

PINNACLE™

Hip Solutions

Surgical Technique





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▲ The PINNACLE Hip Solutions primary surgical technique has been developed in consultation with an experienced surgeon design team and provides the surgeon with general guidance when implanting the PINNACLE Hip Solutions.

Templating and Pre-Operative Planning

The primary goal of total hip arthroplasty is the anatomic reconstruction of the hip joint, resulting in favourable prosthetic joint load and function. Mechanically, the goals are to create a stable articulation with an optimised range of motion, restore biomechanics for muscular efficiency and equalise limb lengths. Meeting these goals begins with a thorough analysis of the hip with comparison to the contralateral side in anteroposterior (A/P) and lateral projections.

The desired magnification for all imaging should be 20 percent, which corresponds to the templates provided for the PINNACLE Hip Solutions (Figure 1a). Magnification markers taped to the patient's leg at the level of the trochanter will assist in determining actual magnification.

For the A/P projection, place both lower limbs in 15° of internal rotation to position the head and neck parallel to the coronal plane. Centre the beam on the symphysis pubis and ensure the proximal femoral shaft is included in the radiograph.

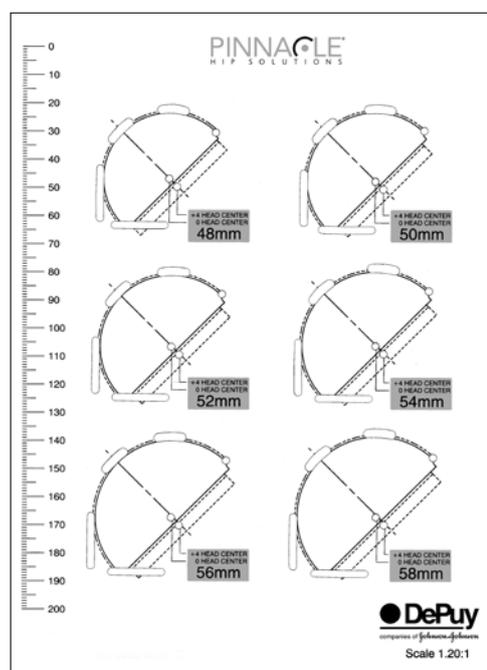


Figure 1a
PINNACLE Hip Solutions Template
(Cat No. 2217-00-002)

Indications and Contraindications

The radiographs should clearly demonstrate the acetabular configuration and the endosteal and periosteal contours of the femoral head, neck and proximal femur (Figure 1b).

Frequently, the affected hip is fixed in external rotation, which leads one to underestimate the amount of offset present. In this situation it may be helpful to template the normal hip. Take into consideration any anatomical anomaly, dysplasia, previous fracture or leg length discrepancy.

The PINNACLE Hip Solutions Templates are oriented at 45° and allow measurement of any hip that can be accommodated by the PINNACLE Hip Solutions Primary components (38 - 72 mm) as well as the PINNACLE Hip Solutions Revision components (54 - 80 mm).

Using the A/P radiograph, position the template 40° - 45° to the inter-teardrop or interischial line so that the inferomedial aspect of the cup abuts the teardrop and the superior-lateral cup is not excessively uncovered (Figure 1c).



Figure 1b
Acetabulum with good lateral coverage

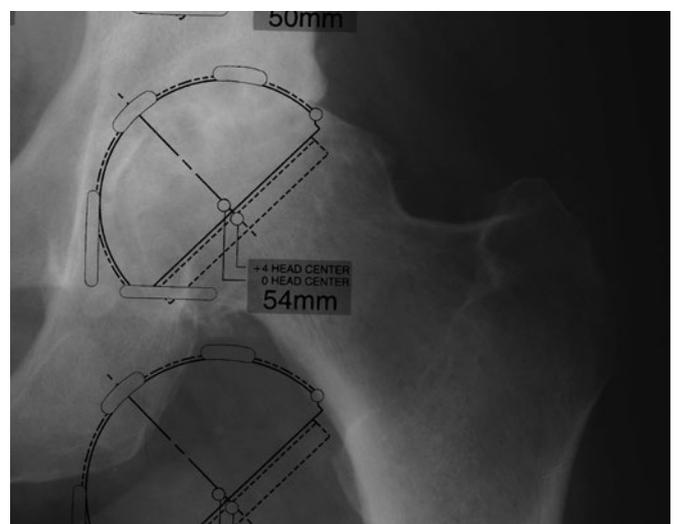


Figure 1c
Properly positioned acetabular template

Acetabular Reaming

The goal of acetabular reaming is to restore the centre of the original acetabulum. Initially employ a reamer 6 – 8 mm smaller than the anticipated acetabular component size to deepen the acetabulum to the level determined by pre-operative templating (Figures 2 and 3). Subsequent reaming should proceed in 1 – 2 mm increments. Centre the reamers in the acetabulum until the deepened socket becomes a true hemisphere. Use a curette to free all cysts of fibrous tissue. Pack any defects densely with cancellous bone.

It is important to understand that all PINNACLE Hip Solutions Instrumentation is marked with true dimensions. The reamers, trial cups and actual PINNACLE Hip Solutions Acetabular Cups are all 180° (Figure 4).

Under-reaming of the acetabulum is dependent on bone quality and the size of the acetabular component. A 1 mm under-ream is usually sufficient in smaller sockets, while a larger socket may require 1 – 2 mm under-ream. Likewise, soft bone will more readily accommodate a greater press-fit of the acetabular component than sclerotic bone.

In some patients, line-to-line reaming may be sufficient to achieve stability.

Where the acetabulum is reamed often determines where the cup will seat; it is important to ream where the final cup is to be positioned. As such a part of the reamer head will be visible on the superolateral rim when reaming (Figure 3).



