Aria

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Date: 2021.06.28 17:19:40 EEST
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Location: Moldova

Signature ORTHOPAEDICS

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Introduction

The Signature Orthopaedics Aria Instrument system is an optimised instrument set for implantation of the Signature Orthopaedics Aria cementless hip stem. The Aria instrument set features an adaptable broach handle that quick-connects to several instrument attachments to reduce the overall number of instruments and minimize the size and weight of the instrument tray.

Indications

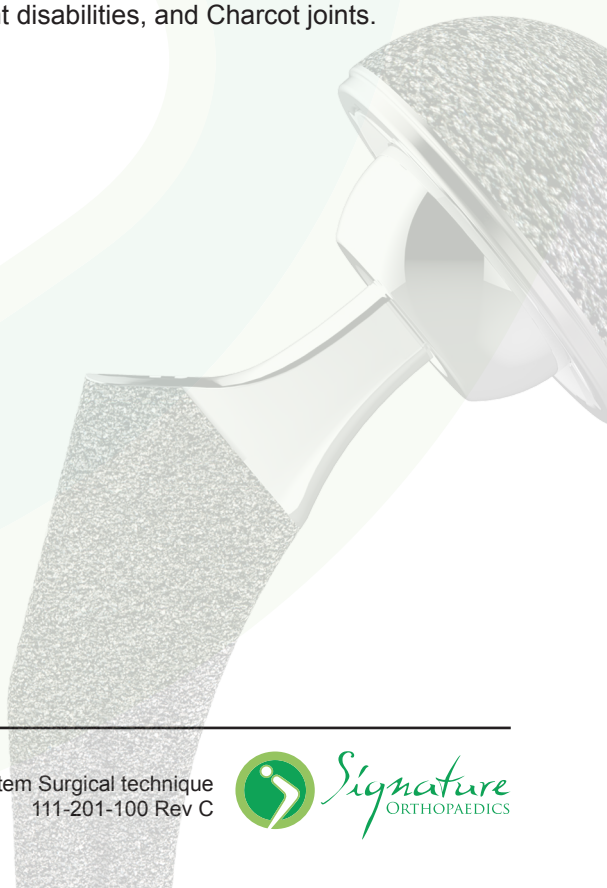
Signature Orthopaedics' hip replacement range is intended to replace a hip joint where bone stock is sufficient to support the implant. When a surgeon has selected prosthetic replacement as the preferred treatment, the devices are indicated for:

- Non-inflammatory degenerative joint disease including osteoarthritis or avascular necrosis
- Inflammatory joint disease including rheumatoid arthritis (excluding TSI stem)
- Correction of functional deformity including congenital hip dysplasia
- Traumatic injury involving the hip joint including traumatic arthritis or femoral head or neck fracture
- Failed previous hip surgery including internal fixation or joint fusion, reconstruction, hemiarthroplasty, surface replacement, or total replacement.

Contraindications

In general, prosthetic components require adequate bone support for correct fit and function. The use of prosthetic components is therefore contraindicated where any pathological condition may reduce the quantity and or strength of the bone which is supporting the prosthesis. Some contraindications are relative to the extent and severity of conditions and the benefits of prosthetic arthroplasty should be considered based on the patient's overall evaluation and the possibility of alternative treatment. Examples of such conditions include; osteoporosis, osteomalacia, osteogenesis imperfecta, or hypophosphatemia. Other contraindications include:

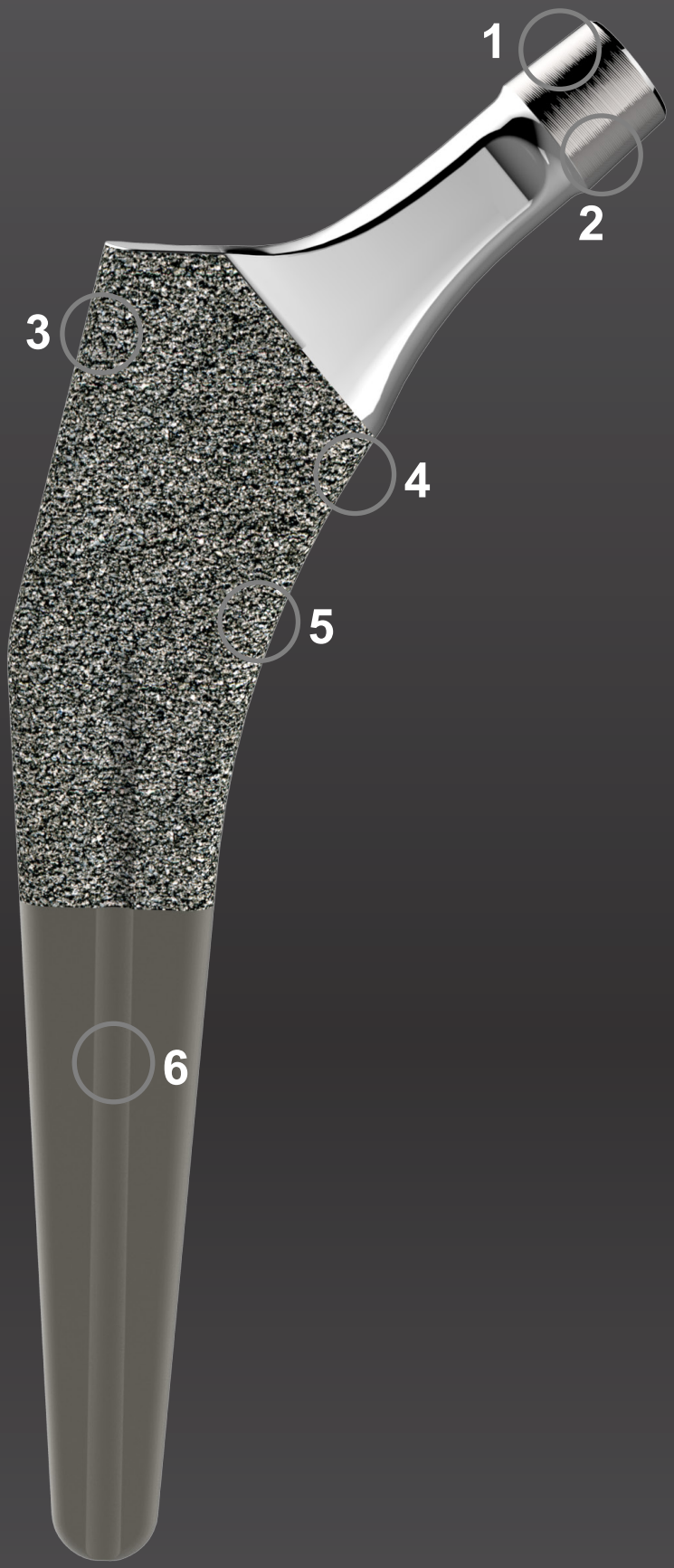
- Conditions limiting blood supply to the bone or joint.
- Systemic or local infection.
- Previous high dose radiotherapy.
- Psychological or neurological conditions which would restrict the patient's ability or compliance in restricting physical activity.
- Skeletal immaturity
- Conditions or activity which may place excessive load on the components such as; obesity, muscle, tendon & ligament deficiencies, multiple joint disabilities, and Charcot joints.



Aria Stem Features

Cementless Hip Stem

- Clinically proven geometry, material and coating (Ti6Al4V with titanium plasma spray coating).
- Threaded proximal feature aids in positioning and removal.



1. Standard and High offset versions

2. 12/14 Taper

3. Low-profile lateral shoulder

Enables easy insertion in reduced insertion techniques, including anterior approach.

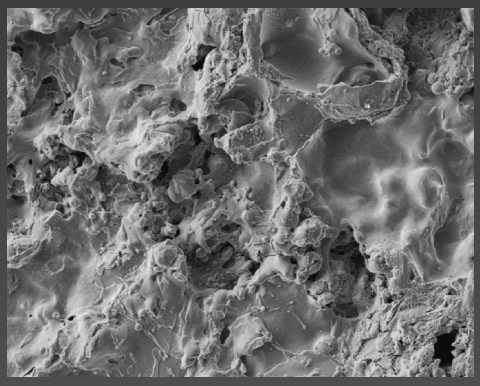
4. Tapered geometry

Wedge-shaped stem improves initial fixation and proximal bone loading.

5. Titanium Plasma Spray Coating

- Tensile Strength > 22MPa
- Shear Strength > 22MPa
- Coating Thickness 70-130 microns.

6. Distal reduced options

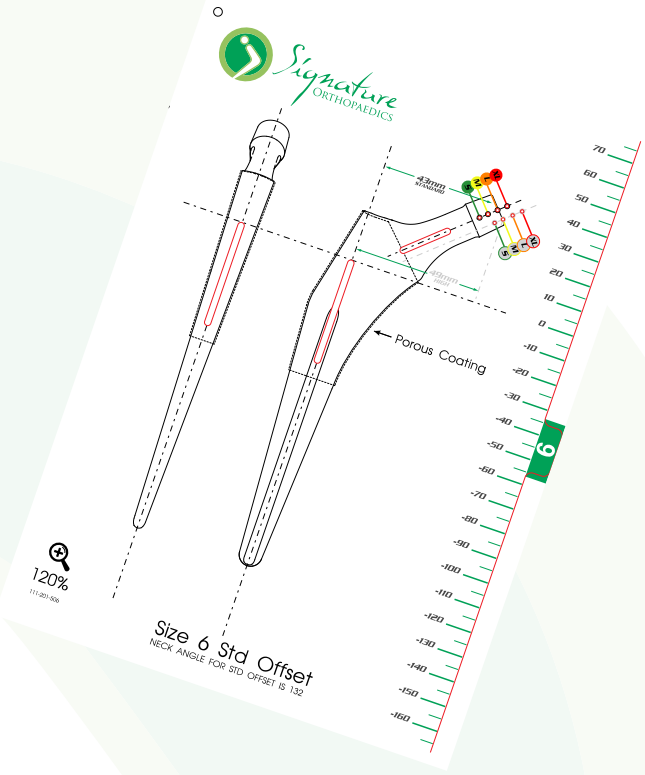


Aria coating x100

1

Preoperative Planning

Aria X-Ray templates can be used over anterior/posterior and lateral radiographs to help determine the correct size to restore the patient's anatomy. Templates are 120% magnification.

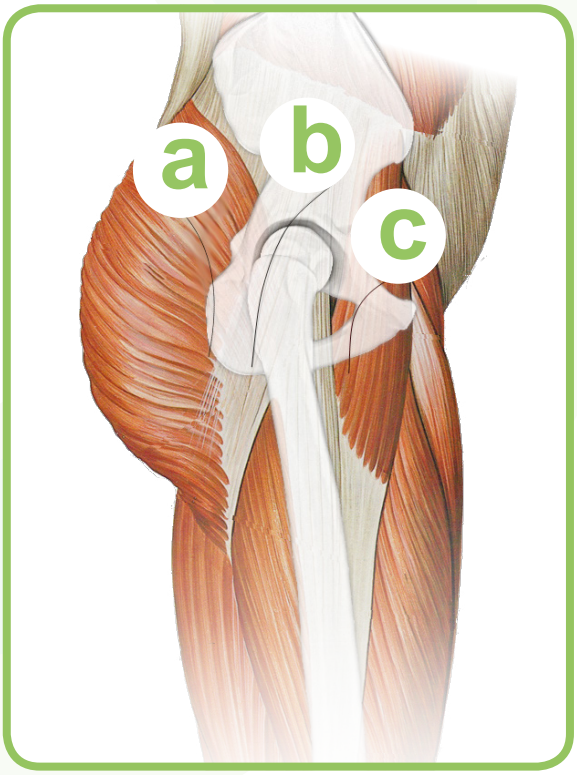


2

Preoperative Planning

The Logical cup can be used with any surgical approach that the surgeon selects.

a. Posterior approach
b. Posterolateral/anterolateral approach
c. Anterior approach

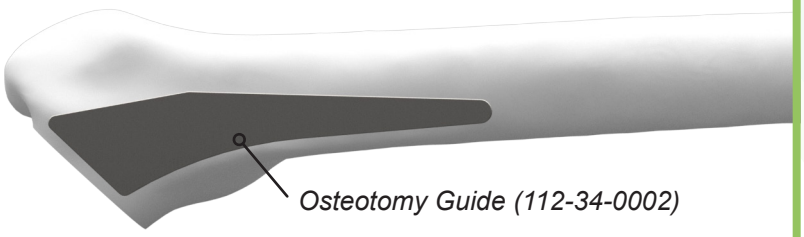


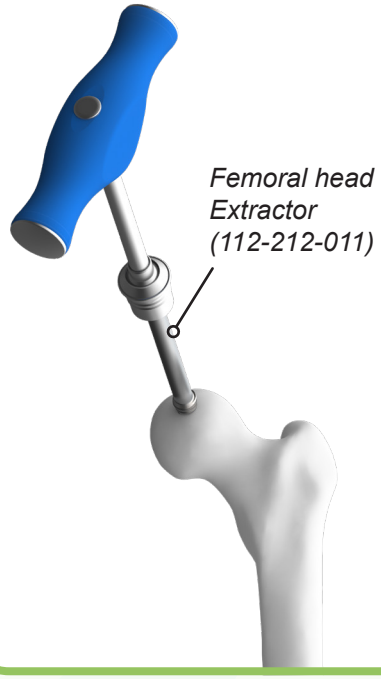
Note:
Prior to the following steps, complete all steps detailed in 111-12-0003 for the Logical acetabular cup implantation.

3

Femoral Neck Resection

The osteotomy guide should be used in conjunction with preoperative planning, to determine the level of the femoral neck resection. This can be performed in multiple steps, depending on surgeon preference.



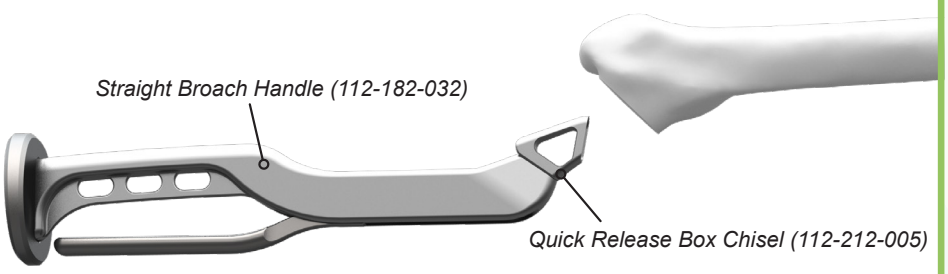


Optional technique:
The femoral head extractor may be used with the T-handle or under power to aid in the removal of the resected head, especially during an anterior approach technique.

