UNITED ORTHOPEDIC®

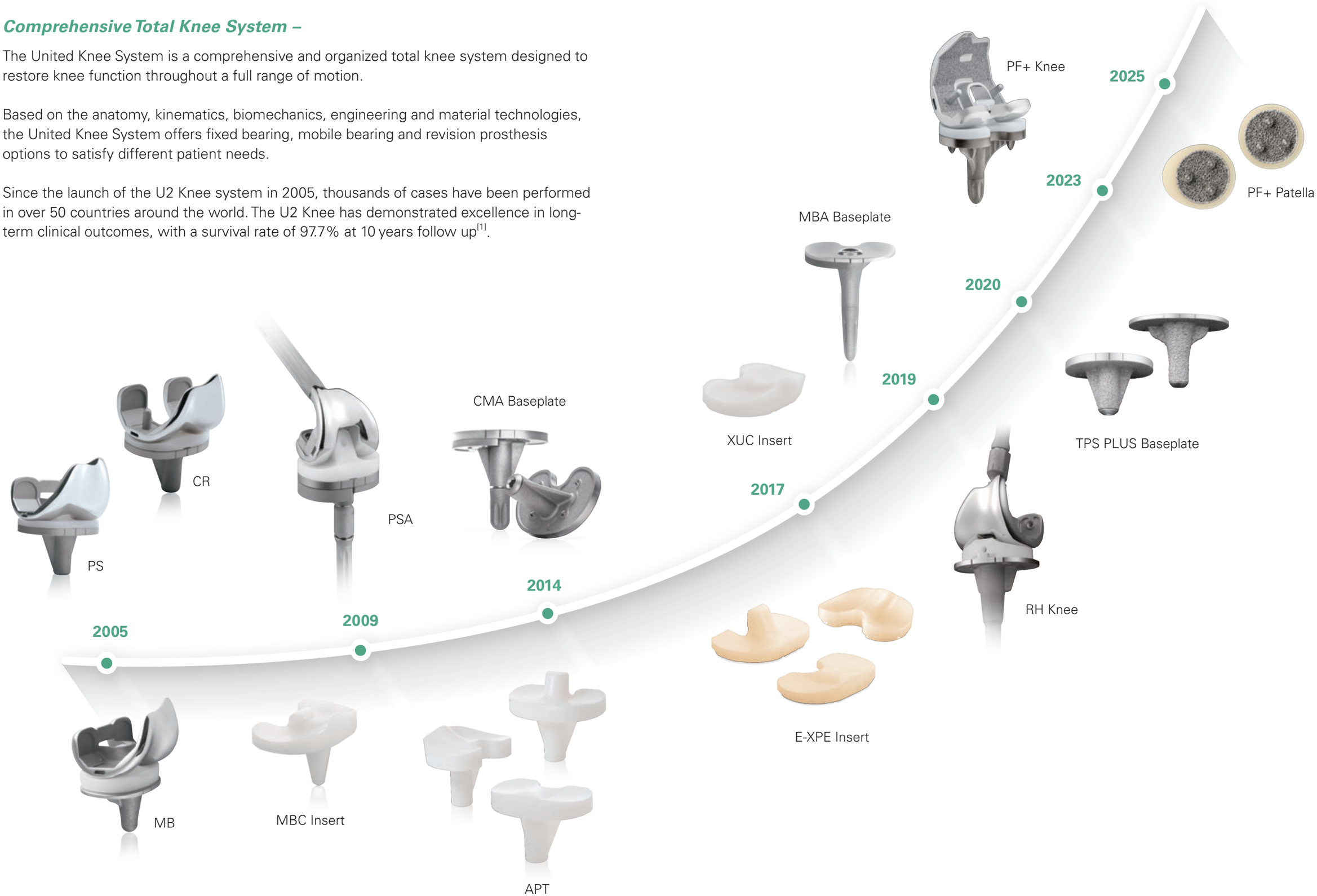
United Knee System

Comprehensive Total Knee System –

The United Knee System is a comprehensive and organized total knee system designed to restore knee function throughout a full range of motion.