Figure 2
Acetabular reaming

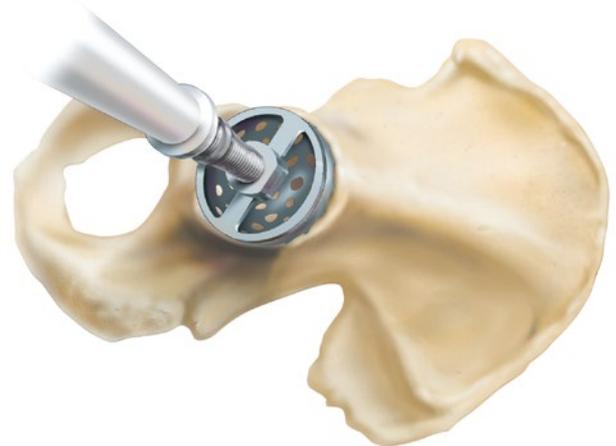


Figure 3
Acetabular reaming



Figure 4

Determining the Abduction Angle

The pre-operative A/P X-ray can help determine the ideal abduction angle (Figure 5) and be helpful in determining how much of the acetabular component should be left uncovered to provide the proper implant abduction angle (Figure 6).

The landmarks for acetabular component positioning are the medial wall of the acetabulum (the radiographic tear drop) and the lateral-superior rim of the acetabulum.

Determining Proper Anteversion

A method for determining proper anteversion is the use of the bony landmark or the transverse acetabular ligament. Other methods are subject to error through a change in patient position during the procedure. Defining the bony landmarks of the ischium and pubis during exposure greatly facilitates proper acetabular component position.

The plane created by the pubis and the ischium can serve as a guide for proper acetabular cup orientation. The cup should be slightly more anteverted than the pubis/ischial plane. This relationship should remain constant regardless of the depth of reaming (Figures 7 and 8).

Trial cups in 1 mm incremental sizes are available to assess cup fit and orientation. Contingent on the quality of the prepared bone, select the acetabular trial equal to or 1 mm larger in diameter than the final reamer size. The size of the trial cup is as marked on the trial cup (54 mm measures 54 mm). Peripheral rim ridges on the trial cup enhance the stability of the trial cup through trial reduction. Even liner trials fit both even-sized and smaller odd-sized trial cups. For example, a 54 mm polyethylene liner trial fits both the 54 mm and the 53 mm trial cups. Using cup and liner trials in conjunction with the femoral component trials aids in ensuring optimum position of the components.

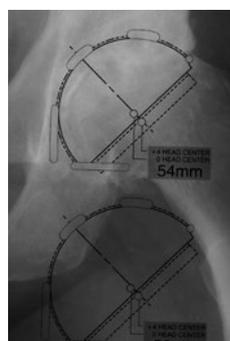


Figure 5
Pre-operative
determination of
abduction angle

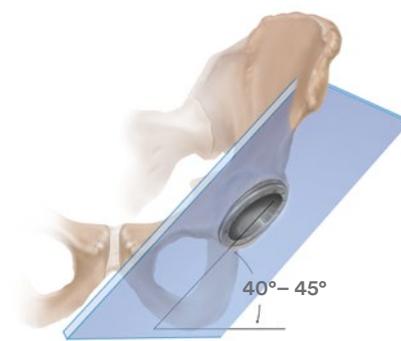


Figure 6
Cup abduction is typically 40°–45°

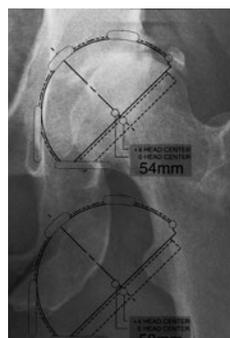


Figure 7
Pre-operative
assessment of coverage
of the acetabulum

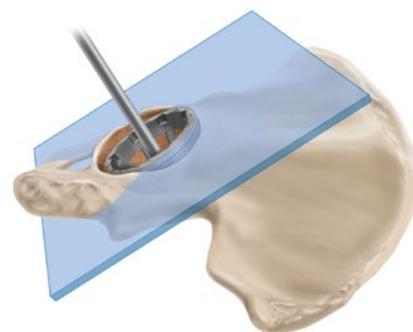


Figure 8
Cup anteversion is typically 15°–20°

Acetabular Cup Trialling and Positioning

(2217-50-041 PINNACLE Hip Solutions Hip Solutions Straight Cup Impactor/2217-50-044 PINNACLE Hip Solutions Alignment Guide)

An alignment guide is provided to assist with cup positioning. However, cup orientation in the patient depends on patient position. The alignment guide does not allow for variation in patient position with respect to the operating table. It should be noted that patient orientation can vary throughout the procedure.

The PINNACLE Hip Solutions alignment guide system may be used to indicate an acceptable level of acetabular inclination and version. Once assembled, the inserter handle should be raised until the vertical bar is perpendicular to the plane of the operating table with the patient in the lateral decubitus position and the version guide parallel to the floor (Figure 9).

The inserter handle should then be rotated until the horizontal bar is in line with the patient's longitudinal axis (Figure 10).

The extended arm of the version guide follows the long axis of the patient's body, corresponding to the affected hip, to achieve appropriate anteversion.

Confirm complete trial seating by sighting through the holes and cutouts in the acetabular trial cup. The screw hole pattern in the trial cup replicates the PINNACLE Hip Solutions Sector Cup Implant screw hole pattern to assist with screw targeting.

Do not use the trial cup to prepare screw holes. Prepare screw holes only through the final implant.