4

Femoral Preparation

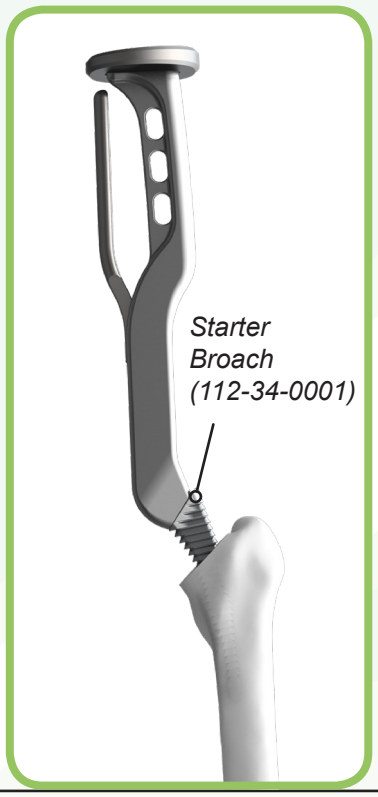
Enter the femoral canal as laterally as possible with the Box Osteotome to initiate access to the medullary canal. The Canal Reamer may be used as needed to open the natural axis of the femoral canal for broach preparation.

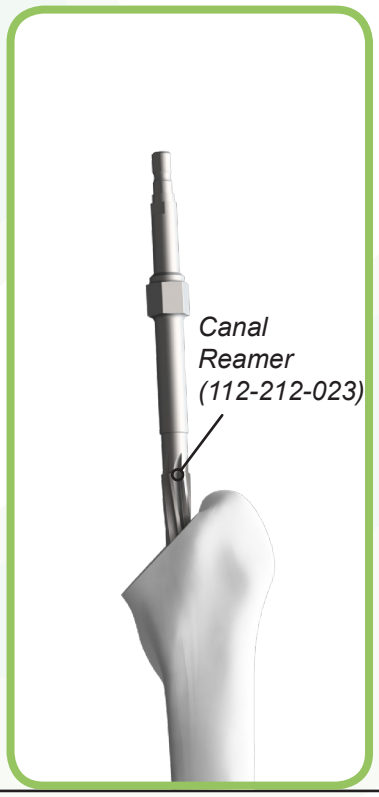


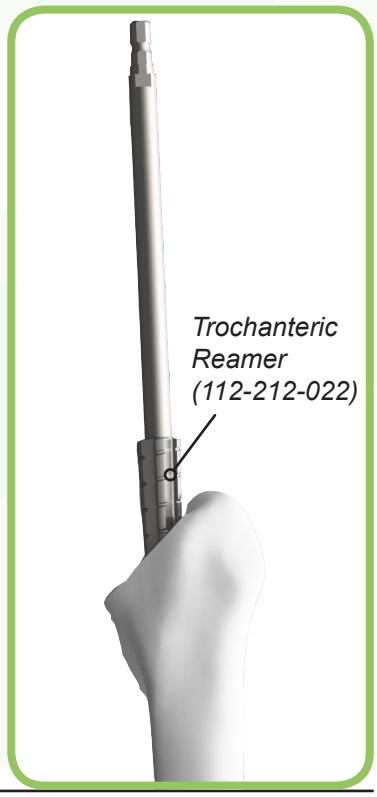
Optional technique:

While the Aria system is intended to be a broach-only system, the Aria instrument tray contains instruments for optional use to ensure proper axial alignment along the femoral cana and to induce lateral bias where needed:

a. Starter broach induces lateral bias by rasping beneath the greater trochanter
b. Canal reamer creates a guide hole for the distal end of the trochanteris reamer
c. Trochanteric reamer removes trochanteric bone tissue laterally to ensure neutral alignment with the femoral axis during broaching



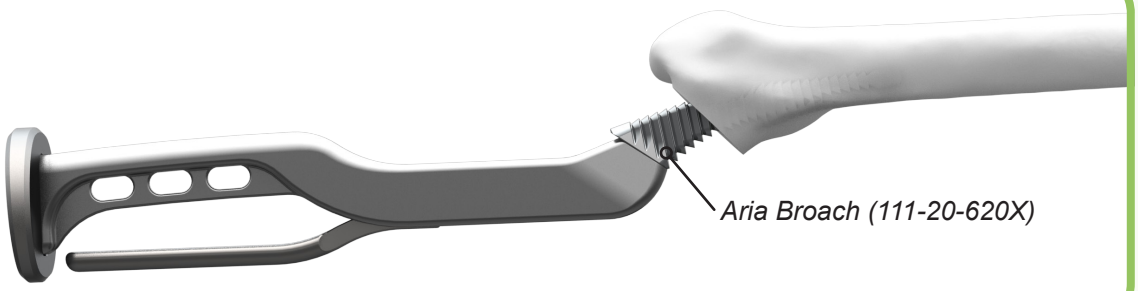




5

Broaching

The broach should run parallel to the posterior cortex following the natural anatomy of the femur. Begin with the smallest broach and increase the size of the broach sequentially until longitudinal and rotational stability is achieved: broaching should then be stopped. Careful preoperative planning is key to help selection of the final broach size. The version will be determined be the natural version of the femur.



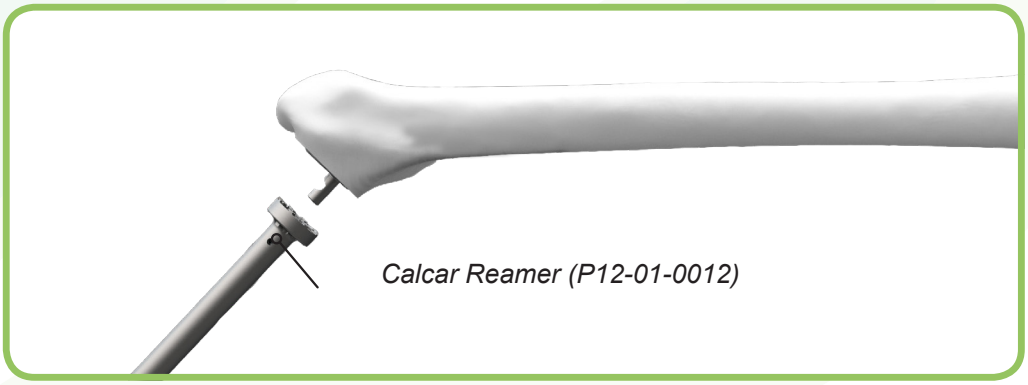
Aria Broach (111-20-620X)

Note:
Refer to **Appendix:Broaching Techniques and Tips** for detail on the theory of compaction broaching, why this technique is used for Aria stems, and how to form a bed of compacted bone that will maximize the longevity and stability of Aria stems in many bone types.

6

Calcar Reaming

With the broach in situ, use the Calcar Reamer to achieve a flat resection surface. Slide the reamer over the broach quick connect fitting to maintain the resection angle. Carefully advance the reamer towards the broach face and into the resected edge of the femur until it bottoms out against the broach face.

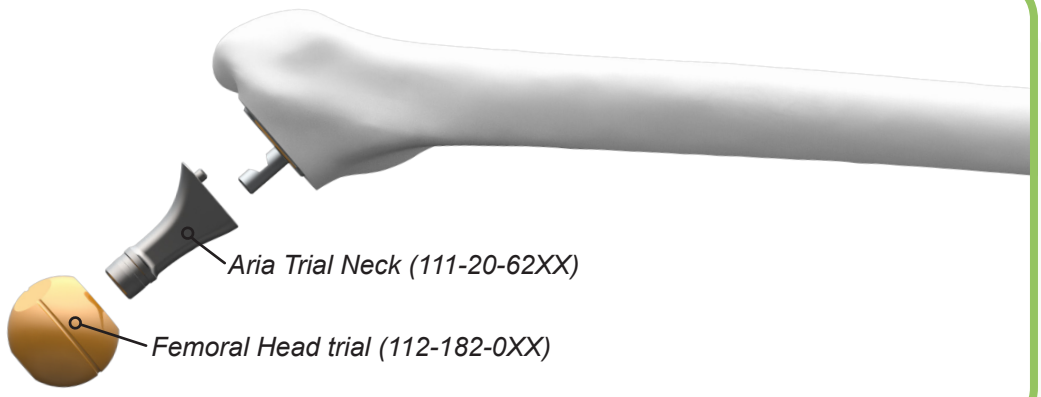


Calcar Reamer (P12-01-0012)

7

Trial Reduction

With the final broach still in situ, attach the appropriate trial neck and trial head. Reduce the hip and assess what adjustments, if any, are required to provide stability through a full range of motion. Remove the trial head, trial neck and final broach. DO NOT irrigate or dry the femoral canal. This will help to preserve the compacted cancellous bone quality and encourage biological fixation of the stem.

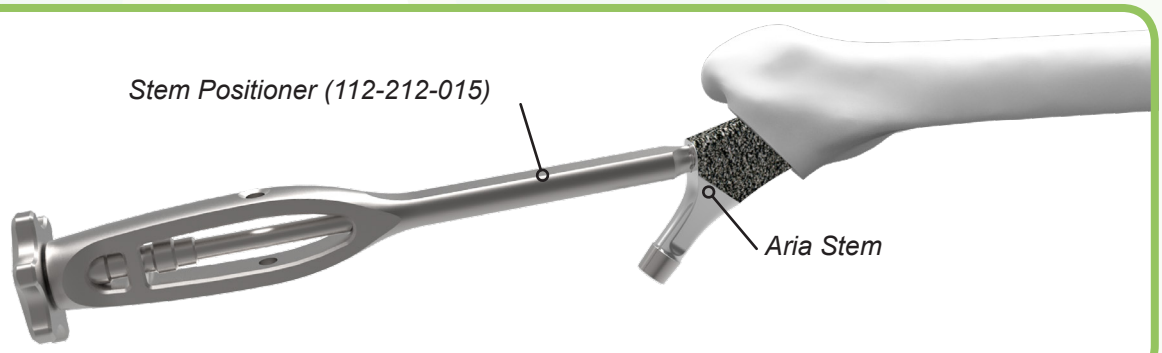


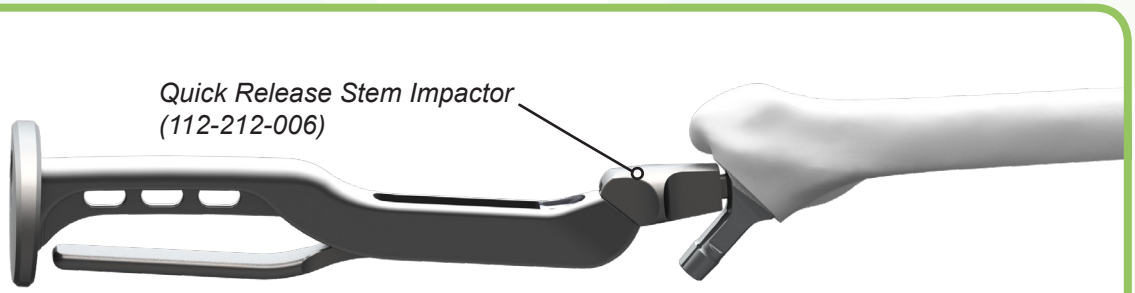
Instrument identification:
Trial heads are colour coded based on offset.
Refer to Aria Implants Sizing Guide in this surgical technique for more details.

8

Femoral Component Insertion

When implanting the definitive stem (same size as final broach) in the femoral canal, ensure that it is directed in by hand. This will help avoid changing the version as a precautionary measure. There should be no more than 15-20mm between the resection line and the top of the porous coating on the stem. If the stem does not readily go down this far, the surgeon should broach again. Once the stem is placed, lightly tap the stem impactor to fully seat. DO NOT over-impact as this may lead to splitting of the femur.



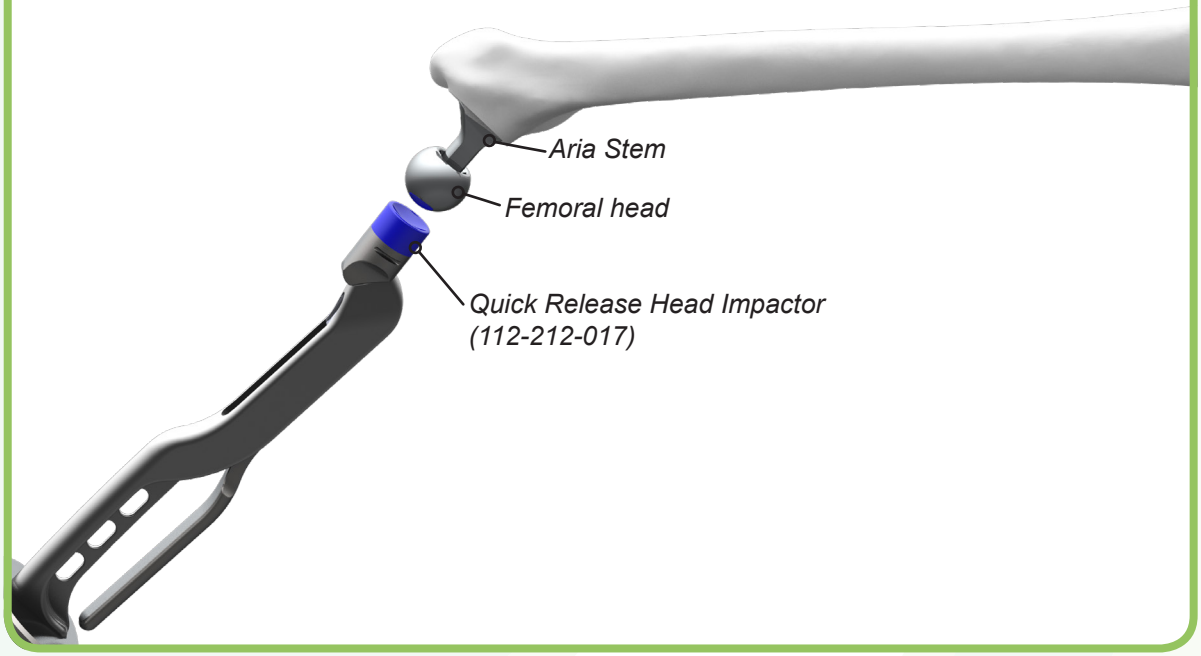


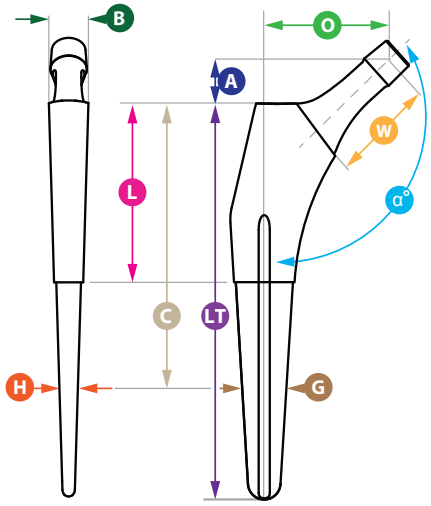
Instrument operation:
To connect the Aria stem to the stem positioner, first slide the inner shaft of the positioner through the outer shaft, spinning the strikeplate so the inner shaft threads in and falls through. Turn the threaded tip of the inner shaft into the female threads on the Aria stem until a snug hold is achieved to prevent damage to the threads.

