stryker

Restoration® Anatomic
Acetabular System

Surgical protocol

Catalog

Restoration Anatomic Acetabular System Surgical protocol

Table of contents

This publication sets forth detailed validated procedures for using the Restoration Anatomic Acetabular System. It offers instructions that you should heed, but, as with any such technical guide, each surgeon must consider the particular needs of each patient and make approriate adjustments when and as required.

Indications, precautions and contraindications

Indications for U.S. and rest of world:

- Painful, disabling joint disease of the hip resulting from: degenerative arthritis, rheumatoid arthritis, post-traumatic arthritis, or late stage avascular necrosis.
- Revision of previous unsuccessful femoral head replacement, cup arthroplasty or other procedure.
- Clinical management problems where arthrodesis or alternative reconstructive techniques are less likely to achieve satisfactory results.
- Where bone stock is of poor quality or is inadequate for other reconstructive techniques as indicated by deficiencies of the acetabulum.

When used with MDM Liners

- Treatment of nonunion, femoral neck and trochanteric fractures of the proximal femur with head involvement that are unmanageable using other techniques.
- Dislocation risks.

When used with Constrained Liners

- The Trident Constrained Acetabular Insert is indicated for use in primary and revision 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.
- The Restoration Anatomic Shell is indicated for cementless use only.

Indications for EU, EMEA countries requiring CE mark, and Australia:

- Revision of previous unsuccessful femoral head replacement, cup arthroplasty or other procedure.
- Clinical management problems where arthrodesis or alternative reconstructive techniques are less likely to achieve satisfactory results.
- Where bone stock is of poor quality or is inadequate for other reconstructive techniques as indicated by deficiencies of the acetabulum.

When used with MDM Liners

- Dislocation risks

When used with Constrained Liners

- The Trident Constrained Acetabular Insert is indicated for use in patients at high risk of hip dislocation.

The Restoration Anatomic Shell is indicated for cementless use only.

Contraindications

- Any active or suspected latent infection in or about the hip joint.
- Any mental or neuromuscular disorder which would create an unacceptable risk of prosthesis instability, prosthesis fixation failure, or complications in post-operative care.
- Bone stock compromised by disease, infection or prior implantation which cannot provide adequate support and/or fixation to the prosthesis.
- Skeletal immaturity.

Warnings and precautions

See package insert for warnings, precautions, adverse effects, information for patients and other essential product information.

Before using Restoration Anatomic Shell instrumentation, verify:

- Instruments have been properly disassembled prior to cleaning and sterilization;
- Instruments have been properly assembled post-sterilization;
- Instruments have maintained design integrity; and,
- Proper size configurations are available.

For Instructions for cleaning, sterilization, inspection and maintenance of Orthopaedic Medical Devices, refer to LSTPI-B, SLI0001, QIN 4382 and 4333.

For indications for use of associated products in this protocol, please refer to the following instructions for use (IFU) numbers enclosed within the product packaging, or visit ifu.stryker.com:

Trident Crossfire and X3 inserts: QIN 4351

MDM Liner: QIN 4500

Trident Constrained Inserts: QIN 4357

Howmedica Osteonics Bone Screws: QIN 4340

Acetabular Dome Hole Plug: QIN 4331

Introduction

This surgical technique is a guide to preparing the acetabulum for Restoration Anatomic Shells utilizing the CuttingEdge Total Hip Acetabular instrumentation.

The Restoration Anatomic Acetabular System is a modular component design that is assembled intraoperatively. Restoration Anatomic Shells are a true hemisphere shape and are designed to achieve a line-to-line or 1mm press-fit by under-reaming the acetabulum. Shells are available in sizes 54mm-80mm. The shells feature both dome and peripheral holes for use when there is a need for adjunctive screw fixation.

The Restoration Anatomic Acetabular System utilizes the Innerchange Locking Mechanism and is designed to be compatible with Trident X3 or Crossfire polyethylene and MDM Liners.

The Trident polyethylene liners are designed to lock into the shell by means of a circumferential ring that engages the shell's mating groove. Trident MDM liners are designed to gain fixation within the shell by means of mating tapers. Rotational stability between the liners and shell is achieved when the shell's anti-rotational barbs interlock with the polyethylene or MDM liner scallops.

Refer to Table 1 for MDM liner and shell compatibility sizing options.

Refer to Table 2 for polyethylene liner and shell compatibility sizing options.

Refer to Table 3 for the total number of screw holes for each size Restoration Anatomic Shell.

Table 1: MDM Liner and Insert compatibility with Restoration Anatomic Shells

Restoration Anatomic Shell (mm)	54	56, 58, 60	62, 64	66, 68	70, 72	74, 76, 78, 80
Liner alpha code	C	D	E	F	G	H
MDM CoCr Liner	36C	38D	42E	46F	48G	52H
Poly insert OD (mm)	36	38	42	46	48	52
Poly insert ID (mm)	22.2	22.2	28	28	28	28
Nominal poly thickness (mm)	6.7	7.7	6.8	8.8	9.8	11.8

Table 2: Polyethylene liner compatibility with Restoration Anatomic Shells

Femoral head, X3 liner and shell compatibility chart
Shell size, liner alpha code and liner thickness (mm) for standard liners

Restoration Anatomic Shell (mm)		54	56, 58, 60	62, 64	66, 68	70, 72	74, 76, 78, 80
Liner alpha code		C	D	E	F	G	H
Anatomic femoral heads	44mm	—	—	—	3.8	5.4	7.1
	40mm	—	—	3.8	5.8	7.4	9.1
	36mm	—	3.9	5.9	7.9	9.4	11.2
Femoral heads	32mm	4.9	5.9	7.9	9.9	11.4	13.2
	28mm	6.9	7.9	9.9	11.9	13.4	15.2
	22mm	9.8	10.8	12.8	14.8	16.3	18.1

Restoration Anatomic Acetabular Shell

Restoration Anatomic Shell (mm)	54	56, 58, 60	62, 64	66, 68	70, 72	74, 76, 78, 80
Liner alpha code	C	D	E	F	G	H
Trident 0°, 10° Inserts (mm)	22, 28, 32*	22, 28 32, 36*	22, 28 32, 36, 40*	22, 28, 32, 36, 40*, 44*	22, 28, 32, 36, 40*, 44*	22, 28, 32, 36, 40*, 44*
Trident Eccentric 0°, 10° Inserts (mm)	28	28, 32	28, 32, 36	28, 32, 36	28, 32, 36	28, 32, 36
Trident Elevated Rim Inserts (mm)	28	28	28, 32, 36	28, 32, 36	28, 32, 36	28, 32, 36
Trident 0° Constrained Inserts (mm)	—	22	22	28	28	32
Trident 10° Constrained Inserts (mm)	—	—	22	22	28	28

*Available in X3 only and 0° only.

Table 3: Restoration Anatomic Shell screw holes

Restoration Anatomic Shell (mm)	54, 56, 58	60, 62, 64, 66, 68, 70, 72	74, 76, 78,80
Total # of screw holes (peripheral)	8 (2)	11 (5)	12 (5)

Anterior – A
Posterior – P
Superior – S
Inferior – I

All components depicted are left shells.

Step 1

Preoperative planning and X-ray evaluation

Preoperative planning is an essential part of the procedure, and templating should be performed prior to every case. The preoperative planning process should take qualitative and quantitative factors (including patient bone quality, density and morphology) into consideration in order to evaluate and select the appropriate instrument/implant system for the patient. X-ray evaluation may also help detect anatomic anomalies that could prevent the intraoperative achievement of the established preoperative goals. Selecting potential implant style and sizes can facilitate operating room preparation and assure availability of an appropriate selection. When it is done using X-rays that have been suitably scaled for magnification, templating allows the surgeon to predict the style, size and position of the implant that may help restore the correct anatomy of the individual patient.

Template planning can be done using acetate templates for printed X-rays or preoperative planning software for digital studies.

Use the template overlay LTEM112 available through your Stryker representative.

If a revision of an existing acetabular shell is required, the surgeon's preferred technique for removing the acetabular shell should be used.

Step 2

Acetabular preparation

The acetabulum is prepared by the release and removal of soft tissue using the surgeon's preferred technique to gain adequate exposure for reaming. Excision of the labrum and osteophytes allows for proper visualization of the bony anatomy and improves ease of reaming.

Stryker's retractors can be utilized to gain acetabular exposure **(Figure 1)**.

With the acetabulum exposed, prior implants and bone cement that would impede reaming or shell impaction should be removed and bony defects can be identified. If necessary, bone grafting options may be considered prior to reaming.

Note
Careful identification and removal of osteophytes may help reduce the possibility of bone-to-bone or component-to-bone impingement.

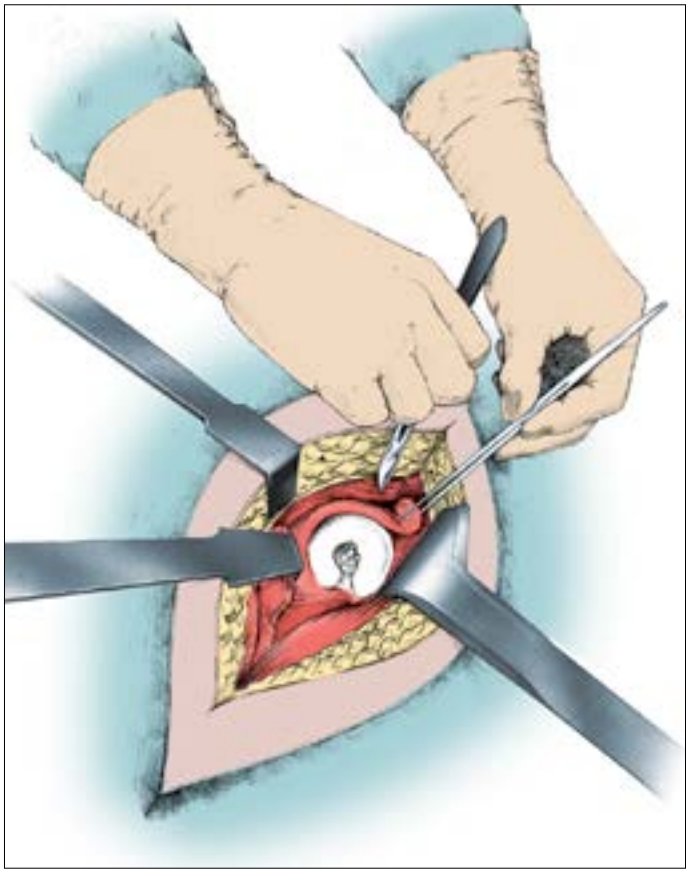

Figure 1

Figure 2

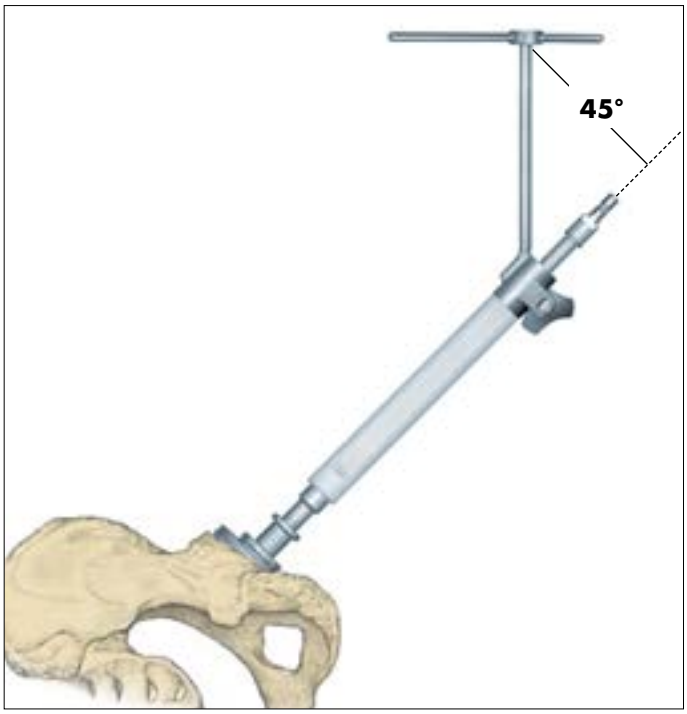

Figure 3

Step 3
Spherical reaming

To aid component positioning in the reaming process, an optional 45/20° Abduction/Anteversion Alignment Guide can be attached to the CuttingEdge Reamer Handle **(Figure 2)**. The Alignment Guide, when perpendicular to the long axis of the patient, is designed to orient the reamer handle at 45° of abduction, thereby placing the axis of the spherical reamer at 45° of inclination **(Figure 3)**. The reamer handle may be positioned at 20° of anteversion by aligning the left/right anteversion rod on the Alignment Guide so that it is parallel to the long axis of the patient.

