

# CHARNLEY® MODULAR

HIP SYSTEM



This publication is not intended for distribution in the USA.

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## SURGICAL TECHNIQUE



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# PRE-OPERATIVE TEMPLATING

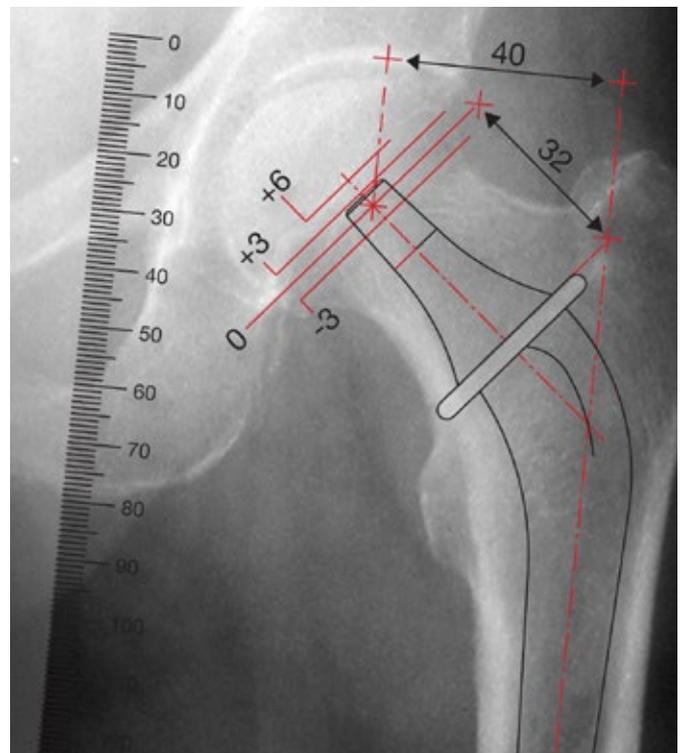
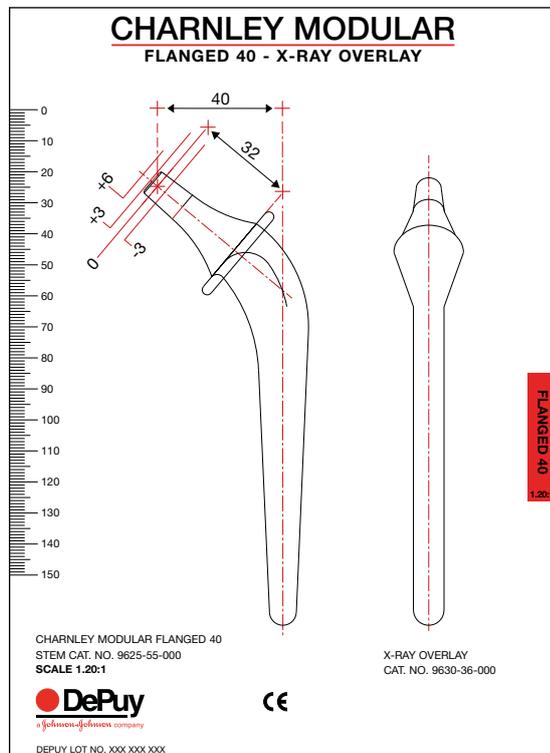


Figure 1

## Pre-operative Templating

Make a thorough radiographic examination of the contralateral side, taking into consideration any anatomical anomalies, dysplasia or previous osteotomy for example, using both A/P and M/L projections. The radiographs should be at 20% magnification and clearly demonstrate the acetabular configuration and the endosteal and periosteal contours of the femoral head, neck and proximal femur.

## Femoral Implant Size

A radiograph showing the AP view of the proximal femur, internally rotated 15°, provides the most important information: a level for the neck resection which will restore leg length; the appropriate neck offset for a natural position of the femoral head; and the lateral/medial dimensions of the femoral canal which determine the overall size of the implant.

The AP view also presents the position of the femur relative to the bony landmarks of the pelvis, and the correct anatomical position of the acetabular component relative to landmarks such as the tear drop.

The lateral view showing the amount of femoral bow, helps to confirm the diameter of the femoral canal and highlights abnormalities in this plane which might affect the position of the implant (Figure 1).

For sizing cement restrictor see page 18.  
For sizing centraliser see page 20.