9

Femoral Head Impaction

A final trial reduction is carried out to confirm joint stability and range of motion. Clean and dry the stem taper to remove any particulate matter or debris. Place the femoral head onto the taper and lightly tap it using the head impactor. Ensure that bearing surfaces are clean and finally reduce the hip.

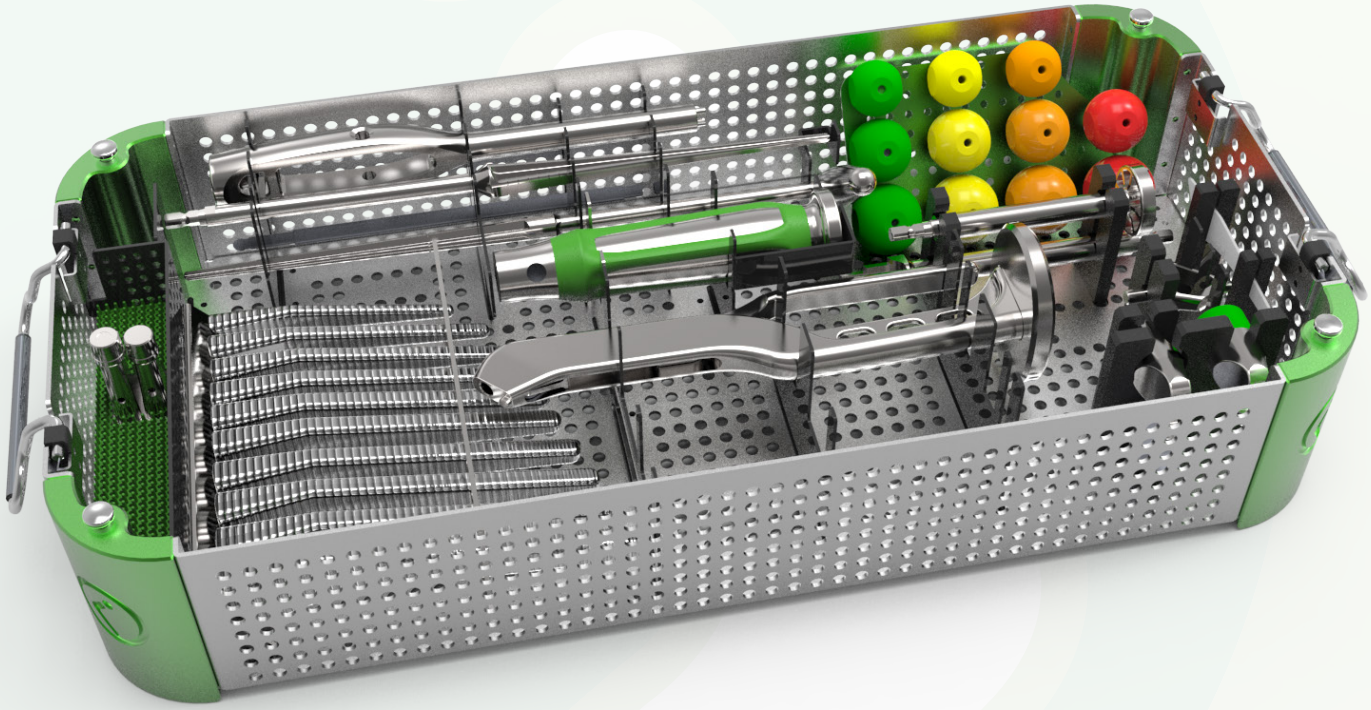




SIZE	OFFSET	LT	L	W	O	α°	G	H	C	B	A
0	111-20-6000 Standard Offset	128	54	35.7	35.6	132	4.9	4.4	120	11.5	11.4
	111-20-6100 High Offset	128	54	40.1	41.6	132	4.9	4.4	120	11.5	11.4
1	111-20-6001 Standard Offset	130	61	38.5	38.7	132	5.6	4.6	122	11.8	12.7
	111-20-6101 High Offset	130	61	43.0	44.7	132	5.6	4.6	122	11.8	12.7
2	111-20-6002 Standard Offset	133	63	39.4	40.1	132	6.9	4.9	124	12.2	13.4
	111-20-6102 High Offset	133	63	43.8	46.1	132	6.9	4.9	124	12.2	13.4
3	111-20-6003 Standard Offset	136	64	39.3	40.7	132	8.2	5.0	126	12.2	13.4
	111-20-6103 High Offset	136	64	43.8	46.7	132	8.2	5.0	126	12.2	13.4
	111-20-6303 Standard Offset Reduced Distal	136	64	43.8	46.7	132	6.2	5.0	126	12.2	13.4
	111-20-6433 High Offset Reduced Distal	136	64	43.8	46.7	132	6.2	5.0	126	12.2	13.4
4	111-20-6004 Standard Offset	138	65	40.4	42.1	132	8.9	5.0	128	12.5	14.1
	111-20-6104 High Offset	138	65	44.9	48.1	132	8.9	5.0	128	12.5	14.1
	111-20-6304 Standard Offset Reduced Distal	138	65	40.4	42.1	132	6.9	5.0	128	12.5	14.1
	111-20-6434 High Offset Reduced Distal	138	65	44.9	48.1	132	6.9	5.0	128	12.5	14.1
5	111-20-6005 Standard Offset	140	66	40.4	42.7	132	9.7	5.0	130	12.6	14.1
	111-20-6105 High Offset	140	66	44.9	48.7	132	9.7	5.0	130	12.6	14.1
	111-20-6305 Standard Offset Reduced Distal	140	66	40.4	42.7	132	7.7	5.0	130	12.6	14.1
	111-20-6435 High Offset Reduced Distal	140	66	44.9	48.7	132	7.7	5.0	130	12.6	14.1
6	111-20-6006 Standard Offset	143	67	40.4	43.3	132	10.9	5.1	132	12.8	14.1
	111-20-6106 High Offset	143	67	44.9	49.3	132	10.9	5.1	132	12.8	14.1
	111-20-6306 Standard Offset Reduced Distal	143	67	40.4	43.3	132	8.9	5.1	132	12.8	14.1
	111-20-6436 High Offset Reduced Distal	143	67	44.9	49.3	132	8.9	5.1	132	12.8	14.1
7	111-20-6007 Standard Offset	145	68	40.4	43.9	132	11.7	5.2	134	12.9	14.1
	111-20-6107 High Offset	145	68	45.0	49.9	132	11.7	5.2	134	12.9	14.1
	111-20-6307 Standard Offset Reduced Distal	145	68	40.4	43.9	132	9.7	5.2	134	12.9	14.1
	111-20-6437 High Offset Reduced Distal	145	68	45.0	49.9	132	9.7	5.2	134	12.9	14.1
8	111-20-6008 Standard Offset	148	70	43.4	46.8	132	13	5.2	136	13.2	16.1
	111-20-6108 High Offset	148	70	47.9	52.8	132	13	5.2	136	13.2	16.1
	111-20-6308 Standard Offset Reduced Distal	148	70	43.4	46.8	132	11	5.2	136	13.2	16.1
	111-20-6438 High Offset Reduced Distal	148	70	47.9	52.8	132	11	5.2	136	13.2	16.1
9	111-20-6009 Standard Offset	151	71	43.4	47.4	132	14.0	5.3	138	13.4	16.1
	111-20-6109 High Offset	151	71	47.9	53.4	132	14.0	5.3	138	13.4	16.1
	111-20-6309 Standard Offset Reduced Distal	151	71	43.4	47.4	132	12.0	5.3	138	13.4	16.1
	111-20-6439 High Offset Reduced Distal	151	71	47.9	53.4	132	12.0	5.3	138	13.4	16.1
10	111-20-6010 Standard Offset	153	72	43.4	48.0	132	13.4	5.3	140	15	16.1
	111-20-6110 High Offset	153	72	47.9	54.0	132	13.4	5.3	140	15	16.1
	111-20-6310 Standard Offset Reduced Distal	153	72	43.4	48.0	132	11.4	5.3	140	15	16.1
	111-20-6440 High Offset Reduced Distal	153	72	47.9	54.0	132	11.4	5.3	140	15	16.1
11	111-20-6011 Standard Offset	158	74	43.4	49.3	132	17.2	6.0	142	14.3	16.1
	111-20-6111 High Offset	158	74	47.9	55.3	132	17.2	6.0	142	14.3	16.1
	111-20-6311 Standard Offset Reduced Distal	158	74	43.4	49.3	132	15.2	6.0	142	14.3	16.1
	111-20-6441 High Offset Reduced Distal	158	74	47.9	55.3	132	15.2	6.0	142	14.3	16.1
12	111-20-6012 Standard Offset	163	76	43.6	50.5	132	19.7	6.3	144	14.6	16.1
	111-20-6112 High Offset	163	76	48.0	56.5	132	19.7	6.3	144	14.6	16.1
	111-20-6312 Standard Offset Reduced Distal	163	76	43.6	50.5	132	17.7	6.3	144	14.6	16.1
	111-20-6442 High Offset Reduced Distal	163	76	48.0	56.5	132	17.7	6.3	144	14.6	16.1

		Ø28	Ø32	Ø36	Ø40
S	CrCo	-3.5	-4.0	-4.0	-4.0
	Ceramic	111-152-011 / 111-152-611	111-152-021 / 111-152-621	111-152-031 / 111-152-631	111-152-041 / 111-152-641
	Stainless Steel	111-152-111	111-152-121	111-152-131	111-152-141
M	CrCo	+0.0	+0.0	+0.0	+0.0
	Ceramic	111-152-012 / 111-152-612	111-152-022 / 111-152-622	111-152-032 / 111-152-632	111-152-042 / 111-152-642
	Stainless Steel	111-152-112	111-152-122	111-152-132	111-152-142
L	CrCo	+4.0	+4.0	+4.0	+4.0
	Ceramic	111-152-013 / 111-152-613	111-152-023 / 111-152-623	111-152-033 / 111-152-633	111-152-043 / 111-152-643
	Stainless Steel	111-152-113	111-152-123	111-152-133	111-152-143
XL	CrCo		+7.0	+8.0	+8.0
	Ceramic		111-152-024 / 111-152-624	111-152-034 / 111-152-634	111-152-044 / 111-152-644
	Stainless Steel		111-152-124	111-152-134	111-152-144

Aria Instrument



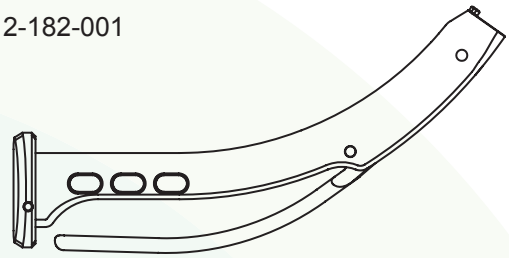
Aria Instruments

Straight Broach Handle

112-182-032

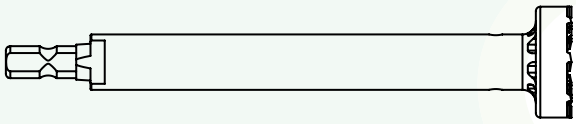
Curved Broach Handle

112-182-001



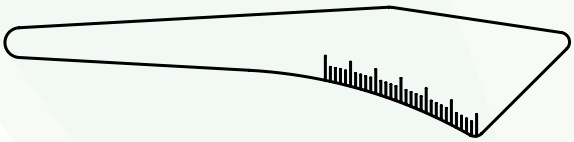
Calcar Reamer

P12-01-0012



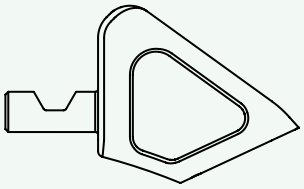
Osteotomy Guide

112-34-0002



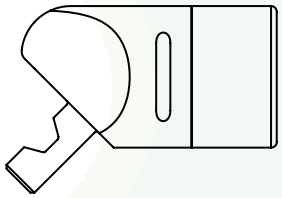
Quick Release Box Chisel

112-212-005



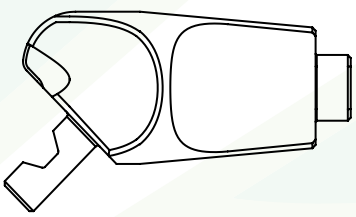
Quick Release Head Impactor

112-212-017



Quick Release Stem Impactor

112-212-006



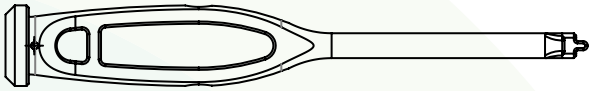
Aria Instruments

Stem Positioner

112-182-027 Outer
112-182-028 Inner

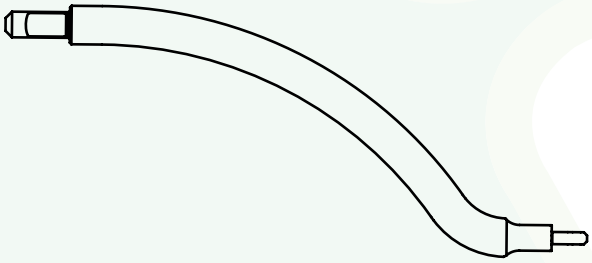
Stem Positioner UniBody

112-212-026



Modular Stem Impactor

112-25-0080 Curved
112-25-0092 Offset
112-25-0093 Bullet Tip



Canal Reamer

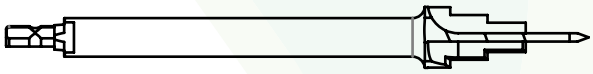
112-212-023

Trochanteric Canal Reamer

112-212-022

Stepped Entry Reamer

112-162-001

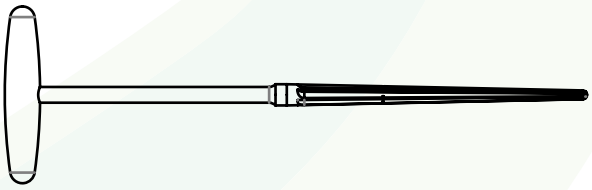


IM Drill

112-182-087

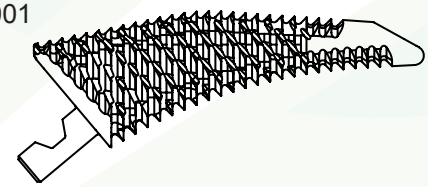
Tapered Pin Reamer

112-182-013



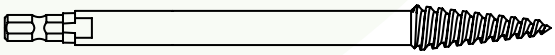
Starter Broach

112-34-0001



Femoral Head Extractor

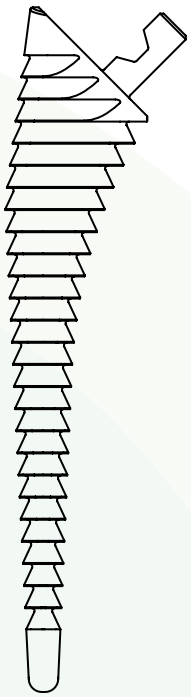
112-182-117



Aria Instruments

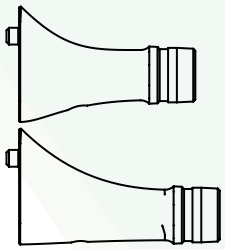
Aria Broaches

111-20-6200	Size 0
111-20-6201	Size 1
111-20-6202	Size 2
111-20-6203	Size 3
111-20-6204	Size 4
111-20-6205	Size 5
111-20-6206	Size 6
111-20-6207	Size 7
111-20-6208	Size 8
111-20-6209	Size 9
111-20-6210	Size 10
111-20-6211	Size 11
111-20-6212	Size 12



