Zimmer® Segmental System Quick Reference Guide

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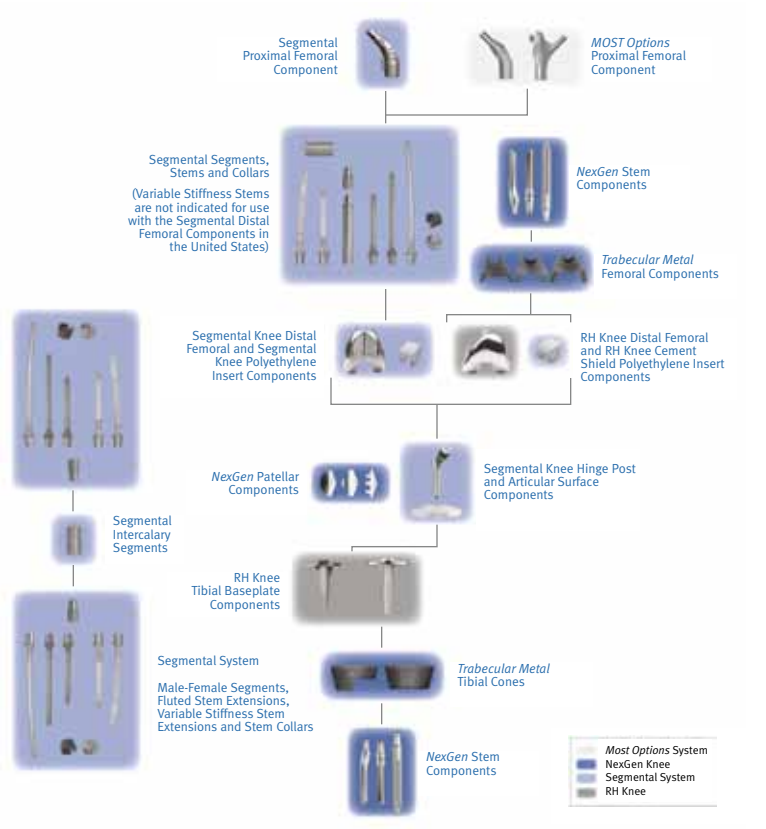
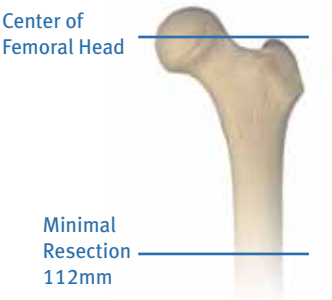
Segmental System Scope/ Compatibility Chart



Zimmer Segmental System Proximal Femur

- Titanium alloy
- 12/14 taper
- 45° neck angle for anatomic function
- 38mm femoral neck offset
- Suture holes (A/P & Medial)
- Component height is 80mm
- Minimum resection is 112mm
- 20 degree rotational adjustability with the *Zimmer* Segmental System segments and stems
- Ability to mate to a bowed stem without the use of a Male/Female Segment

Proximal Femur Resection Length



Proximal Femur	Stem/Collar	Segments	Total Length	Segments	Total Length
80mm	30mm	None	112mm	80+35mm	231mm
		30mm	144mm	120mm	234mm
		35mm	149mm	80+45mm	241mm
		40mm	154mm	100+30mm	246mm
		45mm	159mm	100+35mm	251mm
		60mm	174mm	140mm	254mm
		35+30mm	181mm	100+45mm	261mm
		40+30mm	186mm	120+30mm	266mm
		40+35mm	191mm	120+35mm	271mm
		80mm	194mm	160mm	274mm
		40+45mm	201mm	120+45mm	281mm
		60+30mm	206mm	140+30mm	286mm
		60+35mm	211mm	140+35mm	291mm
		100mm	214mm	180mm	294mm
		60+45mm	221mm	140+45mm	301mm
		80+30mm	226mm		

*Each large taper connection adds 2mm to the total length

Zimmer Segmental System Distal Femur

Utilizes the same kinematics as the *NexGen*® RH Knee – 95% of the load passes through the condyles, similar to the loading pattern of a primary implant.

The femoral component and articular surface are designed to maintain centralized contact throughout the range of motion.

Reproducing *NexGen* Knee System kinematics, femoral condyle centering and the shape of the patella groove allow stable patellar tracking.

