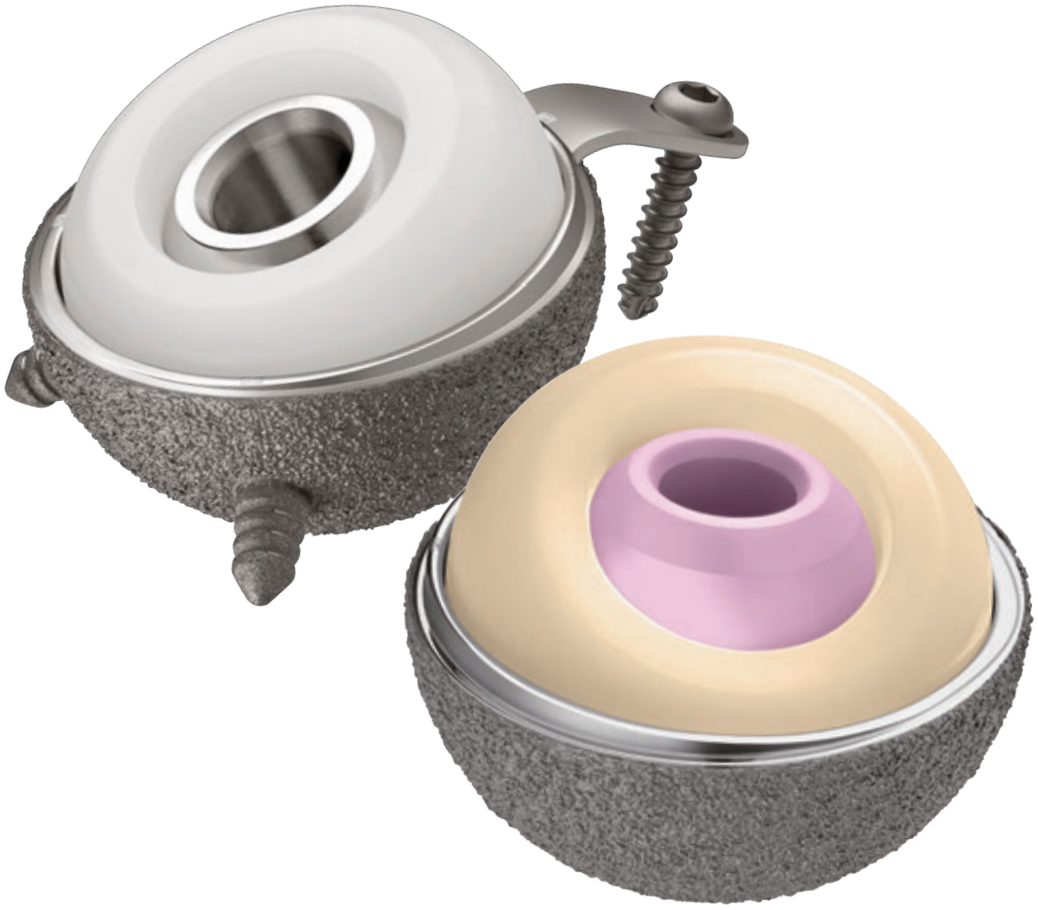
UNITED ORTHOPEDIC®

UDM™

Mobile Bearing Hip System



Surgical Technique Guide

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Device Description

UDM –

The United Dual Mobility (UDM) Acetabular System is applied in a primary or revision total hip arthroplasty for acetabulum reconstruction. Based on two classic concepts, Sir Charnley's low friction principle and the anti-dislocation theory by using larger femoral head diameter, the CoCrMo alloy-based UDM Acetabular System provides greater range of motion and superior jumping distance to reduce the risk of component impingement and joint dislocation. The advanced TPS PLUS/ TPS PLUS with HA surface coating for cementless cup options contribute sufficient initial stability and enhance long-term osteointegration, while the classic discharge grooves design for cemented cup option promotes even cement distribution and implant stability. Various implant types are provided for fulfilling clinical demand:

UDM cups:
- Press-fit UDM Cup
- Peg-fixed UDM Cup
- Cemented UDM Cup

Mobile liner materials:
- XPE (Highly Crosslinked Polyethylene)
- E-XPE (Vitamin E Highly Crosslinked Polyethylene)

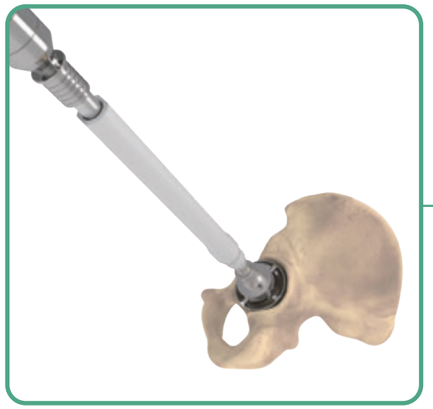
INDICATIONS

1. Painful, disabling joint disease of the hip resulting from: degenerative arthritis, rheumatoid arthritis, post-traumatic arthritis or late stage avascular necrosis.
2. Revision of previous unsuccessful femoral head replacement, cup arthroplasty or other procedure.
3. Clinical management problems where arthrodesis or alternative reconstructive techniques are less likely to achieve satisfactory results.
4. Correction of functional deformity.
5. Treatment of nonunion femoral neck and trochanteric fracture of the proximal femur with head involvement that is unmanageable using other techniques.

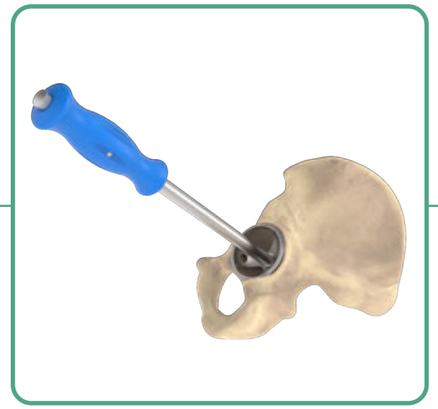
The device is intended for cementless use except the cemented dual mobility cup is for cemented use only.

Please refer to the package inserts for important product information, including, but not limited to contraindications, warnings, precautions, and adverse effects.

Surgical Overview

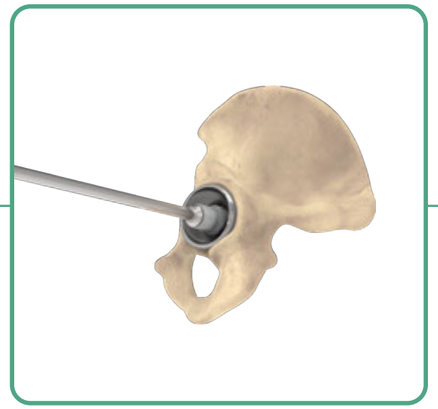


A. Acetabular Reaming

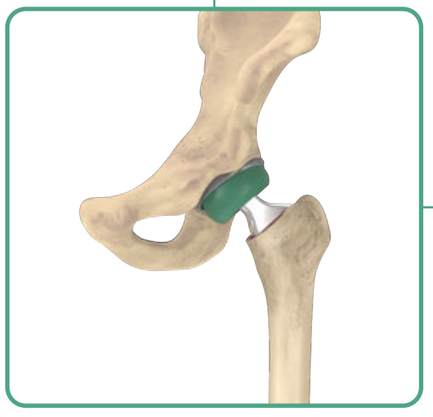


B. Cup Trialing

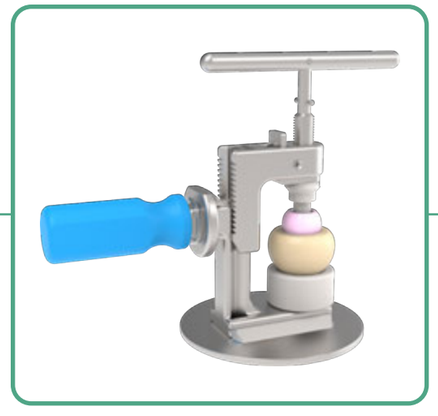
C. Cup Positioning



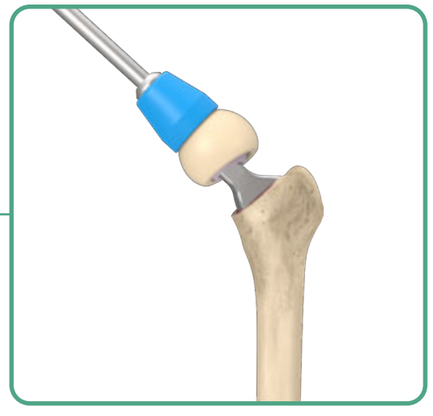
D. Cup Impaction



E. Trial Reduction



F. Mobile Liner & Femoral Head Assembling



G. Final Reduction

Product Overview

Dual Mobility Acetabular Cup

Press-fit UDM Cup

Peg-fixed UDM Cup

Cemented UDM Cup

Mobile Liner

XPE Mobile Liner

E-XPE Mobile Liner

Femoral Head

CoCrMo Alloy
Femoral Head

BIOLOX® *delta*
Femoral Head

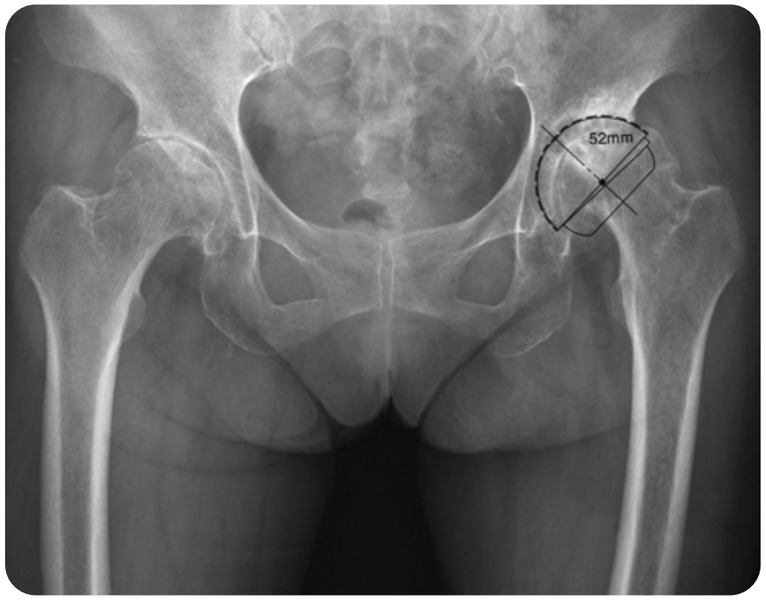
Note: The compatibility of UDM cup and mobile liner are restricted in certain area, please contact with your United representative or local distributor for further information.