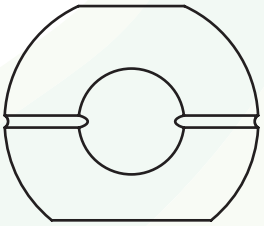
Aria Trial Necks

111-20-6250	Size 0 Standard Offset
111-20-6260	Size 0 High Offset
111-20-6251	Size 1 Standard Offset
111-20-6261	Size 1 High Offset
111-20-6252	Size 2-3 Standard Offset
111-20-6262	Size 2-3 High Offset
111-20-6253	Size 4-7 Standard Offset
111-20-6263	Size 4-7 High Offset
111-20-6254	Size 8-12 Standard Offset
111-20-6264	Size 8-12 High Offset



Trial Femoral Heads

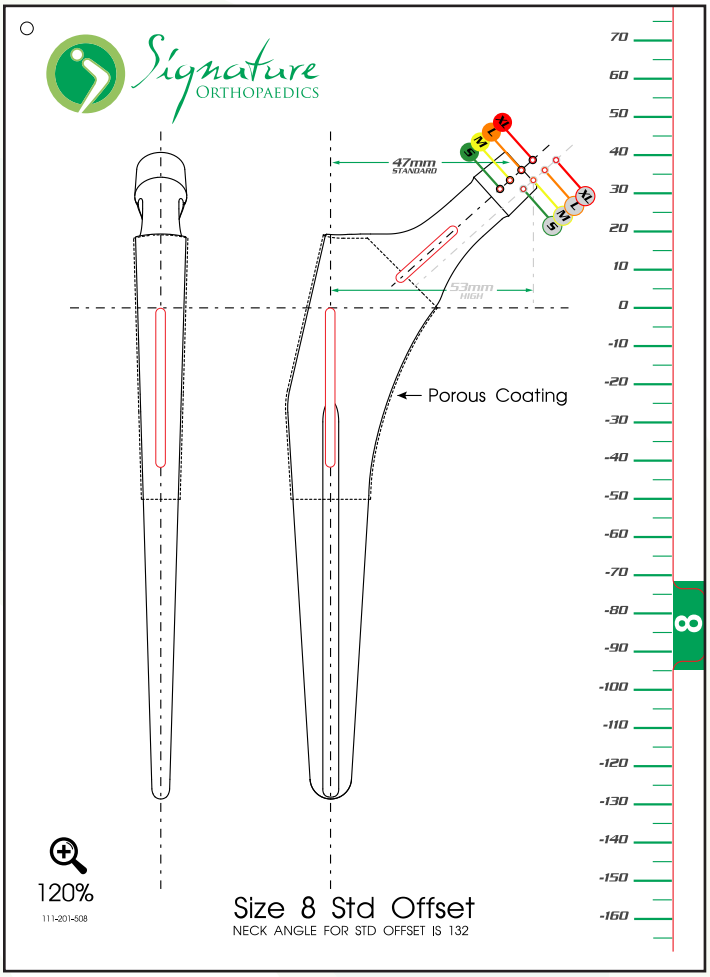
112-35-0003	Ø22mm -3.5mm Green
112-35-0004	Ø22mm 0.0mm Yellow
112-35-0005	Ø22mm +3.5mm Orange
111-182-040	Ø28mm -3.5mm Green
111-182-041	Ø28mm 0.0mm Yellow
111-182-042	Ø28mm +4.0mm Orange
111-182-017	Ø32mm -4.0mm Green
111-182-018	Ø32mm 0.0mm Yellow
111-182-019	Ø32mm +4.0mm Orange
111-182-020	Ø32mm +7.0mm Red
111-182-021	Ø36mm -4.0mm Green
111-182-022	Ø36mm 0.0mm Yellow
111-182-023	Ø36mm +4.0mm Orange
111-182-024	Ø36mm +8.0mm Red
111-182-043	Ø40mm -4.0mm Green
111-182-044	Ø40mm 0.0mm Yellow
111-182-045	Ø40mm +4.0mm Orange
111-182-046	Ø40mm +8.0mm Red



Aria Instruments

Aria Preoperative Templates

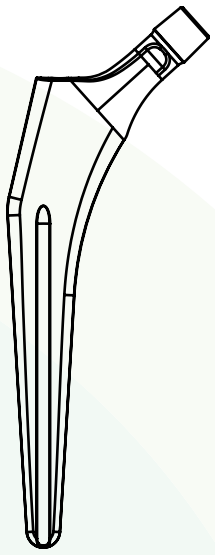
111-201-500	Size 0 Template
111-201-501	Size 1 Template
111-201-502	Size 2 Template
111-201-503	Size 3 Template
111-201-504	Size 4 Template
111-201-505	Size 5 Template
111-201-506	Size 6 Template
111-201-507	Size 7 Template
111-201-508	Size 8 Template
111-201-509	Size 9 Template
111-201-510	Size 10 Template
111-201-511	Size 11 Template
111-201-512	Size 12 Template



Aria Implants

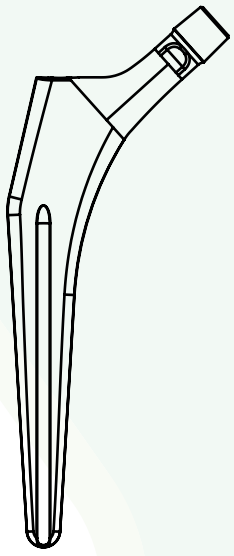
Aria Standard Offset Stem

111-20-6000	Size 0
111-20-6001	Size 1
111-20-6002	Size 2
111-20-6003	Size 3
111-20-6004	Size 4
111-20-6005	Size 5
111-20-6006	Size 6
111-20-6007	Size 7
111-20-6008	Size 8
111-20-6009	Size 9
111-20-6010	Size 10
111-20-6011	Size 11
111-20-6012	Size 12



Aria High Offset Stem

111-20-6100	Size 0
111-20-6101	Size 1
111-20-6102	Size 2
111-20-6103	Size 3
111-20-6104	Size 4
111-20-6105	Size 5
111-20-6106	Size 6
111-20-6107	Size 7
111-20-6108	Size 8
111-20-6109	Size 9
111-20-6110	Size 10
111-20-6111	Size 11
111-20-6112	Size 12



Aria Stem, Standard Offset – Reduced Distal

111-20-6303	Size 3
111-20-6304	Size 4
111-20-6305	Size 5
111-20-6306	Size 6
111-20-6307	Size 7
111-20-6308	Size 8
111-20-6309	Size 9
111-20-6310	Size 10
111-20-6311	Size 11
111-20-6312	Size 12

Aria Implants

Aria Stem, High Offset – Reduced Distal

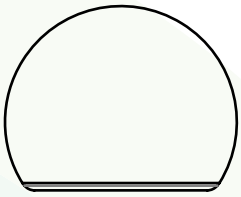
111-20-6333	Size 3
111-20-6334	Size 4
111-20-6335	Size 5
111-20-6336	Size 6
111-20-6337	Size 7
111-20-6338	Size 8
111-20-6339	Size 9
111-20-6340	Size 10
111-20-6341	Size 11
111-20-6342	Size 12

Signature Ceramic Femoral Head

111-152-611	Size 28mm S
111-152-612	Size 28mm M
111-152-613	Size 28mm L
111-152-621	Size 32mm S
111-152-622	Size 32mm M
111-152-623	Size 32mm L
111-152-624	Size 32mm XL
111-152-631	Size 36mm S
111-152-632	Size 36mm M
111-152-633	Size 36mm L
111-152-634	Size 36mm XL
111-152-641	Size 40mm S
111-152-642	Size 40mm M
111-152-643	Size 40mm L
111-152-644	Size 40mm XL
111-152-651	Size 44mm S
111-152-652	Size 44mm M
111-152-653	Size 44mm L
111-152-654	Size 44mm XL
20507	Size 28mm S
20508	Size 28mm M
20509	Size 28mm L
20510	Size 32mm S
20511	Size 32mm M
20512	Size 32mm L
20513	Size 32mm XL
20514	Size 36mm S
20515	Size 36mm M
20516	Size 36mm L
20517	Size 36mm XL
20518	Size 40mm S
20519	Size 40mm M
20520	Size 40mm L
20521	Size 40mm XL
20522	Size 44mm S
20523	Size 44mm M
20524	Size 44mm L
20525	Size 44mm XL

Signature SS Femoral Head

111-151-101	Size 22mm S
111-151-102	Size 22mm M
111-151-103	Size 22mm L
111-152-111	Size 28mm S
111-152-112	Size 28mm M
111-152-113	Size 28mm L
111-152-121	Size 32mm S
111-152-122	Size 32mm M
111-152-123	Size 32mm L
111-152-124	Size 32mm XL
111-152-131	Size 36mm S
111-152-132	Size 36mm M
111-152-133	Size 36mm L
111-152-134	Size 36mm XL
111-152-141	Size 40mm S
111-152-142	Size 40mm M
111-152-143	Size 40mm L
111-152-144	Size 40mm XL

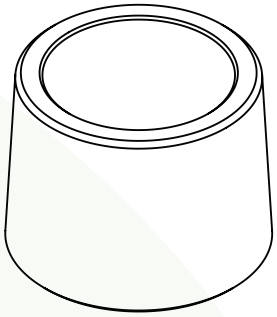


Signature CoCr Femoral Head

111-152-001	Size 22mm S
111-152-002	Size 22mm M
111-152-003	Size 22mm L
111-152-011	Size 28mm S
111-152-012	Size 28mm M
111-152-013	Size 28mm L
111-152-021	Size 32mm S
111-152-022	Size 32mm M
111-152-023	Size 32mm L
111-152-024	Size 32mm XL
111-152-031	Size 36mm S
111-152-032	Size 36mm M
111-152-033	Size 36mm L
111-152-034	Size 36mm XL
111-152-041	Size 40mm S
111-152-042	Size 40mm M
111-152-043	Size 40mm L
111-152-044	Size 40mm XL

Aria Implants

Ti6Al4V Fusion Taper Sleeve

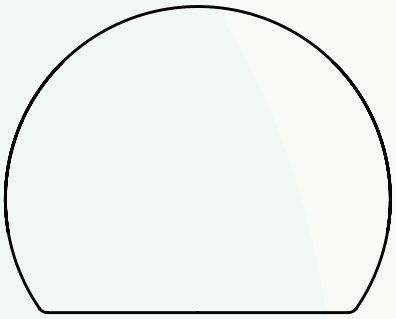


111-37-0001	Ti6Al4V Fusion Taper Sleeve, Size -4mm Offset (S)
111-37-0002	Ti6Al4V Fusion Taper Sleeve, Size 0mm Offset (M)
111-37-0003	Ti6Al4V Fusion Taper Sleeve, Size +4mm Offset (L)
111-37-0004	Ti6Al4V Fusion Taper Sleeve, Size +8mm Offset (XL)
111-37-0005	Ti6Al4V Fusion Taper Sleeve, Size +8mm Offset (Extended)

Fusion CoCr Femoral Head

111-37-0028	Size 28mm
111-37-0032	Size 32mm
111-37-0036	Size 36mm
111-37-0040	Size 40mm

Fusion Ceramic Femoral Head



111-22-0511	Size 28mm
111-22-0512	Size 32mm
111-22-0513	Size 36mm
111-22-0514	Size 40mm

Appendix: Broaching Techniques and Tips

It is better to stop broaching when stability is achieved with a slightly countersunk broach than to attempt to force as oversized broach into the canal. The coating limit line on the implant stem will sit below the resection line but the stem will achieve exceptional stability. Consider a longer neck or higher head offset.

Managing Different Femoral Canal Geometries

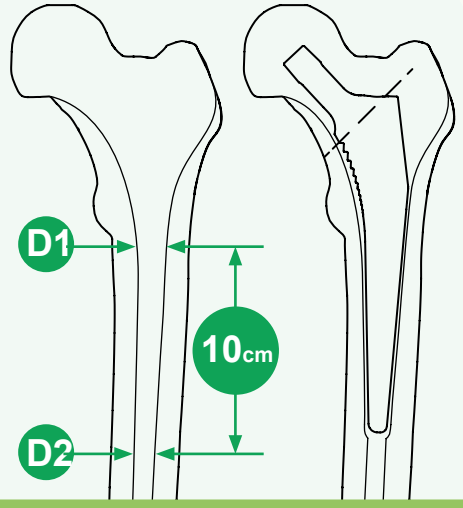
The Dorr femur type system classifies femurs based on a ratio that relates to the geometry of the femoral canal:

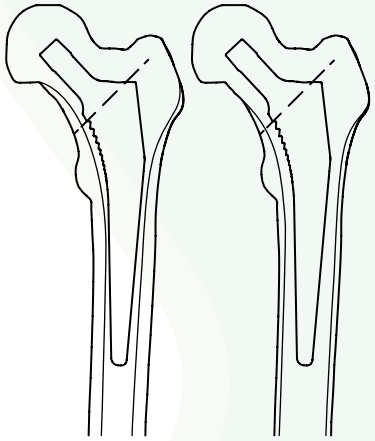
$$R = D_2/D_1$$

see figures at the bottom left

An R-value less than ~0.5 implies a very fluted canal that will more likely bind distally if the canal is not over-reamed. Preoperative templating is especially important for this reason. Refer to the Aria Implant Sizing guide in this technique to help decide what size reamer to use. The three types are as follows.

Type A **R < 0.5**
Type B **R = 0.5 to 0.9**
Type C **R > 0.9**





Type A
Reaming the femoral canal to the distal tip of the definitive stem ensures good compaction of the metaphyseal cancellous bone and prevents binding against the cortical wall, which can lead to stress shielding and an ill-seated stem

Types B & C
The Aria broaches preserve the natural anatomy of the femoral canal. Rotational and axial stability and a change in pitch indicate an appropriate amount of compaction broaching.