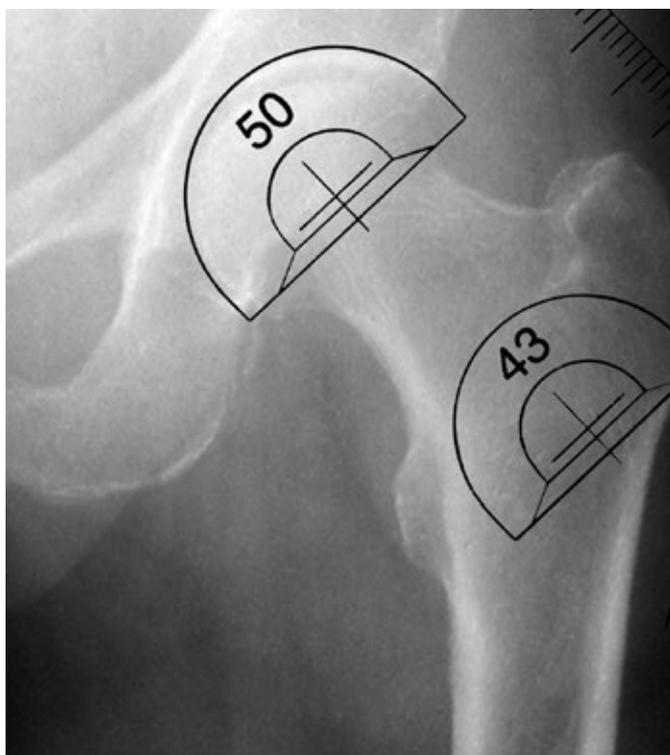


Figure 2

#### Templating for Cemented Acetabular Implant Size

Select an appropriate sized acetabular template and align it with the superior, and then inferior border of the acetabulum. This will ensure that the template is medialised at the level of the teardrop. Once the correct template has been determined, note the centre of rotation and size of the acetabulum on the X-rays (Figure 2).

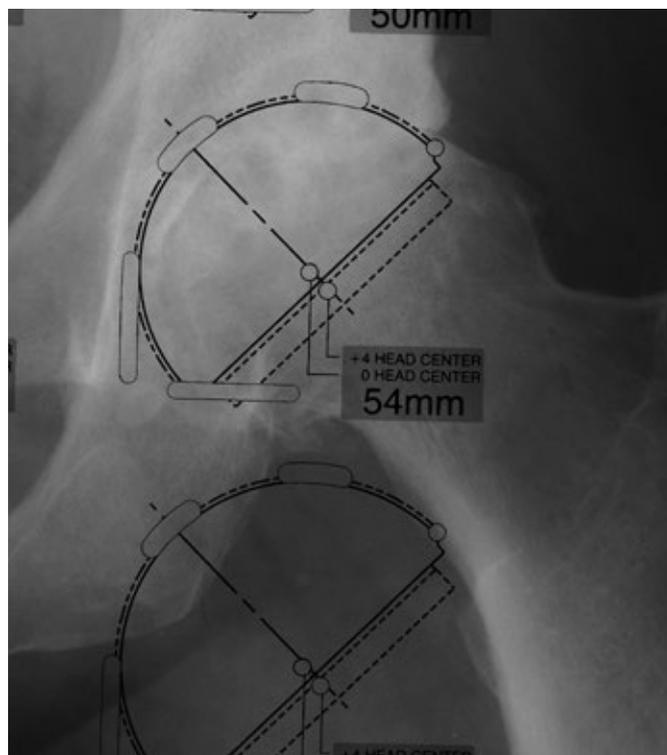


Figure 3

#### Templating for Cementless PINNACLE Acetabular Implant Size

Using the AP radiograph, position the PINNACLE template at 35 - 45° to the inter-teardrop or interischial line so that the inferomedial aspect of the cup abuts the teardrop. Ensure that the superior-lateral aspect of the cup is not excessively uncovered (Figure 3).

# SURGICAL APPROACHES

## Anterolateral Approach

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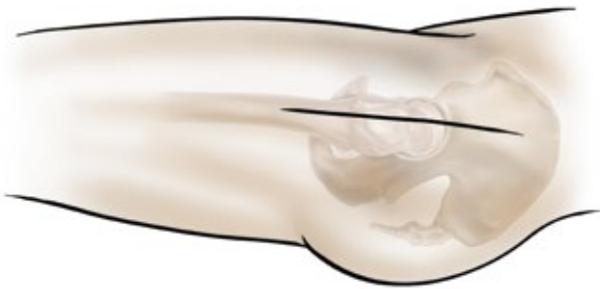