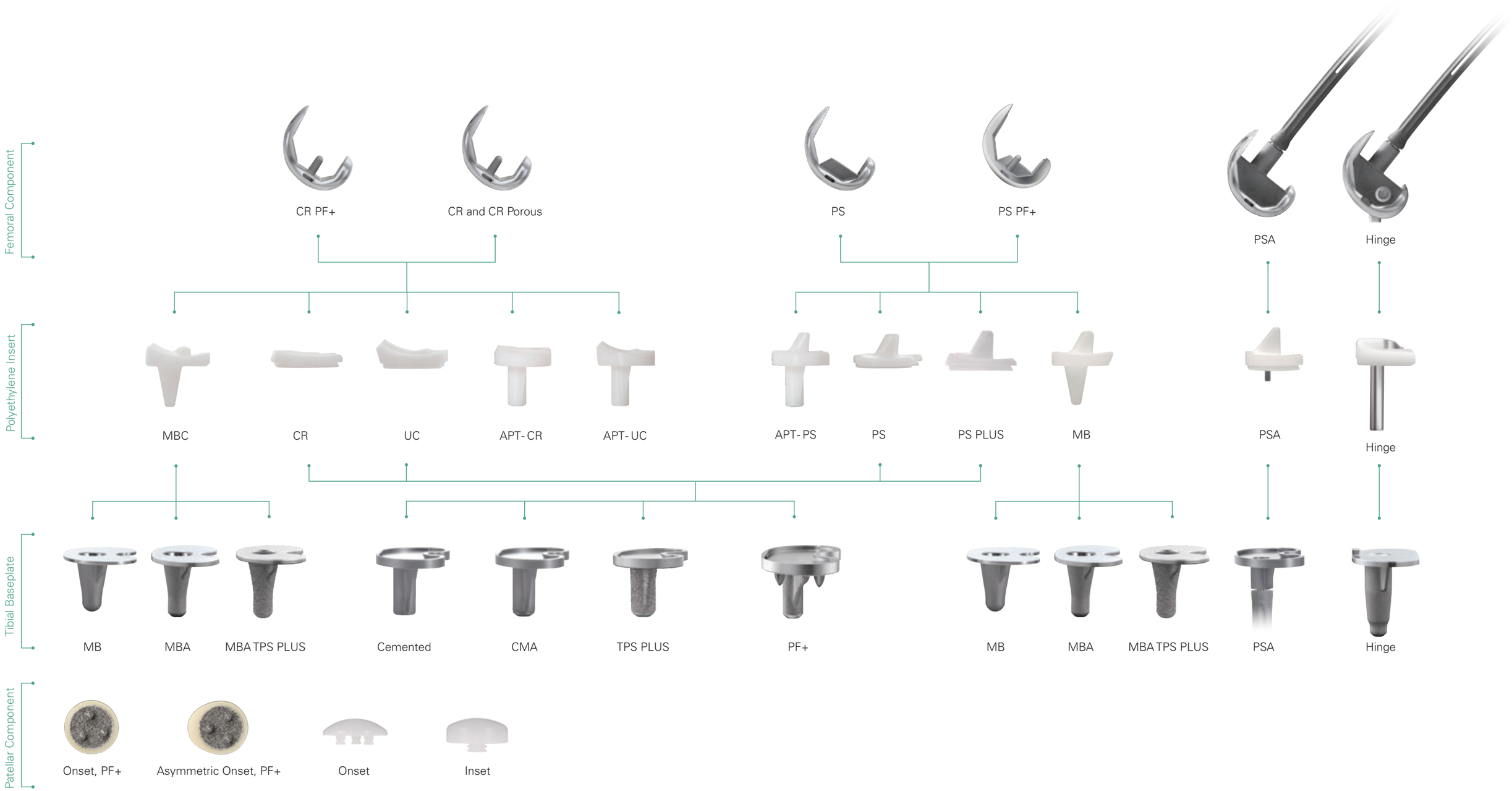
Based on the anatomy, kinematics, biomechanics, engineering and material technologies, the United Knee System offers fixed bearing, mobile bearing and revision prosthesis options to satisfy different patient needs.

Since the launch of the U2 Knee system in 2005, thousands of cases have been performed in over 50 countries around the world. The U2 Knee has demonstrated excellence in long-term clinical outcomes, with a survival rate of 97.7% at 10 years follow up[1].

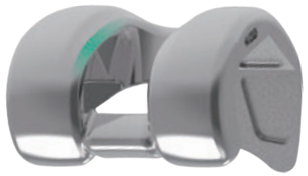


Consistency in U2 Knee System

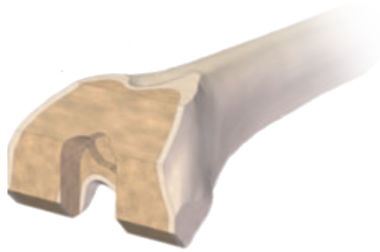
Consistent condylar curvature and intercondylar width allows full interchangeability between femoral and tibial components.



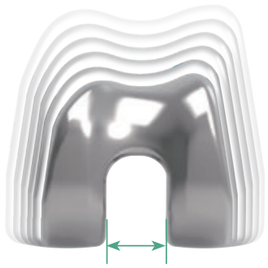
The PS (posterior stabilized) and CR (curciate retaining) femoral components have the same design features, including 2 mm A/P and M/L increments, extended patella groove, and consistent intercondylar width.



The extended patella groove is designed with increased contact area between the patella and femoral implants to allow for optimal patella tracking.



Smaller intercondylar bone removal together with rounded corners help avoid the risk of intercondylar fracture for PS box preparation.