Caution
Only the CuttingEdge Spherical Reamers should be used to prepare the acetabulum for Restoration Anatomic components.

Caution
To help ensure proper functioning of the external alignment guides, the patient must be in a lateral decubitus position without pelvic tilt.

Note
Changes in pelvic tilt and pelvic flexion caused by patient positioning on the table, as well as disease in the contralateral hip, spine and pelvis, may impact a surgeon's ability to achieve component placement at 45/20° abduction/anteversion.

It is recommended that the initial reaming begin with a CuttingEdge Spherical Reamer that is at least 4mm smaller than the templated or gauged size. The reamer is attached to the reamer handle by pushing down on the reamer and applying a quarter-turn lock in place **(Figure 4)**. Reaming progresses in 1 to 2 mm increments until final sizing is achieved.

Instruments

CuttingEdge Acetabular Reamer Handle
2102-0410

CuttingEdge Abduction / Anteversion Alignment Guide
2101-0210

CuttingEdge Acetabular Reamers
2102-04XX

Step 3
Spherical reaming continued

When implanting the Restoration Anatomic Shell, it is recommended to under-ream by 1mm to help to achieve an interference fit.

Note
The amount of interference fit should be determined intraoperatively based upon the patient's bone quality and acetabular size.

Note
When osteoporotic bone is encountered, it is recommended to under-ream by 1mm. When sclerotic bone is encountered, it may be difficult to fully seat the shell with a 1mm interference fit. In this situation, it is recommended to ream line-to-line to reduce the potential for problems that may typically occur in dense bone. Potential challenges implanting acetabular shells may include: acetabular fracture, failure to fully seat the implant or slight deformation of the titanium shell, making seating of the liner more difficult.

The full profile of the CuttingEdge Spherical Reamer necessitates reaming to the full depth. If bony anatomy is not distorted, the reamer head should be driven to the point where the rim/cross bar contacts the acetabular wall at the peripheral lunate region. Removal of the reamer from the handle is performed by pulling back on the locking sleeve and rotating the reamer head a quarter-turn in a clockwise direction **(Figure 4)**.

If bone stock allows, reaming should be done to optimize bone contact against both the posterior and anterior walls. Care should be taken so as not to enlarge or distort the acetabulum by eccentric reaming. Final acetabular reaming ideally provides mechanical support for the acetabular shell directly on viable host bone.

Note
The CuttingEdge Spherical Reamers are very aggressive and perform best when sharp. Care should be taken to protect the reamer from unnecessary handling, as dull or damaged cutting teeth may cause improper reaming. Dull cutting teeth may deflect to cut softer bone and resist hard bone. This situation may result in an irregularly shaped or enlarged acetabulum preparation.

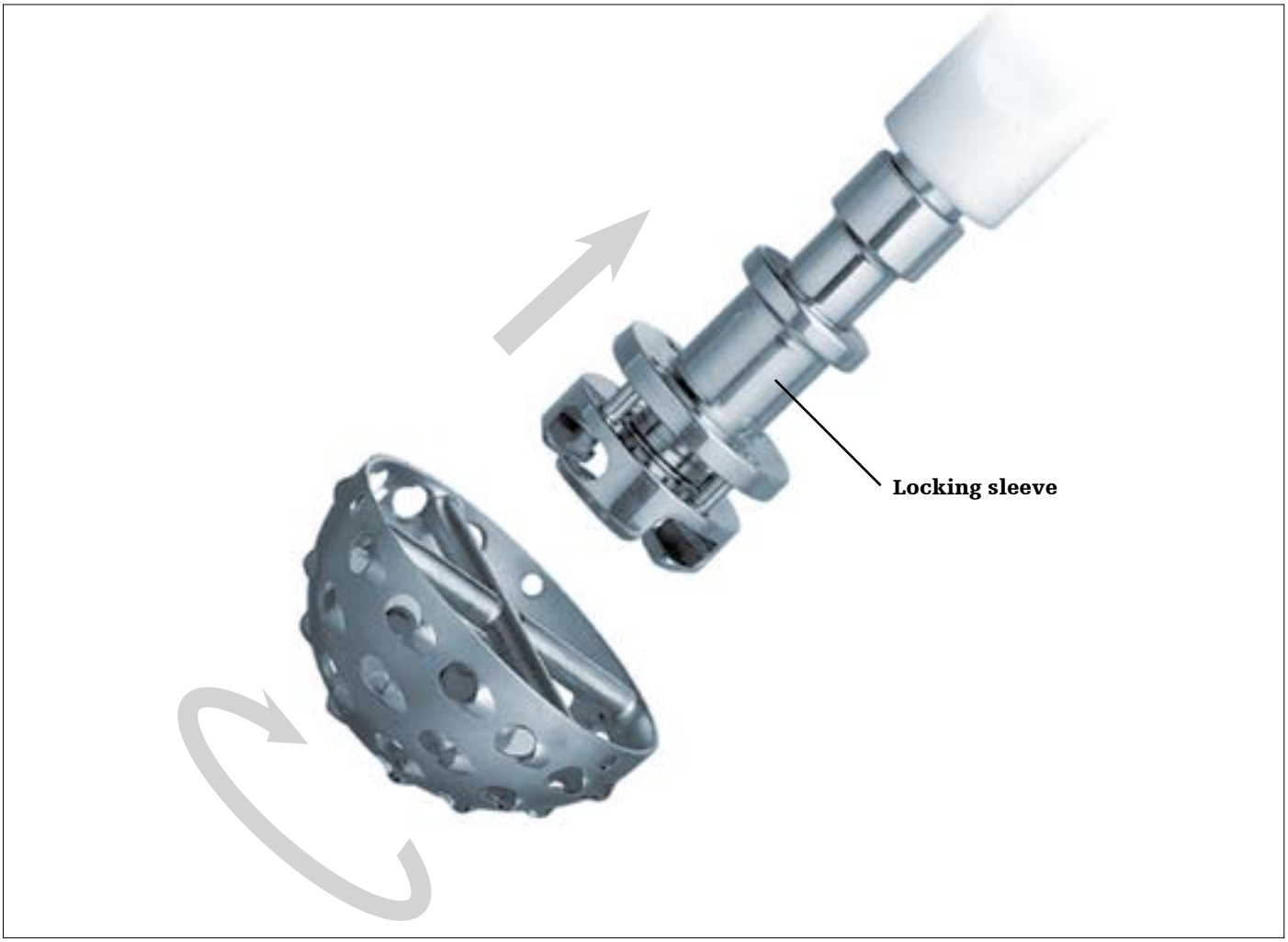

Figure 4

Step 4

Trial evaluation

Following the reaming procedure, the appropriate Restoration Anatomic Window Trial is selected **(Table 4)**.

Table 4: Restoration Anatomic Shell Window Trials

Templated shell size	Right hip cat. no.	Description	Left hip cat. no.	Description
54mm	2208-6053R	53mm Right	2208-6053L	53mm Left
56mm	2208-6055R	55mm Right	2208-6055L	55mm Left
58mm	2208-6057R	57mm Right	2208-6057L	57mm Left
60mm	2208-6059R	59mm Right	2208-6059L	59mm Left
62mm	2208-6061R	61mm Right	2208-6061L	61mm Left
64mm	2208-6063R	63mm Right	2208-6063L	63mm Left
66mm	2208-6065R	65mm Right	2208-6065L	65mm Left
68mm	2208-6067R	67mm Right	2208-6067L	67mm Left
70mm	2208-6069R	69mm Right	2208-6069L	69mm Left
72mm	2208-6071R	71mm Right	2208-6071L	71mm Left
74mm	2208-6073R	73mm Right	2208-6073L	73mm Left
76mm	2208-6075R	75mm Right	2208-6075L	75mm Left
78mm	2208-6077R	77mm Right	2208-6077L	77mm Left
80mm	2208-6079R	79mm Right	2208-6079L	79mm Left

Note
Restoration Anatomic Window Trials are left and right side-specific due to the orientation of the peripheral screw holes, the ischial screw holes and superior / anterior rim bevel. The trials are color-coded (gold - left trial / black - right trial) and marked with an "L" for left and "R" for right for easy identification **(Figure 5)**.

Window Trials are 1mm smaller than the implant outer diameter so as not to impair press-fit stability of the implant. The appropriate left or right Restoration Anatomic Window Trial is threaded onto the CuttingEdge Shell Positioner / Impactor Handle.

Figure 5

Instruments

Restoration Anatomic Window Trials
2208-60XXR / 2208-60XXL

CuttingEdge Shell Positioner / Impactor Handle
2101-0200

Step 4

Trial evaluation continued

The Restoration Anatomic Window Trial is placed into the acetabulum to evaluate the size, position and congruity of the preparation. The trial is "windowed" for visualization and assessment of fit, contact and congruency of the trial within the acetabulum **(Figure 6)**.

To help assess screw hole location, the Window Trials include the position of the implant peripheral screw holes and incorporate two inferior scribe lines indicating the center of the ischial screw hole positions. Additionally, the trials incorporate a scribe line on the superior bevel surface for reference **(Figure 6)**. Once the Window Trial is set, it is recommended to make a mark on the acetabulum bone at the level of the reference mark on the beveled rim. This reference mark will provide a guideline for orienting the final implant.

Note
The Restoration Anatomic Window Trials are designed to evaluate size, position and congruency of the acetabular preparation and offer a visual indication of implant screw hole options. The Window Trials do not acccept Liner Trials.

Warning
The screw holes of the Restoration Anatomic Window Trials are for visual indications of implant screw hole options. Do not drill through the Window Trials.

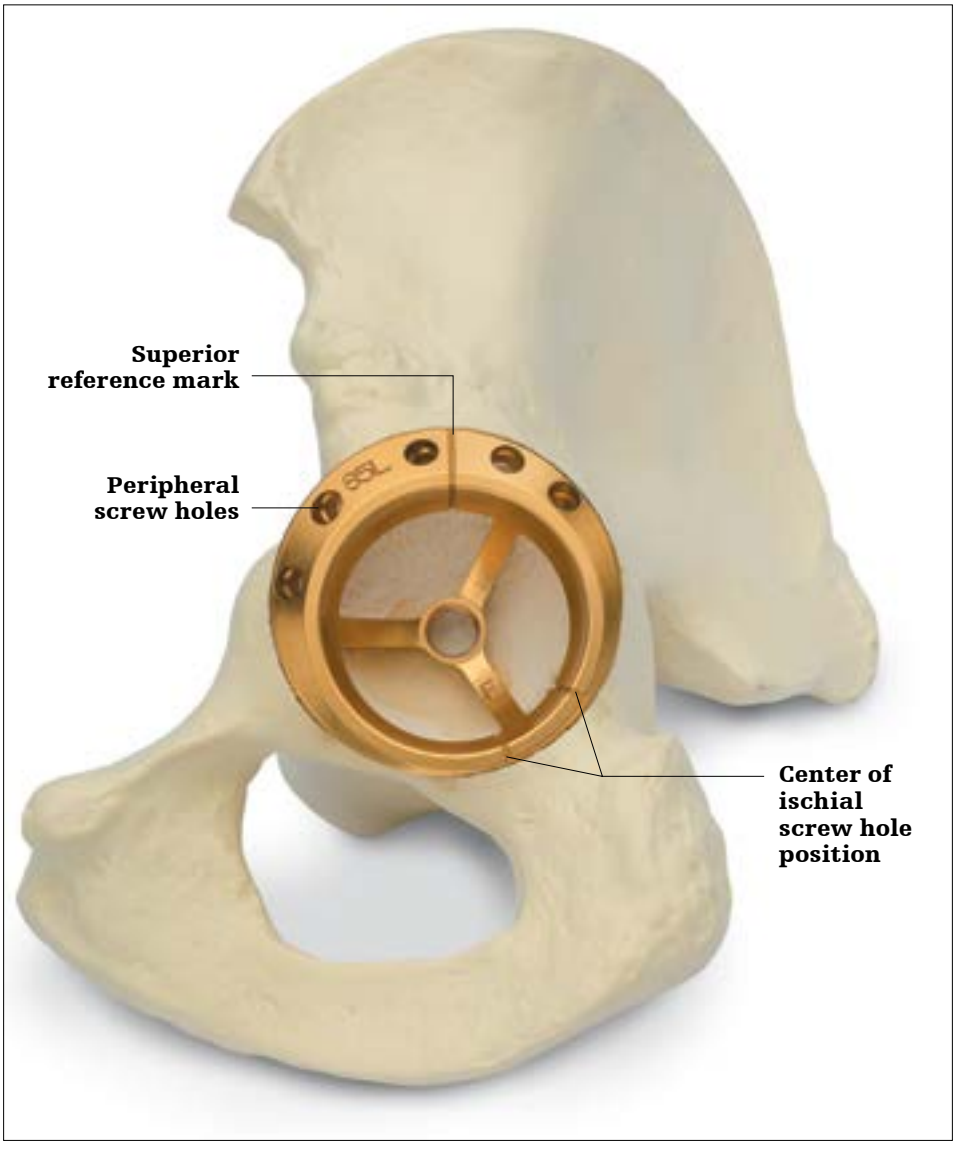

Figure 6

Step 5

Restoration Anatomic Shell implantation

Assess acetabular bone and surrounding soft tissues prior to shell introduction to ensure nothing is preventing shell implantation. During shell introduction into the acetabulum, minimize damage to the shell coating by instrumentation such as retractors, and avoid dragging the roughened surface across soft tissue. After completing the trialing, select the appropriate size and orientation (left or right) Restoration Anatomic Shell as clearly identified on the product label. Ensure that the patient is in the correct position. At this step it is prudent to reassess patient positioning in the surgical field. If desired, the CuttingEdge Abduction / Anteversion Alignment Guide can be attached to the CuttingEdge Shell Positioner / Impactor Handle to help establish the recommended 45° of abduction / inclination and 20° of anteversion **(Figures 7 and 8)**.