Two sizes: packaged with hinge pin and set screw

Femoral Size	M/L	A/P
B	58mm	50mm
C	64mm	54.4mm

Insert the Segmental Hinge Pin Set Screw on the same side as the Hinge Pin (may be inserted either medially or laterally into the femoral component)

Distal Femur Resection Length

Distal Femur	Stem Collar	Segments	Resection Length	Segments	Resection Length
Minimal Resection 90mm  Joint Line		None	90mm	35 + 120mm	249mm
		30mm	122mm	160mm	252mm
		35mm	127mm	45 + 120mm	259mm
		40mm	132mm	30 + 140mm	264mm
		45mm	137mm	35 + 140mm	269mm
		60mm	152mm	180mm	272mm
		30 + 35mm	159mm	45 + 140mm	279mm
		30 + 40mm	164mm	30 + 160mm	284mm
		35 + 40mm	169mm	35 + 160mm	289mm
		80mm	172mm	200mm	292mm
		35 + 50mm	179mm	45 + 160mm	299mm
Size B 58mm*	30mm	30 + 60mm	184mm	30 + 180mm	304mm
		35 + 60mm	189mm	35 + 180mm	309mm
		100mm	192mm	220mm	312mm
		45 + 60mm	199mm	45 + 180mm	319mm
		30 + 80mm	204mm	30 + 200mm	324mm
		35 + 80mm	209mm	35 + 200mm	329mm
		120mm	212mm	40 + 200mm	334mm
		45 + 80mm	219mm	45 + 200mm	339mm
		30 + 100mm	224mm	30 + 220mm	344mm
		35 + 100mm	229mm	35 + 220mm	349mm
		140mm	232mm	40 + 220mm	354mm
		45 + 100mm	239mm	45 + 220mm	359mm
		30 + 120mm	244mm		

* Size C Segmental Distal Femur is 60mm. Resect an additional 2mm beyond the resection length listed in the table above for the Size C

Note: Each large taper connection adds 2mm to the total length

Zimmer Segmental System
Total Femur Replacement

Proximal Femur	Distal Femur	Male-Male Segment	Male-Female Segments	Total Replacement Length
80 mm	Size B 58 mm*	80mm	-	222mm
		90mm	-	232mm
		80mm	30mm	254mm
		80mm	35mm	259mm
		90mm	30mm	264mm
		90mm	35mm	269mm
		90mm	40mm	274mm
		90mm	45mm	279mm
		80mm	60mm	284mm
		80mm	30 + 35mm	291mm
		90mm	60mm	294mm
		90mm	30 + 35mm	301mm
		80mm	80mm	304mm
		90mm	30 + 40mm	306mm
		80mm	40 + 45mm	311mm
		90mm	80mm	314mm
		90mm	40 + 45mm	321mm
		80mm	100mm	324mm
		80mm	60 + 45mm	331mm
		90mm	100mm	334mm
		90mm	60 + 45mm	341mm
		200mm	-	342mm

* Size C Segmental Distal Femur is 60mm.
Note: Each large taper connection adds 2mm to the total length

Proximal Femur	Distal Femur	Male-Male Segment	Male-Female Segments	Total Replacement Length
80 mm	Size B 58 mm*	80mm	120mm	344mm
		90mm	80 + 35mm	351mm
		90mm	120mm	354mm
		90mm	80 + 45mm	361mm
		80mm	100 + 40mm	366mm
		80mm	100 + 45mm	371mm
		200mm	30mm	374mm
		90mm	100 + 60mm	376mm
		200mm	35mm	379mm
		200mm	40mm	384mm
		200mm	45mm	389mm
		90mm	100 + 60mm	396mm
		80mm	140 + 35mm	401mm
		200mm	60mm	404mm
		80mm	140 + 45mm	411mm
		90mm	180mm	414mm
		90mm	140 + 45mm	421mm
		200mm	80mm	424mm
		200mm	40 + 45mm	431mm
		90mm	200mm	434mm

* Size C Segmental Distal Femur is 60mm.
Note: Each large taper connection adds 2mm to the total length

Proximal Femur	Distal Femur	Male-Male Segment	Male-Female Segments	Total Replacement Length
80 mm	Size B 58 mm*	90mm	160 + 45mm	441mm
		200mm	100mm	446mm
		200mm	60 + 45mm	451mm
		90mm	220mm	454mm
		90mm	180 + 45mm	461mm
		200mm	120mm	464mm
		200mm	80 + 45mm	471mm
		90mm	200 + 40mm	476mm
		90mm	200 + 45mm	481mm
		200mm	140mm	484mm
		200mm	100 + 45mm	491mm
		90mm	200 + 60mm	496mm
		90mm	220 + 45mm	501mm
		200mm	160mm	504mm
		200mm	120 + 45mm	511mm
		90mm	220 + 60mm	516mm
		200mm	140 + 35mm	521mm
		200mm	180mm	524mm