Figure 4 - Skin Incision

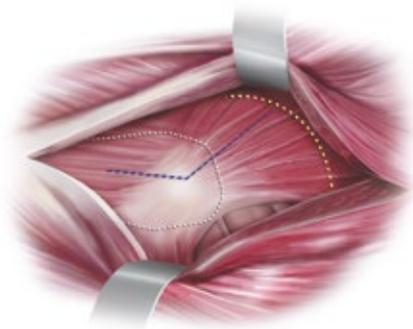


Figure 6 - Gluteus Medius Split

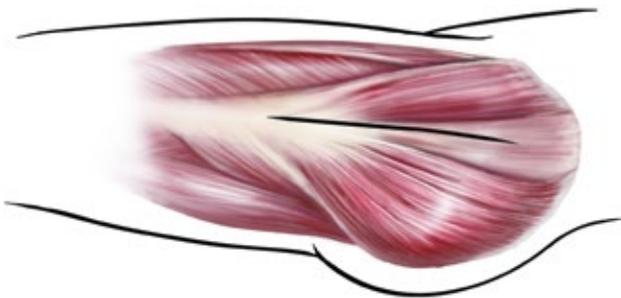


Figure 5 - Fascial Incision

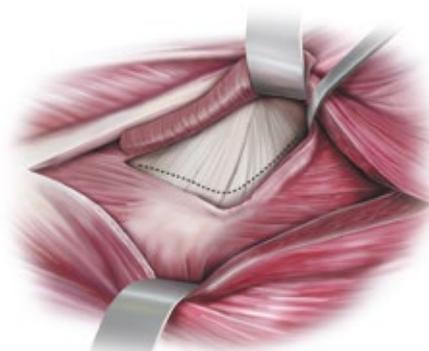


Figure 7 - Capsulotomy/Capsulectomy

### Anterolateral Approach

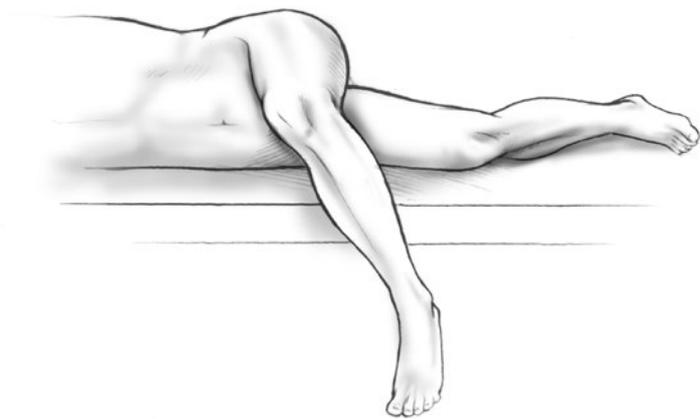
Use the approach with which you are most familiar and achieve the best surgical result. The CHARNLEY Modular Hip System Instrumentation was designed to accommodate all surgical approaches.

For the anterolateral approach, place the patient in the lateral decubitus position and execute a skin incision that extends from distal to proximal, centred over the anterior aspect of the femur, continuing over the greater trochanter tip (Figure 4).

The iliotibial band is split under the skin incision, extending proximally into the gluteus maximus or in between the maximus and the tensor fascia lata muscles (Figure 5).

Palpate the anterior and posterior borders of the gluteus medius. The gluteus medius is split from the trochanter, parallel to its fibres, releasing the anterior 1/2 to 1/3 of the muscle (Figure 6).

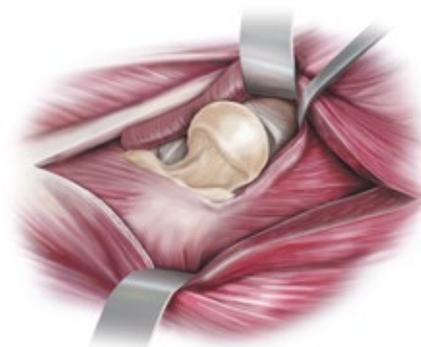
The gluteus medius should not be split more than 4 cm from the tip of the greater trochanter. Care must be taken to ensure the inferior branch of the superior gluteal nerve is not damaged. The gluteus minimus is exposed and released either with or separate from the gluteus medius (Figure 7).



**Figure 8 - Hip Dislocation**

Flexion and external rotation of the leg facilitates exposure of the hip capsule, which is incised or excised depending on surgeon preference. Dislocate the hip with gentle adduction, external rotation and flexion (Figure 8).

The patient's leg is now across the contralateral leg and the foot is placed in a sterile pouch. If dislocation is difficult, additional inferior capsule may be released.



**Figure 9 - Femoral Neck Exposure**



**Figure 10 - Acetabular Exposure**

The femoral neck should now be exposed. Exposure of the acetabulum is accomplished by placing the leg back on the table in slight flexion and external rotation. Use a self-retaining retractor to spread the medius and minimus anteriorly and the hip capsule posteriorly (Figure 9).

Carefully place another retractor over the anterior inferior wall of the acetabulum. The final retractor is placed in the acetabular notch beneath the transverse ligament and pulls the femur posteriorly (Figure 10).

# SURGICAL APPROACHES

## Posterolateral Approach

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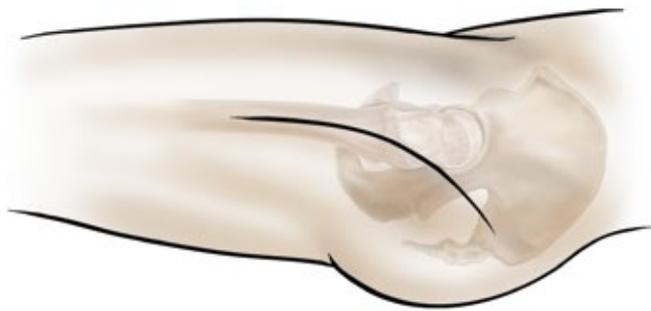


Figure 11 - Skin Incision

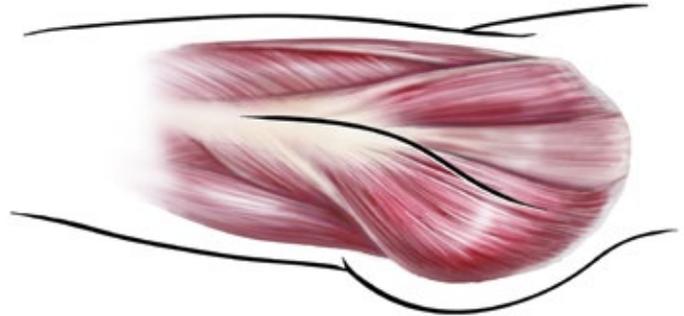


Figure 12 - Fascial Incision

### Posterolateral Approach

Use the approach with which you are most familiar and achieve the best surgical result. The CHARNLEY Modular Hip System Instrumentation was designed to accommodate all surgical approaches.