The Restoration Anatomic Shell is threaded onto the impactor at the threaded hole in the dome of the metal shell **(Figure 9)**. It is important to fully engage the threads and seat the impactor against the shell. Failure to fully engage the threads and seat the impactor could r esult in inserter thread damage and subsequent difficulty removing the impactor from the shell.

The peripheral screw holes of the Restoration Anatomic Shell are intended to be oriented superiorly. Locate the reference mark made previously on the acetabular bone. The Restoration Anatomic Shell incorporates a laser mark on the superior beveled rim for reference **(Figure 10)**.

Note
The laser mark on shell sizes 54mm and 56mm are positioned through the peripheral hole as shown in **Figure 11**.

Caution
The Alignment Guide may yield inaccurate placement if the pelvis has moved from the original **position during intraoperative manipulation. Small changes in pelvic flexion can greatly affect anteversion. The Alignment Guide is only one aid to assist with proper implant positioning. The surgeon must also rely on anatomic landmarks to avoid improper positioning of components.**

The implant should be positioned so that the mark on the shell is aligned with the mark previously made on the acetabular bone. Positioning the shell according to the preset reference mark will help ensure proper shell placement in relation to the previously placed Window Trial.

Figure 7

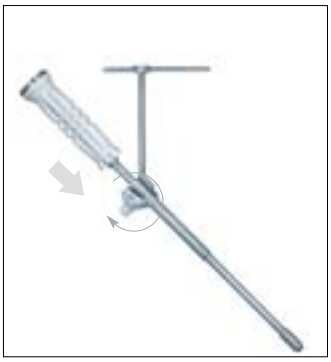

Figure 8

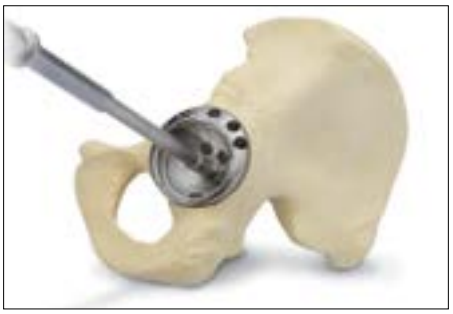

Figure 9

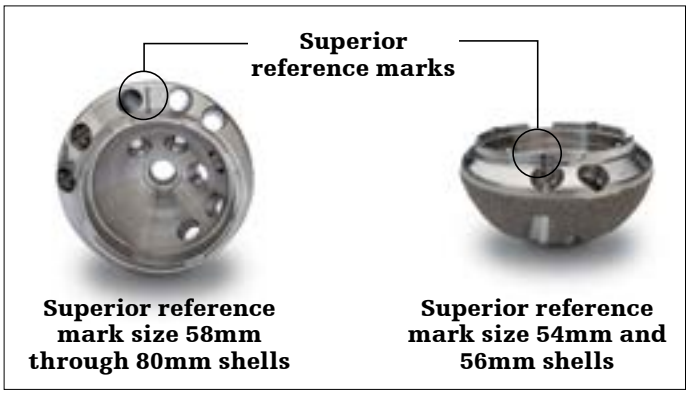

Figure 10 **Figure 11**

Note
Proper positioning of the Restoration Anatomic Shell can help minimize potential impingement and promote stability and articulation between the liner and head. As with any acetabular system, excessive vertical orientation should be avoided as this may lead to problems such as instability and premature wear of the components' surfaces. The superior, anterior and posterior peripheral regions of the Restoration Anatomic Shell are beveled so the superior, anterior and posterior peripheral face of the implant will appear recessed medially in comparison to the position of the face of the reamed dome.

Instruments

CuttingEdge Shell Positioner / Impactor Handle
2101-0200

CuttingEdge Abduction / Anteversion Alignment Guide
2101-0210

Step 5

Restoration Anatomic Shell implantation continued

The recommended shell abduction angle of 45° can be determined by positioning the Alignment Guide perpendicular to the long axis of the patient **(Figure 12)**.

Shell anteversion is set at approximately 20° by moving the cup impactor so that the left/right anteversion rod is parallel to the long axis of the patient **(Figure 13)**. The shell is impacted into the acetabulum using a mallet until a stable fit is achieved. The thumbscrew on the Alignment Guide is then loosened to remove the guide. After removing the guide, the impactor handle is carefully unthreaded from the shell.

Note
The threaded inserter hole of the Restoration Anatomic Shell is offset from the center of the implant. The inserter hole should be positioned inferior to the center of the reamed acetabular cavity.

The depth of the shell seating may now be determined by viewing through the threaded hole in the dome **(Figure 14)**. If it is determined that the shell is not fully seated, The CuttingEdge Final Cup Impactor may then be required to assist in impacting the shell until it is completely seated in the prepared acetabulum.

An optional Acetabular Dome Hole Plug (2060-0000-1) may only be inserted into the shell using the Ratchet Handle (2107-1000) and Universal Driver (2107-1015). Evaluate the plug after insertion to confirm it is fully threaded into the shell to prevent impingement with the liner.

Note
The Restoration Anatomic Shell abduction and anteversion should be based on the orientation of the CuttingEdge Shell Positioner / Impactor Handle in relation to the interior face of the shell at the locking mechanism and not of the outer beveled surface.

Note
While the Alignment Guides are of some assistance, it is important to critically evaluate anatomic landmarks before placement of the acetabular component. These antomic landmarks include the anterior and posterior walls of the acetabulum, the sciatic notch, the floor and/or acetabular fossa of the acetabulum.

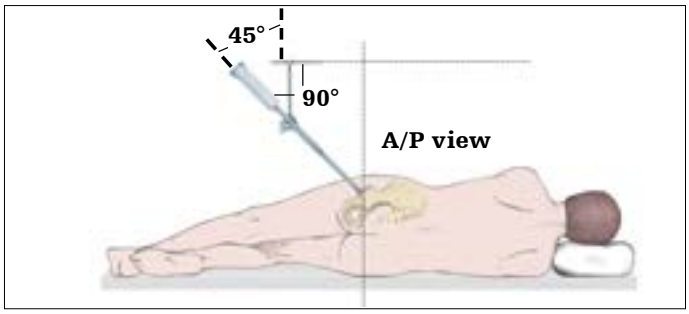

Figure 12

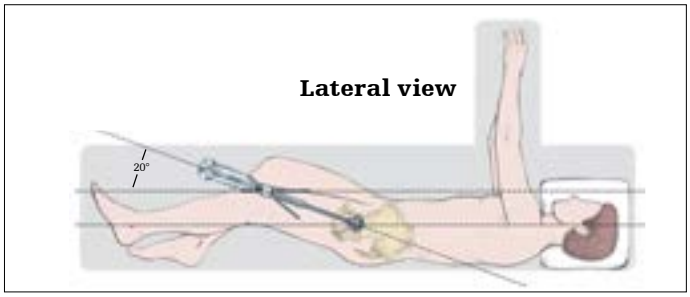

Figure 13

Figure 14

Instruments

CuttingEdge Shell Positioner / Impactor Handle
2101-0200

CuttingEdge Abduction / Anteversion Alignment Guide
2101-0210

Step 6

Screw insertion

Only Stryker's Cancellous 6.5mm Bone Screws can be used. Stryker offers 6.5mm diameter cancellous bone screws for use in the shell dome and periphery, which are available in a variety of lengths **(Table 5)**. The surgeon has the option of hex or torx head screws unless otherwise noted. Stryker's Cancellous Bone Screws are designed to be inserted and removed only with the assistance of Stryker Orthopaedics screw instruments.

It is recommended that at least one dome screw be inserted first to stabilize and fully seat the shell. The peripheral screws can then be inserted.

After determination of the proper site for screw placement, a 3.3mm diameter drill is passed through the 3.3mm Drill Guide to the desired depth. It is important to use the proper Drill Guide barrel depending on whether preparing for dome screws or peripheral screws, in order to keep the pilot hole as straight and concentric as possible, so that the screw head fully seats. The Drill Guide has a shorter barrel to help prepare for the dome screws **(Figure 15)** and a longer barrel which engages into the peripheral screw holes **(Figure 16)**. Screw holes are assessed to determine the hole's depth using a depth gauge. The properly sized screw is then selected and implanted into the bone using Stryker's Screw Drivers with a high torque configuration head.

After screw implantation, assess that the screw heads in the dome are seated flush against the shell to help prevent improper seating of the acetabular liner, or if in the periphery to prevent potential for soft tissue irritation.

Note
In hard bone, the use of 6.5mm screws prepared in the usual fashion may be difficult. The use of a 4.0mm Drill Bit with the 4.0mm Drill Guide can make the utilization easier, without substantial compromise of screw purchase.

Note
Restoration Anatomic Shells are not intended to be drilled through.

Caution
Do not pass a drill, screw or any other instrumentation beyond the inner table of the pelvis. Malposition of either the shell screw hole orientation, screw hole preparation or improper use of the screws themselves may result in injury to the neurovascular structures in the vicinity.

Table 5: Stryker's Cancellous 6.5mm Bone Screws

Screw lengths (mm)	Hex screw catalog no.*
12	5260-5-012*
14	5260-5-014*
16	5260-5-016*
18	5260-5-018*
20	5260-5-020*
22	5260-5-022*
24	5260-5-024*
26	5260-5-026*
28	5260-5-028*
30	5260-5-030*
35	5260-5-035*
40	5260-5-040*
45	5260-5-045*
50	5260-5-050*

Screw lengths (mm)	Torx screw catalog no.
15	2080-0015
20	2080-0020
25	2080-0025
30	2080-0030
35	2080-0035
40	2080-0040
45	2080-0045
50	2080-0050
55	2080-0055
60	2080-0060

*This device is not CE-marked and not available in the EU market.

Caution
Do not use Trident 2030-65XX screws.

Dome screw preparation

Figure 15

Peripheral screw preparation

Figure 16

Instruments

3.3mm Drill Guide
2107-3300

4.0mm Drill Guide
2107-4000

Step 7

Trial Liner reduction

After metal shell implantation, insert either the Trident MDM Trial Liner **(Figure 17)** or Trident Polyethylene Trial Liner **(Table 6)** into the Restoration Anatomic Shell. The hip should be taken through a complete range of motion using the final selected implant sizes. Careful assessment of soft tissue tension and impingement at the extreme range of motion should be performed. A final check of hip mechanics should be completed to include range of motion consistent with the patient's normal daily activities. At this point joint laxity should also be assessed, taking into consideration the type of anesthetic used and its effects on soft tissue.