* Size C Segmental Distal Femur is 60mm.
Note: Each large taper connection adds 2mm to the total length

STEMS

Zimmer Segmental System Stems

- Multiple Unique Stem Options
- Excellent Fixation
- Strong Design
- Designed to Reduce Tip Stresses

Zimmer Segmental System Stem	Size I/M Length	I/M Diameters	Material
Cemented Straight	130	9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19	Cobalt Chrome Alloy
	190		
Cemented Bowed	250	12, 13, 14, 15, 16, 17, 18, 19	
Variable Stiffness Straight	130	9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19	
Variable Stiffness Bowed	190		

Indications For Use

Zimmer Segmental System Stems	Distal Femur	Proximal Femur	Intercalary Segments
Cemented Straight	Yes	Yes	Yes
Cemented Bowed	Yes	Yes	Yes
Variable* Stiffness Straight	Yes Outside US No in US	Yes	Yes
Variable* Stiffness Bowed	Yes Outside US No in US	Yes	Yes

* Variable stiffness stems are indicated for cementless use only.

Variable Stiffness Stems Provide a Press Fit Solution

Excellent Fixation – The splined design provides immediate fixation into bone to help rotation. The *Trabecular Metal* collar enables bone and soft tissue ingrowth at the bone/implant interface and allows the ideal size of collar to be selected for the patient's bone diameter.

Strong Design – Machined from Wrought Co-Cr-Mo Alloy these stems offer high fatigue strength. The stem design avoids the potential decreased mechanical properties that may arise from thermal processing of some porous coatings on the stem while the modular stem/collar design permits porous ingrowth material to be affixed to the stem.

Designed to Reduce Tip Stresses – The Variable Stiffness Stems feature a unique cross-cut tip design intended to reduce tip stresses inside the bone.

Minimum Reamer Diameter		
Stem Size	For Fluted Stem	For Variable Stiffness
9mm	11mm	8.5mm
10mm	12mm	9.5mm
11mm	13mm	10.5mm
12mm	14mm	11.5mm
13mm	15mm	12.5mm
14mm	16mm	13.5mm
15mm	17mm	14.5mm
16mm	18mm	15.5mm
17mm	19mm	16.5mm
18mm	20mm	17.5mm
19mm	21mm	18.5mm

Planer Pilot Diameter		
Stem Size	For Fluted Stem	For Variable Stiffness
9mm	9mm	8mm
10mm	10mm	9mm
11mm	11mm	10mm
12mm	12mm	11mm
13mm	13mm	12mm
14mm	14mm	13mm
15mm	15mm	14mm
16mm	16mm	15mm
17mm	17mm	16mm
18mm	18mm	17mm
19mm	19mm	18mm

Provisional Diameter		
Stem Size	For Fluted Stem	For Variable Stiffness
9mm	9mm	8mm
10mm	10mm	9mm
11mm	11mm	10mm
12mm	12mm	11mm
13mm	13mm	12mm
14mm	14mm	13mm
15mm	15mm	14mm
16mm	16mm	15mm
17mm	17mm	16mm
18mm	18mm	17mm
19mm	19mm	18mm

Straight Stem Reaming:

Use *NexGen*® or *VerSys*® Reamers

Bowed Stem Reaming:

Use flexible *Pressure Sentinel*® System (00-2228-000-03) or *ZMR*® Flexible Reamer Set (00-9975-000-11).

Zimmer Segmental System Modular Collars

- Maximized bone contact – matched to each patient's anatomy
- 80% porosity allows for greater bone ingrowth