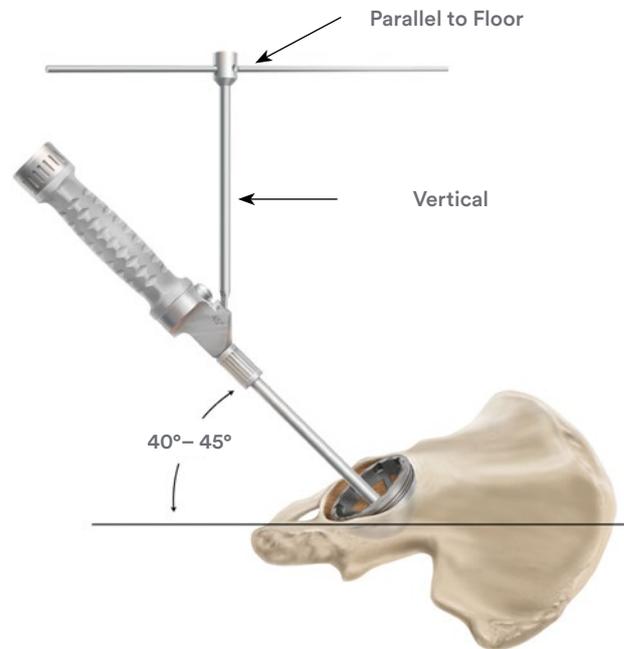


Figure 9

Hold the version guide parallel to the floor and select the abduction angle

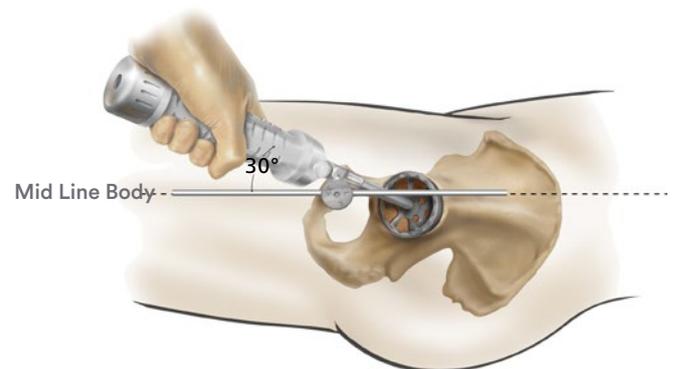


Figure 10

Position the extended arm of the alignment guide on the long body axis to determine anteversion (30° anteversion angle on the alignment guide relates to 20° of anteversion radiographically)

Implanting a PINNACLE Hip Solutions Primary Cup

The natural acetabulum is inclined at an average angle of 50° – 55°. Therefore when a replacement acetabular component is implanted at the correct position, some cup coating will be visible. To achieve the targeted cup position of 40° – 45° inclination and 15° – 20° of anteversion, we recommend that 4 – 6 mm of coating should be left exposed (Figure 11). However, the amount of coating to be left visible is dependant on the angle of the patient’s acetabulum and the size of the component used.

■ **Note:** Avoid increased anteversion and inclination as this may lead to edge loading.

Cup Insertion

Each PINNACLE Hip Solutions Acetabular Cup style is implanted using the same basic surgical technique; however, some cup styles have technique-specific tips that help facilitate implantation. This technique demonstrates the insertion of a PINNACLE Hip Solutions Hip Solutions 100 Series (no-hole) cup. Before implanting the final prosthesis, take the hip through a full range of motion and stability assessment with all trial components in position. Securely thread the permanent acetabular cup prosthesis onto the acetabular cup positioner (Figure 12). Use the PINNACLE Hip Solutions external alignment guide to assist in component orientation.

After confirming alignment, impact the prosthesis into position (Figure 12). Given the nature of a hemispherical acetabular component, rim contact will occur before dome seating occurs. This may require additional impaction to ensure seating. Confirm seating by sighting through the apical hole or, if present, screw holes. An apical hole eliminator may be inserted with a standard hex head screwdriver following cup impaction. Following final component seating, if adjustments to the cup orientation are necessary, thread the impactor handle back into the apical hole to adjust the cup position. Avoid adjusting the cup position by impacting the taper region and/or cup face with a punch, as this may cause damage to the taper.



Figure 11
Confirm acetabular cup alignment

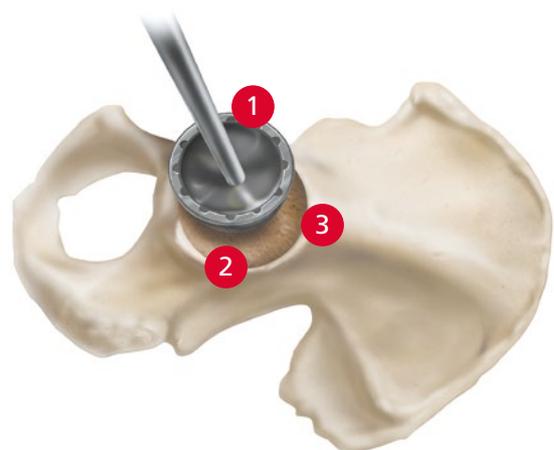


Figure 12
Securely thread the acetabular cup onto the acetabular cup positioner

- 1 Anterior notch**
Check for psoas tendon impingement with large diameter heads.
- 2 Posterior**
Check toe-off impingement.
- 3 Supero-lateral rim**
POROCOAT / reamer visible.

Polyethylene Trial Liners

Following positioning and seating of the acetabular cup trial, place the appropriate sized liner trial into the trial cup (Figure 13b). Secure the liner trial to the cup trial through the apical hole screw using a standard hex head screwdriver.

There are various liner configurations for all head sizes ranging from 28 – 44 mm (Figure 13a). With the femoral component trials in position, assess stability and range of motion. Couple the liner trial with the cup trial in the desired position. For liner alternatives other than neutral, there is an orientation reference etch mark on the liner trial and liner implant.



Figure 13a
Trial liners colour guide

Cup and Liner Trial Sizes



Cup Trial Size (mm)	Liner Trial Size (mm)
47, 48	48
49, 50	50
51, 52	52
53, 54	54
55, 56	56
57, 58	58
59, 60	60
61, 62	62
63, 64	64
65, 66	66
67, 68*	68
69, 70*	70
71, 72*	72

Figure 13b
*Appropriate spacer trials to be utilised for head diameters of 28, 32 and 36 mm

Alternative Bearing Trial Liners

When implanting an alternative bearing the trial reduction needs to be done with dedicated trial liners (Figure 14).

Please note that alternative bearing trials have a built in offset of +2 mm.

Neutral



28 mm alternative bearing trial liners are YELLOW



32 mm alternative bearing trial liners are PINK



36 mm alternative bearing trial liners are PURPLE



40 mm alternative bearing trial liners are AQUA



44 mm alternative bearing trial liners are RED

Figure 14

Alternative bearing trial liners colour guide

Polyethylene Liner Configurations

In the PINNACLE Hip Solutions range, a variety of polyethylene liner designs are available. (Figure 15).

Neutral Liner

The neutral liner provides 180° of head coverage. The wide face chamfer is optimised for range of motion. The femoral head's centre of rotation is concentric with the outer diameter of the cup.