Table 6: Trident Polyethylene Trial Liner options

● =0° (2200-XXX) and 10° (2210-XXX)
❍ =Elevated rim (2260-XXX)

Alpha code	22mm	26mm	28mm	32mm	36mm	40mm	44mm
C	●	●	● ❍	●*	-	-	-
D	●	●	● ❍	●	●*	-	-
E	●	●	● ❍	● ❍	● ❍	●*	-
F	●	●	● ❍	● ❍	● ❍	●*	●*
G	●	●	● ❍	● ❍	● ❍	●*	●*
H	●	●	● ❍	● ❍	● ❍	●*	●*

Trident Eccentric Trials
0° (2240-XXX) 10° (2250-XXX)

Alpha code	28mm	32mm	36mm
C	●	-	-
D	●	●	-
E	●	●	●
F	●	●	●
G	●	●	●
H	●	●	●

* Available in 0° only

Figure 17

Appendix A

Trident Polyethylene

Trident Polyethylene Liner implantation

Select the appropriate size Silicone Insert Positioner Tip that corresponds to the inner diameter of the final implant selected.

Load the Silicone Insert Positioner Tip into the Positioner / Impactor Handle **(Figure 18)**.

Load the polyethylene liner onto the Insert Positioner Tip. Press firmly to ensure the liner is being securely held **(Figure 18)**.

Ensure that the inside of the shell is clean and free of soft tissue or any other debris, which could prevent the liner from properly sitting in the shell.

Gently introduce the polyethylene liner, making sure that the liner flange scallops are aligned with the slot at the rim of the shell (this allows seating the liner at the initial position supported by four indexing barbs). Once the liner is seated at the initial position, slowly turn and drop the liner into the final pre-locking position **(Figure 19)**.

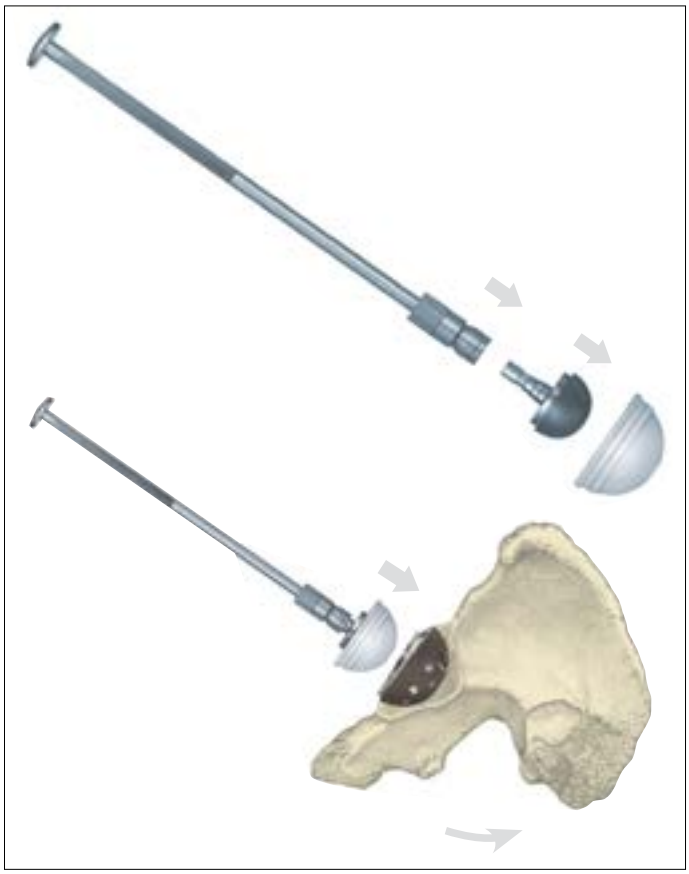

Figure 18

Note
Having a clear view of the rim of the acetabulum will allow easier visualization of the shell's slot and indexing barbs for proper positioning and seating of the liner.

Remove the Silicone Insert Positioner Tip from the Insert Positioner / Impactor Handle.

Select the appropriate size Plastic Insert Impactor Tip.

Load the Plastic Insert Impactor Tip onto the Insert Positioner / Impactor Handle.

Position the Insert Positioner / Impactor Handle into the inner diameter of the liner. Take care to align the handle with the axis of shell. Strike the handle with several mallet blows to fully seat the liner.

Note
In order to obtain a secure lock, it is recommended to use only the hard Plastic Insert Impactor Tips to impact the polyethylene.

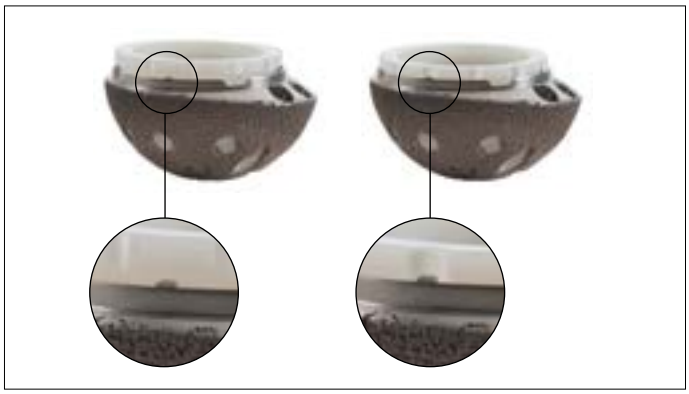

Figure 19

Verify that the liner is fully seated and properly aligned into the acetabular shell. Check the taper lock by running a small osteotome around the periphery of the shell / liner interface.

Instruments

Insert Positioner / Impactor Handle
2111-0000B

Silicone Insert Positioner Tip
2111-00XX

Plastic Insert Impactor Tip
2111-30XX

Appendix A
Trident Polyethylene

Head assembly
Prior to head assembly, neck length selection may be reevaluated using a Stryker V40 or C-Taper Trial Head. Place the Trial Head onto the stem neck taper and reduce the hip to verify that the mechanics have not been altered due to implant seating.

Remove the Trial Head and dry the implant trunnion with a laparatomy sponge or sterile towel.

Select the appropriate corresponding V40 or C-Taper Femoral Head size and place it onto the dry trunnion of the femoral stem with a slight twist. Impact the head with two moderate blows using the Stem Head Impactor **(Figure 20)**.

Figure 20

Optional step

Note
When selecting a BIOLOX delta Anatomic or BIOLOX delta Universal Taper Ceramic Femoral Head for implantation, use of a Universal Adapter Sleeve is necessary **(Table 7)**.

Table 7: Universal Adapter Sleeves

Universal Adapter Sleeve part numbers	Taper	Stem material compatibility
19-0XXXT	C-Taper	TMZF, Ti-6Al-4V, CoCr
6519-T-XXX	V40	TMZF, Ti-6Al-4V, CoCr, Stainless Steel

After completing the trialing process, intraoperatively assemble the Adapter Sleeve to the femoral stem manually. The Universal Adapter Sleeve must be fully seated on the stem trunnion before the head is assembled **(Figure 21)**.

Figure 21

Note
In no instance should any attempt be made to preassemble the Adapter Sleeve inside the BIOLOX delta Anatomic or BIOLOX delta Universal Ceramic head.

Intraoperatively assemble the BIOLOX delta Anatomic and BIOLOX delta Universal Taper Ceramic head onto the sleeved femoral stem and set with one to three moderate blows using the Stem Head Impactor **(Figure 22)**. Care must be taken to avoid excessive impact forces when assembling the Ceramic Head to the sleeved femoral component.

Figure 22

Appendix B

Modular Dual Mobility

MDM Liner implantation

Ensure that the inside of the shell is clean, dry and free of soft tissue or any other debris, which could prevent the liner from properly seating in the shell.

Gently introduce the MDM Liner making sure that the liner flange scallops are aligned with the Removal Tool Slots at the rim of the shell **(Figure 23)**. This orientation will allow the liner to rest on the four indexing barbs and will ensure that the liner is parallel with the shell. Next, slowly turn the liner until it drops into the final pre-locking position. Correct rotational orientation will result in the Liner Tabs aligned with the Removal Tool Slots **(Figure 24)**.

Note
Having a clear view of the rim of the acetabulum will allow easier visualization of the shell's slot and indexing barbs for proper positioning and seating of the liner.

Apply finger pressure around the rim of the liner first to engage the liner within the shell. It may then be necessary to lightly tap on the rim of the liner with the Final Cup Impactor Handle, working around the rim in all four quadrants, to ensure the liner is properly seated in the shell. The liner is properly seated when there is no further rocking or movement of the liner within the shell. This step should be done prior to final impaction of the liner.

Position the Final Cup Impactor Handle into the inner diameter of the liner. Take care to align the handle with the axis of the shell. Strike the handle with several mallet blows to fully seat the liner.

Verify liner is properly aligned and fully seated into the acetabular shell **(Figure 24)**. Check the taper lock by running a small blunt instrument (or the Liner Removal Tool) around the periphery of the shell/liner interface. There should not be any space between the rim of the shell and the under side of the liner rim.

Visually assess the inner articular surface of the MDM Liner to ensure it is not scratched or damaged prior to the trial insert/head reduction.

Note
As with any modular interface under load, there is a potential for fretting and/or corrosion. Proper alignment and locking of the MDM liner into the Restoration Anatomic shell may help to minimize this risk.

Caution
Care should be taken to avoid damage to the highly polished inner surface of the MDM CoCr Liner.

Care should be taken to ensure that the liner is correctly aligned within the shell. Failure to do so may result in incomplete or incorrect liner engagement.

Figure 23

Figure 24

Instruments

Final Cup Impactor Handle
2101-0130

CoCr Liner Removal Tool
2112-0000

Appendix B

Modular Dual Mobility

Trial insert/head reduction

After shell and MDM Liner implantation, there is an option to use either the ADM/MDM Dual Articulating Trials or the ADM/MDM Monopolar Trials. Both trialing options are designed to facilitate a final check of hip mechanics to include range of motion consistent with the patient's normal daily activities. At this point, joint laxity should also be assessed, taking into consideration the type of anesthetic used and its effects on soft tissue.

If using the ADM/MDM Dual Articulating Trials, place the 22.2mm or 28mm Head Trial into the appropriate Insert Trial to mimic the final articulation function of the MDM System **(Figure 25)**. The size of the insert trial will correspond with the MDM Liner being implanted **(Table 8, see page 20)**.

If using the ADM/MDM Monopolar Trials, place the Trial Sleeve that corresponds to the desired femoral head taper and offset into the appropriate Insert Trial by firmly pushing the Sleeve into the inner geometry of the Insert Trial **(Figure 26, Tables 8-10, see page 20)**. Correct assembly of the Trial Sleeve and Insert Trials will produce an audible click. The size of the Insert Trial will correspond with the MDM liner being implanted **(Tables 8-10, see page 20)**.

Note
The Monopolar Trials are only available for V40 and C-Taper heads. Additionally, a feature has been included in the Monopolar Trial design to prevent the assembly of Trial Sleeve offsets only available in 28mm heads into 36C and 38D Insert Trials. The Monopolar Trials are marked 'trial do not implant'. If there is any reason to believe that the trial has been accidentally implanted, the Monopolar Insert Trial is radiopaque and designed to be visible on an X-ray.

Note
Impingement should be carefully assessed and avoided during range of motion. Impingement can result in increased wear in metal polyethylene systems. Impingement should be carefully assessed and avoided during range of motion. Impingement can result in increased wear in metal polyethylene systems.