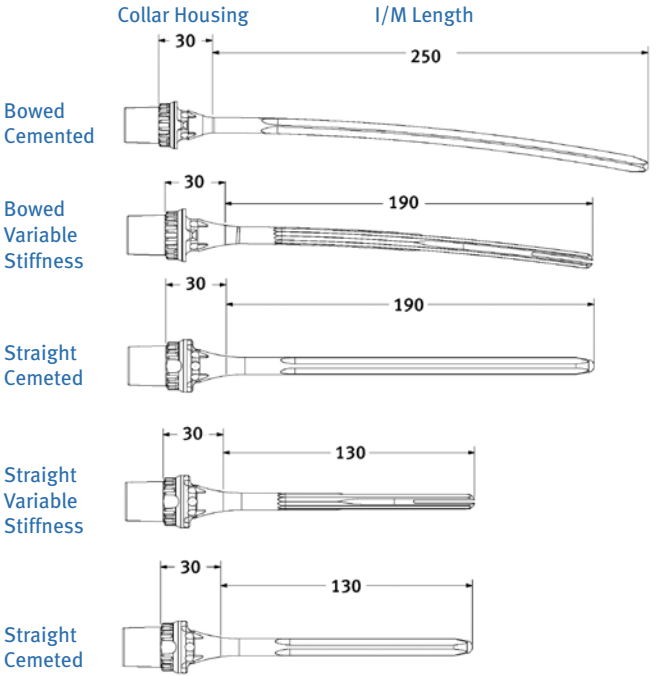
- The 3-D structure provides flexibility, reducing the potential for stress shielding.
- Collar promotes extracortical loading to loadshare with the stem strengthening the stem at a point of the highest loading
- No reports of separation between the collar & the stem with over 1000 implantations in 3.0 years
- The ingrowth and overgrowth could work to prevent debris from entering the canal of the stem, potentially disrupting the cement to bone or stem to bone interface.
- T*rabecular Metal* Material is 80% porous and offers excellent clinical evidence of ingrowth

Trabecular Metal Material is The Best Thing Next to Bone®

Stem Collars			
Stem Collar Diameter (against bone)			
Smooth Collar	Trabecular Metal Collar	Stem Diameter	Stem I/M Length
30mm*	25, 30*, 35*mm	9-16mm	130mm Straight 190mm Straight 250mm Bowed
30mm*	30*, 35*mm	17-19mm	

*Denotes a collar size that has a different inner diameter for stem sizes 9-16mm than for 17-19mm

All Segmental Stems (straight and bowed) must be used with collars, and all collars must be cemented to the stems. Make sure to verify compatibility of the collar with the stem size being used on the product label before the implant packages are opened.



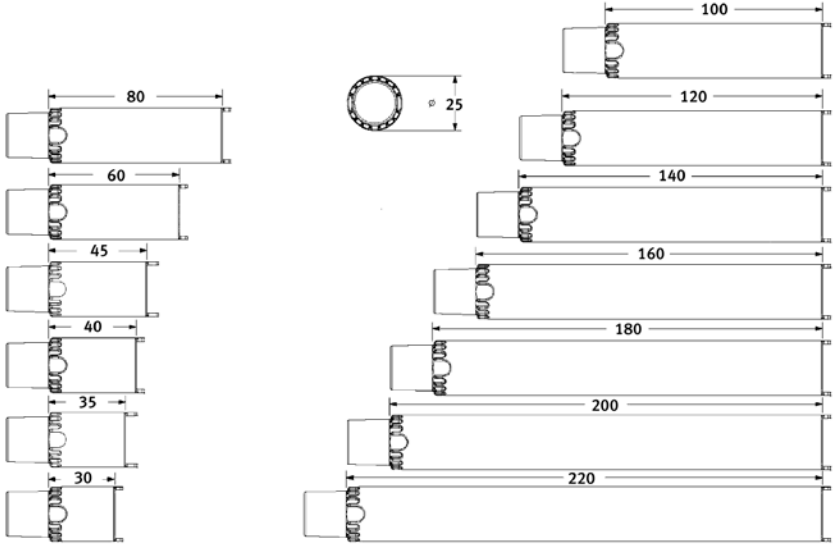
Zimmer Segmental System Segments

Alignment Tab

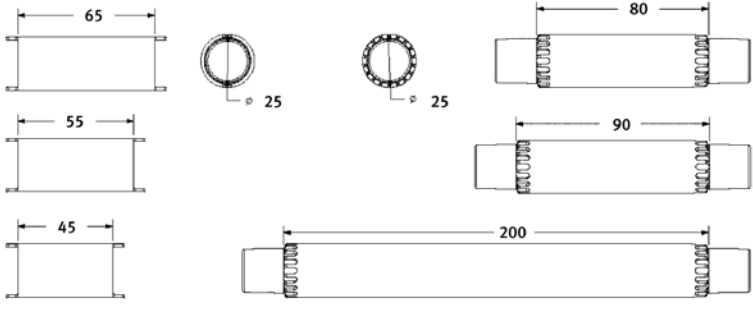
An incremental alignment mechanism features tab and pocket adjustment for optimal alignment. This enables reconstruction to more closely match the patient's physiology; and allows for controllable adjustment in 20-degree increments.