Preoperative Planning and Templating

The reconstruction of hip anatomy and restoration of joint biomechanics are the main objectives in restoring joint function through total hip replacement. A comprehensive analysis of the affected hip is needed. Anteroposterior (A/P) and lateral roentgenographic images are crucial to help determining hip rotational center and correcting component size. An A/P roentgenographic image of the pelvis may be necessary to verify preoperative decisions by comparing with the contralateral side.

Templating the outline of the component which best fits the acetabulum is recommended, thus an ideal implant position and a correct sizing can be achieved. The template of acetabular cup should be positioned towards the medial aspect of the acetabulum as possible, simultaneously, the appropriate center of rotation is important to consider in restoring optimal hip biomechanics.

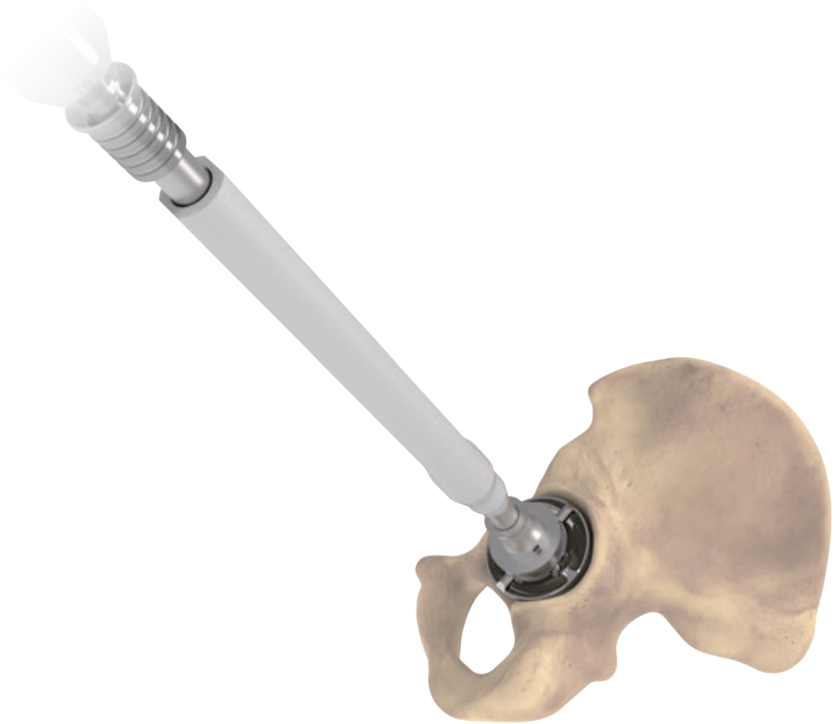
Please note the UDM system is a concentric design. Care should be taken to avoid overlap between the component and the teardrop, any uncovering of the component, and inclination over 45°. However, the final determination should be made depending on the actual condition and patient's needs during surgery.



A. Acetabular Reaming

Appropriate reaming of the acetabulum is important for the cup to be fully seated within. It is important to understand that the labeled size on the Dual Mobility instrumentation is a nominal dimension. All articular cartilage, osteophytes, and any soft tissues should be removed throughout the reaming process.

Hold the **Cup Reamer Handle** at an abduction of 40°- 45° and an anteversion of 15°-20°. Utilize the smallest **Cup Reamer** to begin acetabular reaming, then gradually proceed with enlarged reamers in 1-2 mm increments until the planned size is achieved.



Instruments

Cup Reamer Handle

Cup Reamer

A. Acetabular Reaming

Press-fit and Peg-fixed UDM Cups

The implant with TPS PLUS coating has a 0.35 mm coating interference on each side. For example, a 58 mm cup with TPS PLUS coating represents a 58.7 mm at the outer diameter.

The under reaming of the cavity by 1 mm is recommended. Sometimes a line-to-line reaming would be required to treat an acetabulum with high bone density.

A 58 mm reamer reams for a 58 mm cup

A 58 mm cup trial is 58 mm in diameter

A 58 mm cup is 58.7 mm in diameter with coating

Cemented UDM Cup

A 2 mm cement mantle thickness is recommended for centralizing the component and providing sufficient holding strength.

A 58 mm reamer reams for a 58 mm cup

A 58 mm cup trial is 58 mm in diameter

A 54 mm cement cup is recommended for 2 mm cement mantle thickness

B. Cup Trialing

A trial of the same size as the reamer allows assessment of the fit and position of the cup. Key characteristics of the cup trial are as follows:

Ⓐ Notch shows the position of the flange for the Peg-fixed UDM Cup.

Ⓑ Two holes indicate the position of the pegs for Peg-fixed UDM Cup.

Ⓒ The extended 3 mm rim represents as the implant for directional confirmation.

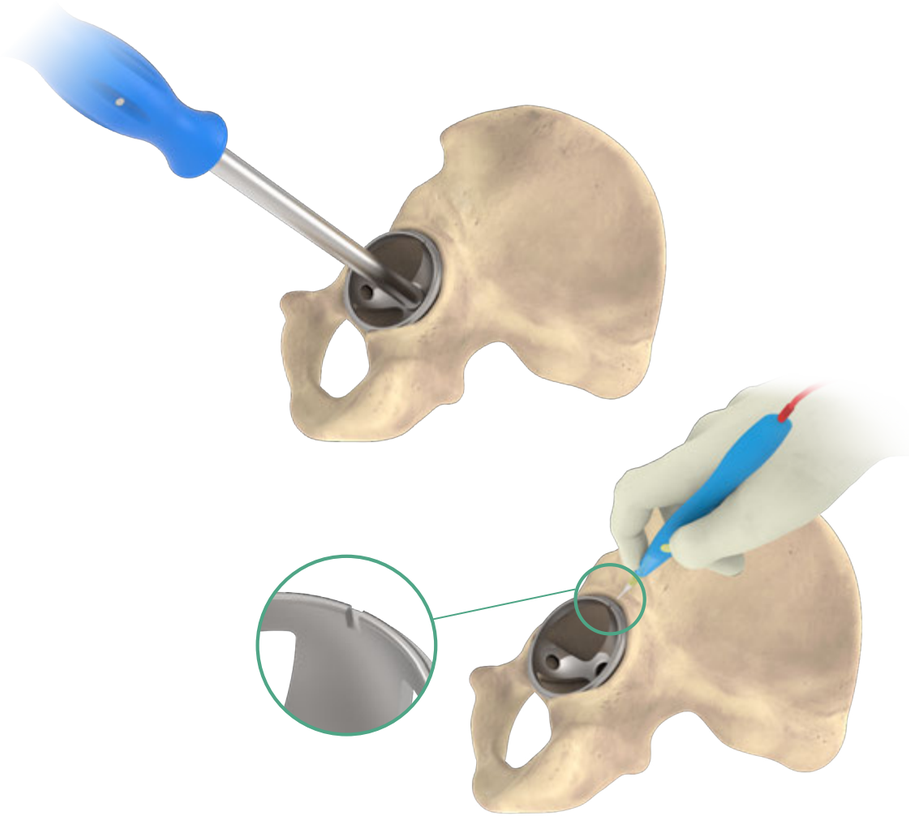
Note:
If a Cemented UDM Cup is desired, the cup diameter will be 4 mm lesser than the **DM Cup Trial** because of the preserved 2 mm circumferential cement mantle thickness. For example, if a 58 mm **DM Cup Trial** is applied for confirmation, the 54 mm Cemented UDM Cup implant should be selected for final implantation.

Instruments

DM Cup Trial

B. Cup Trialing

Connect the **Cup Trial Handle** and the **DM Cup Trial** with the selected size. Place the trial into the reamed acetabulum to check the congruency between the bone and trial and also to confirm stability. If a Peg-fixed UDM Cup is utilized, the notch on the rim of **DM Cup Trial** indicates the location where the flange will be placed. Mark the direction of the flange as needed.

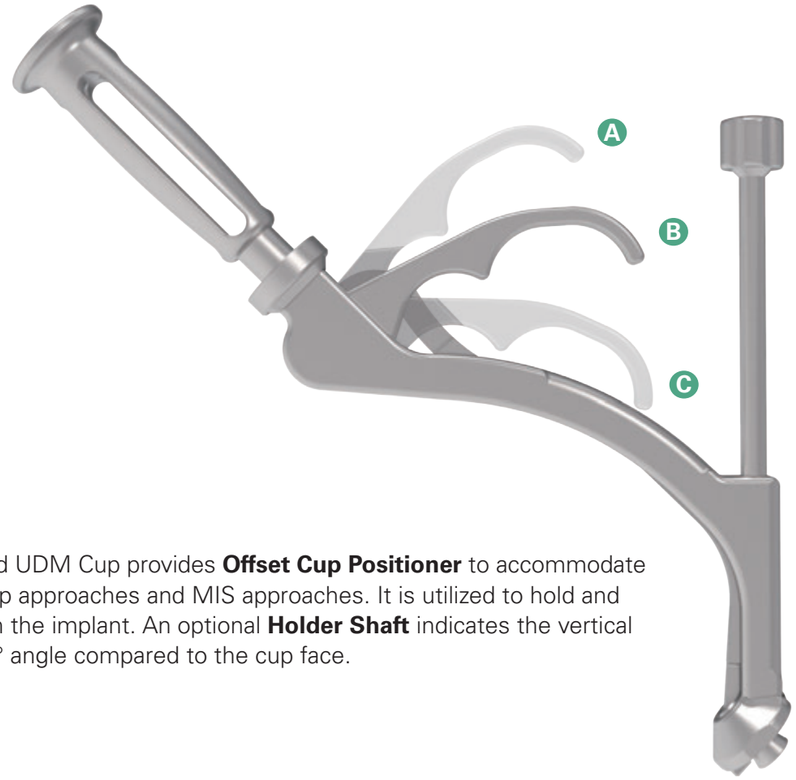


Instruments

Cup Trial Handle

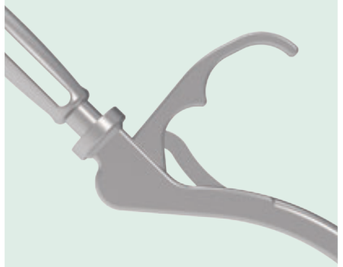
DM Cup Trial

C. Cup Positioning



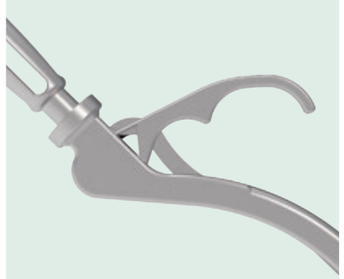
The United UDM Cup provides **Offset Cup Positioner** to accommodate anterior hip approaches and MIS approaches. It is utilized to hold and to position the implant. An optional **Holder Shaft** indicates the vertical axis or 45° angle compared to the cup face.