For the posterolateral approach, place the patient in the lateral decubitus position. Ensure that the operating table is parallel to the floor and that the patient is adequately secured to the table to improve accuracy of the external alignment guides. Centre the skin incision over the greater trochanter, carrying it distally over the femoral shaft for about 15 cm and proximally in a gently curving posterior arc of about 30° for about the same distance (Figure 11).

### Fascial Incision

Incise the iliotibial tract distally following the skin incision. Develop the incision proximally by blunt dissection of the gluteus maximus along the direction of its fibres (Figure 12).

### Initial Exposure

Place the leg in extension and internal rotation. Utilise self-retaining retractors to facilitate the exposure. Gently sweep loose tissue posteriorly, exposing the underlying short external rotators and quadratus femoris.

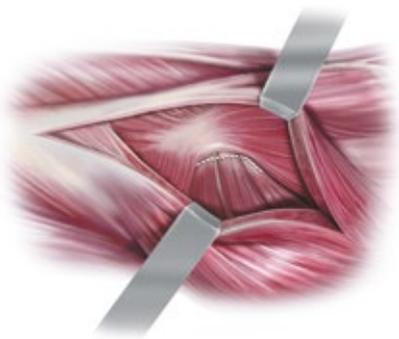


Figure 13 - Short External Rotators



Figure 14 - Posterior Capsulotomy

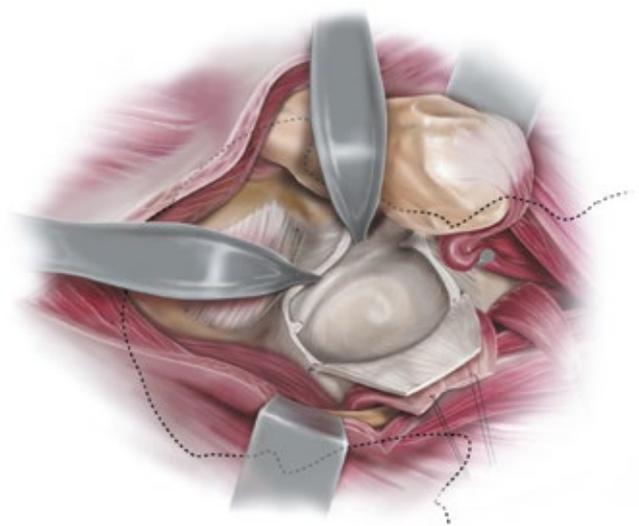


Figure 15 - Posterior Capsulotomy

Identify the posterior margin of the gluteus medius muscle proximally and the tendon of the gluteus maximus distally (Figure 13). Use caution to protect the sciatic nerve.

Incise the quadratus femoris, leaving a cuff of tissue for later repair (Figure 14). This exposes the terminal branch of the medial circumflex artery, which lies deep to the proximal third of the quadratus femoris. Identify the piriformis tendon, the obturator internus tendon (conjoint with the gemelli tendons) and the tendon of the obturator externus, and free them from their insertions at the greater trochanter. The piriformis and the conjoint tendon may be tagged for subsequent reapproximation.

### Posterior Capsulotomy

Retract the short rotator muscles posteromedially together with the gluteus maximus (with consideration to the proximity of the sciatic nerve), thus exposing the posterior capsule (refer to Figure 14). Place cobra retractors anteriorly and inferiorly (Figure 15).

Open the capsule posteriorly starting at the acetabular margin at about the 12 o'clock position and heading to the base of the neck, around the base of the neck inferiorly and back to the inferior acetabulum, creating a posteriorly based flap for subsequent repair. Excise additional anterior/superior capsule to enhance dislocation of the hip. Alternatively the capsule can be excised.

# FEMORAL PREPARATION

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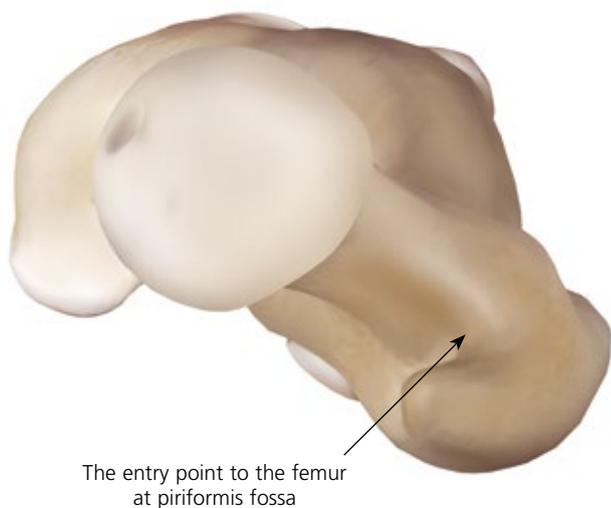


Figure 16



Figure 17

## Femoral Canal Initiation

Attach the IM Initiator to the T-Handle. Centralise the initiator at piriformis fossa in line with the long axis of the femur in both the *A/P* and lateral projections and make an entry point into the proximal femur (Figures 16 & 17). Accurate positioning of the entry point will avoid instrument and implant malalignment later.



Figure 18

### Femoral Alignment

Attach the Canal Probe to the T-Handle. Introduce the probe into the femoral canal, maintaining neutral orientation. If the entry hole has been positioned correctly, the probe should easily pass down the femur (Figure 18). If the probe impinges, enlarge the entry point using the IM initiator.