AUSTRALIAN MADE

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Signature ORTHOPAEDICS

CE 0123

LOGICAL

Signature ORTHOPAEDICS

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Introduction

The Signature Orthopaedics Logical Instrument system is an optimised instrument set for implantation of the Signature Orthopaedics Logical Cementless Acetabular Cup and Liner. The Logical instrument set is comprised of two trays for a s*treamlined* and efficient instrument set.
The primary tray contains all of the common base instruments needed for every procedure.
The secondary tray serves as an ancillary case that is required only for very small and large statured patients.

Indications

Signature Orthopaedics' hip replacement range are intended to replace a hip joint where bone stock is sufficient to support the implant. When a surgeon has selected prostheticreplacement as the preferred treatment, the devices are indicated for:

- Non-inflammatory degenerative joint disease including osteoarthritis or avascular necrosis
- Inflammatory joint disease including rheumatoid arthritis (excluding TSI stem)
- Correction of functional deformity including congenital hip dysplasia
- Traumatic injury involving the hip joint including traumatic arthritis or femoral head or neck fracture
- Failed previous hip surgery including internal fixation or joint fusion, reconstruction, hemiarthroplasty, surface replacement, or total replacement.

Signature Orthopaedics' constrained liner components are indicated particularly for patients at high risk of hip dislocation due to a history of prior dislocation, bone loss, joint or soft tissue laxity, neuromuscular disease or intraoperative instability.

Contradictions

In general, prosthetic components require adequate bone support for correct fit and function. The use of prosthetic components is therefore contraindicated where any pathological condition may reduce the quantity and or strength of the bone which is supporting the prosthesis. Some contraindications are relative to the extent and severity of conditions and the benefits of prosthetic arthroplasty should be considered based on the patient's overall evaluation and the possibility of alternative treatment. Examples of such conditions include; osteoporosis, osteomalacia, osteogenesis imperfecta, or hypophosphatemia.
Other contraindications include:

- Conditions limiting blood supply to the bone or joint.
- Systemic or local infection.
- Previous high dose radiotherapy.
- Psychological or neurological conditions which would restrict the patient's ability or compliance in restricting physical activity.
- Skeletal immaturity
- Conditions or activity which may place excessive load on the components such as; obesity, muscle, tendon & ligament deficiencies, multiple joint disabilities, and Charcot joints.
- Signature Orthopaedics' constrained liners are contraindicated particularly for active patients.

Logical Acetabular Cup and Liner Features

Ceramic Liner (not available in the U.S.A)

- Clinically proven geometry and material (BIOLOX® delta)
- Excellent biological behaviour
- Significantly low taper corrosion
- No metal ion release

Polymer Liner

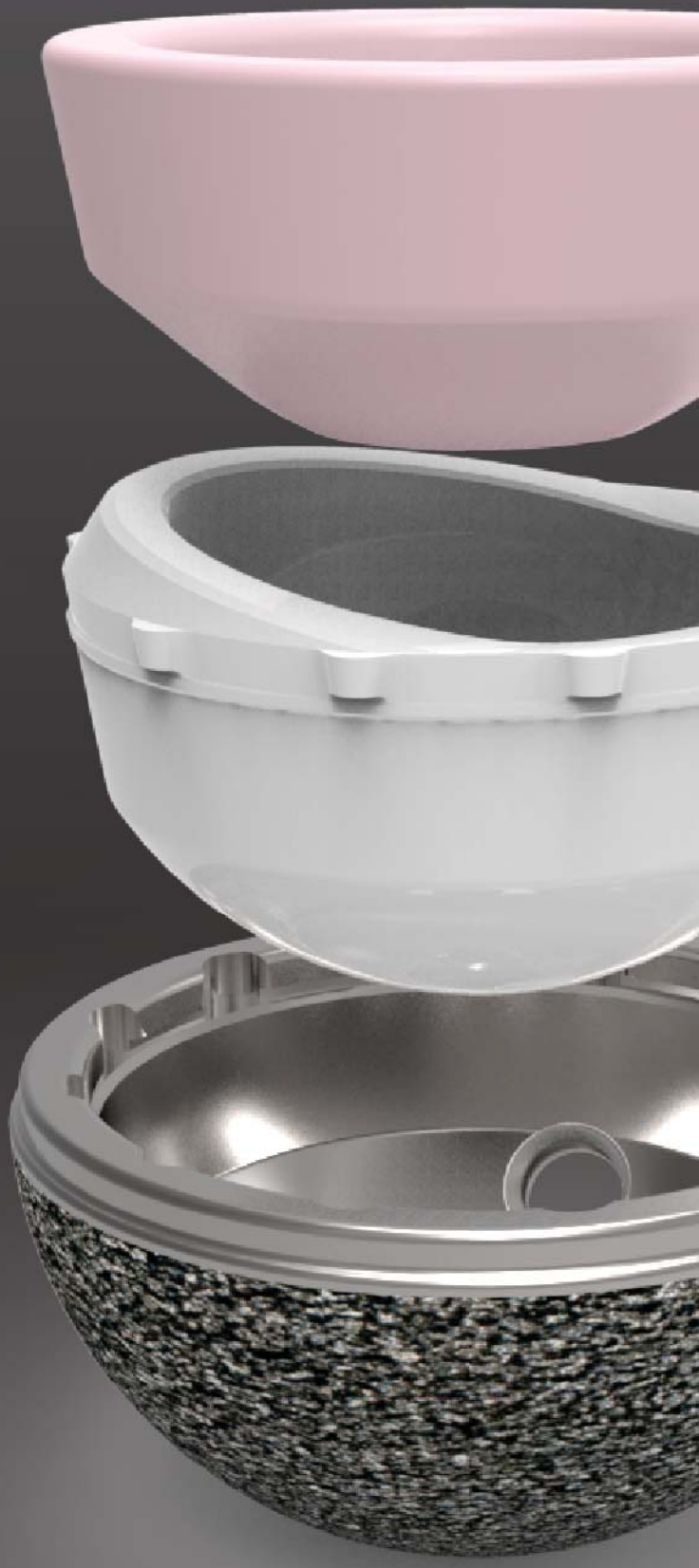
- Clinically proven geometry, material (UHMWPE)
- Base resin: GUR1020
- Stock Forming: Compression molded
- Cross Linking: Gamma irradiation at 7.5 MRads
- Thermal Stabilisation: Remelting
- Sterilisation: ETO
- Available in both neutral, 10° hooded, constrained and +4mm lateralised variations

Acetabular Cup

- Clinically proven geometry, material (Ti6Al4V) and porous coating.
- Available in 3-Hole, multi-hole and no hole options.

Sintered Titanium Coating (G-Series)

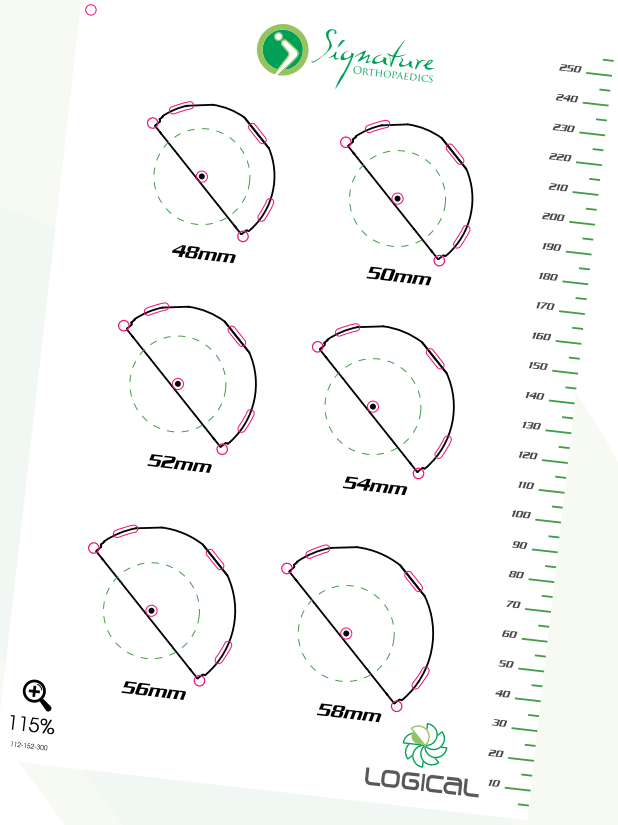
- Tensile Strength > 35MPa
- Shear Strength > 25MPa
- Porosity 45-65% and pore size 100-300 microns.



1

Preoperative Planning

Preoperative assessment of the appropriate size and position of the acetabular component will provide intraoperative guidance for acetabular reaming. To determine the acetabular cup size and position, hold the template at approximately 45° of abduction and place the center of rotation over the anatomic center of the acetabular image. Final component size and position should be determined intraoperatively. Templates are 115% magnification.

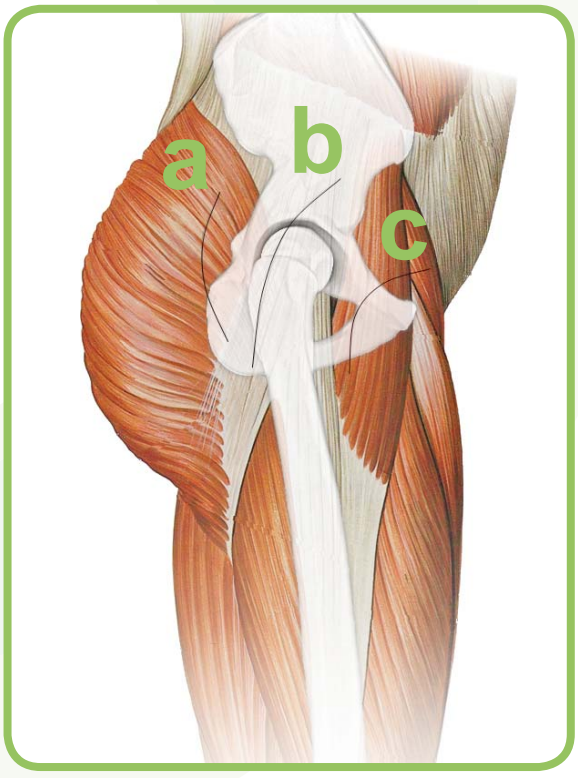


2

Preoperative Planning

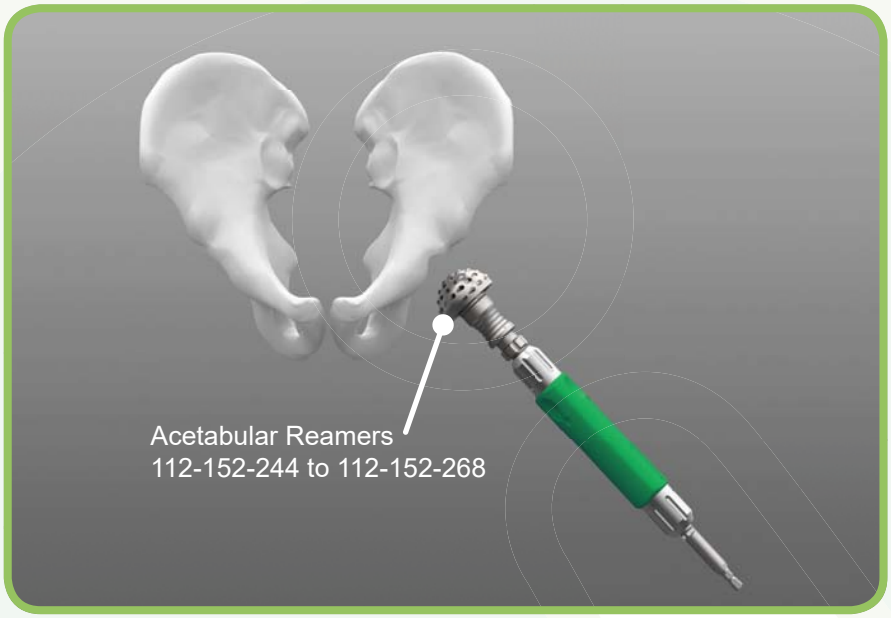
The Logical cup can be used with any surgical approach that the surgeon selects.

a. Posterior approach
b. Posterolateral/anterolateral approach
c. Anterior approach

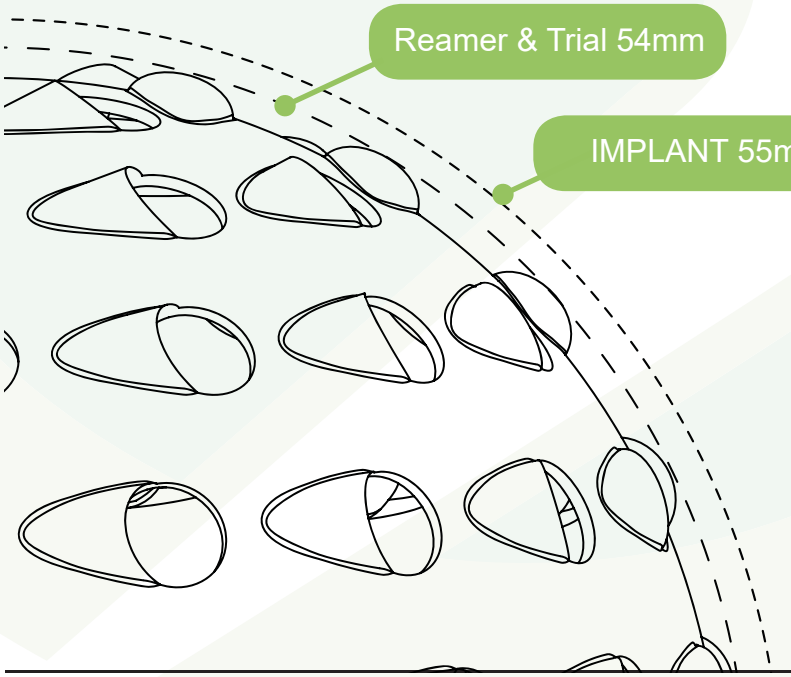


3 Acetabular Preparation

Osteophytes should be removed to gain assessment of the true acetabular rim. Reaming should be sequential and start with the smallest reamer that conforms to the acetabular cavity. Reaming to the circumferential line on the reamer will mimic a full hemisphere. Gradually enlarge the acetabulum by reaming articular cartilage until a continuous surface of cancellous bone is exposed.



Note:
A 54mm reamer will ream a hemispherical cavity 54mm in diameter, and a 54mm trial cup is Ø54mm.
A 54mm Logical cup is 54mm + 1mm of porous coating. This coating thickness of 1mm will give a press fit.