A



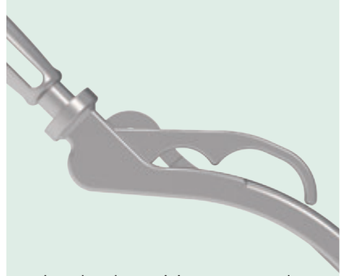
Unlocked position for placing the size-specific cup holder adaptor

B



Neutral position

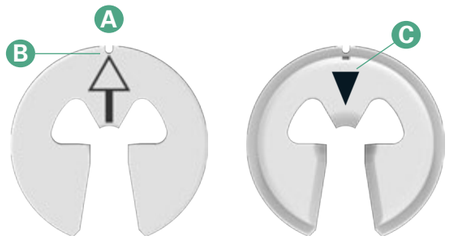
C



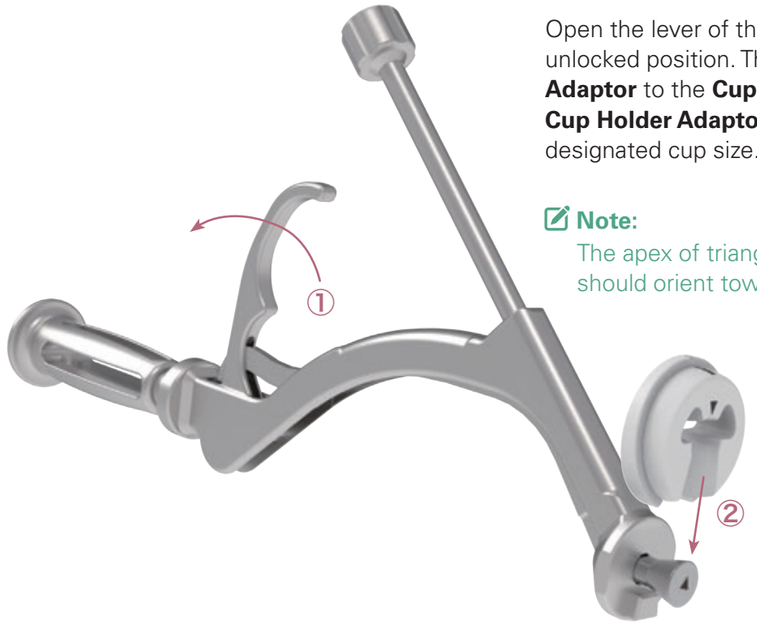
Locked position securely grips the cup trial or final implant for insertion

C. Cup Positioning

The size-specific **Cup Holder Adaptors** allow the cup trial or final implant to be held securely. Its characteristics are as follows:



- **A** Notch designed to be aligned to the laser mark on the rim of the UDM Cup.
- **B** The apex of the triangular size helps align with the laser mark on the rim of the cup.
- **C** The mark on the adaptor indicates the correct orientation for the adaptor.



Open the lever of the **Cup Positioner** to the unlocked position. Then, assemble the **Cup Holder Adaptor** to the **Cup Positioner**. The size of the **Cup Holder Adaptor** should be consistent with the designated cup size.

Note:
The apex of triangular marks on both instruments should orient towards each other.

Instruments

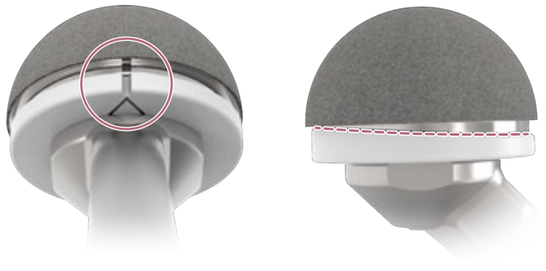
Straight Cup Positioner

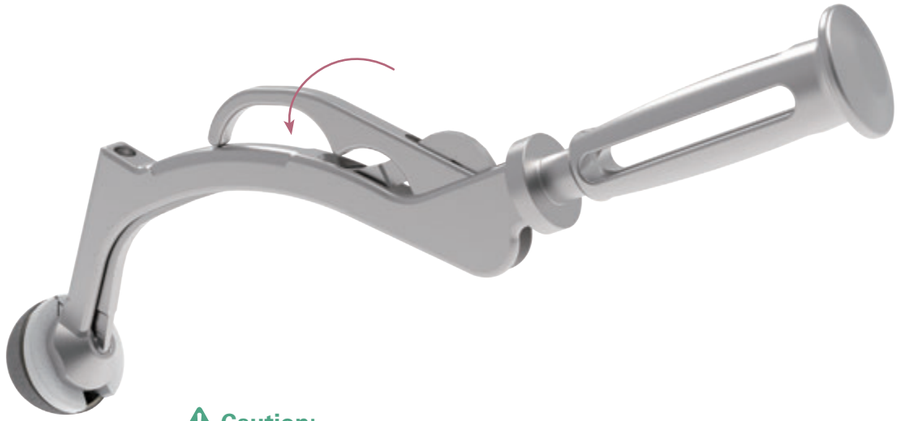
Offset Cup Positioner

Cup Holder Adaptor

C. Cup Positioning

Mount the selected cup to the **Cup Holder Adaptor**. To confirm correct orientation of the cup, ensure the notch, laser marks, and the apex of the triangular size indicator on the **Cup Holder Adaptor** align with the laser mark on the rim of the cup. Lock the **Cup Positioner** so that the cup can be tightly held.





⚠ Caution:
Do not expand the **Cup Holder Adaptor** using the **Cup Positioner** without the cup implant properly seated and fully engaged. Expanding the adaptor without the cup implant in place may cause over-expansion beyond its designed range, resulting in instrument damage or fracture.

Instruments

Straight Cup Positioner

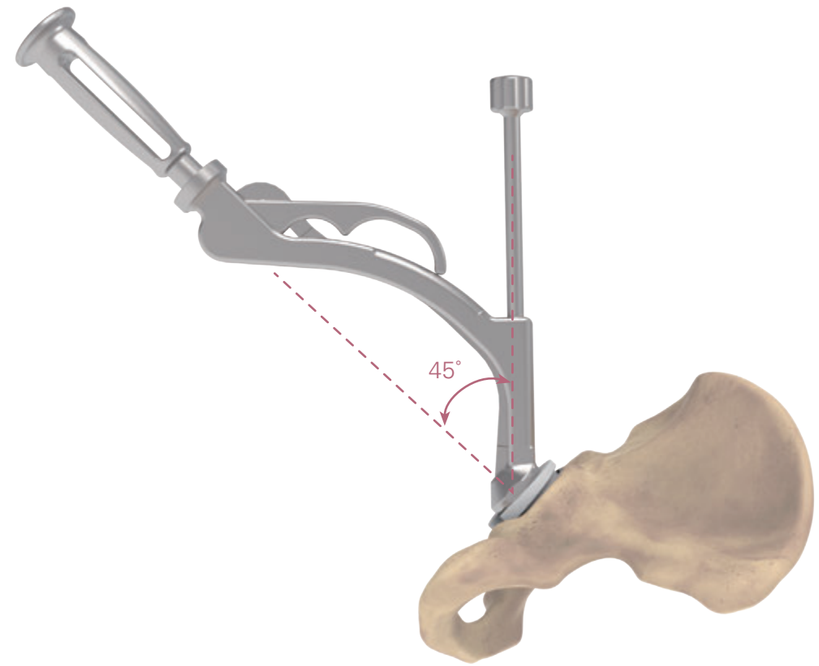
Offset Cup Positioner

Cup Holder Adaptor

C. Cup Positioning

Before inserting the cup, assemble the **Holder Shaft** onto the **Offset Cup Positioner** for alignment reference and handling. A 45° inclination is recommended for general cup orientation.

The **Alignment Tower** and **Alignment Rod** can be set on the positioner as a cup orientation reference. For the direct anterior approach, use the **Alignment Tower**, **Supine**.



Instruments

Cup Holder Adaptor

Offset Cup Positioner

Holder Shaft

Straight Cup Positioner

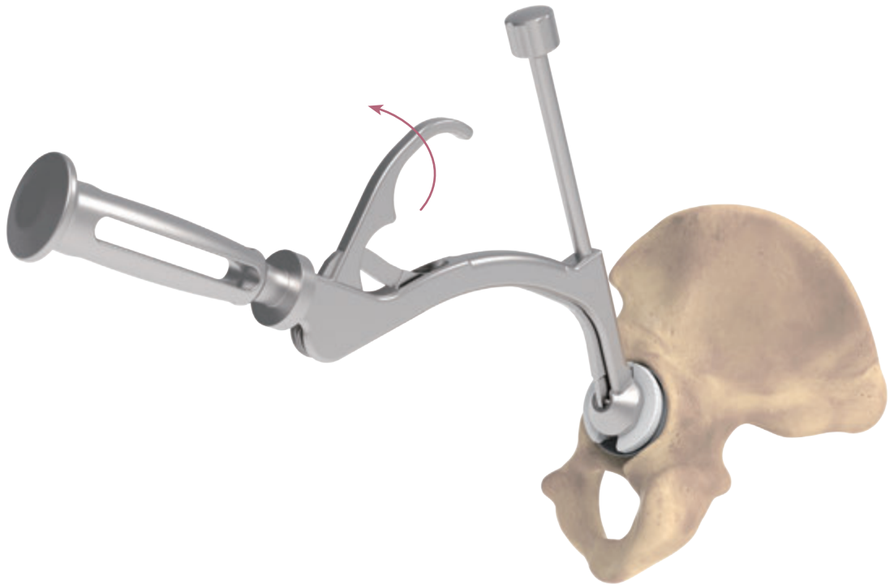
Alignment Tower, Lateral

Alignment Tower, Supine

Alignment Rod

C. Cup Positioning

Insert the selected cup, position as outlined above, and proceed with impaction. Once the cup is in the optimal position and fully seated, unlock the **Cup Positioner** to release the cup. Remove the **Cup Positioner** and **Cup Holder Adaptor** from the cup implant.