The CHARNLEY Modular Hip System is designed as a broach-only system, to maximise the strength of the bone/cement interface. CHARNLEY Modular Hip System reamers are available for surgeons who prefer to ream the intramedullary canal (see page 24). The Flanged 35 prosthesis requires the use of the recommended broach as a rasp to prepare the femur and a trial prosthesis is used to assess joint function and stability.

CHARNLEY Broach/CHARNLEY Modular Trial heads accommodate up to size 32 mm heads. Use of the trial prostheses is necessary to perform the assessment of joint function with 36 mm trial heads.



Figure 19

### Neck Resection

The neck resection guide is used to establish the level (normally in the region of 1.5 cm above the lesser trochanter) and the angle of the neck resection (Figure 19). The straight edge of the guide is aligned with the long axis of the femur, the resection level is marked using diathermy and the neck is resected using an oscillating saw.

**Note:** The approach through piriformis fossa leads to neutral A/P and lateral stem positioning with the stem centralised within an even cement mantle.

# ACETABULAR PREPARATION FOR CEMENTED CUP FIXATION



Figure 20

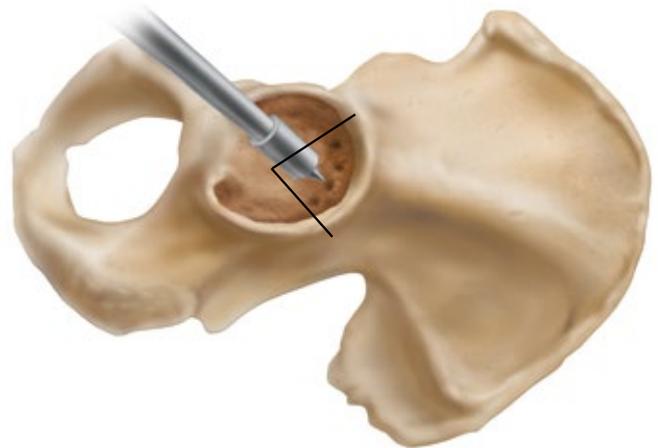


Figure 21

## Acetabular Preparation for Cemented Cup Fixation

Clear the acetabular rim of soft tissues so that the rim is fully exposed. A retractor can be placed in the teardrop to improve access if required.

The goal of acetabular reaming is to restore the centre of the original acetabulum. Progressively ream the acetabulum with the reamers introduced centrally, in 45° of abduction and 15° of anteversion. Over ream the acetabulum by 4 - 6 mm to ensure 2 - 3 mm cement mantle. It is important to remember that if the posterior approach is employed the pelvis will be in approximately 20° of anteversion and this must be compensated for during both acetabular reaming and cup placement (Figure 20).

Ream the acetabulum to a hemispherical dome of healthy, bleeding subchondral, cortico-cancellous bone that will contain the cup and its surrounding mantle. A balanced approach is needed to create the right bony surface for a good cement interlock, while retaining sufficient subchondral bone to maintain the load bearing strength of the socket.

Clear away any remaining soft tissues and capsule. Remove any osteophytes or cysts from the acetabular bed and repair the defects using a cancellous bone block. Sclerotic bone should also be removed at this stage since this will prevent cement penetration.

Introduce multiple drill holes in the roof of the acetabulum superiorly and posteriorly in the safe quadrant. Use the collared acetabular preparation drill to encourage intrusion of cement into acetabular bone (taking care to avoid the medial wall of the acetabulum - the triangle of bone based on the transverse ligament, Figure 21). Smooth the edges of the drill holes and remove debris using a small curette. A spoon may be used to feel for cysts that may not have been revealed by reaming or radiological examination.

## Cup Sizing

Size the acetabulum using a phantom cup (and trimming aid for the OGEE® cup) attached to the cup introducer. Once the size is established, trim the rim of the OGEE trimming aid so that it just fits within the rim of the acetabulum. Use the trimming aid as a guide to trim the definitive OGEE cup (Figure 22).

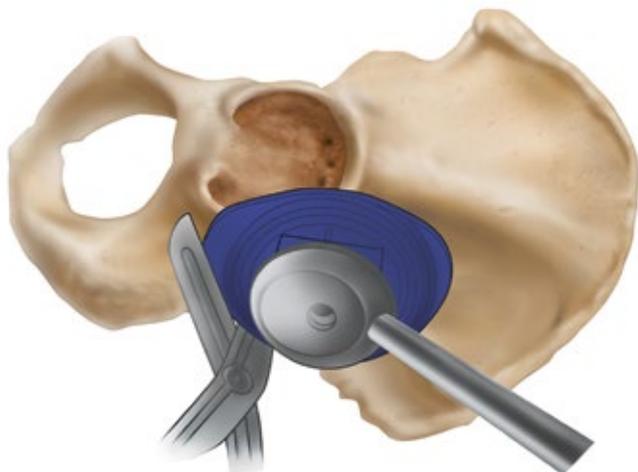


Figure 22

### Bone Preparation

Use pulsatile or continuous lavage within the acetabulum to remove fat and debris from the cancellous bone interface. Use a brush to remove loose cancellous bone if necessary. Employ suction and dry swabs to clean and dry the bone surface.

When the acetabular surface is dry and the bone surface is open, pack the socket with hydrogen peroxide impregnated swabs. These will prevent blood clots adhering to the bone and leave the surface ready for cement introduction.