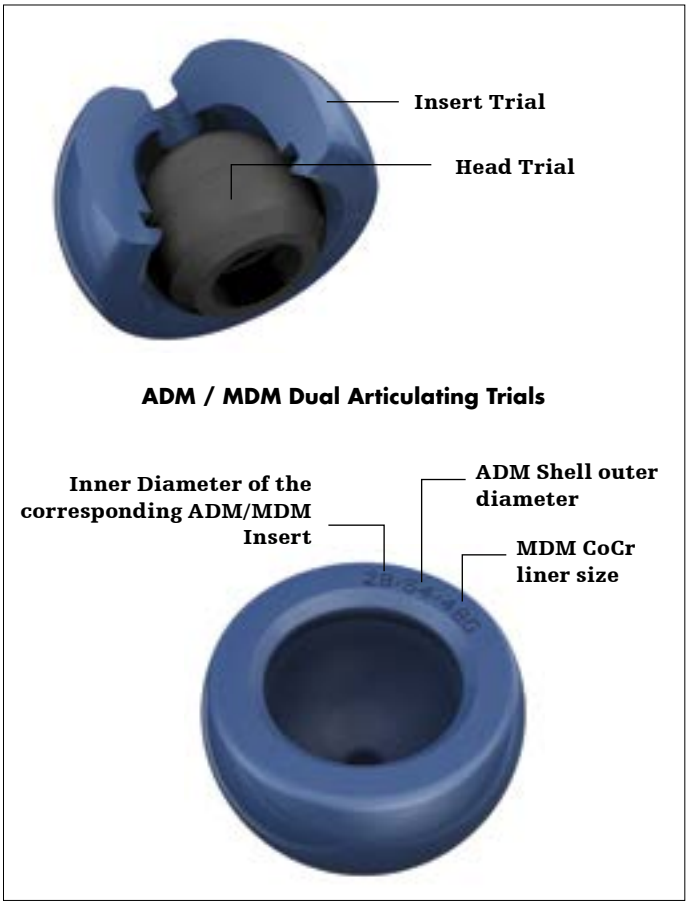

Figure 25

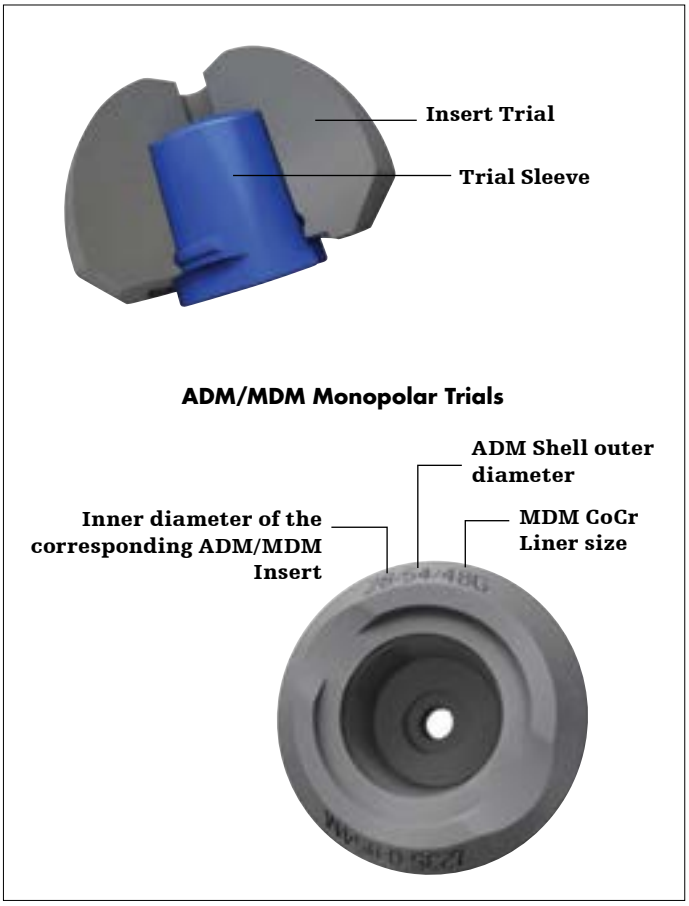

Figure 26

Appendix B

Modular Dual Mobility

Place the assembled Dual Articulating or Monopolar Trials onto the neck trial or stem trunnion component. Ensure that the Monopolar Trials are locked by firmly pushing the Insert Trial Sleeve assembly onto the neck trial or stem. Reduce the hip, checking for hip stability and the restoration of leg length. Fine tuning of hip joint mechanics may be achieved with the use of different +/- offsets.

Once hip stability and leg length have been checked, the Dual Articulating or Monopolar Trial assembly can be removed from the neck trial or trunnion as one unit. If using the Monopolar Trials, the Trial Sleeve can then be removed from the Insert Trial with the assistance of standard Kocher forceps by squeezing the Trial Sleeve and pulling it out of the Insert Trial **(Figure 27)**..

Tip
When using the ADM/MDM Dual Articulating Trials, place the 22.2mm or 28mm trial head onto the neck trial or stem trunnion and place the ADM/MDM Insert Trial into the MDM Liner. The smaller trial head can then be reduced into the Insert Trial for ease of reduction.

Figure 27

Appendix B

Modular Dual Mobility

Table 8: MDM Liner, Insert and Femoral Head compatibility

MDM Liner	MDM Liner Trial	ADM/MDM X3 Insert	ADM/MDM Dual Articulating Insert Trial	Required Femoral Head size (mm)	ADM/MDM Monopolar Insert Trial
626-00-36C	3200-36C	1236-2-242 or 7236-2-242	1235-0-242	22.2 mm	1235-0-242M
626-00-38D	3200-38D	1236-2-244 or 7236-2-244	1235-0-244	22.2 mm	1235-0-244M
626-00-42E	3200-42E	1236-2-848 or 7236-2-848	1235-0-848	28 mm	1235-0-848M
626-00-46F	3200-46F	1236-2-852 or 7236-2-852	1235-0-852	28 mm	1235-0-852M
626-00-48G	3200-48G	1236-2-854 or 7236-2-854	1235-0-854	28 mm	1235-0-854M
626-00-52H	3200-52H	1236-2-858 or 7236-2-858	1235-0-858	28 mm	1235-0-858M

Note
Inserts are compatible with Stryker 22.2 and 28mm heads only.

Table 9: Monopolar Trial Sleeve catalog numbers and V40 22.2 and 28mm Femoral Head options

V40 22.2mm Femoral Head offsets	Monopolar Trial Sleeve	LFIT CoCr
+0mm	1235-V-1000	✔
+3mm	1235-V-1030	✔
+8mm	1235-V-1080	✔

V40 28mm Femoral Head offsets	Monopolar Trial Sleeve	LFIT CoCr	Biolox delta	Biolox delta Universal	Alumina
-4mm	1235-V-0040	✔	✔		
-2.7mm	1235-V-0027		✔		✔
-2.5mm	1235-V-0025			✔	
+0mm	1235-V-1000	✔	✔	✔	✔
+4mm	1235-V-1040	✔	✔	✔	✔
+6mm	1235-V-1060	✔			
+8mm	1235-V-1080	✔			
+12mm	1235-V-1120	✔			

Table 10: Monopolar Trial Sleeve catalog numbers and C-Taper 22.2 and 28mm Femoral Head options

C-Taper 22.2mm Femoral Head offsets	Monopolar Trial Sleeve	LFIT CoCr
+0mm	1235-C-1000	✔
+2.5mm	1235-C-1025	✔
+5mm	1235-C-1050	✔
+10mm	1235-C-1100	✔

C-Taper 28mm Femoral Head offsets	Monopolar Trial Sleeve	LFIT CoCr	Biolox delta	Biolox delta Universal	Alumina
-3mm	1235-C-0030	✔			
-2.5mm	1235-C-0025		✔	✔	✔
+0mm	1235-C-1000	✔	✔	✔	✔
+2.5mm	1235-C-1025	✔	✔	✔	
+5mm	1235-C-1050	✔	✔	✔	✔
+7.5mm	1235-C-1075	✔			
+10mm	1235-C-1100	✔			

Appendix B

Modular Dual Mobility

Insert / head assembly

Back table assembly of the Insert and corresponding V40 or C-Taper 22.2mm* or 28mm Head is required **(Figure 28)**. The following instructions must be carefully adhered to:

Place the Press Stand flat on the table and place the Press onto the Press Stand pin.

Put the Femoral Head Supporting Piece into the base of the Press **(Figure 28)**.

Open the press by turning the T-Handle counterclockwise until the polyethylene insert fits above the femoral head and below the plastic cone portion of the press.

Place the Femoral Head onto the Head Supporting Piece and then place the Insert onto the Femoral Head.

Once the Femoral Head and polyethylene insert are in a vertical position, tighten the Press until the head is fully lodged into the insert. After insertion, the air confined between the head and insert is usually released, resulting in a characteristic noise.

After the head and insert are assembled, verify that the coupling has complete mobility.

*Stryker's Universal, V40 and C-Taper BIOLOX delta and Alumina Ceramic heads are not available in 22.2mm. They can only be utilized in inserts compatible with 28mm heads.

Note
Ensure that the inside of the shell is clean and free of soft tissue or other debris, which could prevent the polyethylene insert from properly seating in the shell.

Warning
A metal or ceramic head should not be used in place of the dual mobility insert/head. The MDM Liner is not intended for use as a metal-on-metal or ceramic-on-metal articulation. No testing has been conducted to determine that these bearing couples produce favorable mechanical outcomes. Only Stryker 22.2mm or 28mm femoral heads should be inserted into the ADM/MDM polyethylene inserts.

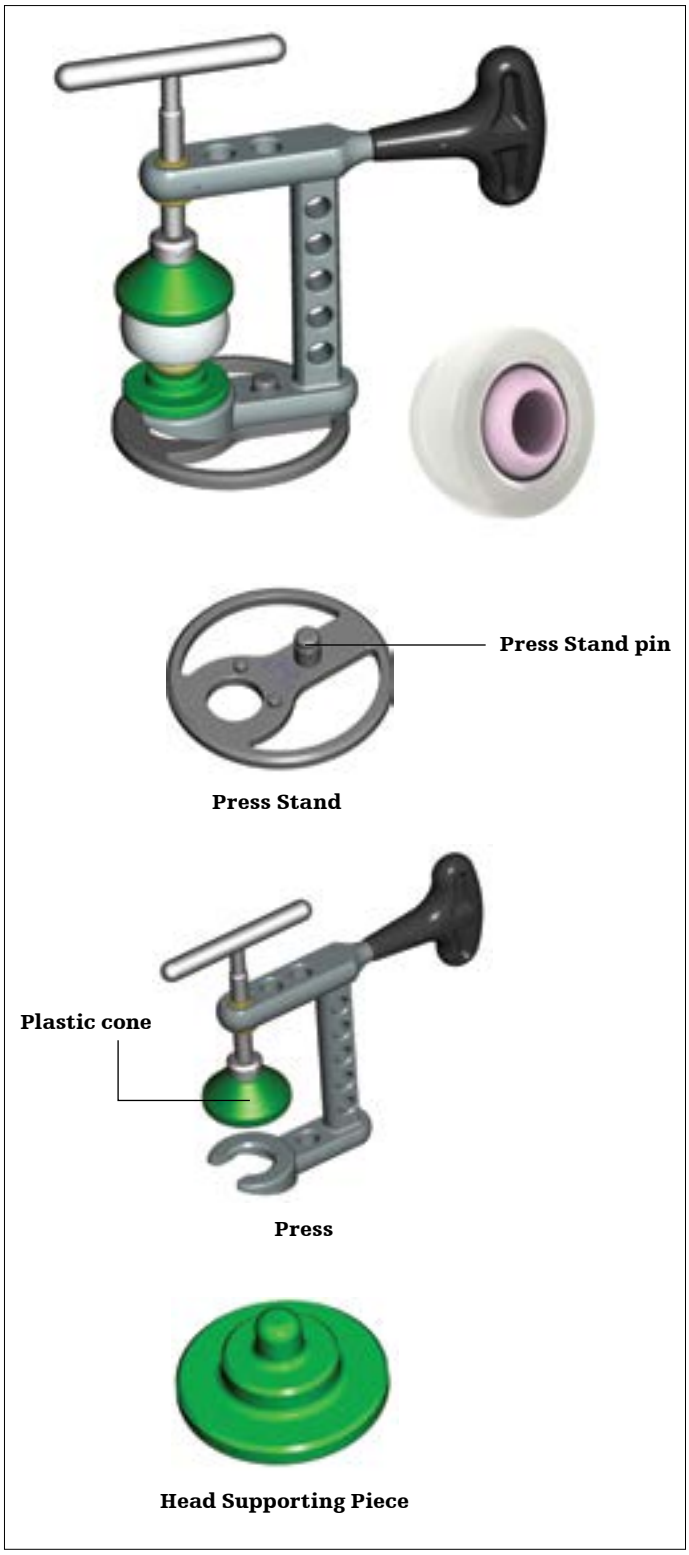

Figure 28

Instruments

Press
1235-0-008

Press Stand
1235-0-012

Head Supporting Piece
1235-0-009

Appendix B

Modular Dual Mobility

MDM reduction and closure

Once the Insert and Head are assembled, the unit is ready for implantation and reduction. Place the insert/head unit onto the trunnion of the femoral stem and slightly impact with the Insert Reduction Tool. Then, by exerting axial traction on the limb and pressure on the insert using the Insert Reduction Tool, reduce the hip and check for laxity, stability, leg length equality and range of motion **(Figure 29)**. The surgical site is then closed according to surgeon preference.