Note:

Impingement of iliopsoas muscle at the anteromedial region must be avoided. In general, the most extruded rim/flange should be located towards the posterosuperior region to provide greater jumping distance for the mobile liner without causing serious soft tissue impingement.

Instruments

Cup Holder Adaptor

Offset Cup Positioner

Holder Shaft

Straight Cup Positioner

Alignment Tower, Lateral

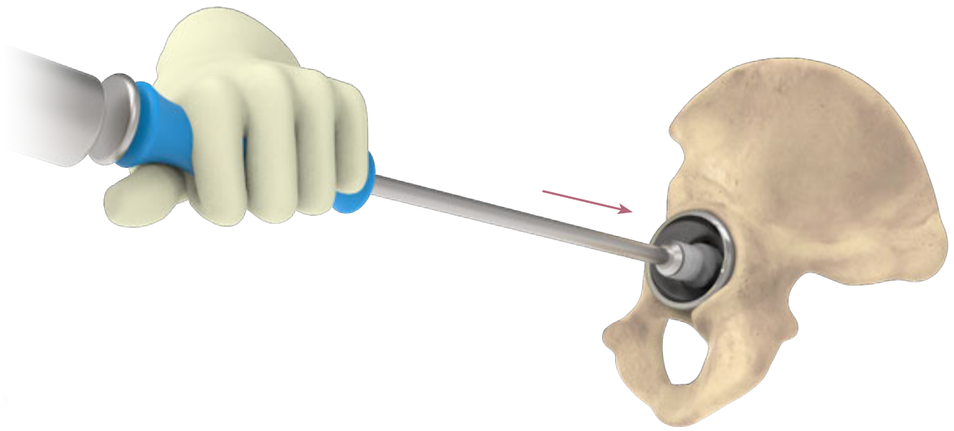
Alignment Tower, Supine

Alignment Rod

D. Cup Impaction

Connect the **Universal Handle** to the **Final Cup Impactor**. Use the blunt end to impact the cup until fully seated.

If a Peg-fixed or Cemented UDM Cup is applied, please refer to the Appendix for guidance.



Instruments

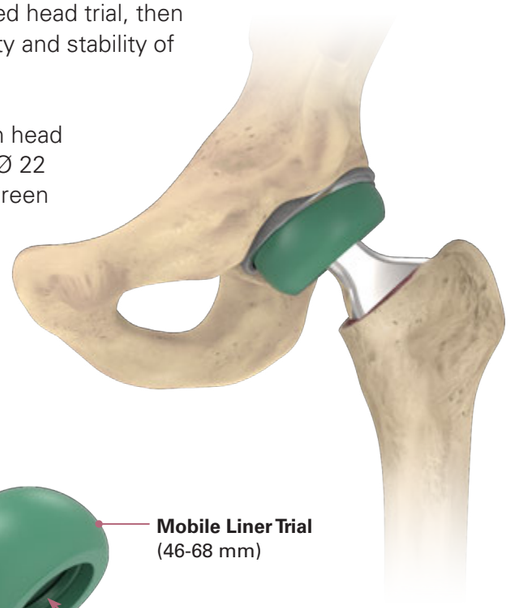
Universal Handle

Final Cup Impactor

E. Trial Reduction

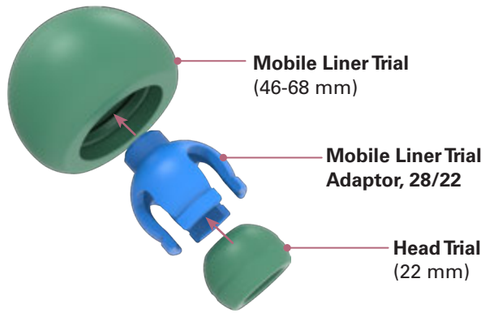
Place the **Mobile Liner Trial** with the selected head trial, then perform a trial reduction to check the mobility and stability of the structure.

The Green **Mobile Liner Trials** are used with head trials of Ø 28 mm. To carry out trialing with Ø 22 mm heads, it is necessary to combine the Green **Mobile Liner Trial** and **Mobile Liner Trial Adaptor, 28/22**.



Normal:

Option:

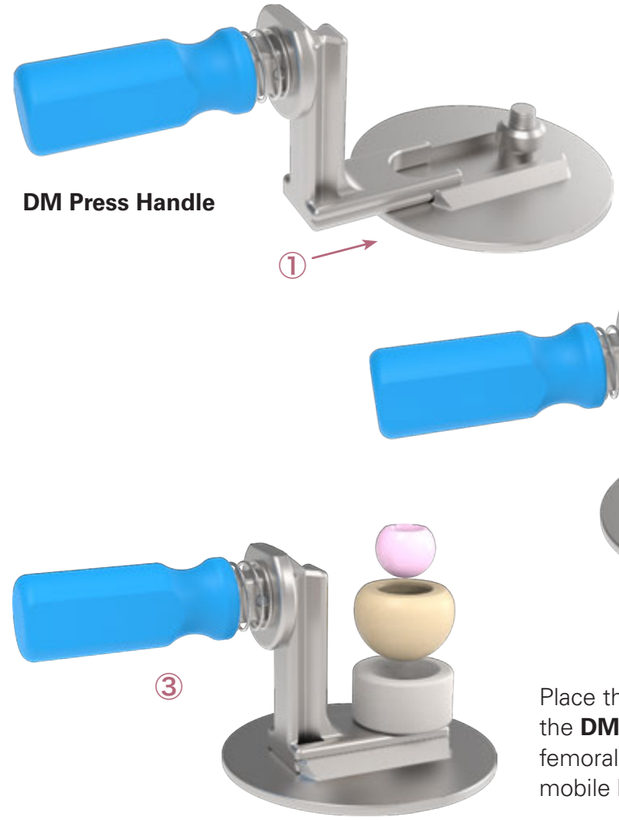


Instruments

Mobile Liner Trial 42-44 | Mobile Liner Trial 46-68 | Mobile Liner Trial Adaptor, 28/22

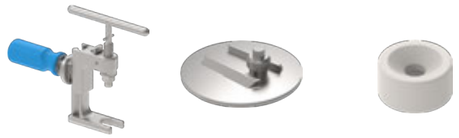
F. Mobile Liner & Femoral Head Assembling

Assemble the **DM Press**, **DM Liner Holder**, and **Press Baseplate** as following steps. Engage the **DM Press Handle** to the **Press Baseplate** through the slot, then screw the **DM Liner Holder** onto the **Press Baseplate** to fix the **DM Liner Holder**.



Place the selected mobile liner onto the **DM Liner Holder**, then place the femoral head over the entrance of the mobile liner.

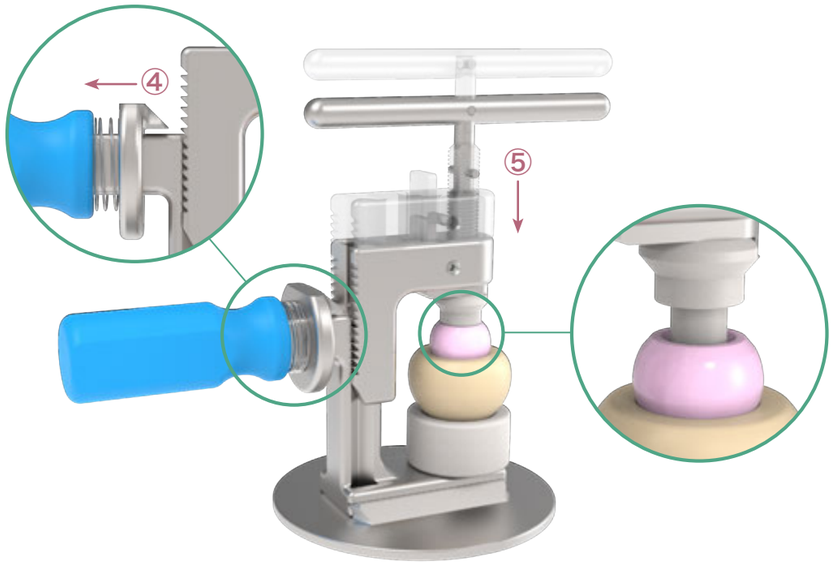
Instruments

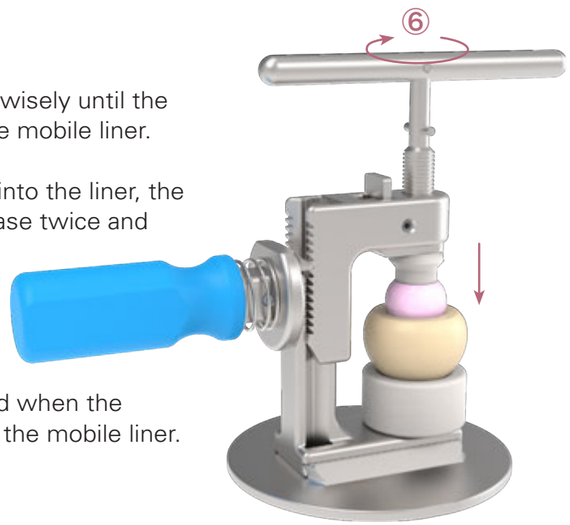


DM Press | Press Baseplate | DM Liner Holder

F. Mobile Liner & Femoral Head Assembling

Pull the collar on the **DM Press Handle** to seat the body onto the femoral head.