### Cement Technique

The majority of surgeons introduce cement into the acetabulum by hand. Don clean gloves to avoid contaminating the cement. Take the bolus of mixed cement and knead to assess the viscosity in addition to visual evaluation. The cement is ready for insertion when it has taken on a dull, doughy appearance and does not adhere to the surgeon's glove. Remove the peroxide swabs from the acetabulum and use a dry swab to remove excess peroxide. Introduce the cement in one piece, distribute it to follow the acetabular hemisphere and push cement deep into the fixation holes. This should only take a few seconds.

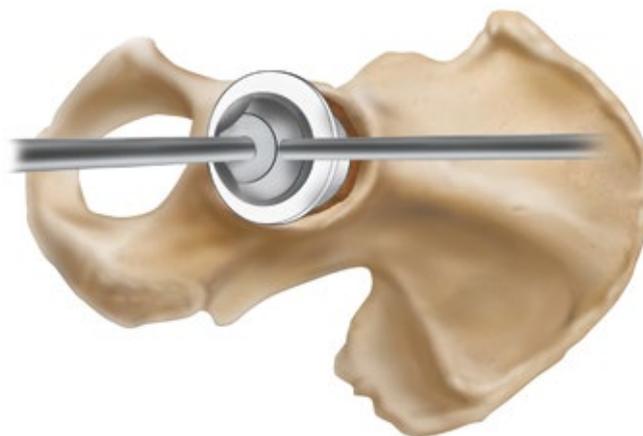


Figure 23

### Cement Pressurisation

Using an appropriately sized acetabular pressuriser, completely seal the acetabulum and apply maximum pressure to encourage interdigitation of bone cement into the cancellous bed. Retain a small piece of cement to finger test to assess the viscosity of the cement. When the cement can be pressed together without sticking to itself, implant the cup.

### Cup Implantation

Attach the cup to the cup introducer and align the introducer in 10° to 15° of anteversion (if the posterior approach is employed, the pelvis will be in approximately 20° of anteversion and this must be compensated for). The flange should occlude the acetabulum, with the flange rim sitting just within the border of the acetabulum, so that the cement is contained behind the flange. Place a finger on the flange prior to insertion, to avoid air being trapped behind the flange. The cement should be contained behind the rim of the cup, and the rim fully supported by the cement.

The cup pusher is then located on the back of the cup introducer and the cement is pressurised until polymerisation is complete (Figure 23).

# ACETABULAR PREPARATION FOR PINNACLE RECONSTRUCTION



Figure 24

## Acetabular Preparation

Acetabular preparation for PINNACLE cementless implantation is essentially the same as the cemented technique, with the following strategy in mind.

Begin with a reamer 6 - 8 mm smaller than the anticipated acetabular component diameter and deepen the acetabulum to the level determined by pre-operative templating. Increase the reamer sizes in 1 - 2 mm increments (PINNACLE instruments are marked with true dimensions), centering the reamers to deepen the acetabulum until it becomes a true hemisphere (Figure 24).

Depending on bone quality, it is usually sufficient to under-ream 1 mm in smaller sockets, while a larger socket may require 1 - 2 mm under-ream. Soft bone will more readily accommodate a greater press-fit of the acetabular component than sclerotic bone. Use a curette to free all cysts of fibrous tissue. Pack any defects densely with cancellous bone.

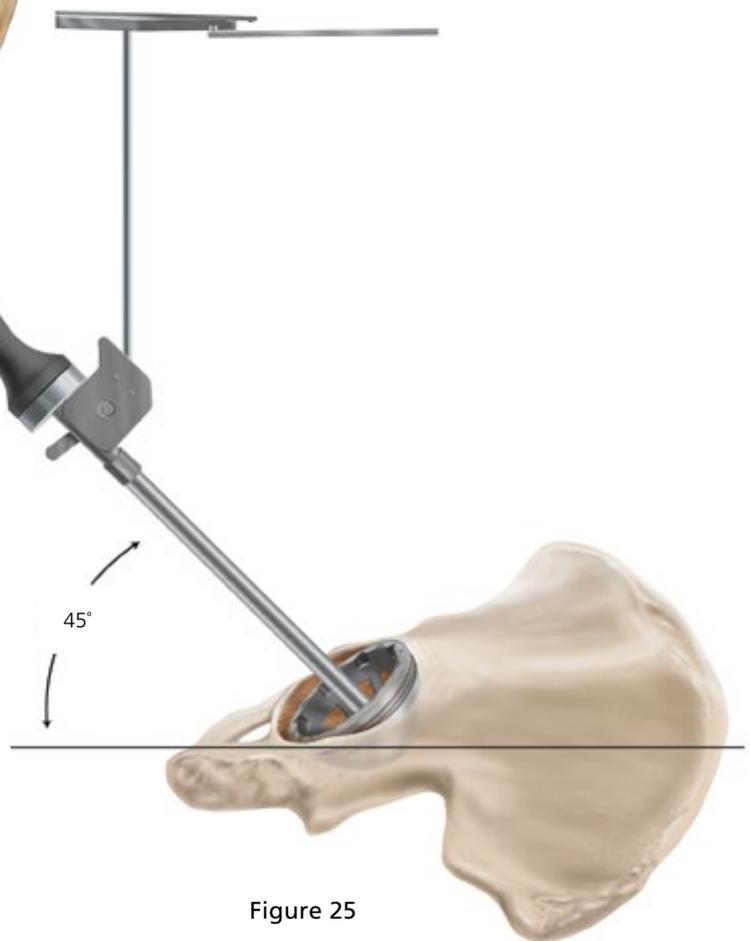


Figure 25

## Acetabular Cup Trialing and Positioning

Pre-operative templating, using the A/P projection will help determine the ideal abduction angle.