Reamer Handles available in both large (112-152-018) and slim verisons (112-152-342)

4 Acetabular Preparation

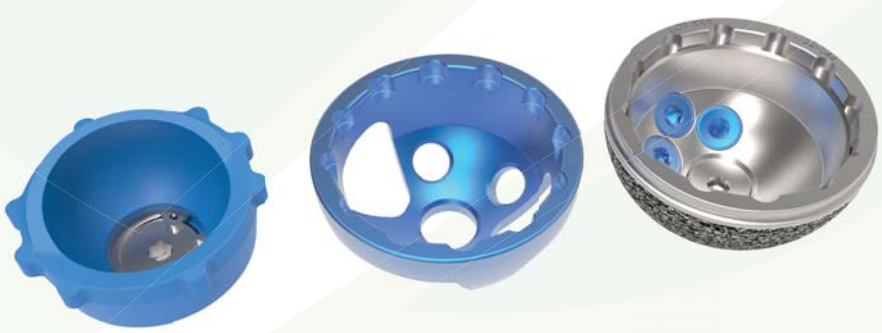
Osteophytes should be removed to gain assessment of the true acetabular rim. Reaming should be sequential and start with the smallest reamer that conforms to the acetabular cavity. Reaming to the circumferential line on the reamer will mimic a full hemisphere. Gradually enlarge the acetabulum by reaming articular cartilage until a continuous surface of cancellous bone is exposed.

Trial Acetabular Cups

Part Number	Diameter
112-152-191	44mm
112-152-192	46mm
112-152-193	48mm
112-152-194	50mm
112-152-195	52mm
112-152-196	54mm
112-152-197	56mm
112-152-198	58mm
112-152-199	60mm
112-152-200	62mm
112-152-201	64mm
112-152-202	66mm
112-152-203	68mm

Instrument Identification:
Trial acetabular cups are identified by the size marked on the top rim. They are also colour-coded to match with compatible trial liners. Each trial cup size corresponds to a Logical cup implant size. Refer to the Logical Implants Sizing Chart in this technique for more details (pg13).

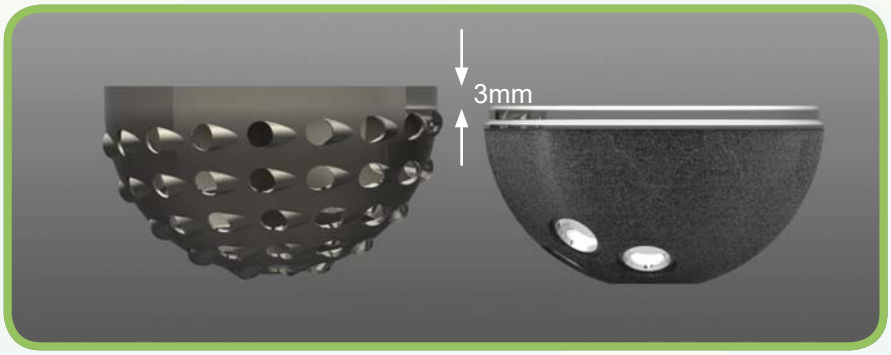
Example below:
Connection type B shown, the blue trial liner matches the blue trial shell, which matches the blue colouring on the box label and the hole covers on the implant.

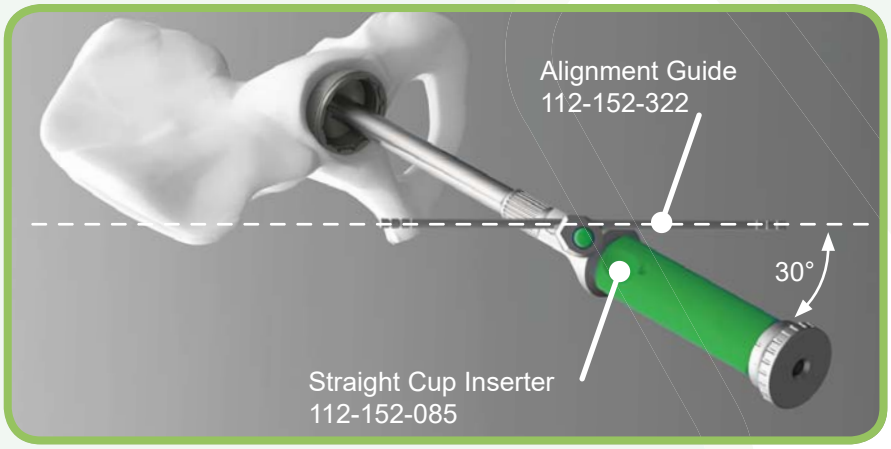


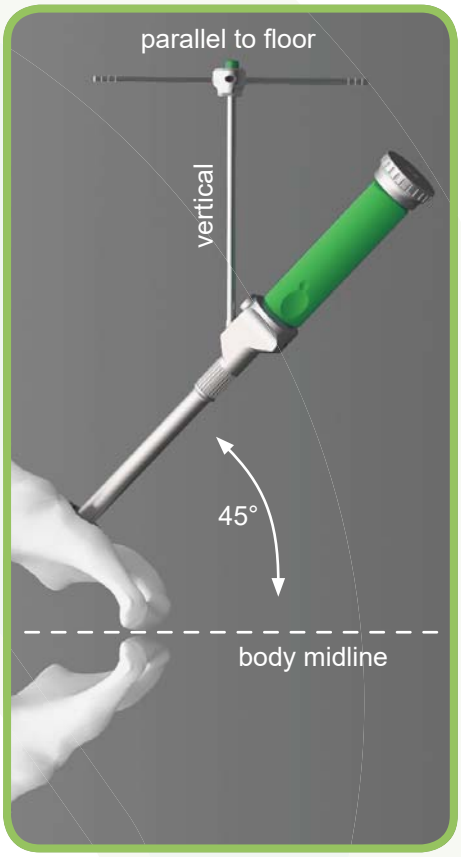
5

Implant Acetabular Cup Insertion

Thread the appropriate size prosthetic cup onto the impactor (same size as the final reamer). The cup rotation can be adjusted with regards to the impactor by pressing the button and rotating the strikeplate, in increments of 15°. The alignment guide can be attached to the impactor to help with anteversion and abduction angles. Seat the cup with a series of firm mallet blows to the end of the impactor. Screw placement can begin once the cup component is securely positioned and the impactor is removed.





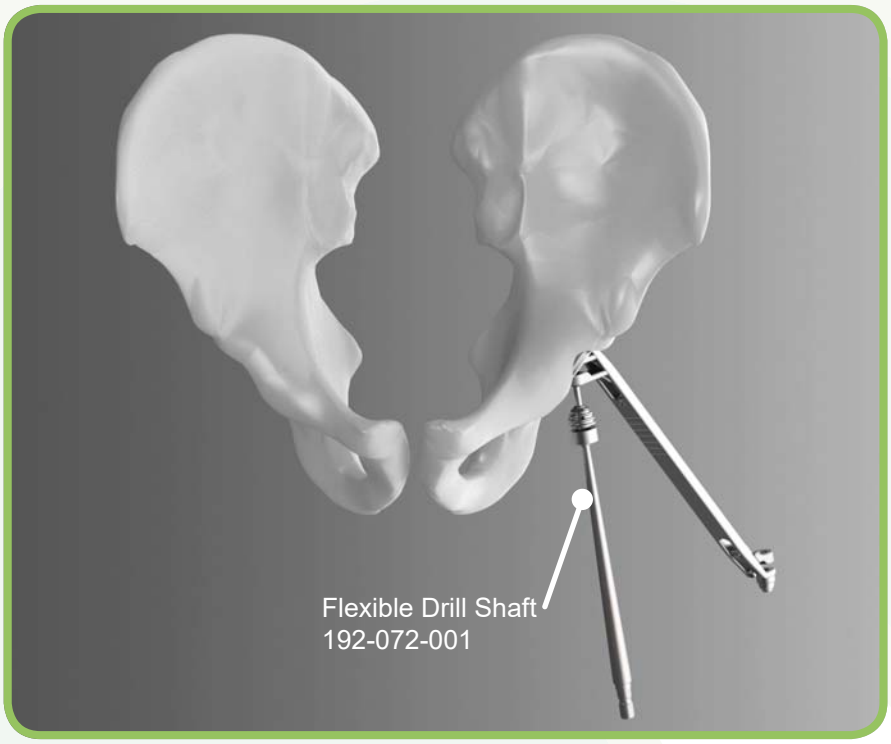


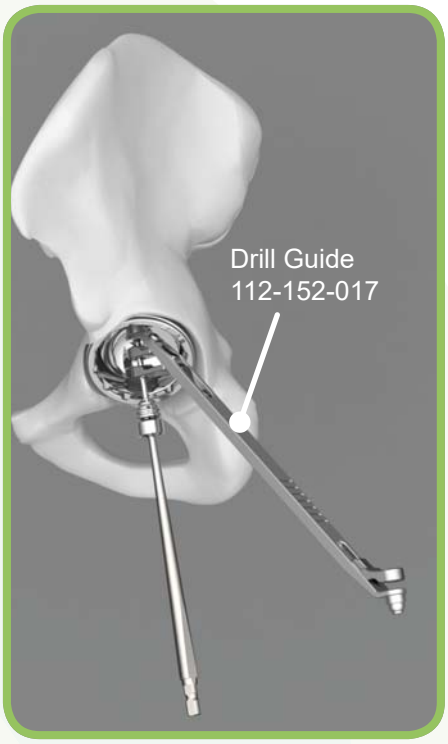
Note:
The alignment guide indicates 30° of operative anteversion, which equates to 20° of radiographic anteversion. Operative anteversion differs from radiographic anteversion due to the projection of angles on a radiograph.

Optional:
A curved cup inserter option is also available, please inquire for additional instructions for use.

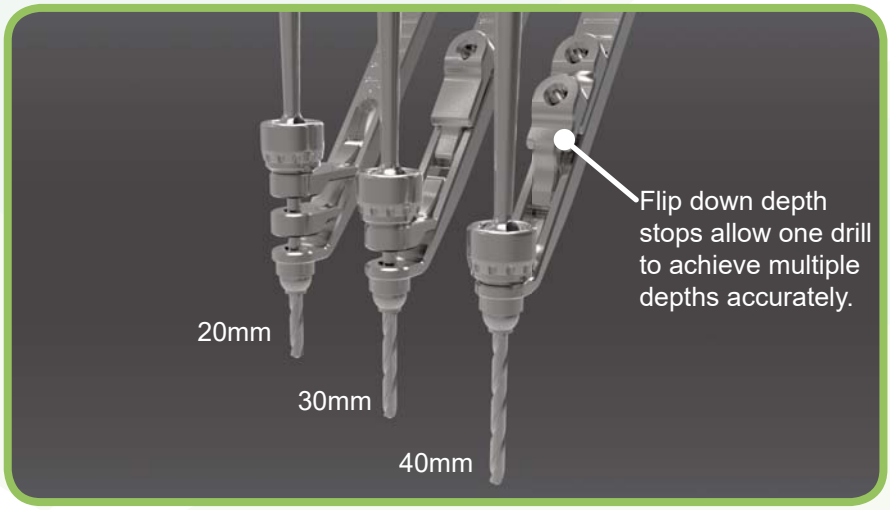
6 Determine Screw Location and Drill Depth

Determine screw location and select a suitable drill depth (see figure below). The flexible drill allows a wide range of drilling angles while still being able to apply pressure to the drill.



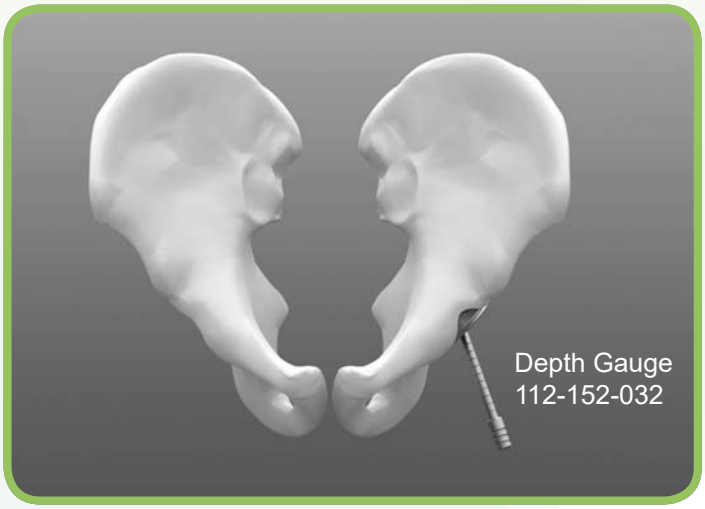


Instrument operation:
The drill guide has flip-down depth stops at each end. One end has 10mm steps, which allows a 50mm drill to drill a hole at 40, 30 and 20mm deep.
While the other end has steps of 5mm, which allows holes to be drilled at 25 and 35mm.



7 Determine Screw Length

Use the screw depth gauge to determine the appropriate length screw. Due to intrapelvic vascularity, screw placement in the medial aspect of the acetabulum must be carefully considered.



8 Insert Screws

Screws snap into the screw inserter, allowing them to rotate freely without falling out at any angle. Pull inserter off screw to allow for countersinking of the screw head. Full seating can be confirmed with the use of a trial liner prior to impacting the prosthetic liner, or by manually examining the inner surface. To ensure proper prosthetic liner seating in the cup, screw heads must be seated below the inner surface of the cup. Hex driver available in both tapered and parallel versions.

Solid end provides stability to flexible driver.

9 Trial Liner Evaluation

Trial liners that match the prosthetic implant are available to evaluate the optimum position of the final implant. Position the trial liner in the desired orientation and secure it in place with the captured screw using one of the 3.5mm hex screwdriver shafts. Apical Screw insertion should not take place until a reduction with the trial liner is completed.

Neutral	10° Hooded	Head Ø(mm)	Cup Ø(mm)
112-152-156	112-152-061	28	44-46
112-152-157	112-152-062	28	48-50
112-152-158	112-152-063	28	52-54
112-152-159	112-152-064	32	48-50
112-152-160	112-152-065	32	52-54
112-152-161	112-152-066	32	56-58
112-152-162	112-152-067	32	60-70
112-152-163	112-152-068	36	52-54
112-152-164	112-152-069	36	56-58
112-152-165	112-152-070	36	60-70
112-152-166	112-152-142	40	56-58
112-152-167	112-152-143	40	60-70

10 Liner Placement

Prior to inserting the prosthetic liner, thoroughly irrigate and clean the cup. Insert the prosthetic liner by hand (or using the ceramic liner inserter (112-152-230) if ceramic is chosen), making sure the face of the liner is parallel with the face of the acetabular cup. The anti-rotation tabs should be lined up with the slots in the cup. Use the liner impactor on the cup impactor to apply a series of firm mallet blows to fully seat the liner.

A final inspection of the liner should be done to ensure the liner is firmly locked in place. Neutral and ceramic liners should be flush with the cup face along the entire rim. Only the lower half of the rim of lipped liners should be flush with the cup face.