+4 Neutral Liner

Like the neutral liner, the +4 mm neutral liner provides 180° of head coverage. This liner provides a 4 mm lateralisation of the femoral head's centre of rotation. This 4 mm offset both increases soft tissue tensioning and provides 4 mm of increased polyethylene thickness in the cup's dome region. This lateralised liner can be used as an alternative to a longer neck and may enable the surgeon to avoid using a skirted head. A +4 mm lateralised liner will result in about 3 mm of leg length and about 3 mm of offset if the cup is inserted at a 45° abduction angle.

+4 10° Face-Changing Liner

Like the other liners, the +4 10° liner provides 180° of head coverage and the wide chamfer is optimised for range of motion. This liner lateralises the femoral head 4 mm and a 10° face change alters inclination/version dependent upon placement of the liner.

Lipped Liner

This liner provides 180° of head coverage plus a 4 mm build-up for added stability. It also features a face-change of 15° that will alter inclination/ version dependent upon placement of the liner. The lip on this liner can provide additional stability.

Constrained Liners

Constrained liners are available for the PINNACLE Hip Solutions.

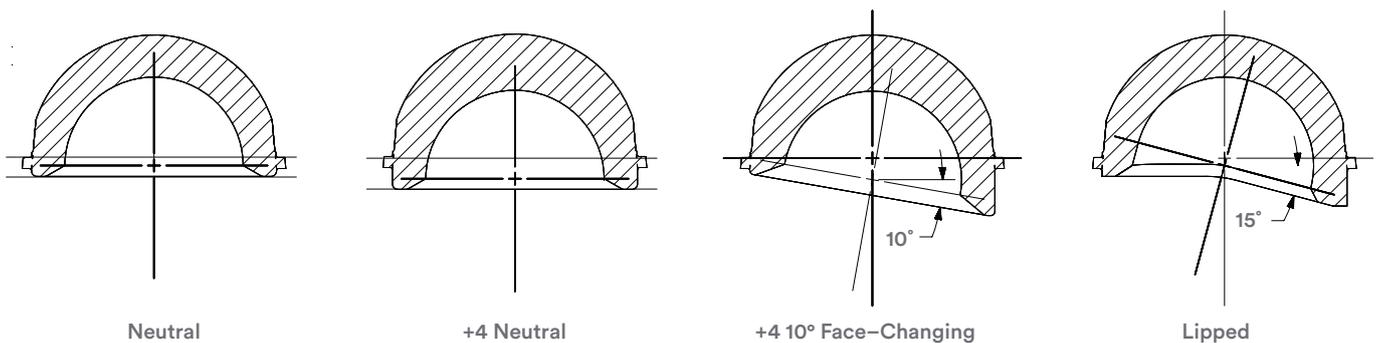


Figure 15

Implanting the Acetabular Cup with Screw Fixation

Screw Insertion

The PINNACLE Hip Solutions Sector Cup has three screw holes and is designed for insertion with screws. QUICKSET Acetabular Screw Instruments are recommended for screw insertion. Two medial hole alternatives are placed to enable screw placement up the posterior column in either the right or left hip. The single lateral screw provides additional access to the ilium.

The drill bit is controlled by the drill guide as it passes through selected holes into the acetabulum (Figure 16). The screw angle may vary by as much as 34° (Figure 17). Drill bits of varying lengths are available. By seating the drill bit completely into the guide, holes corresponding to the effective length of the drill bit will be created.

Select holes where the prosthesis is to be anchored with cancellous screws so that the screws lie within a safe quadrant. The safe quadrant is defined by two lines from the anterior–inferior iliac spine through the centre of the acetabulum and posterior by a line from the sciatic notch to the centre of the acetabulum (Figure 18).

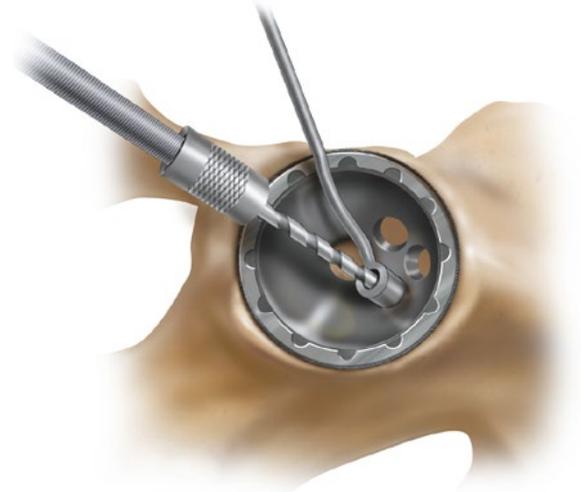


Figure 16
Drill Guide

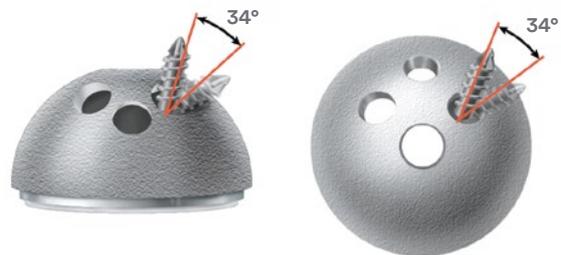


Figure 17
Screw Angulation

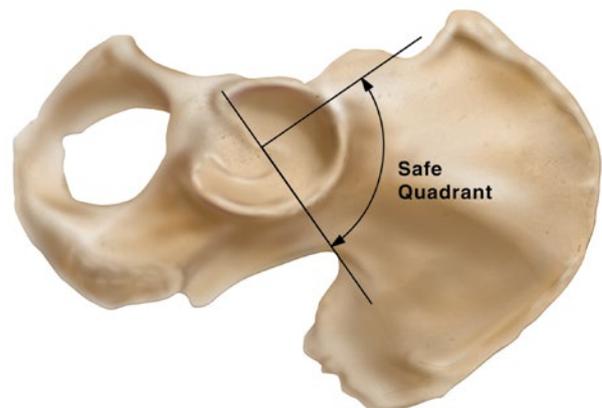


Figure 18
Screw hole selection

Verify hole depth using the QUICKSET Depth Gauge. Alternating colours on the depth gauge represent 10 mm increments (Figure 19).