The lateral ilium is a useful intra-operative landmark. In a normal acetabulum with good lateral coverage, the abduction angle will be correct if the socket lies flush with a normal lateral pillar (Figure 25).

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The implanted cup should be slightly more anteverted than the pubis / ischial plane. This relationship should remain constant regardless of the depth of reaming (Figure 26).

Select a cup trial that is equal to or 1 mm larger in diameter than the final reamer. Screw the cup introducer into the threaded apex hole and introduce the cup trial in an anatomic orientation, with an abduction of 35 - 45° to the transverse plane. Confirm that the cup trial is fully seated by sighting through the holes and cut-outs in the acetabular cup trial. Appropriate trial cup orientation can also be verified with external alignment guides.

#### Definitive Cup Implantation

Once the correct cup size is confirmed, extract the trial, attach the appropriate definitive cup to the introducer and repeat the process. Once its position and alignment have been checked, impact the cup into place. Insert the apex hole eliminator using a standard hex head screwdriver.

At this point in the procedure a decision can finally be made whether to screw the cup into place (sector and multihole). This should be carried out with due consideration to bone quality, ensuring the appropriate length of screws are located within the 'safe' quadrant.

#### Insert Trial Introduction

Place the appropriate insert trial into the trial cup (Figure 27). Secure the insert trial to the cup trial through the apical hole screw using a standard hex head screwdriver.

A full description of this technique and the range of cup and insert options is available in the PINNACLE Surgical Technique DPEM/ORT/1112/0366(2).

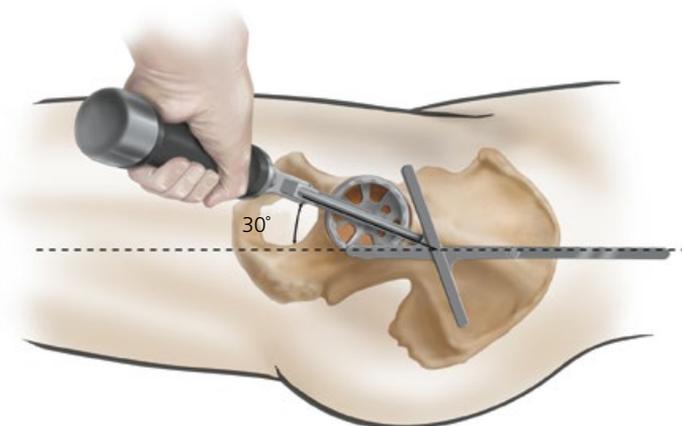


Figure 26



Figure 27

# METAPHYSEAL PREPARATION



Figure 28

## Clearing the Anatomical Calcar

In order to achieve an optimal cement mantle, clear the anatomical calcar (the cortical condensation overlying the endosteal entry into the lesser trochanter) using an osteotome or curette. Avoid excavating the lesser trochanter (Figures 28 & 29).



Figure 29

**The broaches used for femoral preparation are the same as the Charnley broaches.**

## Femoral Broaching

A broach, smaller than that determined during pre-operative templating is attached to the in-line broach handle and passed down the canal. It is essential that the broach is introduced as close to the greater trochanter as possible, and is in line with the long axis of the femur with 10° to 15° of anteversion. If the broach enters the femur too medially, the cavity will be undersized, and the implant malaligned.

Again, broaching should not be so aggressive that it strips away strong cortico-cancellous bone in the proximal femur.

To achieve a good cement mantle, the anatomical calcar may be cleared using a curette, extending the medullary canal toward the lesser trochanter, but avoiding excavation of the lesser trochanter.

The final broach should confirm the size templated pre-operatively and determine the final implant size.