Connection	Length	Diameter	Material
Male/Female	30, 35, 40, 45, 60, 80, 100, 120, 140, 160, 180, 200, 220mm	25mm	*Tivanium*® Alloy
Male/Male	80, 90, 200mm		
Female/Female (Intercalary)	45, 55, 65mm		

Male/Female Segments



Male/Male & Intercalary Segments



Zimmer Segmental System Intercalary Segments

- Mid-Shaft Application
- Leverage Trabecular Metal Technology in mid-shaft
- Available for cemented or cementless stems

The minimum resection is 109mm

Intercalary Resection Lengths			
Intercalary Segments	Stem/Collar (Two Stems Required)	Male-Female Segments	Resection Length*
45mm	30+30mm	0	109mm
		30mm	141mm
		35mm	146mm
55mm	30+30mm	0	119mm
		30mm	151mm
		35mm	156mm
65mm	30+30mm	0mm	129mm
		30mm	161mm
		35mm	166mm
		40mm	171mm
		45mm	176mm

Note: Each large taper connection adds 2mm to the total length

NexGen RH Knee Tibial Component

- Modular: 6 sizes (1–6) (accepts stem extensions and augments)
- Non modular: 3 sizes (1–3) (for smaller anatomy; does not accept stem extension)
- 95% loading carried by tibial condyles
- 25 degrees of internal and external rotation (50 degrees total)
- Compatable with *Trabecular Metal* augments and cones

- *Zimaloy*® CoCrMo Alloy
- Precoated with PMMA
- Double-capture locking mechanism of the tibial component
- Hinge post extension (jump height of 40 mm)

Zimmer Segmental System Transitional Articular Surface

- A tapered articular surface permits the use of a smaller tibial component for a given distal femur size, which is especially advantageous in oncology cases, where skin closure can be challenging
- Articular surface is packaged with one-piece hinge post to ensure 40mm jump height of the post
- Trials: use RH Knee articular surface trials

Note: Be aware that the length of the hinge post implant may be longer than the provisional.

Compatibility of Hinge Posts & Polys

RH Knee	Hinge Servicing Kit Used	Compatible Articular Surfaces and Hinge Components		
			Segmental Articular Surface (with the Hinge Post Extension)	
 Base Component System	 *NexGen* RH Knee Hinge Servicing Kit	 *NexGen* RH Knee Articular Surface (with the Hinge Post Extension)	OR  Segmental Articular Surface with the Segmental One-Piece Hinge Post	 *NexGen* RH Knee Articular Surface (with the Hinge Post Extension)
 Base Component System	 *NexGen* RH Knee Cement Shield Servicing Kit	 Segmental Articular Surface with the Segmental One-Piece Hinge Post		

NexGen Knee
Rotating Hinge Knee (RH Knee)

		Femoral Size				
		B	C	D	E	F
Tibial Base Plate	1	B/1-6				
	2	B/1-6	C/2-6			
	3	B/1-6	C/2-6	D/3-6		
	4	B/1-6	C/2-6	D/3-6	E/4-6	
	5	B/1-6	C/2-6	D/3-6	E/4-6	F/5-6
	6	B/1-6	C/2-6	D/3-6	E/4-6	F/5-6
Patella Size		Use standard size Patellas with RH Knee Femoral Component			26mm (insert only)† 29mm†	32mm† 38mm 35mm 41mm

† Do not use 26,29 or 32mm Patellas with size G Femoral Components.

Zimmer Knee
Segmental Knee System
(using RH Knee femoral and tibial component)

		RH Knee Femoral Size				
		B	C	D	E	F
RH Knee Tibial Size	1	B/123456	C/123456	D/123456		
	2	B/123456	C/123456	D/123456	E/23456	
	3	B/123456	C/123456	D/123456	E/23456	F/3456
	4	B/123456	C/123456	D/1234566	E/23456	F/3456
	5	B/123456	C/123456	D/1234566	E/23456	F/3456
	6	B/123456	C/123456	D/1234566	E/23456	F/3456