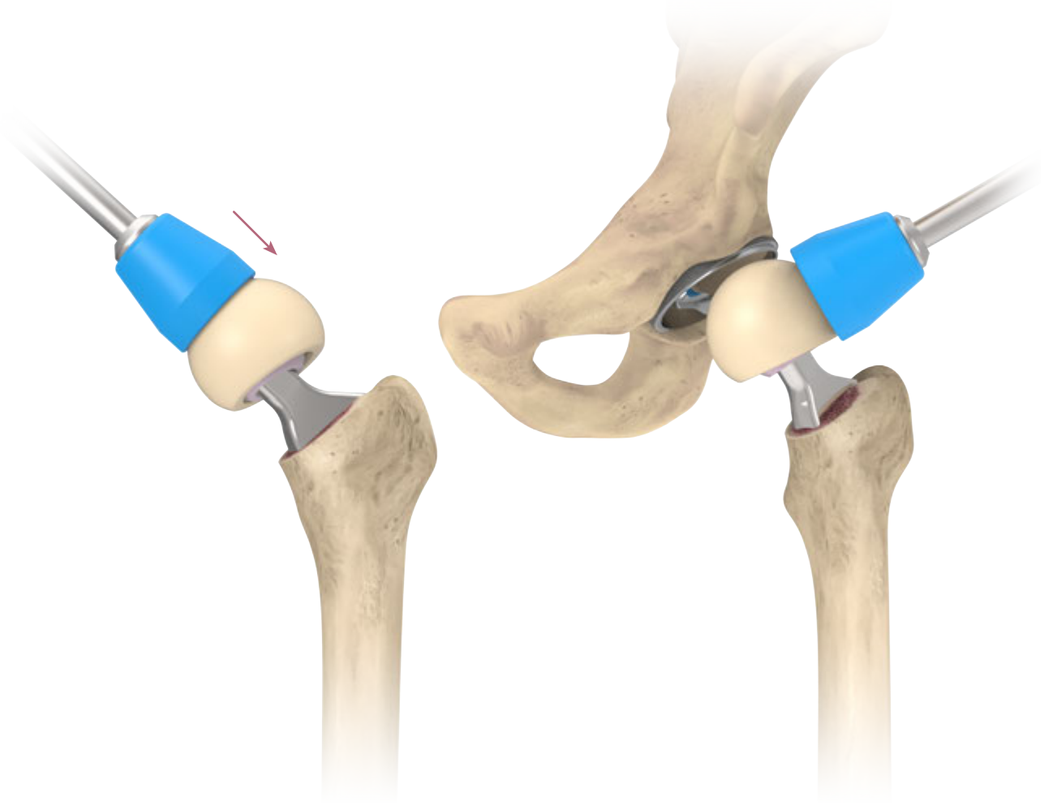
Rotate the press handle clockwisely until the femoral head is forced into the mobile liner.

During assembly of the head into the liner, the user will feel resistance increase twice and hear two noises as the head passes the retentive bore and then air escapes from the bearing.

Correct assembly is confirmed when the femoral head rotates freely in the mobile liner.

G. Final Reduction

Engage the final liner/head structure to the trunnion of the femoral stem. Connect the **Universal Handle** to the **Liner Head Impactor** and impact the liner/head structure against the trunnion. Clean the articulating surface of the cup and finish the reduction. Check the range of motion and joint stability again before closing the incision.



Instruments

Universal Handle

Liner Head Impactor

Appendix

Peg-fixed UDM Cup

A. Flange Bending

The flange on the Peg-fixed UDM Cup is pre-bent. The angle and curvature of the flange can be adjusted by using the **Flange Bender** to further bend the flange for improving anatomical fit.

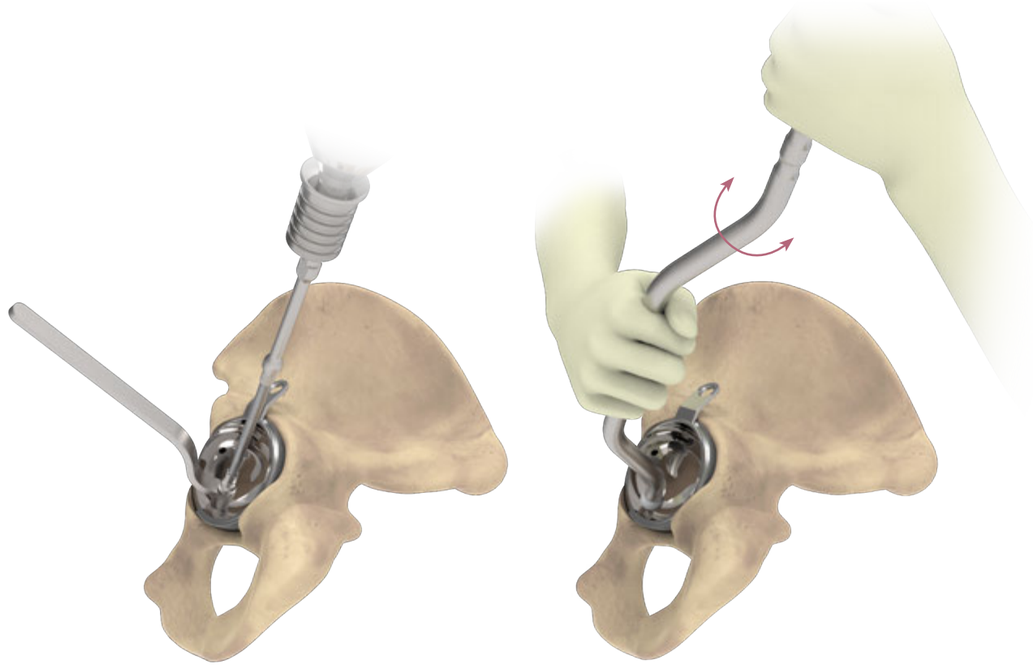
Instruments

Flange Bender

Appendix

B. Peg Space Preparation

Use the **Flexible Peg Drill** to create the pilot holes through the **Peg Drill Guide**. Then, use **Peg Dilator** to create the space for pegs.



Instruments

Flexible Peg Drill

Peg Drill Guide

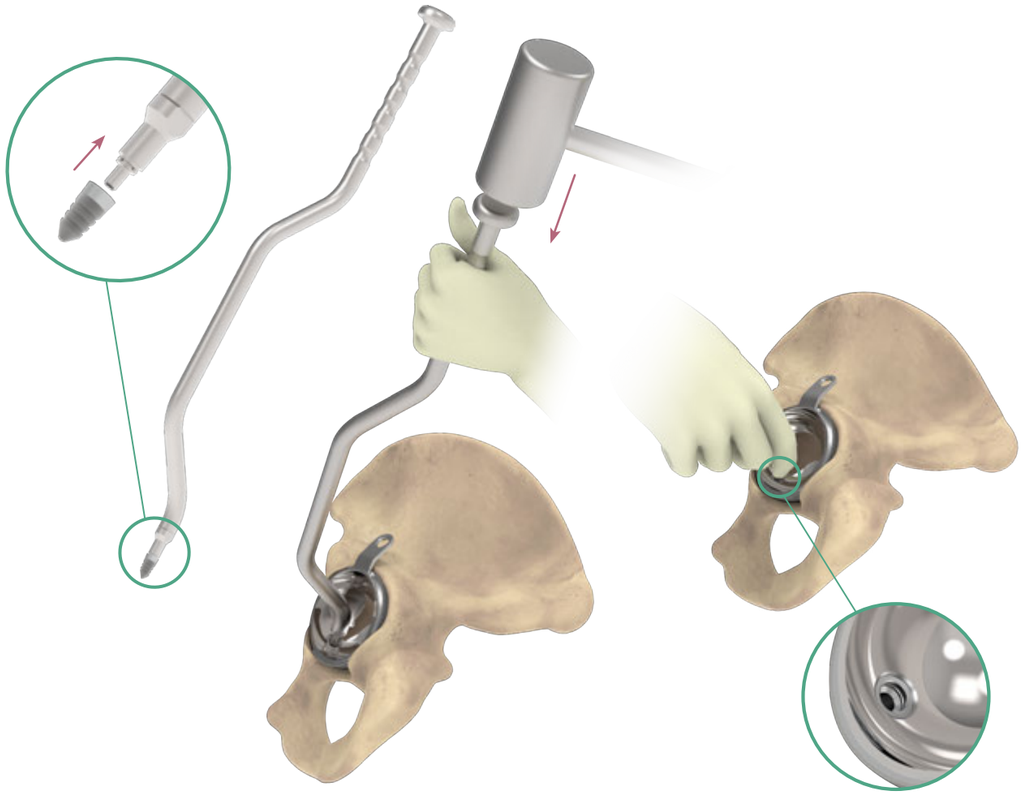
Offset Peg Dilator

Curved Peg Dilator

Appendix

C. Peg Insertion

Attach the peg onto the **Peg Inserter**, insert into the peg holes on the cup, then moderately impact the peg into the peg hole. Fully impact the peg ensuring the peg is fully seated. Confirm there is no eminence of peg from the articulating surface of the cup. Then, continue with the second peg preparation.



Note:
Check that the pegs do not standout from the inner surface of the cup.