Insert 6.5 mm PINNACLE Hip Solutions Cancellous Bone Screws using a hex head screwdriver (Figures 20 and 21).

The 6.5 mm self-tapping screws have four-point cutting flutes with a blunt tip to reduce the risk of neurovascular injury (Figure 22).

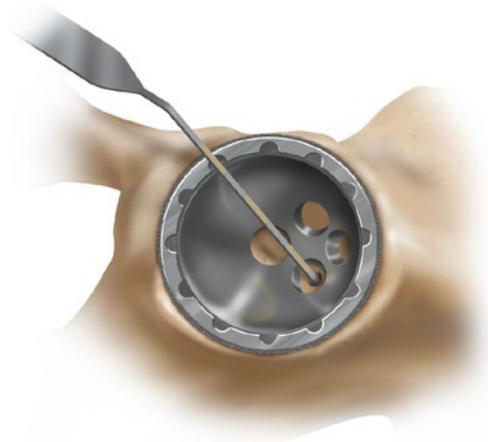


Figure 19
Depth Gauge

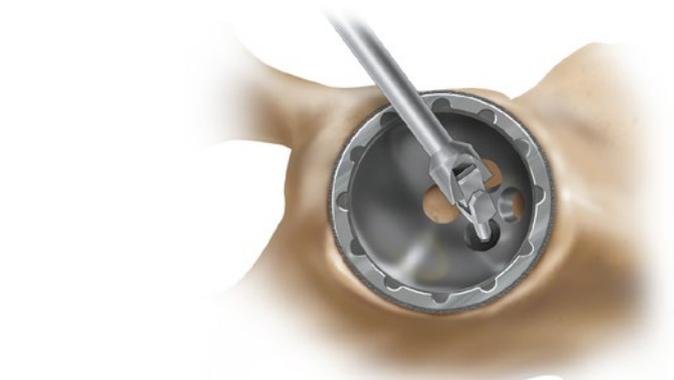


Figure 20
Screw insertion

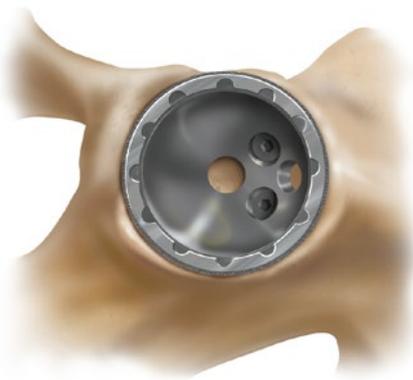


Figure 21
Screw insertion

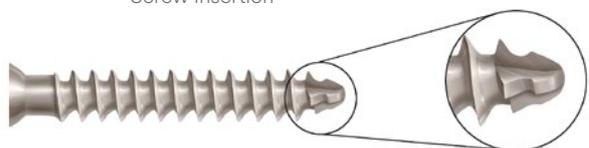


Figure 22
Screw tip

Polyethylene Liner Insertion and Impaction

Following insertion of the final acetabular cup and femoral component, the trial liners can be used in the cup to confirm liner selection and evaluate joint stability and range of motion. Prior to inserting the final acetabular liner, thoroughly irrigate and clean the cup. It is important to check the cup/liner locking groove to ensure it is clear of any debris. Remove all soft tissue from the face of the cup so as not to impede liner seating (Figure 23). An apex hole plug may be used prior to liner insertion.



Figure 23
Liner placement

Prior to insertion/impaction, mate the liner anti-rotational device (ARD) tabs with the ARD scallops on the cup (Figure 24). There are six ARD tabs on the liners and 12 ARD scallops for cup diameters 48 mm – 72 mm. Also, there are four ARD tabs and eight ARD scallops in cup diameters 38 mm – 46 mm. This allows the liner to be rotated in 30° increments for cups 48 mm – 80 mm and 45° increments for 38 mm – 46 mm.

Seat the liner using the ID impactor that corresponds to the selected implant. Because the locking mechanism is tapered, it is important to impact the liner directly into the cup with multiple medium blows (Figure 25).

Impacting the liner in a tilted position may prevent complete seating. Seating of the liner is visually confirmed when the liner ARDs are flush with the face of the acetabular cup; however, the liner face will remain proud in relation to the cup face by approximately 1 mm for a neutral liner to 4 mm for a lateralised liner (Figure 26).



Figure 24

Align the liner anti-rotation tabs with cup scallops

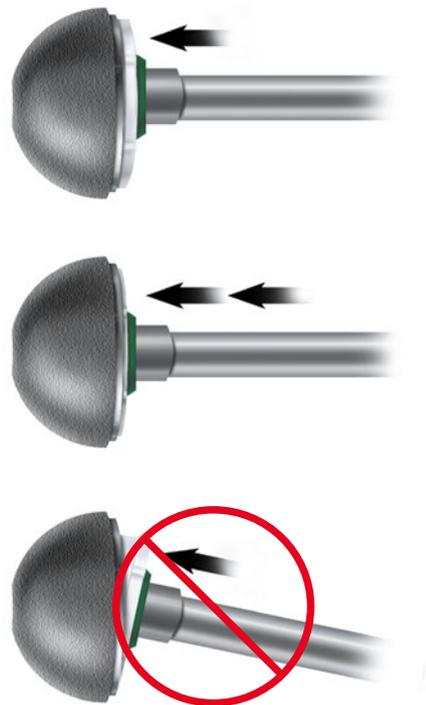


Figure 25

Liner impaction

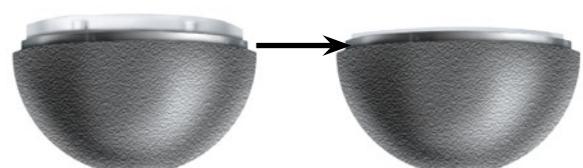


Figure 26

Seating height of a neutral liner

Polyethylene Liner Extraction

A polyethylene liner extractor is available to aid in polyethylene liner extraction and to help ensure the PINNACLE Hip Solutions Acetabular Cup is not damaged during polyethylene liner extraction (Figure 27).