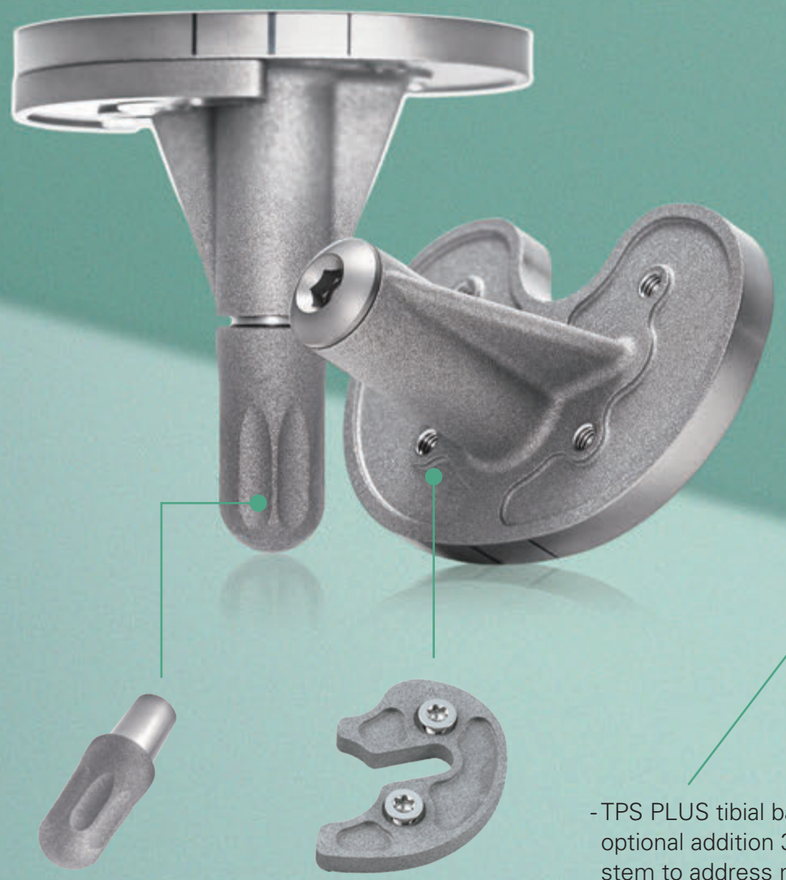


Consistent condylar curvature and standard intercondylar box width (in PS knee) allows full interchangeability between femoral and tibial components.

The curved anterior insert post and PS femoral cam is designed to reduce potential for impingement, component failure and poly wear.

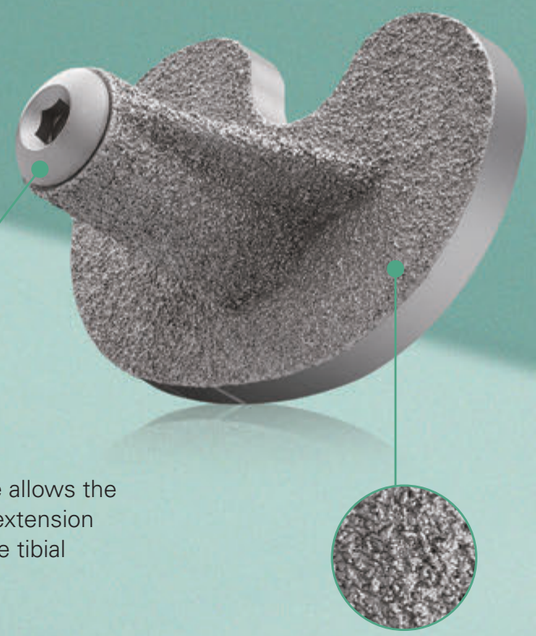
PS and CR femoral components are offered in 2 mm A/P and M/L increments to provide a comprehensive femoral sizing solution.

Cemented **M**odular **A**ugmentable (CMA)



- CMA tibial baseplate allows the optional addition of 5 & 10 mm augments and 30 mm extension stem to address moderate tibial bone defects

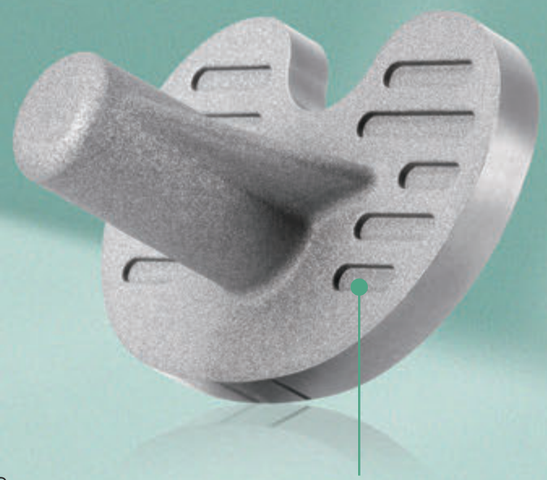
Titanium **P**lasma **S**pray PLUS (TPS PLUS)



- TPS PLUS tibial baseplate allows the optional addition 30 mm extension stem to address moderate tibial bone defects

- Titanium Plasma Spray PLUS coating designed to improve biological fixation

Cemented

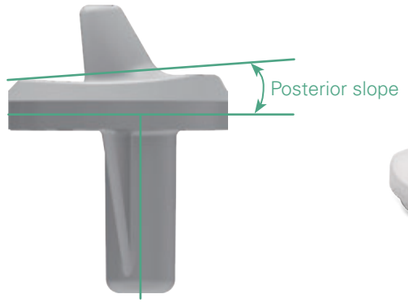


- Cemented tibial baseplate with rough surface and cement recess to promote optimal cement fixation

PS and CR Inserts

5° posterior slope built into CR and PS tibial inserts for horizontal tibial resection.

All CR, PS, UC inserts are available in UHMWPE (Ultra High Molecular Weight Polyethylene), XPE (Highly Crosslinked Polyethylene) , E-XPE (Vitamin E Highly Crosslinked Polyethylene).