Caution
Care should be taken to avoid damage to the polyethylene insert during reduction as this may lead to premature wear of the insert material.

Figure 29

Instruments

Insert Reduction Tool
1235-0-020

Appendix C

Liner removal

Note
Prior to performing a liner exchange, visually assess the shell's locking mechanism for damage. If damaged, shell should be replaced.

Trident Polyethylene Liner removal

Utilize a 3/16" (5mm) Drill Bit to create an off-center hole in the polyethylene liner. Use the T-Handle to thread the Polyethylene Insert Removal Tool into the liner, and advance the tool into the medial wall of the shell to dislodge the liner **(Figures 30 and 31)**.

Shell removal

Should removal of the metal shell ever become necessary, an osteotome or small burr can be passed around the cup periphery to loosen the fixation interface. The CuttingEdge Universal Shell Positioner can be threaded into the dome hole of the cup. A Slotted Mallet is slid over the positioner shaft to assist with the shell removal.

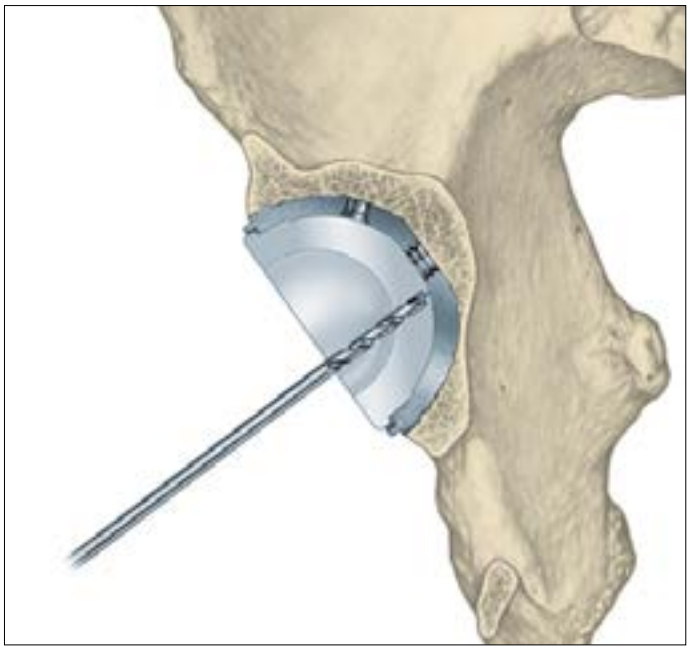

Figure 30

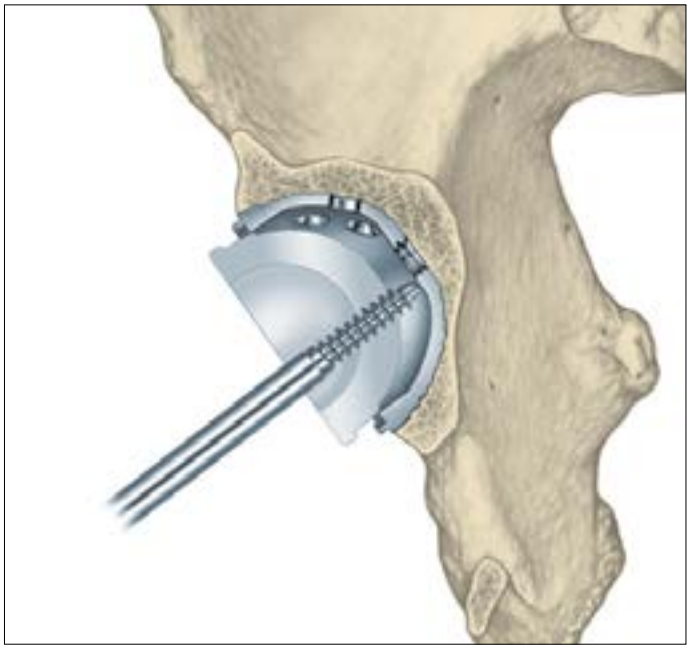

Figure 31

Instruments

T-Handle **1101-2100**	**Polyethylene Insert Removal Tool** **2112-0010**

Appendix C
Liner Removal

MDM Liner / Head removal
The Trident Insert Removal Tool is designed to provide the surgeon with two options for extracting the MDM Liner from the Restoration Anatomic shell.

Option 1: Flat head
Connect the T-Handle to the L-shaped end of the removal tool. Insert the flat end of the removal tool between the shell and MDM Liner at one of the four notches in the shell rim **(Figure 32)**. While applying continuous force toward the center of the shell, twist the T-Handle (like a screwdriver), to dislodge the MDM Liner. Bias the flat head of the tool toward the left when rotating the instrument in a counter-clockwise direction to enhance its effectiveness. Conversely, biasing the tool toward the right when rotating clockwise may aid in its use. It may be required to repeat this procedure at the other notches in order to successfully disengage the taper.

Option 2: L-shaped
Insert the L-shaped end of the removal tool between the shell and MDM Liner at one of the four notches in the shell rim **(Figure 33)**. Apply continuous force toward the center of the shell, and lever the tool in a plane tangent to the shell's outside edge, to dislodge the MDM Liner. It may be required to repeat this procedure at the other notches in order to successfully disengage the taper. The removal tool may be attached to the Insert Positioner/Impactor Handle to increase leverage and length for larger patients.

MDM Insert/Head Unit removal
Place the distal portion of the Femoral Head Remover Instrument over the neck of the stem, while placing the proximal portion of the instrument under the insert and head unit.

Once the instrument is in position, squeeze the handles together to pry the insert and head unit off of the trunnion of the stem.

Be sure that the instrument is not pressing against the outer bearing surface of the poly, as this will decrease the effectiveness of the removal tool and will result in a significantly larger force required to separate the head from the stem.

Note
Once the polyethylene insert and femoral head are assembled, the two components cannot be disassembled. However, the assembled polyethylene insert and femoral head unit can be removed from the trunnion of the stem. If the insert and head unit needs to be revised for any reason, remove the unit with the Femoral Head Remover Instrument.

Shell removal
Should removal of the metal shell ever become necessary, an osteotome or small burr can be passed around the cup periphery to loosen the fixation interface. The CuttingEdge Universal Shell Positioner can be threaded into the dome hole of the cup. A Slotted Mallet is slid over the positioner shaft to assist with the shell removal.

Figure 32

Figure 33

Instruments

CoCr Liner Removal Tool
2112-0000

T-Handle
1101-2100

Femoral Head Remover Instrument
6059-9-505

Catalog information

Restoration Anatomic implants and instruments

Restoration Anatomic Shells

Catalog no.	Description
504-02-54C-R	Restoration Anatomic Shell size 54 Right
504-02-56D-R	Restoration Anatomic Shell size 56 Right
504-02-58D-R	Restoration Anatomic Shell size 58 Right
504-02-60D-R	Restoration Anatomic Shell size 60 Right
504-02-62E-R	Restoration Anatomic Shell size 62 Right
504-02-64E-R	Restoration Anatomic Shell size 64 Right
504-02-66F-R	Restoration Anatomic Shell size 66 Right
504-02-68F-R	Restoration Anatomic Shell size 68 Right
504-02-70G-R	Restoration Anatomic Shell size 70 Right
504-02-72G-R	Restoration Anatomic Shell size 72 Right
504-02-74H-R	Restoration Anatomic Shell size 74 Right
504-02-76H-R	Restoration Anatomic Shell size 76 Right
504-02-78H-R	Restoration Anatomic Shell size 78 Right
504-02-80H-R	Restoration Anatomic Shell size 80 Right
504-02-54C-L	Restoration Anatomic Shell size 54 Left
504-02-56D-L	Restoration Anatomic Shell size 56 Left
504-02-58D-L	Restoration Anatomic Shell size 58 Left
504-02-60D-L	Restoration Anatomic Shell size 60 Left
504-02-62E-L	Restoration Anatomic Shell size 62 Left
504-02-64E-L	Restoration Anatomic Shell size 64 Left
504-02-66F-L	Restoration Anatomic Shell size 66 Left
504-02-68F-L	Restoration Anatomic Shell size 68 Left
504-02-70G-L	Restoration Anatomic Shell size 70 Left
504-02-72G-L	Restoration Anatomic Shell size 72 Left
504-02-74H-L	Restoration Anatomic Shell size 74 Left
504-02-76H-L	Restoration Anatomic Shell size 76 Left
504-02-78H-L	Restoration Anatomic Shell size 78 Left
504-02-80H-L	Restoration Anatomic Shell size 80 Left

Restoration Anatomic case and trays

Catalog no.	Description
1020-9000	Single Tray Case
2107-4005	Left Trial Tray
2107-4006	Right Trial Tray

Surgical Templates

LTEM112

Restoration Anatomic Drill Guides

Catalog no.	Description
2107-3300	Ø3.3mm Drill Guide
2107-4000	Ø4.0mm Drill Guide

Restoration Anatomic Window Trials

Catalog no.	Description
2208-6053R	Restoration Anatomic Shell Trial Size 53mm Right
2208-6055R	Restoration Anatomic Shell Trial Size 55mm Right
2208-6057R	Restoration Anatomic Shell Trial Size 57mm Right
2208-6059R	Restoration Anatomic Shell Trial Size 59mm Right
2208-6061R	Restoration Anatomic Shell Trial Size 61mm Right
2208-6063R	Restoration Anatomic Shell Trial Size 63mm Right
2208-6065R	Restoration Anatomic Shell Trial Size 65mm Right
2208-6067R	Restoration Anatomic Shell Trial Size 67mm Right
2208-6069R	Restoration Anatomic Shell Trial Size 69mm Right
2208-6071R	Restoration Anatomic Shell Trial Size 71mm Right
2208-6073R	Restoration Anatomic Shell Trial Size 73mm Right
2208-6075R	Restoration Anatomic Shell Trial Size 75mm Right
2208-6077R	Restoration Anatomic Shell Trial Size 77mm Right
2208-6079R	Restoration Anatomic Shell Trial Size 79mm Right
2208-6053L	Restoration Anatomic Shell Trial Size 53mm Left
2208-6055L	Restoration Anatomic Shell Trial Size 55mm Left
2208-6057L	Restoration Anatomic Shell Trial Size 57mm Left
2208-6059L	Restoration Anatomic Shell Trial Size 59mm Left
2208-6061L	Restoration Anatomic Shell Trial Size 61mm Left
2208-6063L	Restoration Anatomic Shell Trial Size 63mm Left
2208-6065L	Restoration Anatomic Shell Trial Size 65mm Left
2208-6067L	Restoration Anatomic Shell Trial Size 67mm Left
2208-6069L	Restoration Anatomic Shell Trial Size 69mm Left
2208-6071L	Restoration Anatomic Shell Trial Size 71mm Left
2208-6073L	Restoration Anatomic Shell Trial Size 73mm Left
2208-6075L	Restoration Anatomic Shell Trial Size 75mm Left
2208-6077L	Restoration Anatomic Shell Trial Size 77mm Left
2208-6079L	Restoration Anatomic Shell Trial Size 79mm Left

Catalog information

MDM implants and instruments

MDM instrumentation

Catalog no.	Description
5900-8114	MDM Case#
1235- -306	MDM Tray#
1235-0-020	Insert Reduction Tool

Catalog no.	Description
1235-0-008	Press
1235-0-012	Press Stand
1235-0-009	Head Supporting Piece

Catalog no.	Description
2112-0000	CoCr Liner Removal Tool
2101-0130	Final Cup Impactor Handle

#Stryker Orthopaedics has only validated these reusable instrument tray/cases for use with CSR wrap. Refer to LSTPI-B (Instructions for Cleaning, Sterilization, Inspection, and Maintenance of Reusable Medical Devices).

Stryker Orthopaedics has validated the following reusable instrument trays with Aesculap's SterilContainer™ System and with CSR wrap. Refer to LSTPI-B (Instructions for Cleaning, Sterilization, Inspection, and Maintenance of Reusable Medical Devices).