Proximal Femur	
KT-5853-011-00	*Zimmer* Segmental Proximal Femoral Kit
KT-5853-006-00	*Zimmer* Segmental Distal Femoral Accessories Kit
KT-5853-007-00	*Zimmer* Segmental Femoral Accessories Kit
KT-5853-001-00	*Zimmer* Segmental 130mm Straight Stem Provisionals Kit
KT-5853-002-00	*Zimmer* Segmental 190mm Straight Stem Provisionals Kit
KT-5853-003-00	*Zimmer* Segmental 250mm Bowed Stem Provisionals Kit
KT-5853-004-00	*Zimmer* Segmental Segment Provisionals Kit
00-2228-000-00*	*Pressure Sentinel* Reamer Full Set
00-9975-000-11*	*ZMR* Flexible Reamer Set
Distal Femur	
KT-5853-006-00	*Zimmer* Segmental Distal Femoral Accessories Kit
KT-5853-007-00	*Zimmer* Segmental Femoral Accessories Kit
KT-5853-001-00	*Zimmer* Segmental 130mm Straight Stem Provisionals Kit
KT-5853-002-00	*Zimmer* Segmental 190mm Straight Stem Provisionals Kit
KT-5853-003-00	*Zimmer* Segmental 250mm Bowed Stem Provisionals Kit
KT-5853-004-00	*Zimmer* Segmental Segment Provisionals Kit
00-5979-003-00	RH Knee Tibial Instrument/Provisional Kit
00-5979-004-00	RH Knee Articular Surface Provisional Kit
00-5979-009-00	RH Knee Small General Instrument Kit
00-5973-003-00	*NexGen* Tibial/Femoral General Instrument Kit
00-5973-035-00	*NexGen* Tibial Augment Instrument/Provisional Kit
00-5973-024-00	*NexGen* Straight & Offset Stem Extension Provisional Kit
00-5973-036-00	*NexGen* Reamer Kit
00-2228-000-00*	*Pressure Sentinel* Reamer Full Set
00-9975-000-11*	*ZMR* Flexible Reamer Set

*Only one of the two kits is needed if flex reaming is necessary
* If using flex reaming ensure appropriate guide-wires are available as well

Total Femur	
KT-5853-011-00	*Zimmer* Segmental Proximal Femoral Kit
KT-5853-006-00	*Zimmer* Segmental Distal Femoral Accessories Kit
KT-5853-007-00	*Zimmer* Segmental Femoral Accessories Kit
KT-5853-001-00	*Zimmer* Segmental 130mm Straight Stem Provisionals Kit
KT-5853-002-00	*Zimmer* Segmental 190mm Straight Stem Provisionals Kit
KT-5853-003-00	*Zimmer* Segmental 250mm Bowed Stem Provisionals Kit
KT-5853-004-00	*Zimmer* Segmental Segment Provisionals Kit
00-5979-003-00	RH Knee Tibial Instrument/Provisional Kit
00-5979-004-00	RH Knee Articular Surface Provisional Kit
00-5979-009-00	RH Knee Small General Instrument Kit
00-5973-003-00	*NexGen* Tibial/Femoral General Instrument Kit
00-5973-035-00	*NexGen* Tibial Augment Instrument./Provisional Kit
00-5973-024-00	*NexGen* Straight & Offset Stem Extension Provisional Kit
00-5973-036-00	*NexGen* Reamer Kit
00-2228-000-00*	*Pressure Sentinel* Reamer Full Set
00-9975-000-11*	*ZMR* Flexible Reamer Set

*Only one of the two kits is needed if flex reaming is necessary
* If using flex reaming ensure appropriate guide-wires are available as well

Literature Available	
97-5850-001-00 Rev 2	*Zimmer* Segmental System Brochure
97-5850-004-00	*Zimmer* Segmental System Surgical Technique Distal/Total Femur
97-5850-007-00	*Zimmer* Segmental System Surgical Technique Proximal Femur
97-5850-003-00	*Zimmer* Segmental System Surgical Technique Variable Stiffness Stems and Intercalary Segments

References

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Bobyn JD, Hacking SA, Krygier JJ, Chan SP, Toh KK, Tanzer M. Characterization of a new porous tantalum biomaterial for reconstructive surgery. Scientific exhibition: 66th Annual Meeting of the American Academy of Orthopaedic Surgeons; February 4-8, 1999;Anaheim, CA.

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Zhang Y, Ahn PB, Fitzpatrick DC, Heiner AD, Poggie RA, Brown TD. Interfacial frictional behavior: cancellous bone, cortical bone, and a nobel porous tantalum biomaterial. Journal of Musculoskeletal Research. 1999;3(4):245-251.

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