10

Ceramic Liner Placement

The ceramic liner inserter (112-152-230), has a series of snap rings that are coloured per the connection type. The example below is yellow (C type connection).
4 different Impactor heads are available (28/32/26/40mm - 112-152-21X).
The snap ring is loaded onto the inserter first, followed by the impactor head. This will grip the ceramic liner firmly, in any position desired.
Once the ceramic liner is loaded into the shell, a firm tap on the end of the inserter will see the snap ring let go of the ceramic liner, and the ceramic liner seat into the shell. Further impaction may be done using the straight cup inserter coupled with the ceramic liner impact adapter, as shown below.

An alternative to the liner impactor for the ceramic liners, is to use the “Ceramic Liner Impact Adapter” (112-152-305) with an appropriate sized trial head. This combination can also be used on the polyethylene liners.

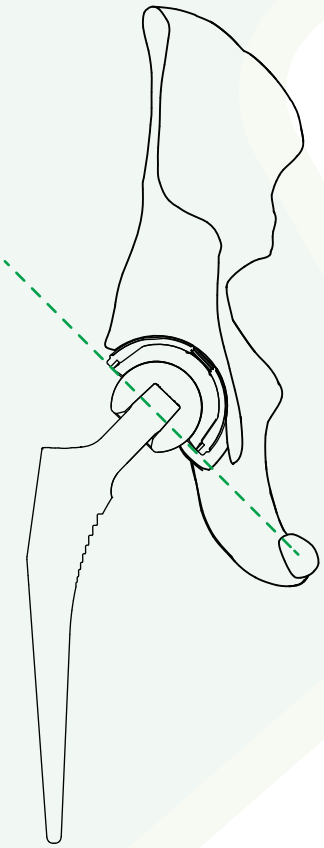
11

Positioning

Current studies* have highlighted that correct acetabular component positioning is a key element to success with all types of bearings used in hip replacement surgery. As well as subluxation, impingement, fixation and range of motion, optimum femoral head coverage and mechanical loading of the bearing must also be considered when positioning the acetabular component. Incorrect acetabular component positioning can lead to edge loading and undesirable effects across all bearings, such as dislocation, increased wear, and polyethylene fractures.

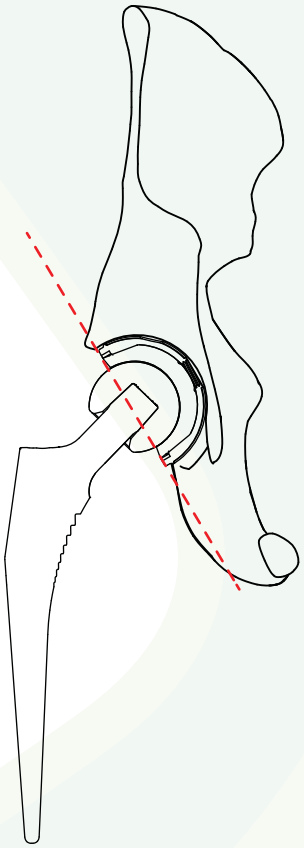
CORRECT

Inclination 40-45°
Anteversion 15-20°



INCORRECT

Inclination >45°
Anteversion >20°



*Data on file

12

Polyethylene Liner removal

Upon removal of any Liner, inspect the taper and polyethylene locking mechanisms for damage.
Special care should be taken not to lever against the Shell during Liner removal.

• Locate a 3.5mm drill bit included in the Kit.

• Drill a pilot hole into the dome of the Liner between the pole and the taper region of the Shell.

• Drive the screw into the pilot hole by hand until the Liner is lifted out of the Shell.

• Special care should be taken not to damage the Shell taper or locking mechanism during removal of the Liner.

Logical Implant Sizing Guide

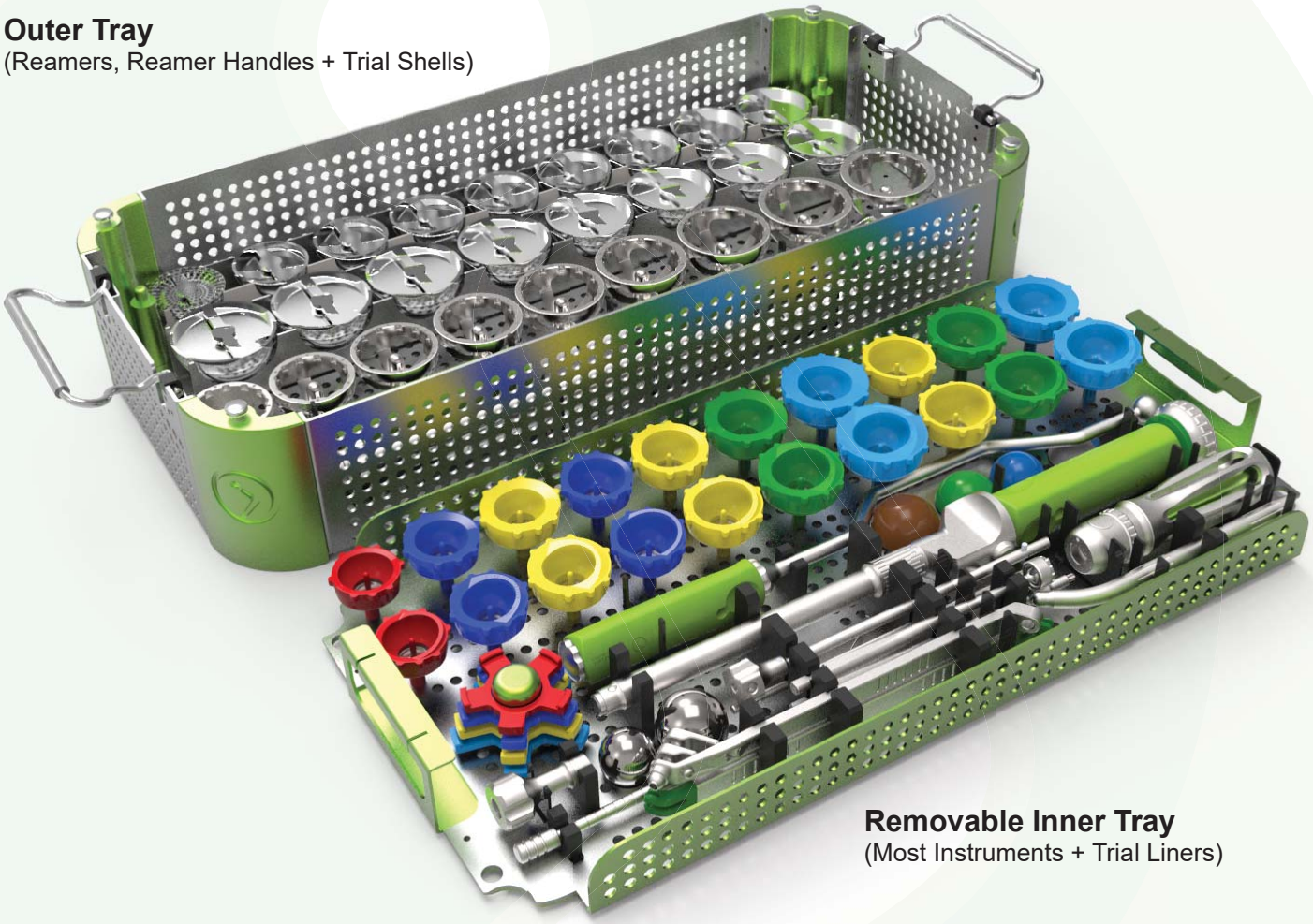
Acetabular Cups, ceramic and UHMWPE Liners

	28	32	36	40
111-12-3344 44 111-12-3346 46  A	Neutral 111-12-5844 Hooded 111-12-6844 Ceramic 111-22-1002 Constrained 111-12-9211 Lateralised 111-12-7844			
111-12-3348 48 111-12-3350 50  B	Neutral 111-12-5850 Hooded 111-12-6850 Ceramic 111-22-1003 Lateralised 111-12-7850	Neutral 111-12-5250 Hooded 111-12-6250 Ceramic 111-22-1005 Constrained 111-12-9212 Lateralised 111-12-7250		
111-12-3352 52 111-12-3354 54  C	Neutral 111-12-5852 Hooded 111-12-6852 Ceramic 111-22-1004 Lateralised 111-12-7852	Neutral 111-12-5252 Hooded 111-12-6252 Ceramic 111-22-1006 Lateralised 111-12-7252	Neutral 111-12-5652 Hooded 111-12-6652 Ceramic 111-22-1009 Constrained 111-12-9213 Lateralised 111-12-7652	
111-12-3356 56 111-12-3358 58  D	Neutral 111-12-5856 Hooded 111-12-6856	Neutral 111-12-5256 Hooded 111-12-6256 Ceramic 111-22-1007 Lateralised 111-12-7256	Neutral 111-12-5656 Hooded 111-12-6656 Ceramic 111-22-1010 Lateralised 111-12-7656	Neutral 111-12-5456 Hooded 111-12-6456 Ceramic 111-22-1012 Constrained 111-12-9214 Lateralised 111-12-7456
111-12-3360 60 111-12-3362 62 111-12-3364 64 111-12-3366 66 111-12-3368 68 111-12-3370 70  E	Neutral 111-12-5860 Hooded 111-12-6860	Neutral 111-12-5260 Hooded 111-12-6260 Ceramic 111-22-1008 Lateralised 111-12-7260	Neutral 111-12-5660 Hooded 111-12-6660 Ceramic 111-22-1011 Lateralised 111-12-7660	Neutral 111-12-5460 Hooded 111-12-6460 Ceramic 111-22-1013 Lateralised 111-12-7460

Logical Instrument Trays

Primary Logical Instrument Tray

Outer Tray
(Reamers, Reamer Handles + Trial Shells)



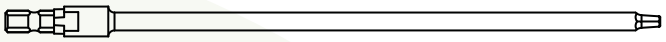
Removable Inner Tray
(Most Instruments + Trial Liners)

The secondary tray that is required only for very small and large statured patients not shown.

Logical Instruments

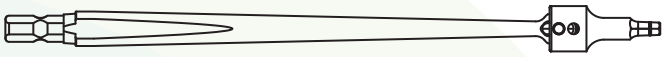
Hi Torque Screwdriver 3.5mm Hex

112-152-306



Flexible Screwdriver

112-152-026



Drill Guide

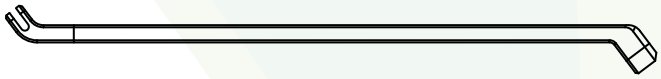
112-152-017

Depth Gauge

112-152-032

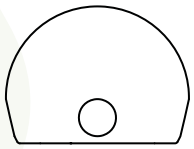
Screw Inserter

112-152-038



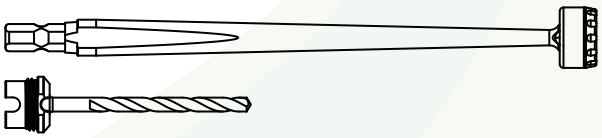
Liner Impactors

112-152-002 - 28mm
112-152-334 - 32mm
112-152-121 - 36mm
112-152-003 - 40mm



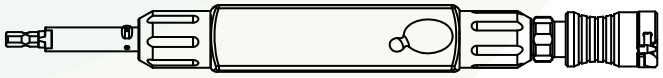
Optimus Drill (Flexible Drill)

192-072-001 (Drill bits 192-072-002)



Reamer Shaft Assembly

112-152-018 (Large Reamer Grip 112-152-316



Logical Instruments

Straight Cup Inserter

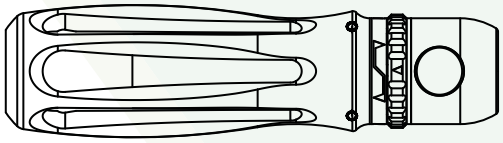
112-152-085 (Cup alignment can be set in increments of 15°)

Alignment Guide (Two parts in tray)

112-152-322 (Button release)

Ratcheting Screwdriver

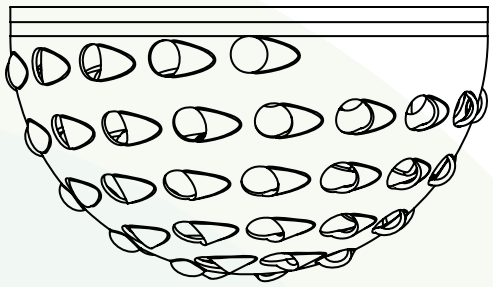
192-062-001



Logical Instruments

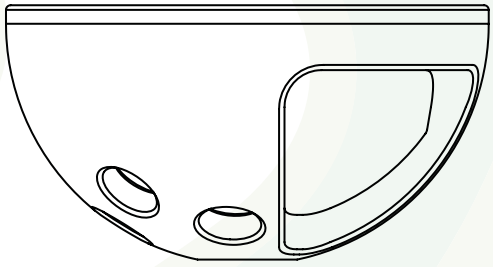
Acetabular Reamers

112-152-244	44mm
112-152-245	45mm
112-152-246	46mm
112-152-247	47mm
112-152-248	48mm
112-152-249	49mm
112-152-250	50mm
112-152-251	51mm
112-152-252	52mm
112-152-253	53mm
112-152-254	54mm
112-152-255	55mm
112-152-256	56mm
112-152-257	57mm
112-152-258	58mm
112-152-259	59mm
112-152-260	60mm
112-152-261	61mm
112-152-262	62mm
112-152-263	63mm
112-152-264	64mm
112-152-265	65mm
112-152-266	66mm
112-152-267	67mm
112-152-268	68mm
112-152-269	69mm
112-152-270	70mm



Trial Acetabular Cups

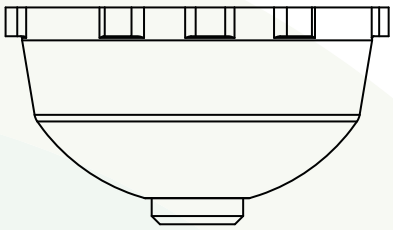
112-152-191	44mm
112-152-192	46mm
112-152-193	48mm
112-152-194	50mm
112-152-195	52mm
112-152-196	54mm
112-152-197	56mm
112-152-198	58mm
112-152-199	60mm
112-152-200	62mm
112-152-201	64mm
112-152-202	66mm
112-152-203	68mm
112-152-206	70mm



Logical Instruments

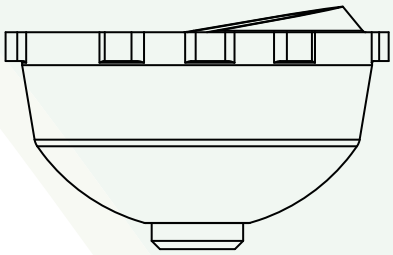
Logical Trial Liner Neutral

112-152-156	28/44-46mm	A
112-152-157	28/48-50mm	B
112-152-158	28/52-54mm	C
112-152-159	32/48-50mm	B
112-152-160	32/52-54mm	C
112-152-161	32/56-58mm	D
112-152-162	32/60-70mm	E
112-152-163	36/52-54mm	C
112-152-164	36/56-58mm	D
112-152-165	36/60-70mm	E
112-152-166	40/56-58mm	D
112-152-167	40/60-70mm	E