Instruments

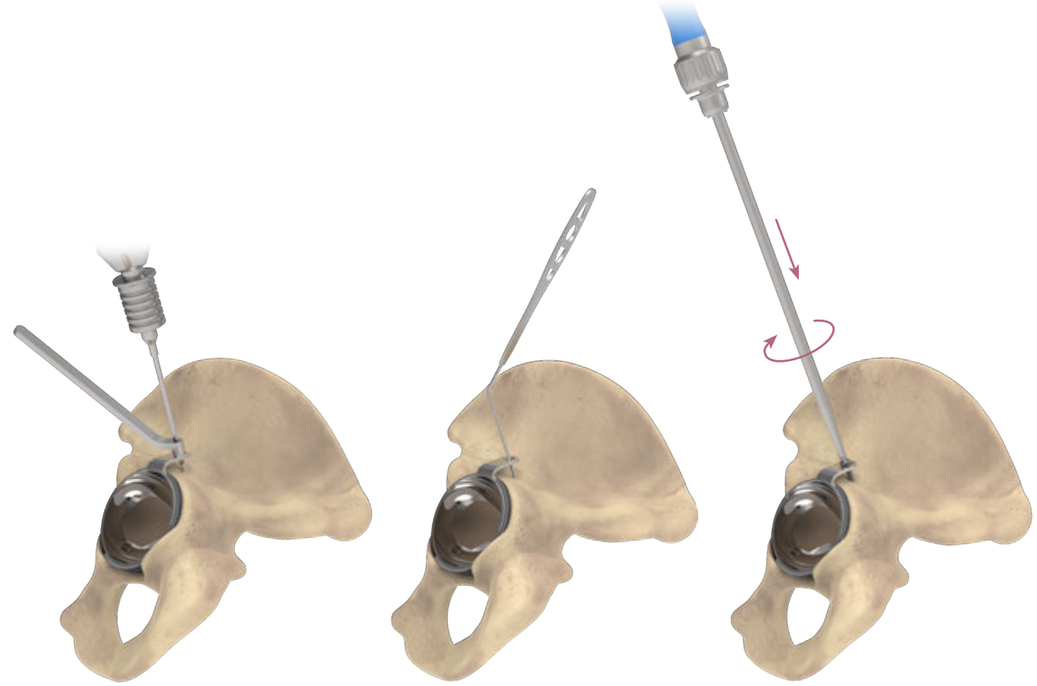
Curved Peg Inserter

Offset Peg Inserter

Appendix

D. Screw Fixation

Place the **DM Flange Drill Guide** into the screw hole on the flange, and drill through the guide using the **Drill**, **3.2 mm**. The recommended drilling depth is to the inner edge of the second cortex. Measure the required length of screw using the **Depth Gauge**, then insert the selected CoCrMo Cortical Screw by using the **Screwdriver** with **Ratchet Handle**. Tightly secure the screw to accomplish the fixation of Peg-fixed UDM Cup. The pegs and cup must be re-impacted after the screw is tightened.



Instruments

DM Flange Drill Guide

Drill, 3.2 mm

Depth Gauge

Straight Screwdriver

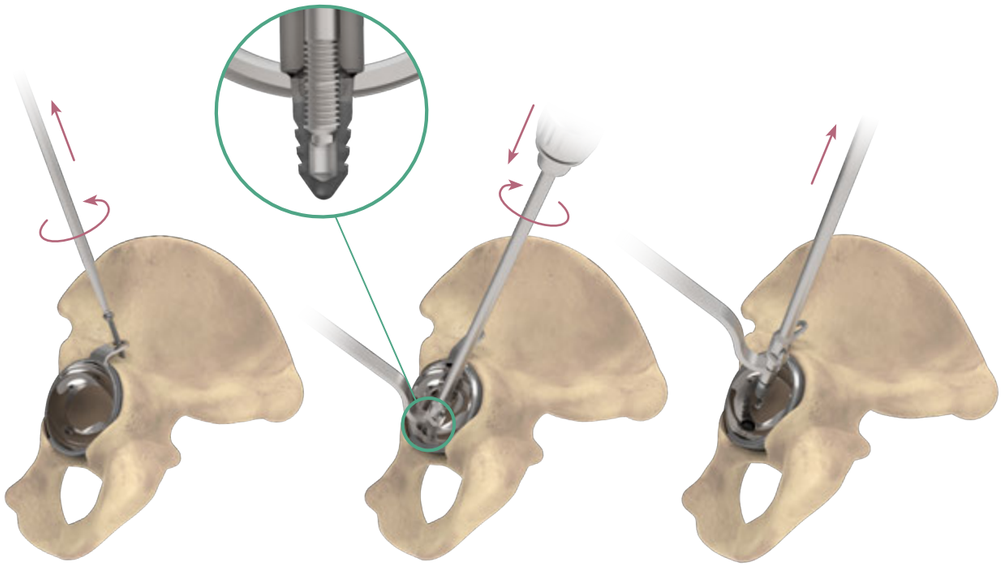
Ratchet Handle

Appendix

E. Peg Removal

Extract the CoCrMo Cortical Screw by using the **Screwdriver** with **Ratchet Handle**. Screw the **Peg Remover** into the thread inside the peg through the **Peg Remover Guide**, then the **Peg Remover** will pull the peg out.

Repeat for the second peg.



Instruments

Straight Screwdriver

Ratchet Handle

Peg Remover Guide

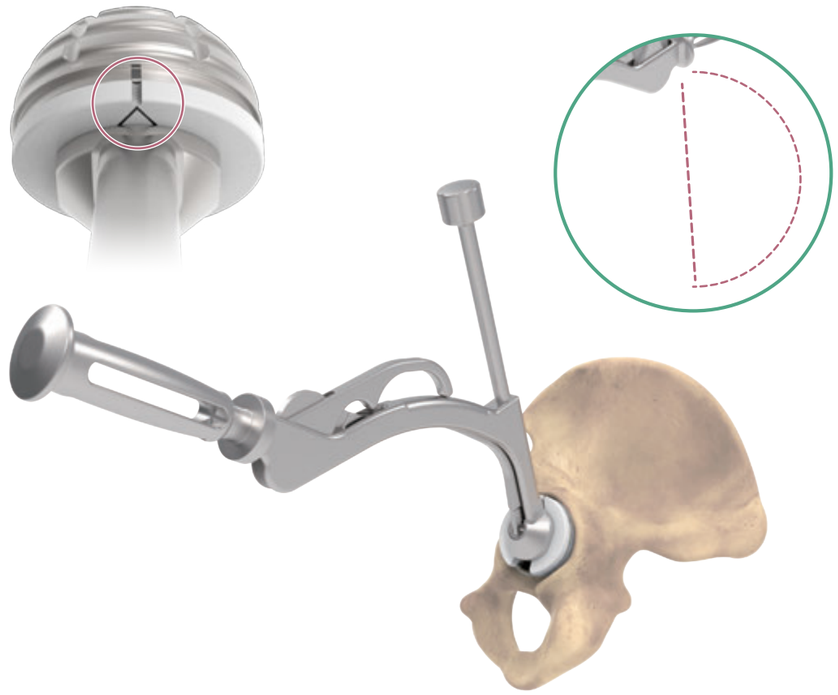
Peg Remover

Appendix

Cemented UDM Cup

Prepare cement to the desired level of viscosity. Put the cement into the reamed acetabulum and onto the backside of the Cemented UDM Cup. Place the cup into acetabulum and remove the redundant cement. Note a 2 mm cement mantle is recommended for centralizing the component and providing sufficient holding strength.

The **Alignment Tower** and **Alignment Rod** can be set on the positioner as a cup orientation reference. For the direct anterior approach, use the **Alignment Tower**, **Supine**. Hold the **Cup Positioner** in position until the cement is fully set. Disengage the **Cup Positioner** and the **Cup Holder Adaptor.**



Instruments

Straight Cup Positioner

Offset Cup Positioner

Cup Holder Adaptor

Alignment Tower, Lateral

Alignment Tower, Supine

Alignment Rod

Special Order Items

Order Information

Press-fit UDM Cup

Made with CoCrMo Alloy and 600-Micron Titanium Plasma Spray (TPS) coating.
Made with CoCrMo Alloy and 600-Micron Titanium Plasma Spray (TPS) and 80-Micron HA coating.

TPS PLUS

TPS PLUS with HA

Catalog Number		Description
TPS PLUS	**TPS PLUS with HA**	
1307 - 1242	1307 - 1042	OD 42 mm
1307 - 1244	1307 - 1044	OD 44 mm
1307 - 1246	1307 - 1046	OD 46 mm
1307 - 1248	1307 - 1048	OD 48 mm
1307 - 1250	1307 - 1050	OD 50 mm
1307 - 1252	1307 - 1052	OD 52 mm
1307 - 1254	1307 - 1054	OD 54 mm
1307 - 1256	1307 - 1056	OD 56 mm
1307 - 1258	1307 - 1058	OD 58 mm
1307 - 1260	1307 - 1060	OD 60 mm
1307 - 1262	1307 - 1062	OD 62 mm
1307 - 1264	1307 - 1064	OD 64 mm
1307 - 1266	1307 - 1066	OD 66 mm
1307 - 1268	1307 - 1068	OD 68 mm

Peg-fixed UDM Cup

Made with CoCrMo Alloy and 600-Micron Titanium Plasma Spray (TPS) coating.
Made with CoCrMo Alloy and 600-Micron Titanium Plasma Spray (TPS) and 80-Micron HA coating.

TPS PLUS

TPS PLUS with HA

Catalog Number		Description
TPS PLUS	**TPS PLUS with HA**	
1307 - 5242	1307 - 5042	OD 42 mm
1307 - 5244	1307 - 5044	OD 44 mm
1307 - 5246	1307 - 5046	OD 46 mm
1307 - 5248	1307 - 5048	OD 48 mm
1307 - 5250	1307 - 5050	OD 50 mm
1307 - 5252	1307 - 5052	OD 52 mm
1307 - 5254	1307 - 5054	OD 54 mm
1307 - 5256	1307 - 5056	OD 56 mm
1307 - 5258	1307 - 5058	OD 58 mm
1307 - 5260	1307 - 5060	OD 60 mm
1307 - 5262	1307 - 5062	OD 62 mm
1307 - 5264	1307 - 5064	OD 64 mm
1307 - 5266	1307 - 5066	OD 66 mm
1307 - 5268	1307 - 5068	OD 68 mm

Special Order Items

Order Information

Cemented UDM Cup

Made with CoCrMo Alloy.

Catalog Number	Description
1307 - 3042	OD 42 mm
1307 - 3044	OD 44 mm
1307 - 3046	OD 46 mm
1307 - 3048	OD 48 mm
1307 - 3050	OD 50 mm
1307 - 3052	OD 52 mm
1307 - 3054	OD 54 mm
1307 - 3056	OD 56 mm
1307 - 3058	OD 58 mm
1307 - 3060	OD 60 mm
1307 - 3062	OD 62 mm
1307 - 3064	OD 64 mm

CoCrMo Cortical Screw

Made with CoCrMo Alloy.