Open the extractor jaws and extend the ARD pin from the extractor tip. Place the ARD pin into an empty ARD and tightly close the jaws of the extractor (Figure 28). The teeth of the extractor should dig into the inner diameter of the polyethylene.

Once the ARD tip and teeth are secure on the polyethylene, advance the extraction knob clockwise until the polyethylene is removed (Figures 29 and 30).

It is important to note that an extracted polyethylene liner must not be reused.



Figure 27
Polyethylene Liner Extractor



Figure 28
Extractor placement

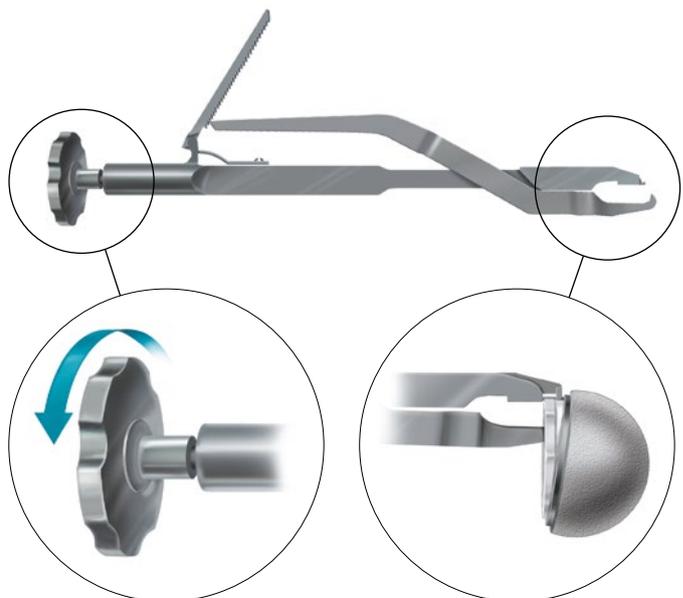


Figure 29
Rotation of Extraction Knob

Figure 30
Polyethylene liner removal

Ceramic Liner Insertion Technique

Size Selection and Assembly

Overview

The PINNACLE Ceramic Liner Inserter is designed to aid initial insertion of BIOLOX® Ceramic liners in PINNACLE Acetabular shells.

The Ceramic Liner Inserter consists of two radiolucent Radel® polyphenylsulfone (PPSU) components, a yellow “gripper” and a grey “pusher”. These components are not detectable by x-ray.

Size Selection

- Select the appropriate size “Pusher” and “Gripper” to match the internal and external diameters of the ceramic liner.
- Pusher size = inner diameter (Head size).
- Gripper size = outer diameter (Shell size).

Assembly

- Orientate the Pusher and Gripper as shown.
- Align the Pusher with the central hole of the Gripper and firmly press together.
- Ensure that the Pusher arms are aligned with the gaps between the Gripper legs.

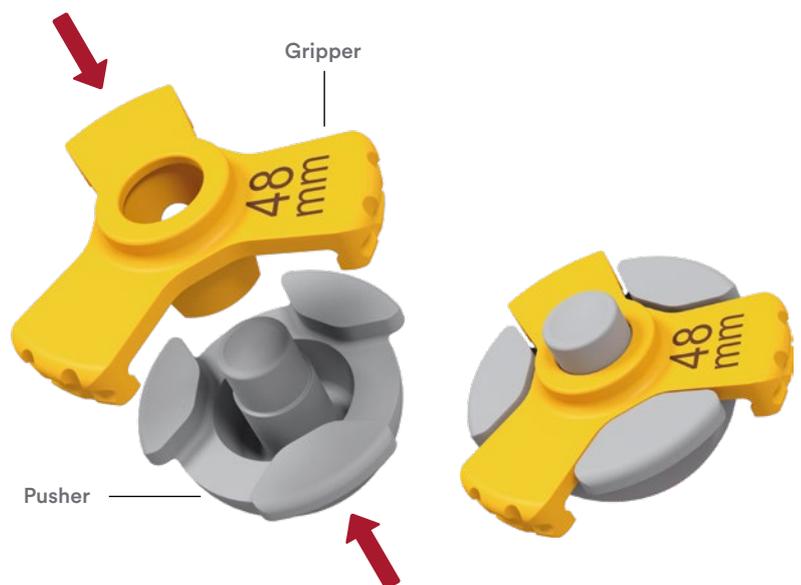


Figure 31.
PINNACLE Ceramic Liner Inserter instrument tray

Figure 32.

Assemble Pusher and Gripper

Assembly to Ceramic Liner

- Place the sub-assembly on the ceramic liner with the gripper legs capturing the outer edge (Figure 33).

Verify

- To ensure correct function and reduce the likelihood of ceramic liner misalignment, verify all the gripper legs are firmly fixed and flush to the line; this may require effort to clip on (Figure 34).

■ **Note:** An audible click may be heard during assembly.

■ **Note:** Ensure the liner is held firmly during assembly.

■ **Note:** Once assembled, the user should hold the inserter/liner construct either by the outer surfaces of the gripper legs or by the liner itself.



Figure 33.
Assemble the Liner Inserter with the Ceramic Liner

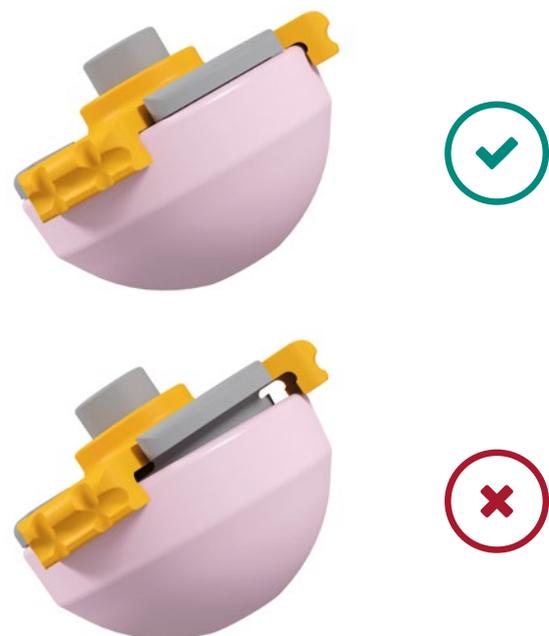


Figure 34.
Correct and incorrect Liner Inserter seating

Introduction to the Wound and Exposure

- Carefully advance the liner into the incision and align the face of the gripper to the face of the implanted acetabular cup.
- Care should be taken to avoid soft tissue or bony impingement.
- Ensure all three gripper legs are in contact with the face of the acetabular shell (Figure 35).
- Should any bony or soft tissue impingement occur during insertion of the Ceramic Liner Inserter into the wound and seating on the shell, remove the Ceramic Liner Inserter from the wound and modify the retractor positions to improve exposure.
- To determine if the Ceramic Liner Inserter is flush with the face of the cup and there is no soft tissue impingement, visually inspect the area between the gripper legs and the shell.
- In addition the sub-assembly may be freely rotated on the face of the shell to ensure full contact between the gripper legs and the shell (Figure 36).