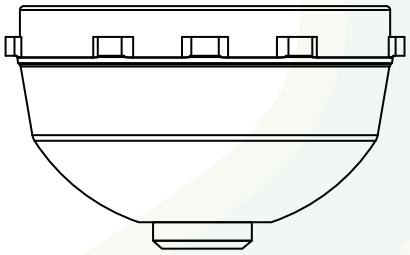
Logical Trial Liner 10° Hooded

112-152-061	28/44-46mm	A
112-152-062	28/48-50mm	B
112-152-063	28/52-54mm	C
112-152-064	32/48-50mm	B
112-152-065	32/52-54mm	C
112-152-066	32/56-58mm	D
112-152-067	32/60-70mm	E
112-152-068	36/52-54mm	C
112-152-069	36/56-58mm	D
112-152-070	36/60-70mm	E
112-152-142	40/56-58mm	D
112-152-143	40/60-70mm	E



Logical Lateralised Trial Liner Neutral

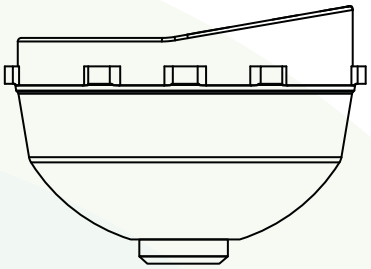
112-15-7244	28/44-46mm	A
112-15-7850	28/48-50mm	B
112-15-7852	28/52-54mm	C
112-15-7250	32/48-50mm	B
112-15-7252	32/52-54mm	C
112-15-7256	32/56-58mm	D
112-15-7260	32/60-70mm	E
112-15-7652	36/52-54mm	C
112-15-7656	36/56-58mm	D
112-15-7660	36/60-70mm	E
112-15-7456	40/56-58mm	D
112-15-7460	40/60-70mm	E



Logical Instruments

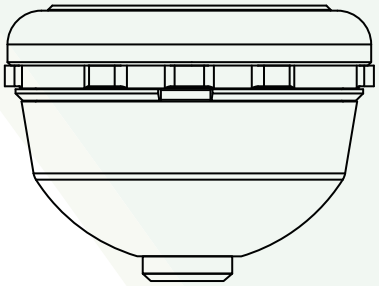
Logical Lateralised Trial Liner 10° Hooded

112-15-8244	28/44-46mm	A
112-15-8850	28/48-50mm	B
112-15-8852	28/52-54mm	C
112-15-8250	32/48-50mm	B
112-15-8252	32/52-54mm	C
112-15-8256	32/56-58mm	D
112-15-8260	32/60-70mm	E
112-15-8652	36/52-54mm	C
112-15-8656	36/56-58mm	D
112-15-8660	36/60-70mm	E
112-15-8456	40/56-58mm	D
112-15-8460	40/60-70mm	E



Logical Constrained Trial Liner

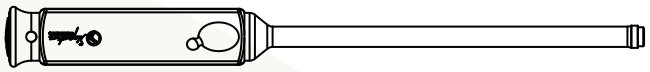
112-152-359	28/44-46mm	A
112-152-360	32/48-50mm	B
112-152-361	36/52-54mm	C
112-152-362	40/56-58mm	D
112-152-363	40/60-70mm	E



Logical Optional Instruments

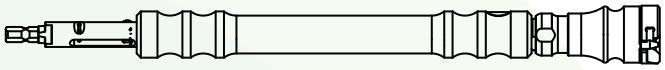
Simple Cup Inserter

112-152-310 (No moving parts)



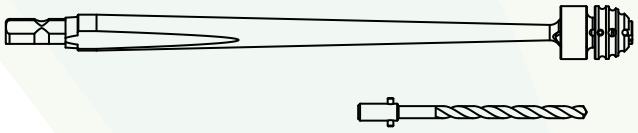
Slim Reamer Shaft Assembly

112-152-342 (Slim grip 112-152-022)



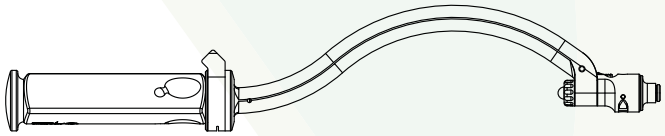
Optimus Q Drill (Flexible Drill)

192-072-020 (Drill bits 192-072-013)



Curved Cup Inserter

112-172-001

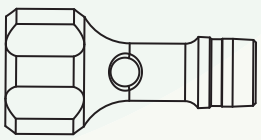


Alignment Guide (Two parts in tray)

112-172-022 (Spring fit)

Ceramic Liner Inserter

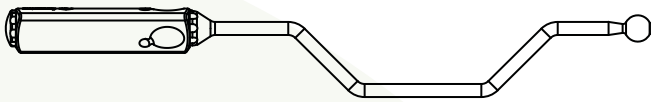
112-152-305



Logical Optional Instruments

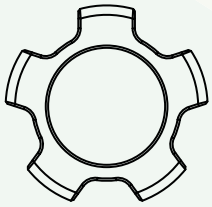
Ceramic Liner Inserter

112-152-230



Ceramic Liner Snap Rings

Part Number	Shell Size	Connection Type
112-152-214	44-46mm	A
112-152-215	48-50mm	B
112-152-216	52-54mm	C
112-152-217	56-58mm	D
112-152-218	60-70mm	E



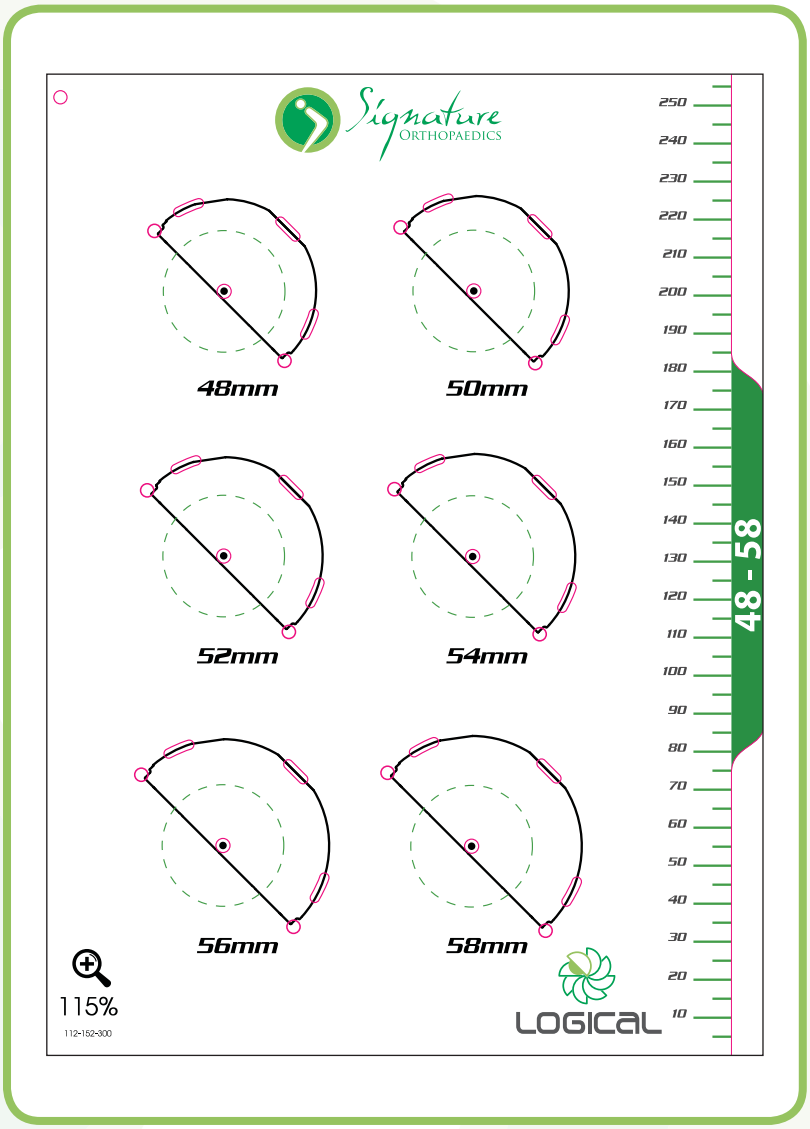
Ceramic Liner Snap Rings

112-152-210	Ø28mm
112-152-211	Ø32mm
112-152-212	Ø36mm
112-152-213	Ø40mm

Logical Preoperative Templates

Logical Templates

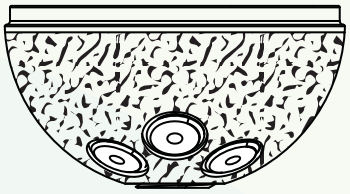
112-152-304	38-46mm
112-152-300	48-58mm
112-152-301	60-70mm



Logical Implants

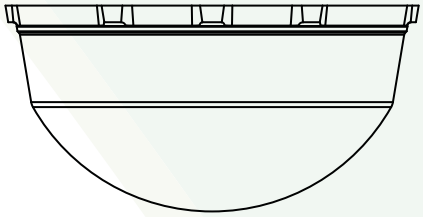
Logical G Series Acetabular Cups, 3 Hole

111-12-3344	44mm
111-12-3346	46mm
111-12-3348	48mm
111-12-3350	50mm
111-12-3352	52mm
111-12-3354	54mm
111-12-3356	56mm
111-12-3358	58mm
111-12-3360	60mm
111-12-3362	62mm
111-12-3364	64mm
111-12-3366	66mm
111-12-3368	68mm



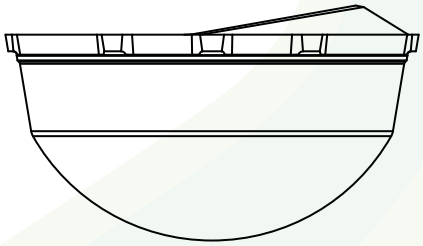
Logical UHMWPE Liner Neutral

111-12-5844	28/44-46mm	A
111-12-5850	28/48-50mm	B
111-12-5852	28/52-54mm	C
111-12-5250	32/48-50mm	B
111-12-5252	32/52-54mm	C
111-12-5256	32/56-58mm	D
111-12-5260	32/60-70mm	E
111-12-5652	36/52-54mm	C
111-12-5656	36/56-58mm	D
111-12-5660	36/60-70mm	E
111-12-5456	40/56-58mm	D
111-12-5460	40/60-70mm	E



Logical UHMWPE Liner 10° Hooded

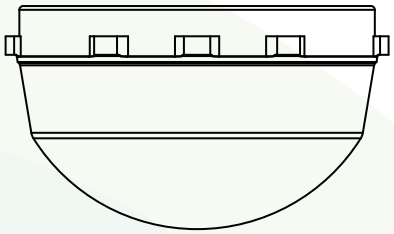
111-12-6844	28/44-46mm	A
111-12-6850	28/48-50mm	B
111-12-6852	28/52-54mm	C
111-12-6250	32/48-50mm	B
111-12-6252	32/52-54mm	C
111-12-6256	32/56-58mm	D
111-12-6260	32/60-70mm	E
111-12-6652	36/52-54mm	C
111-12-6656	36/56-58mm	D
111-12-6660	36/60-70mm	E
111-12-6456	40/56-58mm	D
111-12-6460	40/60-70mm	E



Logical Implants

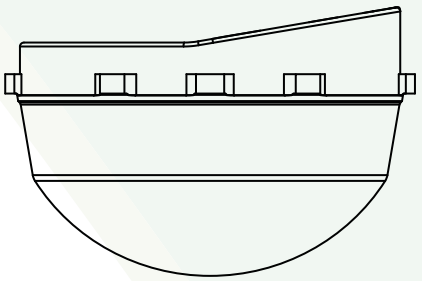
Logical UHMWPE Liner Neutral Lateralised

111-12-7844	28/44-46mm	A
111-12-7850	28/48-50mm	B
111-12-7852	28/52-54mm	C
111-12-7250	32/48-50mm	B
111-12-7252	32/52-54mm	C
111-12-7256	32/56-58mm	D
111-12-7260	32/60-70mm	E
111-12-7652	36/52-54mm	C
111-12-7656	36/56-58mm	D
111-12-7660	36/60-70mm	E
111-12-7456	40/56-58mm	D
111-12-7460	40/60-70mm	E



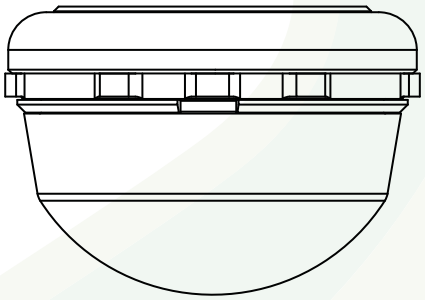
Logical UHMWPE Liner 10° Hooded Lateralised

111-12-8844	28/44-46mm	A
111-12-8850	28/48-50mm	B
111-12-8852	28/52-54mm	C
111-12-8250	32/48-50mm	B
111-12-8252	32/52-54mm	C
111-12-8256	32/56-58mm	D
111-12-8260	32/60-70mm	E
111-12-8652	36/52-54mm	C
111-12-8656	36/56-58mm	D
111-12-8660	36/60-70mm	E
111-12-8456	40/56-58mm	D
111-12-8460	40/60-70mm	E



Logical UHMWPE Liner Constrained

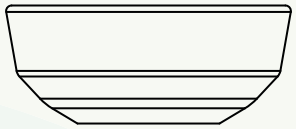
111-12-9200	22/44-46mm	A
111-12-9201	28/48-50mm	B
111-12-9202	32/52-54mm	C
111-12-9203	36/48-50mm	D
111-12-9204	40/60-70mm	E



Logical Implants

Logical Ceramic Liner Neutral

111-12-1002	28/44-46mm	A
111-12-1003	28/48-50mm	B
111-12-1004	28/52-54mm	C
111-12-1005	32/48-50mm	B
111-12-1006	32/52-54mm	C
111-12-1007	32/56-58mm	D
111-12-1008	32/60-70mm	E
111-12-1009	36/52-54mm	C
111-12-1010	36/56-58mm	D
111-12-1011	36/60-70mm	E
111-12-1012	40/56-58mm	D
111-12-1013	40/60-70mm	E

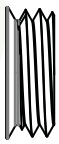


Acetabular Fixation Screws, Ø6.5mm

111-12-9115	15mm
111-12-9120	20mm
111-12-9125	25mm
111-12-9130	30mm
111-12-9135	35mm
111-12-9140	40mm
111-12-9145	45mm
111-12-9150	50mm
111-12-9155	55mm
111-12-9160	60mm
111-12-9165	65mm
111-12-9170	70mm

Apical Screw

111-12-9001



AUSTRALIAN MADE

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Signature ORTHOPAEDICS

CE 0086