Catalog Number	Description
5107 - 1025	Ø4.5 × 25 mm
5107 - 1030	Ø4.5 × 30 mm
5107 - 1035	Ø4.5 × 35 mm
5107 - 1040	Ø4.5 × 40 mm
5107 - 1045	Ø4.5 × 45 mm
5107 - 1050	Ø4.5 × 50 mm
5107 - 1055	Ø4.5 × 55 mm
5107 - 1060	Ø4.5 × 60 mm
5107 - 1065	Ø4.5 × 65 mm

Special Order Items

Order Information

Mobile Liner

Made with Highly Cross-Linked Polyethylene (HXLPE).
Made with Vitamin E Highly Cross-Linked Polyethylene (Vitamin E blended HXLPE).

Catalog Number		Description
XPE	E-XPE	
1207 - 1442	1207 - 3442	OD 42 mm, ID 22 mm
1207 - 1444	1207 - 3444	OD 44 mm, ID 22 mm
1207 - 1446	1207 - 3446	OD 46 mm, ID 22 mm
1207 - 1448	1207 - 3448	OD 48 mm, ID 22 mm
1207 - 1450	1207 - 3450	OD 50 mm, ID 22 mm
1207 - 1452	1207 - 3452	OD 52 mm, ID 22 mm
1207 - 1454	1207 - 3454	OD 54 mm, ID 22 mm
1207 - 1456	1207 - 3456	OD 56 mm, ID 22 mm
1207 - 1458	1207 - 3458	OD 58 mm, ID 22 mm
1207 - 1460	1207 - 3460	OD 60 mm, ID 22 mm
1207 - 1462	1207 - 3462	OD 62 mm, ID 22 mm
1207 - 1464	1207 - 3464	OD 64~68 mm, ID 22 mm
1207 - 1646	1207 - 3646	OD 46 mm, ID 28 mm
1207 - 1648	1207 - 3648	OD 48 mm, ID 28 mm
1207 - 1650	1207 - 3650	OD 50 mm, ID 28 mm
1207 - 1652	1207 - 3652	OD 52 mm, ID 28 mm
1207 - 1654	1207 - 3654	OD 54 mm, ID 28 mm
1207 - 1656	1207 - 3656	OD 56 mm, ID 28 mm
1207 - 1658	1207 - 3658	OD 58 mm, ID 28 mm
1207 - 1660	1207 - 3660	OD 60 mm, ID 28 mm
1207 - 1662	1207 - 3662	OD 62 mm, ID 28 mm
1207 - 1664	1207 - 3664	OD 64~68 mm, ID 28 mm

Special Order Items

Order Information

U2 Femoral Head

Made with CoCrMo Alloy.

Catalog Number	Description
1206 - 1122	* Ø22 mm, +0 mm
1206 - 1322	* Ø22 mm, +3 mm
1206 - 1522	* Ø22 mm, +6 mm
1206 - 1722	* Ø22 mm, +9 mm
1206 - 1028	Ø28 mm, -3 mm
1206 - 1128	Ø28 mm, +0 mm
1206 - 1228	Ø28 mm, +2.5 mm
1206 - 1428	Ø28 mm, +5 mm
1206 - 1628	Ø28 mm, +7.5 mm
1206 - 1828	Ø28 mm, +10 mm

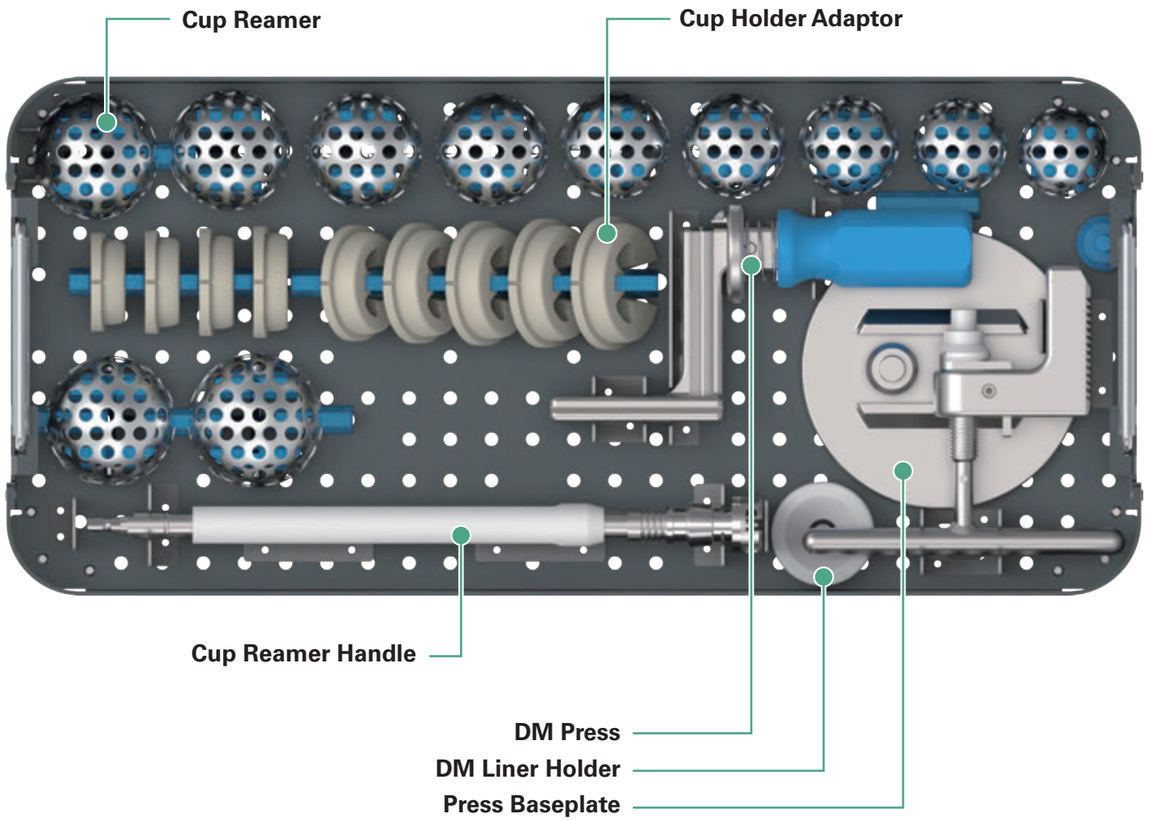
BIOLOX® delta Femoral Head

Catalog Number	Description
1203 - 5022	* Ø22 mm, S +1 mm
1203 - 5222	* Ø22 mm, M +3 mm
1203 - 5422	* Ø22 mm, L +5 mm
1203 - 5028	Ø28 mm, S -2.5 mm
1203 - 5228	Ø28 mm, M +1 mm
1203 - 5428	Ø28 mm, L +4 mm

* The actual spherical diameter of a 22 mm head is 22.2 mm.
* BIOLOX® is a registered trademark of the CeramTec Group, Germany.
* CoCrMo is an abbreviation for cobalt chromium molybdenum.