■ **Note:** Lack of soft tissue and bony impingement may be confirmed by rotating the Liner Inserter freely on the Cup.

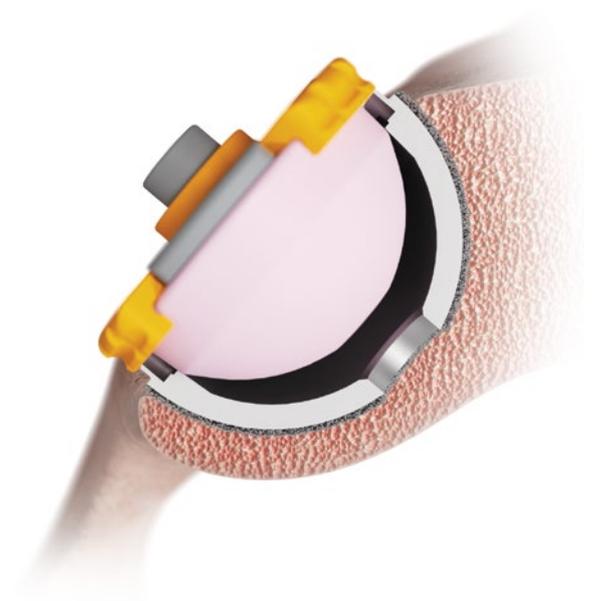


Figure 35.
Position the device



Figure 36.
Confirm no soft tissue impingement
by rotating the Ceramic Liner Inserter on the cup

Deployment and Retrieval

Deployment

Manually deploy the Ceramic Liner Inserter by firmly depressing the central button (Figure 37).



■ **Note:** No impaction should be used when deploying the device. Do not attempt to fully engage the taper locking mechanism by striking the Liner Inserter.

When the liner is released from the gripper and is “flush” with the face of the shell an audible cue should be apparent.

Retrieval

- Carefully retrieve the device from the wound.
- Palpate the liner to confirm proper taper alignment and seating in the cup. The liner should sit flush relative to the face of the shell.
- If liner seating is acceptable, use an impactor with the appropriate size impactor tip for final seating of the BIOLOX Ceramic Insert (Figure 38). Final seating requires two to four moderate blows. If liner seating is not acceptable remove the liner and repeat liner insertion.

■ **Note:** If the liner has not been impacted by the impactor instrument, it is acceptable to remove the liner and repeat liner insertion. However, if the liner has been impacted by the impactor instrument and is unacceptably seated in the shell (e.g., canted), the liner should be removed and a new liner should be used.



Figure 37.
Deploy the Ceramic Liner to the Acetabular Cup

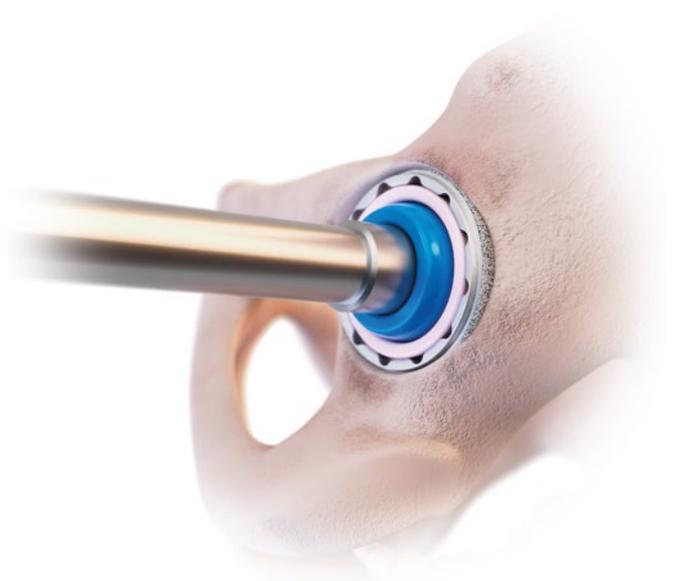


Figure 38.
Impact the Ceramic Liner to engage the VIP Taper

Alternative Bearing Insertion

Alternative Bearing Insertion Technique

Use an impactor with appropriate impactor tip for final seating of the liner (Figure 39). Final seating requires two to four moderate blows (Figure 40).

The nature of hard-on-hard bearings requires precise placement of femoral and acetabular components. It is important to optimise component placement to avoid mechanical impingement. To ensure optimal component placement when using alternative bearings, trialling is critical. Dedicated trials for alternative bearings help ensure the correct representation of biomechanics.

■ **Note:** If any other bearing surface has been impacted into the cup, a BIOLOX Total Hip System liner cannot be used. BIOLOX Total Hip System liners should only be used in new PINNACLE Hip Solutions acetabular cups with an “as manufactured” taper.

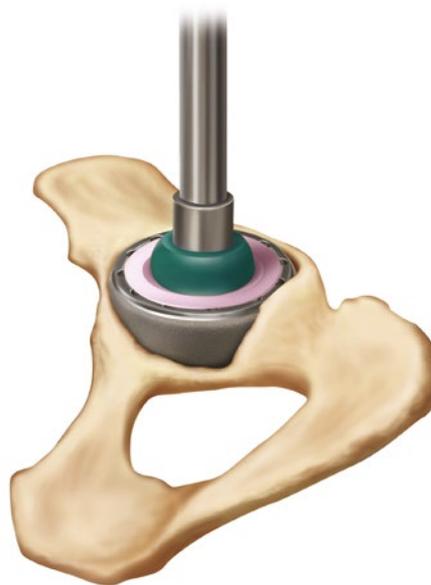


Figure 39



Figure 40

Alternative Bearing Liner – Extraction Technique

Deployment and Retrieval

If it is necessary to remove an AB liner from a PINNACLE Hip Solutions cup, thread the extractor handle onto the appropriate size AB extractor (Figure 41). Each cup size has a specific extractor, e.g., 48 mm cup uses a 48 mm extractor.