CR

PS

UC Insert

Ultracongruent Design

- Accommodates CR femoral component
- The PCL sacrificing surgical technique allows for bone preservation and the potential for a less time consuming procedure
- Up to 14.5 mm prominent anterior lip and a more conforming articulating surface designed to provide joint stability

Tibial baseplate "one up / one down" size pairing for UC insert

Insert	Tibial Baseplate	Femoral												
		#1	#1.5	#2	#2.5	#3	#3.5	#4	#4.5	#5	#5.5	#6	#6.5	#7
#0	#0	●												
#1	#1	●	●	●										
#2	#2	●	●	●	●	●								
#3	#3			●	●	●	●	●						
#4	#4					●	●	●	●	●				
#5	#5							●	●	●	●	●		
#6	#6									●	●	●	●	●
#7	#7											●	●	●

APT

All Poly Tibial Component

Durable, lower cost, elimination of backside wear, and designed for easier removal if necessary[2,3].

Multiple articular selections: CR, PS, UC.

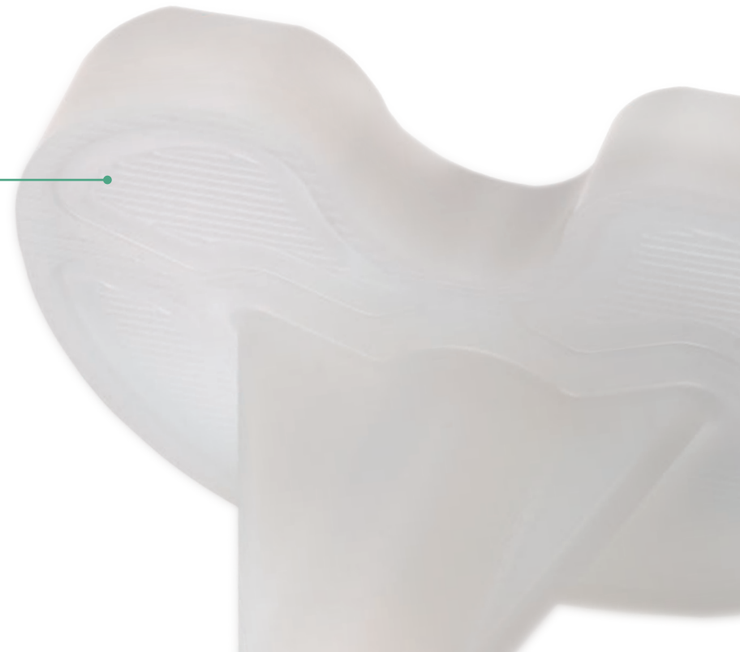
APT- CR

APT- PS

APT- UC

- Metal locating pin inside the APT component for X-ray image identification

- Deeper cement recess with rougher surface finishing to enhance cement fixation and anti-rotation



U2 MB™ Knee

Mobile Bearing Total Knee System

The Mobile Bearing rotating platform knee prosthesis provides both low contact pressure on the articular surface and low shear force on the bone-implant interface.

MBC, Mobile Bearing Congruent Insert

- For use with the U2 CR femoral component
- Surgery: PCL can be either retained or sacrificed
- Includes a central stopping mechanism designed to enhance Medial/Lateral (M/L) stability and also allows up to 4.5° hyper-extension

MB, Mobile Bearing Insert

- For use with the U2 PS femoral component
- Surgery: Both ACL and PCL sacrificed

- Highly mirror-polished platform designed to reduce backside wear

Tibial Accessories Include

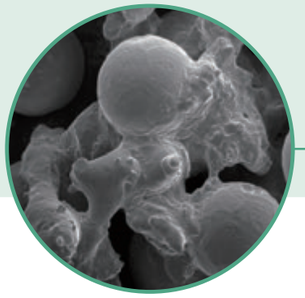
- 5 & 10 mm augments (MBA tibial baseplate only)
- Ø9 mm, lengths 20, 45, 70 and 95 mm extension stems
- Ø12.5 mm and 14 mm, length 45 mm extension stems

Three Tibial Baseplate Options are Available Within the U2 MB Knee

- **MB:** Mobile bearing tibial baseplate
- **MBA:** Mobile bearing augmentable tibial baseplate
- **MBA TPS PLUS:** Mobile bearing augmentable Titanium Plasma Spray PLUS tibial baseplate

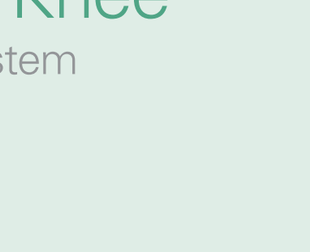
U2 PF+™ Knee

Total Knee System



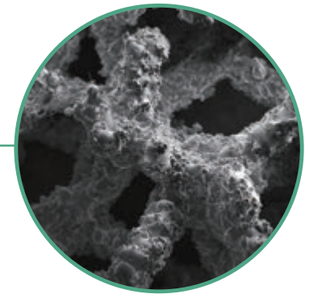
CoCrMo Beads with Irregular Shards

Average Pore Size	Average Porosity
948 µm (surface)	**85% (surface)**
430 µm (overall)	**56% (overall)**