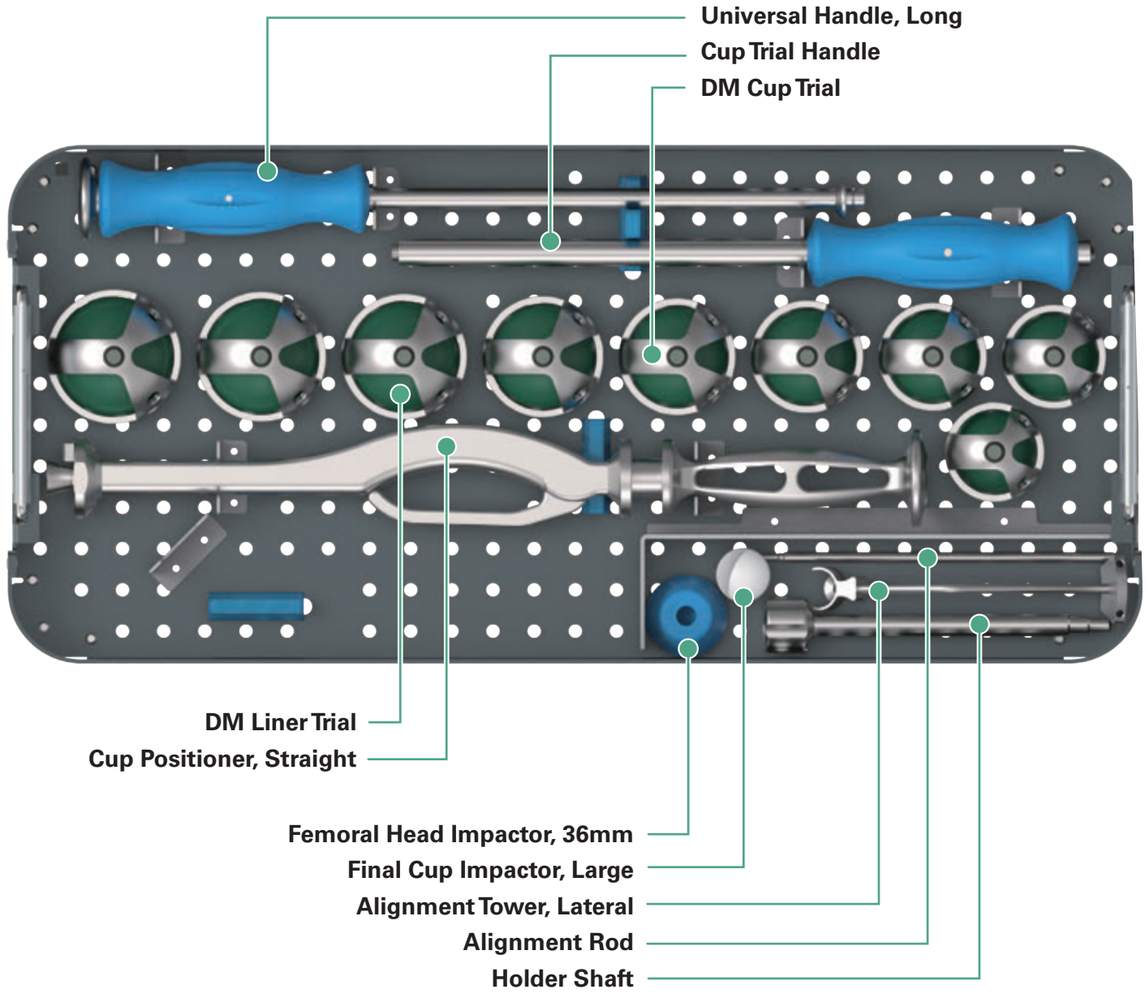
Instrument Tray Guide

UDM Cup Reamer Tray



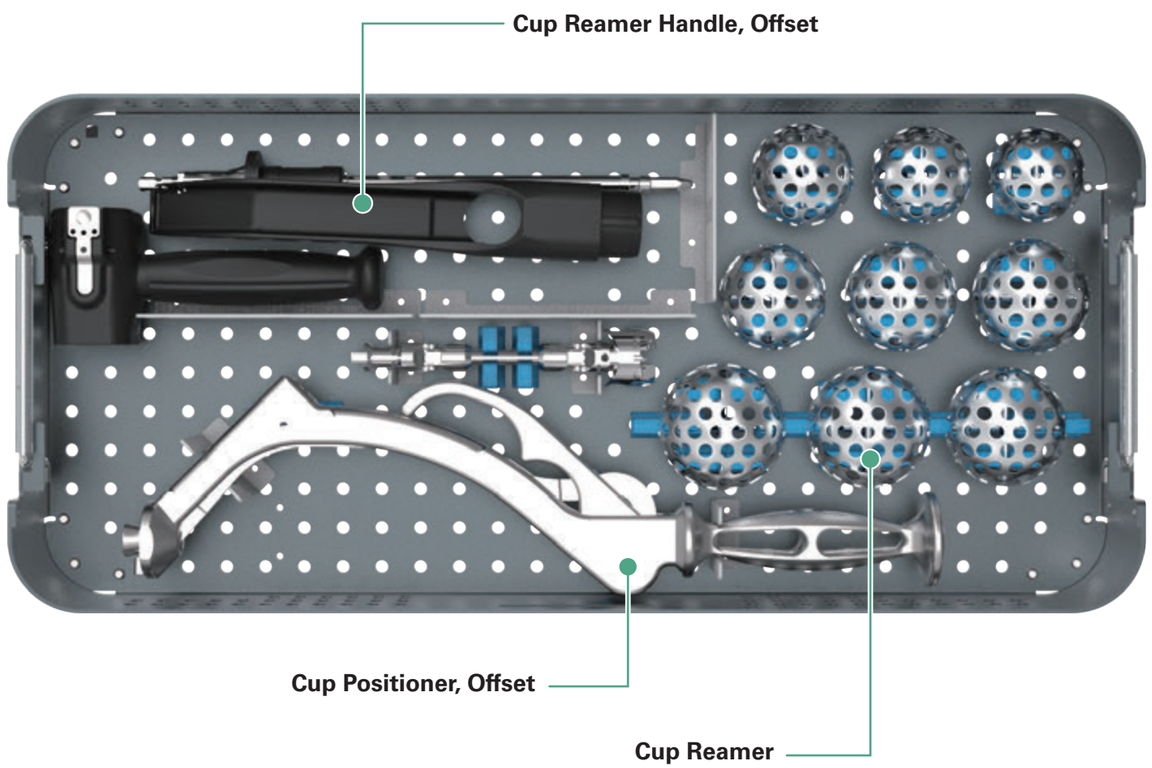
Instrument Tray Guide

UDM Cup Trial Tray



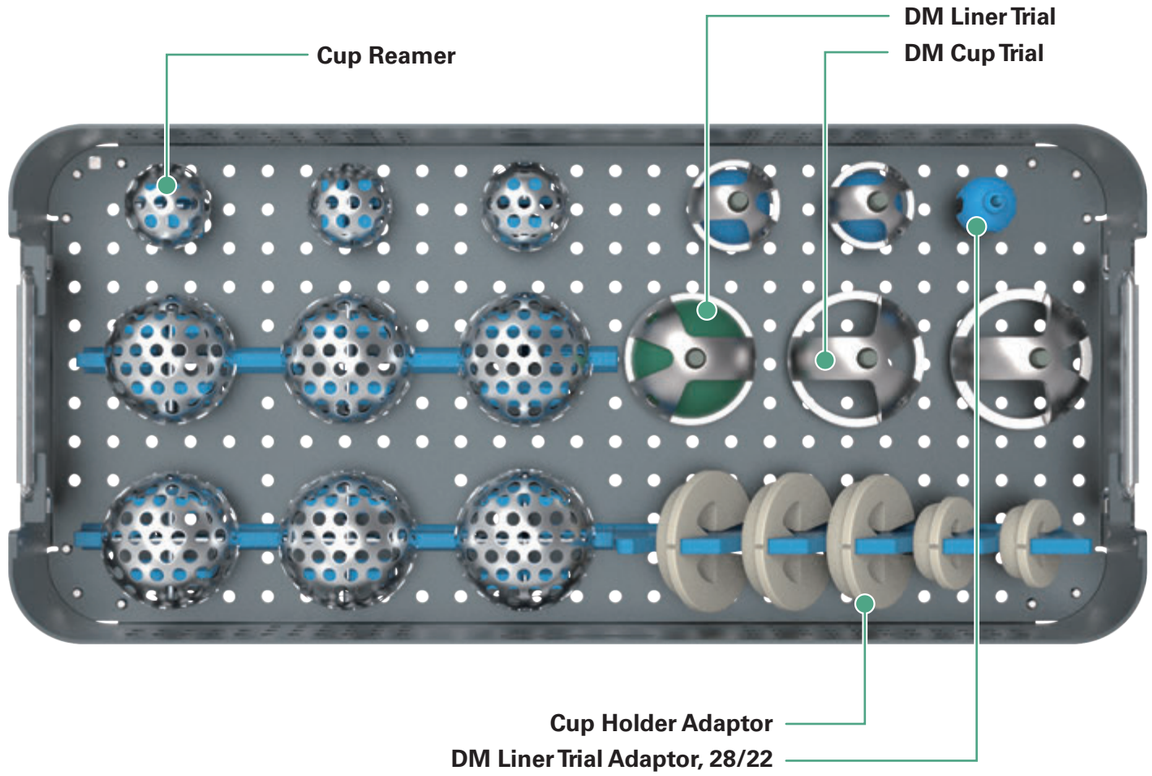
Instrument Tray Guide

UDM Cup Reamer (Odd) Tray



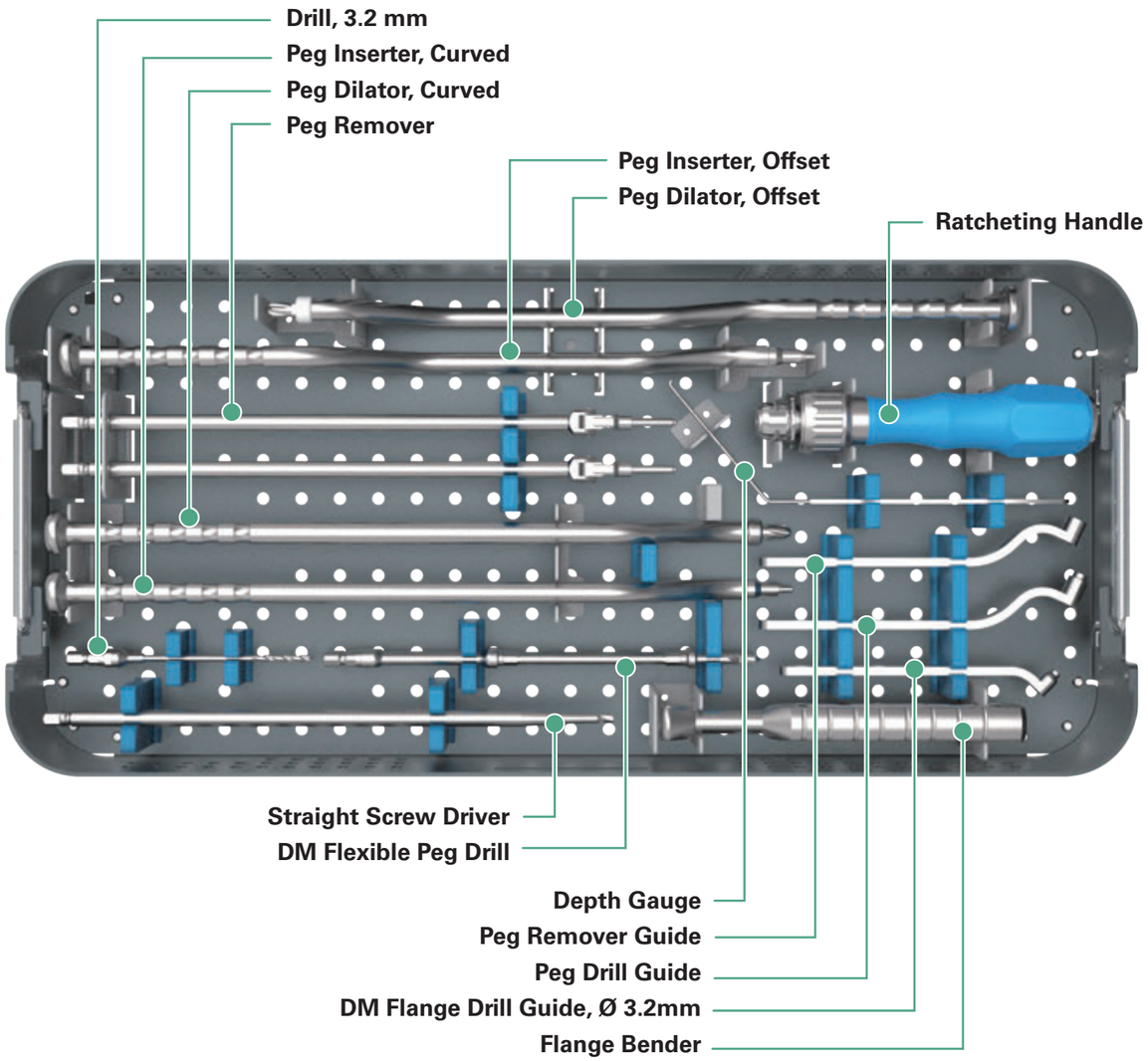
Instrument Tray Guide

UDM Extreme Sizes Tray



Instrument Tray Guide

UDM Peg-Fixed Tray



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