Catalog no.	Description
6147-0-100	Universal Lid
6147-2-101	MDM Instruments Tray

MDM Liner, Insert and Femoral Head compatibility

MDM Liner	MDM Liner Trial	ADM/MDM X3 Insert	ADM/MDM Dual Articulating Insert Trial	Required femoral head size (mm)	ADM/MDM Monopolar Insert Trial
626-00-36C	3200-36C	1236-2-242 or 7236-2-242	1235-0-242	22.2 mm	1235-0-242M
626-00-38D	3200-38D	1236-2-244 or 7236-2-244	1235-0-244	22.2 mm	1235-0-244M
626-00-42E	3200-42E	1236-2-848 or 7236-2-848	1235-0-848	28 mm	1235-0-848M
626-00-46F	3200-46F	1236-2-852 or 7236-2-852	1235-0-852	28 mm	1235-0-852M
626-00-48G	3200-48G	1236-2-854 or 7236-2-854	1235-0-854	28 mm	1235-0-854M
626-00-52H	3200-52H	1236-2-858 or 7236-2-858	1235-0-858	28 mm	1235-0-858M

Note
MDM inserts are compatible with Stryker's 22.2 and 28mm heads only.

Catalog information

Trident Crossfire Liner and Trial compatibility

Trident 0° and 10° Liners

Alpha code	Trident Crossfire 0° Liner	Trident Crossfire 10° Liner	ID (mm)	Restoration Anatomic Shell (mm)	Poly thickness (mm)	0° Liner Trial	10° Liner Trial
C	621-00-28C	621-10-28C	28	54	6.9	2200-28C	2210-28C
D	621-00-28D	621-10-28D	28	56, 58, 60	7.9	2200-28D	2210-28D
D	621-00-32D	621-10-32D	32	56, 58, 60	5.9	2200-32D	2210-32D
E	621-00-32E	621-10-32E	32	62, 64	7.9	2200-32E	2210-32E
F	621-00-32F	621-10-32F	32	66, 68	9.9	2200-32F	2210-32F
G	621-00-32G	621-10-32G	32	70, 72	11.4	2200-32G	2210-32G
H	621-00-32H	621-10-32H	32	74, 76, 78, 80	13.2	2200-32H	2210-32H
E	621-00-36E	621-10-36E	36	62, 64	5.9	2200-36E	2210-36E
F	621-00-36F	621-10-36F	36	66, 68	7.9	2200-36F	2210-36F
G	621-00-36G	621-10-36G	36	70, 72	9.4	2200-36G	2210-36G
H	621-00-36H	621-10-36H	36	74, 76, 78, 80	11.2	2200-36H	2210-36H

Catalog information

Trident X3 Polyethylene Liners

Trident 0° and 10° Liners

Alpha code	Trident X3 0° Liner	Trident X3 10° Liner	ID (mm)	Restoration Anatomic Shell (mm)	Poly thickness (mm)
C	623-00-22C or 723-00-22C	623-10-22C or 723-10-22C	22	54	9.8
D	623-00-22D or 723-00-22D	623-10-22D or 723-10-22D	22	56, 58, 60	10.8
E	623-00-22E or 723-00-22E	623-10-22E or 723-10-22E	22	62, 64	12.8
F	623-00-22F or 723-00-22F	623-10-22F or 723-10-22F	22	66, 68	14.8
G	623-00-22G or 723-00-22G	623-10-22G or 723-10-22G	22	70, 72	16.3
H	623-00-22H or 723-00-22H	623-10-22H or 723-10-22H	22	74, 76, 78, 80	18.1
C	623-00-28C or 723-00-28C	623-10-28C or 723-10-28C	28	54	6.9
D	623-00-28D or 723-00-28D	623-10-28D or 723-10-28D	28	56, 58, 60	7.9
E	623-00-28E or 723-00-28E	623-10-28E or 723-10-28E	28	62, 64	9.9
F	623-00-28F or 723-00-28F	623-10-28F or 723-10-28F	28	66, 68	11.9
G	623-00-28G or 723-00-28G	623-10-28G or 723-10-28G	28	70, 72	13.4
H	623-00-28H or 723-00-28H	623-10-28H or 723-10-28H	28	74, 76, 78, 80	15.2
C	623-00-32C or 723-00-32C	–	32	54	4.9
D	623-00-32D or 723-00-32D	623-10-32D or 723-10-32D	32	56, 58, 60	5.9
E	623-00-32E or 723-00-32E	623-10-32E or 723-10-32E	32	62, 64	7.9
F	623-00-32F or 723-00-32F	623-10-32F or 723-10-32F	32	66, 68	9.9
G	623-00-32G or 723-00-32G	623-10-32G or 723-10-32G	32	70, 72	11.4
H	623-00-32H or 723-00-32H	623-10-32H or 723-10-32H	32	74, 76, 78, 80	13.2
D	623-00-36D or 723-00-36D	–	36	56, 58, 60	3.9
E	623-00-36E or 723-00-36E	623-10-36E or 723-10-36E	36	62, 64	5.9
F	623-00-36F or 723-00-36F	623-10-36F or 723-10-36F	36	66, 68	7.9
G	623-00-36G or 723-00-36G	623-10-36G or 723-10-36G	36	70, 72	9.4
H	623-00-36H or 723-00-36H	623-10-36H or 723-10-36H	36	74, 76, 78, 80	11.2
E	623-00-40E or 723-00-40E	–	40	62, 64	3.8
F	623-00-40F or 723-00-40F	–	40	66, 68	5.8
G	623-00-40G or 723-00-40G	–	40	70, 72	7.4
H	623-00-40H or 723-00-40H	–	40	74, 76, 78, 80	9.1
F	623-00-44F or 723-00-44F	–	44	66, 68	3.8
G	623-00-44G or 723-00-44G	–	44	70, 72	5.4
H	623-00-44H or 723-00-44H	–	44	74, 76, 78, 80	7.1

Catalog information

Trident Polyethylene Liner and Trial compatibility

Trident Eccentric X3 0°and 10° Liners

Alpha code	Trident X3 Eccentric 0° Liner*	Trident X3 Eccentric 10° Liner	ID (mm)	Restoration Anatomic Shell (mm)	Poly thickness (mm)
C	663-00-28C or 763-00-28C	663-10-28C or 763-10-28C	28	54	10.5
D	663-00-28D or 763-00-28D	663-10-28D or 763-10-28D	28	56, 58, 60	11.6
E	663-00-28E or 763-00-28E	663-10-28E or 763-10-28E	28	62, 64	13.5
F	663-00-28F or 763-00-28F	663-10-28F or 763-10-28F	28	66, 68	15.6
G	663-00-28G or 763-00-28G	663-10-28G or 763-10-28G	28	70, 72	17.1
H	663-00-28H or 763-00-28H	663-10-28H or 763-10-28H	28	74, 76, 78, 80	18.8
D	663-00-32D or 763-00-32D	663-10-32D or 763-10-32D	32	56, 58, 60	9.5
E	663-00-32E or 763-00-32E	663-10-32E or 763-10-32E	32	62, 64	11.5
F	663-00-32F or 763-00-32F	663-10-32F or 763-10-32F	32	66, 68	13.5
G	663-00-32G or 763-00-32G	663-10-32G or 763-10-32G	32	70, 72	15
H	663-00-32H or 763-00-32H	663-10-32H or 763-10-32H	32	74, 76, 78, 80	16.8
E	663-00-36E or 763-00-36E	663-10-36E or 763-10-36E	36	62, 64	9.5
F	663-00-36F or 763-00-36F	663-10-36F or 763-10-36F	36	66, 68	11.5
G	663-00-36G or 763 -00-36G	663-10-36G or 763-10-36G	36	70, 72	13
H	663-00-36H or 763-00-36H	663-10-36H or 763-10-36H	36	74, 76, 78, 80	14.8

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Trident Elevated Rim Liners

Alpha code	Trident X3 Elevated Rim Liner	ID (mm)	Restoration Anatomic Shell (mm)	Poly thickness (mm)	Elevated Rim Liner Trial
C	643-00-28C or 743-00-28C	28	54	5.9	2260-28C
D	643-00-28D or 743-00-28D	28	56, 58, 60	7.9	2260-28D
E	643-00-28E or 743-00-28E	28	62, 64	9.9	2260-28E
F	643-00-28F or 743-00-28F	28	66, 68	11.9	2260-28F
G	643-00-28G or 743-00-28G	28	70, 72	13.4	2260-28G
H	643-00-28H or 743-00-28H	28	74, 76, 78, 80	15.2	2260-28H
E	643-00-32E or 743-00-32E	32	62, 64	7.9	2260-32E
F	643-00-32F or 743-00-32F	32	66, 68	9.9	2260-32F
G	643-00-32G or 743-00-32G	32	70, 72	11.4	2260-32G
H	643-00-32H or 743-00-32H	32	74, 76, 78, 80	13.2	2260-32H
E	643-00-36E or 743-00-36E	36	62, 64	5.9	2260-36E
F	643-00-36F or 743-00-36F	36	66, 68	7.9	2260-36F
G	643-00-36G or 743-00-36G	36	70, 72	9.4	2260-36G
H	643-00-36H or 743-00-36H	36	74, 76, 78, 80	11.2	2260-36H

Catalog information

Trident Polyethylene Liner and Trial compatibility

Trident 0°Constrained Liner

Alpha code	Trident 0° Constrained Liner	Restoration Anatomic Shell (mm)	Bipolar Femoral Head size (mm)	Bipolar Head OD (mm)	Outer Bearing poly thickness (mm)	Total range of motion	Outer Bearing OD spherical diameter (mm)	Head Removal Key	Constrained 0° Liner Trial
D	690-00-22D	56, 58, 60	22	36	5.6	82°	40.4	HI-UHRK-3638	2270-22D
E	690-00-22E	62, 64	22	36	7.5	82°	44.4	HI-UHRK-3638	2270-22E
F	690-00-28F	66, 68	28	42	6.5	90°	48.5	HI-UHRK-28	2270-28F
G	690-00-28G	70, 72	28	42	8.1	90°	51.5	HI-UHRK-28	2270-28G
H	690-00-32H	74, 76, 78, 80	32	46	7.8	94°	55.0	HI-UHRK-32	2270-32H

Trident 10°Constrained Liner

Alpha code	Trident 10° Constrained Liner	Restoration Anatomic Shell (mm)	Bipolar Femoral Head size (mm)	Bipolar Head OD (mm)	Outer Bearing poly thickness (mm)	Total range of motion	Outer Bearing OD spherical diameter (mm)	Head Removal Key	Constrained 10° Liner Trial
E	690-10-22E	62, 64	22	36	7.9	82°	44.4	HI-UHRK-3638	2230-22E
F	690-10-22F	66, 68	22	36	9.9	82°	48.4	HI-UHRK-3638	2230-22F
G	690-10-28G	70, 72	28	42	8.4	90°	51.5	HI-UHRK-28	2230-28G
H	690-10-28H	74, 76, 78, 80	28	42	10.2	90°	55.0	HI-UHRK-28	2230-28H

Catalog information

Ancillary Implants

Restoration Acetabular Wedge Augment Implants

Catalog no.	Description	Acetabular Wedge Augment Trial
5096-4615	46mm OD x 15mm Thickness	5097-4615
5096-4620	46mm OD x 20mm Thickness	5097-4620
5096-4625	46mm OD x 25mm Thickness	5097-4625
5096-5015	50mm OD x 15mm Thickness	5097-5015
5096-5020	50mm OD x 20mm Thickness	5097-5020
5096-5025	50mm OD x 25mm Thickness	5097-5025
5096-5415	54mm OD x 15mm Thickness	5097-5415
5096-5420	54mm OD x 20mm Thickness	5097-5420
5096-5425	54mm OD x 25mm Thickness	5097-5425
5096-5815	58mm OD x 15mm Thickness	5097-5815
5096-5820	58mm OD x 20mm Thickness	5097-5820
5096-5825	58mm OD x 25mm Thickness	5097-5825
5096-6215	62mm OD x 15mm Thickness	5097-6215
5096-6220	62mm OD x 20mm Thickness	5097-6220
5096-6225	62mm OD x 25mm Thickness	5097-6225
5096-6615	66mm OD x 15mm Thickness	5097-6615
5096-6620	66mm OD x 20mm Thickness	5097-6620
5096-6625	66mm OD x 25mm Thickness	5097-6625

Stryker's Cancellous 6.5mm Bone Hex Screws*

Catalog no.	Screw length (mm)
5260-5-012	12
5260-5-014	14
5260-5-016	16
5260-5-018	18
5260-5-020	20
5260-5-022	22
5260-5-024	24
5260-5-026	26
5260-5-028	28
5260-5-030	30
5260-5-035	35
5260-5-040	40
5260-5-045	45
5260-5-050	50

Stryker's Cancellous 6.5mm Bone Torx Screws

Catalog no.	Screw length (mm)
2080-0015	15
2080-0020	20
2080-0025	25
2080-0030	30
2080-0035	35
2080-0040	40
2080-0045	45
2080-0050	50
2080-0055	55
2080-0060	60

Additional

Catalog no.	Description
2060-0000-1	Acetabular Dome Hole Plug

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Catalog information

Femoral Head compatibility

V40 Taper LFIT Heads

Catalog no.	Diameter (mm)	Offset (mm)	Trial catalog no.
6260-9-122	22	+0	6264-8-122R
6260-9-222	22	+3	6264-8-222R
6260-9-322	22	+8	6264-8-322R
6260-9-028	28	-4	6264-8-028R
6260-9-128	28	+0	6264-8-128R
6260-9-228	28	+4	6264-8-228R
6260-9-328	28	+8	6264-8-328R
6260-9-428	28	+12	6264-8-428R
6260-9-032	32	-4	6264-8-032R
6260-9-132	32	+0	6264-8-132R
6260-9-232	32	+4	6264-8-232R
6260-9-332	32	+8	6264-8-332R
6260-9-432	32	+12	6264-8-432R

Note
Trial heads with an "R" suffix are made from radiopaque material, designed to allow for easy visibility on X-rays.