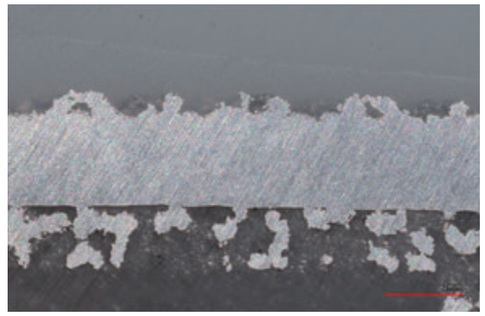
Titanium (Ti6Al4V) Irregular Shards

Average Pore Size	Average Porosity
530 µm (surface)	**84% (surface)**
246 µm (overall)	**64% (overall)**



Titanium (Ti6Al4V) Additive Manufacturing (3D-printed)

Average Pore Size	Average Porosity
527 µm (undersurface)	**64% (undersurface)**
436 µm (peg)	**62% (peg)**



*Stereo microscope photography at 3 magnifications

Advanced Polyethylene–Metal Combination Technology

- PF+ Patella is direct compression molded (DCM) onto a titanium (Ti6Al4V) base
- No remelting or annealing, preserving PE mechanical strength

Two Stem Options

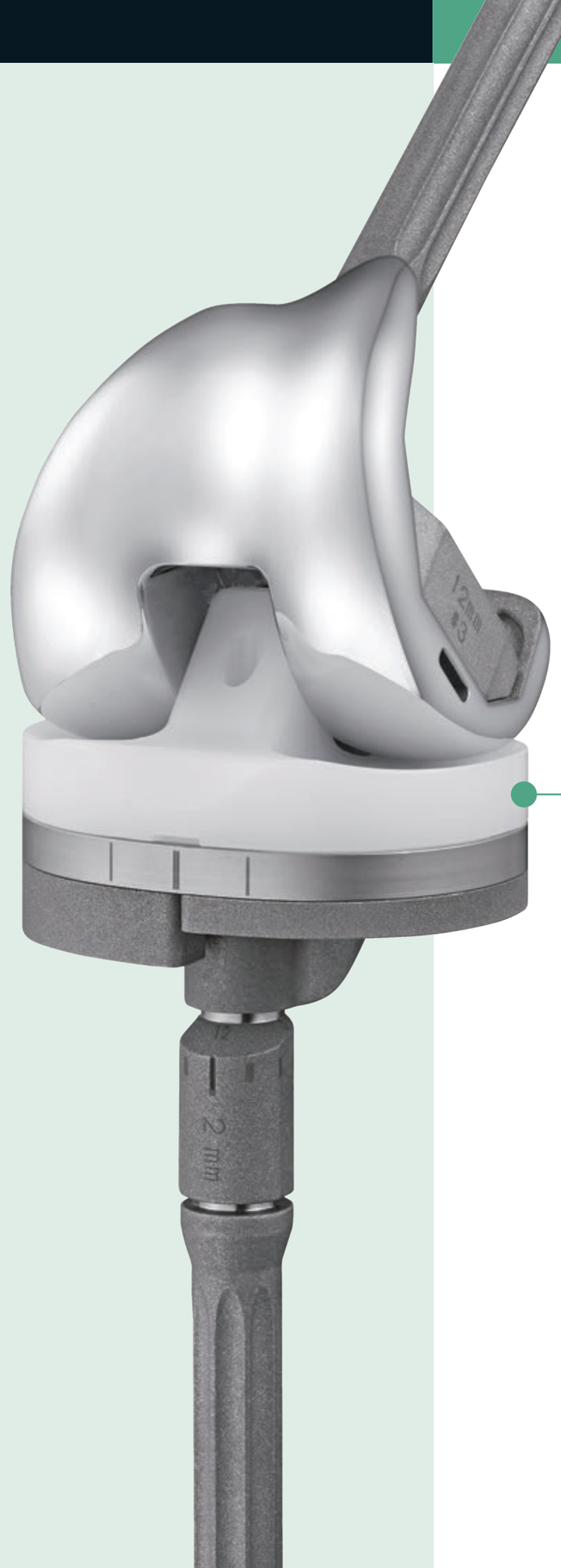
- 20 & 35 mm

U2 PSA™ Knee

Revision Knee System

For use in the event of severe bone deficiency, as well as other complicated cases.

Can be used with augments and extension stem options to manage soft tissue and bone defects.

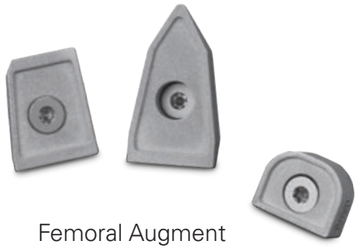


PSA Insert

Constrained Design Enhancing Joint Stability

- Early post–cam engagement at 40° of flexion
- Allows up to ±3.7° of internal/external rotation
- Varus–valgus lift-off limited to ±1.4°

Tibial Augment



Femoral Augment

Improved Design for Optimal Function

- Constrained design with safety screw locking mechanism provides more secured stability

C Ring

Reinforcement Bushing
Patent No. US 9044327

Multiple Extensions Choices

- Straight or curved extension stem length: 30 – 200 mm
- Distal femoral augment thicknesses : 4, 8, 12, 16 mm
- Posterior augment thicknesses: 4, 8 mm
- Tibial augment thicknesses: 5, 10, 15 mm
- 3 offset adapter selections with full range orientation: 2, 4, 6 mm