■ **Note:** AB extractors are available for cups starting at 44 mm OD up to 66 mm OD.

The AB extractor can be used with 28, 32, 36, 40 and 44 mm ID

Place the three tips of the AB extractor into any three scallops on the face of the PINNACLE Hip Solutions cup (Figure 42).

Push down the attached lever with thumb pressure to engage the suction cup against the inner face of the AB liner (Figure 43).

To remove the AB liner from the cup, impact the extraction handle lightly one to two times with a metal mallet. The resulting vibration will release the taper lock between the AB liner and the PINNACLE Hip Solutions cup. The liner is then lifted out of the cup by the suction cup mechanism (Figure 44).



Figure 41
Alternative Bearing Extractor



Figure 42
Placement of Alternative Bearing Extractor



Figure 43
Engage the suction cup by pushing down on the lever



Figure 44
Impact the extractor handle lightly and lift the liner

Ordering Information - Instrumentation

2015-24-000	PINNACLE Hip Solutions Poly Impactor Handle	2244-10-000	Acetabular Alignment Guide
2217-00-002	PINNACLE Hip Solutions Primary Template	2244-14-000	Poly Extractor Screwdriver
2217-50-001	PINNACLE Hip Solutions Polyethylene Liner Extractor	2274-02-000	QUICKSET Ratchet Screwdriver Handle
2217-50-004	Impactor Tip 22.225 mm	2274-47-000	QUICKSET Tapered Rigid Hex Screwdriver
2217-50-005	Impactor Tip 26 mm	2274-48-000	QUICKSET Tapered Flexible Hex Screwdriver
2217-50-006	Impactor Tip 28 mm	2274-49-000	QUICKSET Tapered Hex Screwdriver Cardan
2217-50-007	Impactor Tip 32 mm	2274-50-000	QUICKSET Cross Head Screwdriver
2217-50-008	Impactor Tip 36 mm	2274-52-000	QUICKSET Flexible Quick Couple Drill Shaft
2217-50-041	PINNACLE Hip Solutions Straight Cup Impactor	2274-53-000	QUICKSET Rigid Quick Couple Drill Shaft
2217-50-044	PINNACLE Hip Solutions Version Guide	2274-54-500	QUICKSET Drill Guide 3.8 mm
2217-50-048	PINNACLE Hip Solutions Bantam Acetabular Cup Impacter Adapter	2274-55-000	QUICKSET Screw Holding Forceps
2217-50-050	PINNACLE Hip Solutions Trial Liner Base	2274-56-000	QUICKSET Ø 3.8 mm Drill Bit 25 mm
2217-50-051	PINNACLE Hip Solutions Trial Liner Lid Case Complete (Case, Tray, Lid)	2274-58-000	QUICKSET Ø 3.8 mm Drill Bit 55 mm
2217-50-060	PINNACLE Hip Solutions Impactor Tip 40 mm	2274-59-000	QUICKSET Ø 3.8 mm Drill Bit 70 mm
2217-50-061	PINNACLE Hip Solutions Impactor Tip 44 mm	2274-60-000	QUICKSET 70 mm Depth Gauge
2217-50-062	PINNACLE Hip Solutions Impactor Tip 48 mm	2274-63-000	QUICKSET Tapered Hex Screwdriver U-Joint
2217-60-015	Primary Case Complete (Case, Tray, Lid)	2346-01-000	Apex Hole Elim Tapered Hex Driver
2218-90-001	PINNACLE Hip Solutions 28 mm TIP	9599-10-000	Replacement Suction Cup
2218-90-002	PINNACLE Hip Solutions 36 mm TIP		
2218-90-003	AB Curved Handle Assembly		
2218-90-004	PINNACLE Hip Solutions 40 mm TIP		
2218-90-005	PINNACLE Hip Solutions 44 mm TIP		
2218-90-007	PINNACLE Hip Solutions 32 mm TIP		
2004-20-933	PINNACLE Ceramic Liner Inserter Case Lid		
2220-00-231	PINNACLE Ceramic Liner Inserter Case Inner Tray		
2220-00-230	PINNACLE Ceramic Liner Inserter Case Outer Tray		
2218-10-028	PINNACLE Ceramic Liner Inserter 28 mm Pusher		
2218-10-032	PINNACLE Ceramic Liner Inserter 32 mm Pusher		
2218-10-036	PINNACLE Ceramic Liner Inserter 36 mm Pusher		
2218-10-044	PINNACLE Ceramic Liner Inserter 44 mm Gripper		
2218-10-046	PINNACLE Ceramic Liner Inserter 46 mm Gripper		
2218-10-048	PINNACLE Ceramic Liner Inserter 48 mm Gripper		
2218-10-050	PINNACLE Ceramic Liner Inserter 50 mm Gripper		
2218-10-052	PINNACLE Ceramic Liner Inserter 52 mm Gripper		
2218-10-054	PINNACLE Ceramic Liner Inserter 54 mm Gripper		
2218-10-056	PINNACLE Ceramic Liner Inserter 56 mm Gripper		
2218-10-058	PINNACLE Ceramic Liner Inserter 58 mm Gripper		
2218-10-060	PINNACLE Ceramic Liner Inserter 60 mm Gripper		
2218-10-062	PINNACLE Ceramic Liner Inserter 62 mm Gripper		
2218-10-064	PINNACLE Ceramic Liner Inserter 64 mm Gripper		
2218-10-066	PINNACLE Ceramic Liner Inserter 66 mm Gripper		

▲ For more detailed information on PINNACLE Hip Solutions implants and related trial instruments please refer to the PINNACLE Hip Solutions Primary System Overview

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