C-Taper LFIT Heads

Catalog no.	Diameter (mm)	Offset (mm)	Trial catalog no.
06-2200	22	+0	1100-2200R
S-1400-HH22	22	+2.5	1100-2225R
06-2205	22	+5	1100-2205R
06-2210	22	+10	1100-2210R
06-2898	28	-3	1100-2898R
06-2800	28	+0	1100-2800R
S-1400-HH82	28	+2.5	1100-2825R
06-2805	28	+5	1100-2805R
S-1400-HH84	28	+7.5	1100-2875R
06-2810	28	+10	1100-2810R
06-3299	32	-5	1100-3299R
S-1400-HH31	32	-2.5	1100-3297R
06-3200	32	+0	1100-3200R
S-1400-HH32	32	+2.5	1100-3225R
06-3205	32	+5	1100-3205R
S-1400-HH34	32	+7.5	1100-3275R
06-3210	32	+10	1100-3210R

Catalog information

Femoral Head compatibility

V40 Taper LFIT Anatomic Heads

Catalog no.	Diameter (mm)	Offset (mm)	Trial catalog no.
6260-9-036	36	-5	6264-8-036R
6260-9-136	36	+0	6264-8-136R
6260-9-236	36	+5	6264-8-236R
6260-9-336	36	+10	6264-8-336R
6260-9-040	40	-4	6264-8-040R
6260-9-140	40	+0	6264-8-140R
6260-9-240	40	+4	6264-8-240R
6260-9-340	40	+8	6264-8-340R
6260-9-440	40	+12	6264-8-440R
6260-9-044	44	-4	6264-8-044R
6260-9-144	44	+0	6264-8-144R
6260-9-244	44	+4	6264-8-244R
6260-9-344	44	+8	N/A
6260-9-444	44	+12	N/A

Universal Taper Biolox delta Ceramic Heads*

Catalog no.	Diameter (mm)
6519-1-028	28
6519-1-032	32
6519-1-036	36
6519-1-040	40
6519-1-044	44

*Requires use of Universal Adapter Sleeve.

V40 Taper Biolox delta Ceramic Heads

Catalog no.	Diameter (mm)	Offset (mm)	Trial catalog no.
6570-0-028	28	-4	6264-8-028R
6570-0-328	28	-2.7	6264-8-928R
6570-0-128	28	+0	6264-8-128R
6570-0-228	28	+4	6264-8-228R
6570-0-032	32	-4	6264-8-032R
6570-0-132	32	+0	6264-8-132R
6570-0-232	32	+4	6264-8-232R

C-Taper LFIT Anatomic Heads

Catalog no.	Diameter (mm)	Offset (mm)	Trial catalog no.
06-3699	36	-5	1100-3699R
06-3697	36	-2.5	1100-3697R
06-3600	36	+0	1100-3600R
06-3625	36	+2.5	1100-3625R
06-3605	36	+5	1100-3605R
06-3675	36	+7.5	1100-3675R
06-3610	36	+10	1100-3610R
06-4099	40	-5	1100-4099R
06-4097	40	-2.5	1100-4097R
06-4000	40	+0	1100-4000R
06-4025	40	+2.5	1100-4025R
06-4005	40	+5	1100-4005R
06-4075	40	+7.5	1100-4075R
06-4010	40	+10	1100-4010R
06-4499	44	-5	1100-4499R
06-4497	44	-2.5	1100-4497R
06-4400	44	+0	1100-4400R
06-4425	44	+2.5	1100-4425R
06-4405	44	+5	1100-4405R
06-4475	44	+7.5	N/A
06-4410	44	+10	N/A

V40 Taper Alumina Ceramic Heads

Catalog no.	Diameter (mm)	Offset (mm)	Trial catalog no.
6565-0-028	28	–2.7	6264-8-928R
6565-0-128	28	+0	6264-8-128R
6565-0-228	28	+4	6264-8-228R
6565-0-032	32	-4	6264-8-032R
6565-0-132	32	+0	6264-8-132R
6565-0-232	32	+4	6264-8-232R
6565-0-036	36	-5	6264-8-036R
6565-0-136	36	+0	6264-8-136R
6565-0-236	36	+5	6264-8-236R

Catalog information

Femoral Head compatibility

C-Taper Biolox delta Ceramic Heads

Catalog no.	Diameter (mm)	Offset (mm)	Trial catalog no.
18-28-3	28	-2.5	1100-2897R
18-2800	28	+0	1100-2800R
18-2825	28	+2.5	1100-2825R
18-2805	28	+5	1100-2805R
18-32-3	32	-2.5	1100-3297R
18-3200	32	+0	1100-3200R
18-3225	32	+2.5	1100-3225R
18-3205	32	+5	1100-3205R

C-Taper Alumina Ceramic Heads

Catalog no.	Diameter (mm)	Offset (mm)	Trial catalog no.
17-28-3E	28	–2.5	1100-2897R
17-2800E	28	+0	1100-2800R
17-2805E	28	+5	1100-2805R
17-32-3E	32	–2.5	1100-3297R
17-3200E	32	+0	1100-3200R
17-3205E	32	+5	1100-3205R
17-36-5E	36	–5	1100-3699R
17-3600E	36	+0	1100-3600R
17-3605E	36	+5	1100-3605R

The V40 Adapter Sleeve (catalog #17-0000E) enables the C-Taper Alumina Heads to be used with the existing Stryker V40 taper.

V40 Taper Biolox delta Ceramic Anatomic Heads

Catalog no.	Diameter (mm)	Offset (mm)	Trial catalog no.
6570-0-036	36	-5	6264-8-036R
6570-0-436	36	-2.5	6264-8-436R
6570-0-136	36	+0	6264-8-136R
6570-0-536	36	+2.5	6264-8-536R
6570-0-236	36	+5	6264-8-236R
6570-0-736	36	+7.5	6264-8-736R

Note
Trial heads with an "R" suffix are made from radiopaque material, designed to allow for easy visibility on X-rays.

Universal Adapter Sleeves – Titanium

Catalog no.	Offset (mm)	Taper
19-0325T	-2.5	C-Taper
19-0000T	+0	C-Taper
19-0025T	+2.5	C-Taper
19-0005T	+5	C-Taper
6519-T-025	-2.5	V40
6519-T-100	+0	V40
6519-T-204	+4	V40

C-Taper Biolox delta Ceramic Anatomic Heads

Catalog no.	Diameter (mm)	Offset (mm)	Trial catalog no.
18-36-5	36	-5	1100-3699R
18-36-3	36	-2.5	1100-3697R
18-3600	36	+0	1100-3600R
18-3625	36	+2.5	1100-3625R
18-3605	36	+5	1100-3605R
18-3675	36	+7.5	1100-3675R

Universal Trial Heads

Catalog no.	Diameter (mm)	Offset (mm)	Trial catalog no.
1100-4497R	44	–2.5	C-Taper
1100-4425R	44	+2.5	C-Taper
6264-8-728R	28	-2.5	V40
6264-8-632R	32	-2.5	V40
6264-8-236R	36	+4.0	V40
6264-8-940R	40	-2.5	V40
6264-8-944R	44	-2.5	V40

Note
Trial heads with an "R" suffix are made from radiopaque material, designed to allow for easy visibility on X-rays.

Catalog information

Acetabular instruments

Offset options

Offset Reamer Handle	T6320
Metal Handle Offset Cup Impactor	510912
Cup Impactor Alignment Guide	T7718
Reamer/Cup Impactor Case	T7396

Other instrumentation

Catalog no.	Description
1118-6000	22mm - 32mm Head Disassembly Instrument
6059-9-505	36mm - 44mm Anatomic Head Disassembly Instrument
1118-1005	Ceramic Head Sleeve Disassembly Adapter
1101-2100	T-Handle
2102-0003	Hudson to Stryker Adapter
2102-0410	Acetabular Reamer Handle
2112-0010	Polyethylene Removal Tool
2101-0200	CuttingEdge Shell Positioner/Impactor Handle
2101-0210	CuttingEdge Abduction/Anteversion Alignment Guide
2111-0000B	Insert Positioner / Impactor Handle
2111-0022	22mm Silicone Insert Positioner Tip
2111-0026	26mm Silicone Insert Positioner Tip
2111-0028	28mm Silicone Insert Positioner Tip
2111-0032	32mm Silicone Insert Positioner Tip
2111-0036	36mm Silicone Insert Positioner Tip
2111-0040	40mm Silicone Insert Positioner Tip
2111-0044	44mm Silicone Insert Positioner Tip
2111-3022	22mm Plastic Insert Impactor Tip
2111-3026	26mm Plastic Insert Impactor Tip
2111-3028	28mm Plastic Insert Impactor Tip
2111-3032	32mm Plastic Insert Impactor Tip
2111-3036	36mm Plastic Insert Impactor Tip
2111-3040	40mm Plastic Insert Impactor Tip
2111-3044	44mm Plastic Insert Impactor Tip

Refer to Trident Acetabular surgical protocol for further information on Trident instrumentation.

CuttingEdge Acetabular Reamers

Catalog no.	Diameter (mm)	Catalog no.	Diameter (mm)
2102-0438	38mm	2102-0460	60mm
2102-0439	39mm	2102-0461	61mm
2102-0440	40mm	2102-0462	62mm
2102-0441	41mm	2102-0463	63mm
2102-0442	42mm	2102-0464	64mm
2102-0443	43mm	2102-0465	65mm
2102-0444	44mm	2102-0466	66mm
2102-0445	45mm	2102-0467	67mm
2102-0446	46mm	2102-0468	68mm
2102-0447	47mm	2102-0469	69mm
2102-0448	48mm	2102-0470	70mm
2102-0449	49mm	2102-0471	71mm
2102-0450	50mm	2102-0472	72mm
2102-0451	51mm	2102-0473	73mm
2102-0452	52mm	2102-0474	74mm
2102-0453	53mm	2102-0475	75mm
2102-0454	54mm	2102-0476	76mm
2102-0455	55mm	2102-0477	77mm
2102-0456	56mm	2102-0478	78mm
2102-0457	57mm	2102-0479	79mm
2102-0458	58mm	2102-0480	80mm
2102-0459	59mm		

Screw instrumentation

Catalog no.	Diameter (mm)
2107-3325	Drill Bit 3.3mm x 25mm
2107-2240	Drill Bit 3.3mm x 40mm
2107-2260	Drill Bit 3.3mm x 60mm
2107-4025	Drill Bit 4.0mm x 25mm
2107-4040	Drill Bit 4.0mm x 40mm
2107-4060	Drill Bit 4.0mm x 60mm
2107-2200	Flexible Drill Shaft
2107-0006	Screw Holding Forceps
2107-0014	Wire Depth Gauge

Catalog information

Acetabular instruments

Torx Screw Driver

Catalog no.	Diameter (mm)
2107-1000	Ratchet Handle
2107-1014	Straight Driver Shaft
2107-1015	Universal Driver Shaft
2107-1016	Flexible Driver Shaft
2107-1017	Straight Driver Shaft - Short

Hex Screw Driver

Catalog no.	Diameter (mm)
6090-4-330*	Ratchet Handle
6090-4-325*	3.5mm Hex Driver Universal Joint Shaft

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RAAS-SP-1_Rev-4_29933

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