Extension Stem

Offset Adapter

USTAR II™

Rotating Hinge Knee System

An Extension to U2 Knee Family

- RH (Rotating Hinge) Knee is a rotating platform hinged knee prosthesis
- The resection design is the same with U2 primary and revision femoral components

U2 Primary

U2 PSA Revision

Hinge

Hinge Assembly

Femoral Accessories

Compatible with U2 PSA Revision Knee

Press-fit Stem

Offset Adapter

Femoral Augment

Femoral Screw

Tibial Accessories

Compatible with U2 MB Knee

Straight Stem

Hinge Knee only

Press-fit Stem

Tibial Augment

E-XPE

Vitamin E Highly Crosslinked Polyethylene

CR Insert

UC Insert

PS Insert

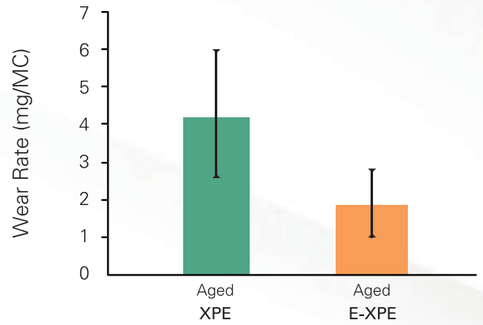
PSA Insert

Inset Patella

Onset Patella

Advanced Bearing Technology

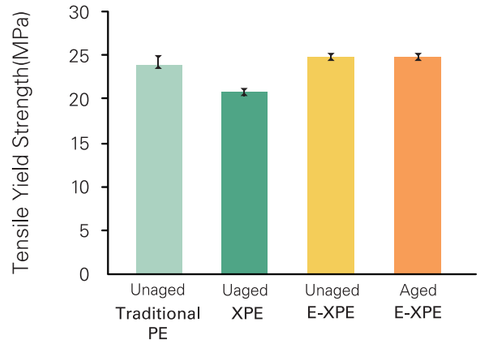
Wear Performance



Extraordinary Wear Performance

E-XPE insert shows 60% reduction in gravimetric wear compared to XPE after accelerated aging[4].

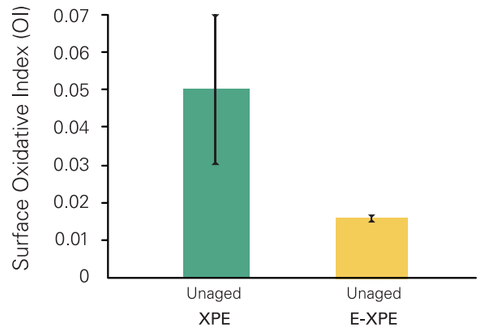
Mechanical Strength



Enhanced Mechanical Strength

Heat treatment is not required after cross-linking process. Therefore, E-XPE shows a 20% tensile strength improvement as compared to highly cross-linked polyethylene[5].

Oxidative Stability



Superior Oxidative Stability

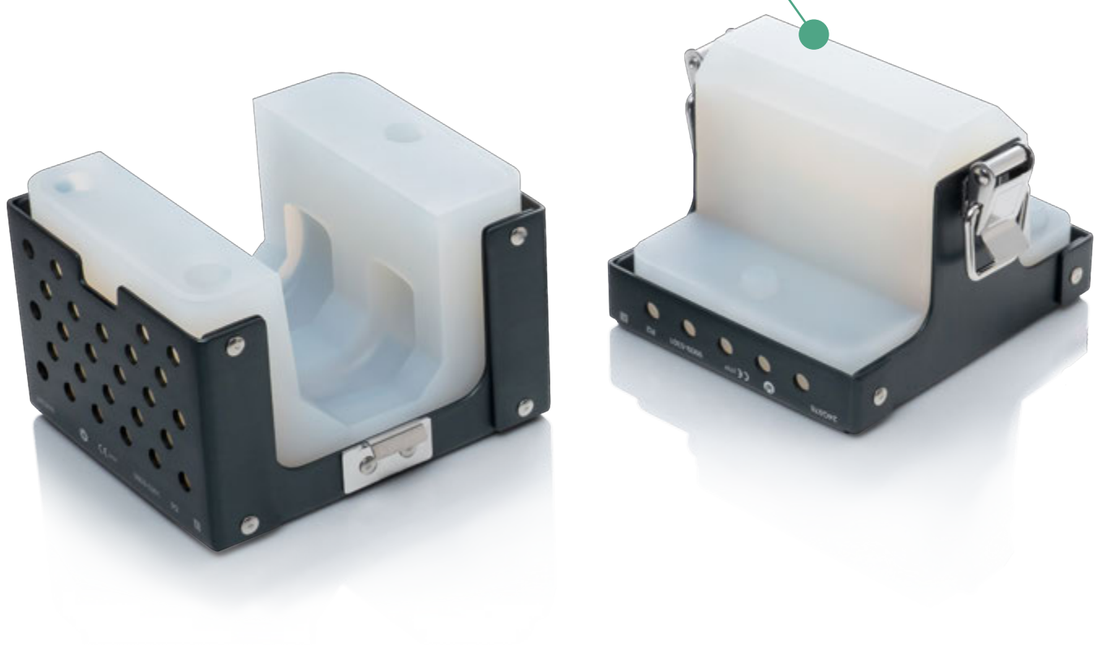
Surface oxidative index of E-XPE shows significant low oxidation after in vitro accelerated aging test[6].

Cellbrick™ Knee

Infection Management Spacer

Made of Medical Grade Silicone

- Allows for repeated autoclave cycles

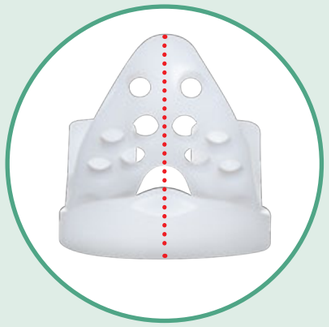


Femoral Spacer

4 sizes available (#2-#5)

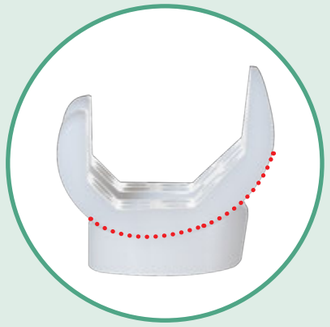
Tibial Spacer

4 sizes available (#2-#5)



Symmetrical design for a universal left/right fit

- Reduces inventory complexity while maintaining consistent performance



Ultra-Congruent (UC) Articulating Design

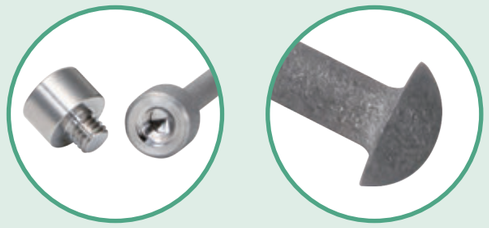
- Improved mobile spacer stability with reduced dislocation risk

Optional Extension for Deep Infection Control

- Designed to deliver and anchor antibiotic cement deep within the medullary canal, with an 80 mm titanium core and easy-retrieval threaded head

Easy-Extraction Design Features

- Threaded top for extractor fixation
- Mushroom end for holding wrapped cement

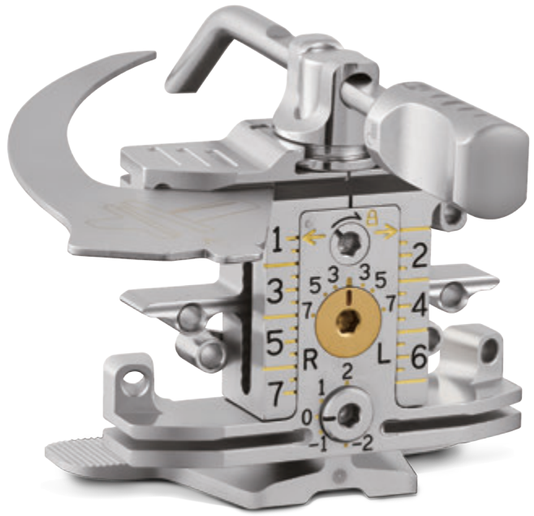


U2 Knee AiO™

All-in-One Sizing & Resection Block

Supports both anterior and posterior references.

Accommodates all 13 sizes of anterior and posterior femoral cuts in one block.



Patent No. US9974547

U2 Knee MDT™

Single-Use Modular Disposable Trial

Single-use trial set designed to reduce sterilization, reprocessing costs and infection risks.

2019

BRONZE WINNER

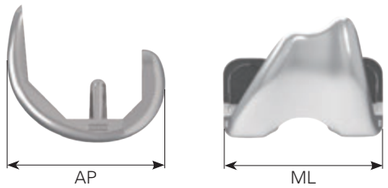
MEDICAL DESIGN

EXCELLENCE AWARDS

When using the U2 Knee System's AiO Block and MDT Implant Trials together, the number of required instrument trays can be reduced from 6 to 1.5.

Implant

Femoral Component



	#1	#1.5	#2	#2.5	#3	#3.5	#4	#4.5	#5	#5.5	#6	#6.5	#7
AP	52	54	56	58	60	62	64	66	68	70	72	74	76
ML	56	58	60	62	64	66	68	70	72	74	76	78	80

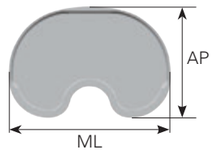
Unit : mm

Cemented CR & Porous CR	PS	PF+ CR	PF+ PS
Sizes #1 ~ #7	#1 ~ #7	#1 ~ #7	#1 ~ #7

PSA	RH
Sizes #1 ~ #6	XS, #1 ~ #6

Implant

Tibial Baseplate



	#0	#1	#2	#3	#4	#5	#6	#7
AP	39.5	42	44.5	47	49.5	52.5	55.5	58.5
ML	60	63	66	69	72	76	80	84

Unit : mm

Cemented & CMA	TPS PLUS	MB & MBA	TPS PLUS
Sizes #0 ~ #7	#0 ~ #7	#1 ~ #6	#1 ~ #6

PF+	PSA	RH
Sizes #1 ~ #7	#1 ~ #6	XS, #1 ~ #6

Implant

U2 Knee Fixed Bearing System

CR Cruciate Retaining

UHMWPE XPE E-XPE

UC Ultracongruent

XPE E-XPE

PS Posterior Stabilized

UHMWPE XPE E-XPE

PS PLUS

XPE

Thickness : 9 / 10 / 11 / 12 / 13 / 14 / 15 / 16 / 17 / 18 mm

U2 Knee Mobile Bearing System

MBC Mobile Bearing Congruent

UHMWPE XPE

MB Mobile Bearing

UHMWPE XPE

Thickness : 9 / 11 / 13 / 15 / 18 mm

All Poly Tibial Component

CR Cruciate Retaining

UHMWPE

PS Posterior Stabilized

UHMWPE

UC Ultracongruent

UHMWPE

Thickness : 9 / 11 / 13 / 15 / 18 mm

Implant

U2 Knee Revision System

PSA Posterior Stabilized Augmentable

UHMWPE XPE E-XPE

Thickness : 9 / 11 / 13 / 15 / 18 / 21 / 25 / 30 mm

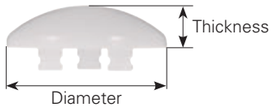
Hinge Knee Tibial Insert

XPE

Thickness : 12 / 14 / 17 / 20 / 23 / 26 / 30 mm

Implant

Onset Patellar Component

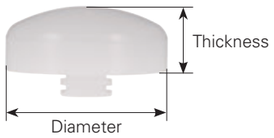


UHMWPE XPE E-XPE

	XS	S	M	L	XL	XXL	EL
Thickness	7	8	8.5	9	9.5	10	10.5
Diameter	26	29	32	35	38	41	44

Unit : mm

Inset Patellar Component



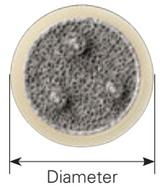
UHMWPE XPE E-XPE

	S	M	L	XL
Thickness	8	10	10	10
Diameter	22	25	28	32

Unit : mm

Implant

Onset Patellar Component, PF+

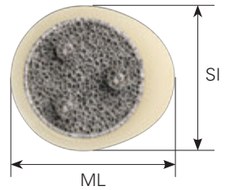


E-XPE

	S	M	L	XL	XXL
Thickness	9	10	10	11	11
Diameter	29	32	35	38	41

Unit: mm

Asymmetric Onset Patellar Component, PF+



E-XPE

	S	M	L	XL	XXL
Thickness	9	10	10	11	11
SI	29	32	35	38	41
ML	33	36	39	42	44

Unit: mm

Accessories

Fixed Bearing Knee

Tibial Augment

Thickness : 5 / 10 mm

Straight Stem

Length : 30 mm

Diameter : Ø14 mm

Mobile Bearing Knee

Tibial Augment

Thickness : 5 / 10 mm

	Straight Stem	Press-fit Stem
Length :	20 / 45 / 70 / 95 mm	45 mm
Diameter :	Ø9 mm	Ø12.5 / 14 mm

PF+ Knee

Plug

Straight Stem

Length : 20 / 35 mm

Diameter : Ø12.5 mm

Accessories

PSA Revision Knee

Distal Femoral Augment

Thickness : 4 / 8 mm 12 / 16 mm

Posterior Femoral Augment

4 / 8 mm

Tibial Augment

5 / 10 / 15 mm

Straight Stem

Length : 30 / 75 / 100 / 150 / 200 mm

Diameter : Ø10 / 12 / 14 / 16 / 18 / 20 / 22 / 24 mm

Curved Stem

150 / 200 mm

Ø10 / 12 / 14 / 16 / 18 / 20 / 22 / 24 mm

Offset Adapter

Offset : 2 / 4 / 6 mm

Accessories

USTAR II RH Knee

Femoral Part

Distal Femoral Augment

Posterior Femoral Augment

Thickness :	4 / 8 mm	12 / 16 mm	4 / 8 mm

Straight Stem

Curved Stem

Offset Adapter

Length :	30 / 75 / 100 / 150 / 200 mm	150 / 200 mm	2 / 4 / 6 mm
Diameter :	Ø10 / 12 / 14 / 16 / 18 / 20 / 22 / 24 mm	Ø10 / 12 / 14 / 16 / 18 / 20 / 22 / 24 mm	

Tibial Part

Tibial Augment

Thickness :	5 / 10 / 15 mm

Straight Stem

Press-fit Stem

Length :	20 / 45 / 70 / 95 / 120 / 145 mm	45 / 70 / 95 / 120 mm
Diameter :	Ø9 mm	Ø12.5 / 14 mm

Reference

[1] Data held on file. United Orthropedic Corporation

[2] All-Polyethylene Versus Metal-Backed Tibial Components—An Analysis of 27,733 Cruciate-Retaining Total Knee Replacements from the Swedish Knee Arthroplasty Register. Asgeir Gudnason, Nils P. Hailer, Annette W-Dahl, Martin Sundberg, Otto Robertsson., J Bone Joint Surg Am. 2014

[3] The role of the cemented all-polyethylene tibial component in total knee replacement: a 30-year patient follow-up and review of the literature. Thomas J. Blumenfeld, Richard D. Scott., Knee. 2010

[4] Data held on file. United Orthropedic Corporation

[5] Data held on file. United Orthropedic Corporation

[6] Data held on file. United Orthropedic Corporation

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