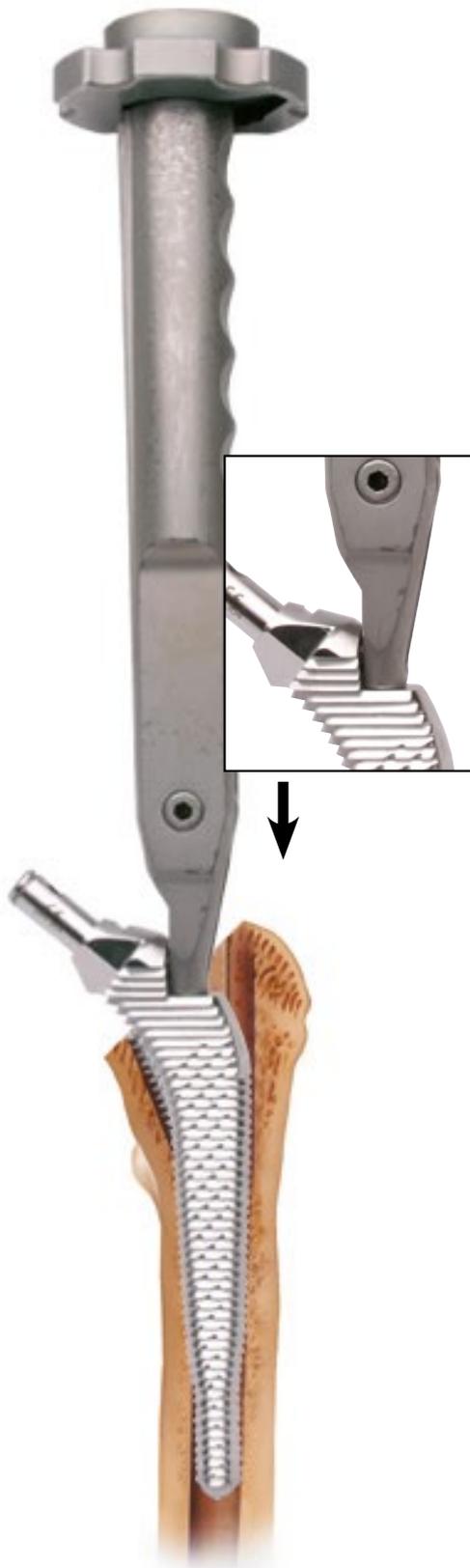


Figure 30



Figure 31

#### Femoral Neck Trial Head

Attach the appropriate trial head to the broach. Multiple trial heads are available to allow for proper restoration of hip biomechanics (28 mm heads: -3 mm, +0 mm, +3 mm and +6 mm neck lengths).

#### Charnley Modular Trial Head

**Note:** For Surgeons who use trial stems please use the ELITE™ trial heads.

The Flanged 35 prosthesis requires the use of the recommended broach as a rasp to prepare the femur and a trial prosthesis is used to assess joint function and stability.

CHARNLEY Broach/CHARNLEY Modular Trial heads accommodate up to size 32 mm heads. Use of the trial prostheses is necessary to perform the assessment of joint function with 36 mm trial heads.

## TRIAL REDUCTION



Figure 32

### Trial Reduction

Use the trial head with different size offsets to restore joint stability with an adequate range of motion. To assess stability for each combination, check external rotation in extension to rule out anterior dislocation. Also perform a posterior dislocation test, bringing the hip up to 90° of flexion with internal rotation. Once adequate stability is achieved, note the neck segment (standard or high) and the trial head chosen (Figure 32).

**If the PINNACLE Cementless Cup System is to be implanted, a comprehensive range of trial inserts is available which offers a further dimension for adjustment at this stage (see PINNACLE Surgical Technique DPEM/ORT/1112/0366(2)).**

### Broach Removal

Remove the broach using the broach handle or broach extractor. Clean the canal to remove loose cancellous bone using a curette.

## CEMENT RESTRICTION



Figure 33

### Inserting the Cement Restrictor

Use pulsative lavage to clear the femoral canal of debris and open the interstices of the bone.

Attach the size of trial cement restrictor selected during pre-operative templating to fit the distal canal. Attach it to the cement restrictor inserter and insert the trial to the planned depth. Check that it is firmly seated in the canal. Remove the trial and replace it with the corresponding restrictor implant. Insert the restrictor implant at the same level as the restrictor trial (Figures 33 & 34).

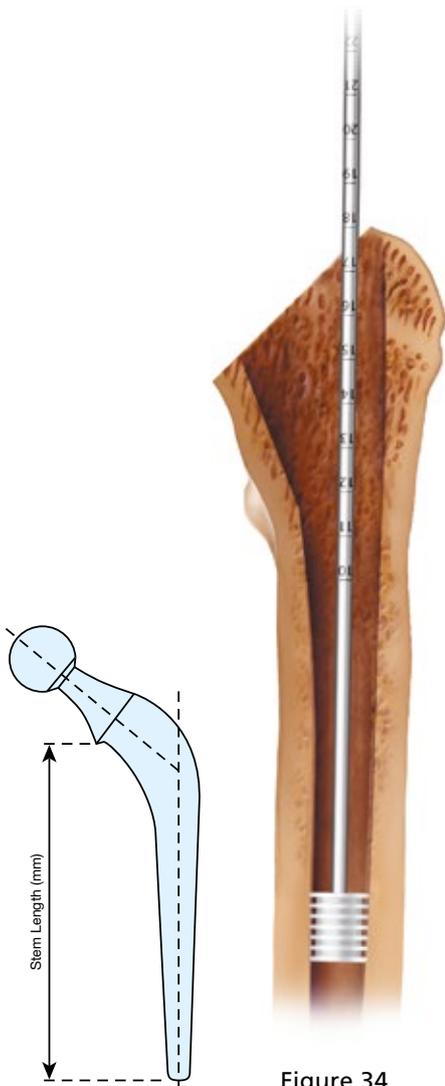


Figure 34



Figure 35

### Insertion Depth Table

Size	Stem Length (Crotch Point to Distal Tip)	Restrictor Depth
Flanged 40	112 mm	132 mm
Extra Heavy Flanged 40	112 mm	132 mm
Roundback 40	113 mm	133 mm
Roundback 40	113 mm	133 mm
Narrow Roundback 45	113 mm	133 mm
Flanged 45	113 mm	133 mm
Extra Heavy Flanged 45	113 mm	133 mm

Irrigate the canal using pulsatile lavage with saline solution, ensuring that all debris is removed (Figure 35).

Pass a swab down the femoral canal to help dry and remove any remaining debris. The swab may also be pre-soaked in an epinephrine or hydrogen peroxide solution.

# DISTAL CENTRALISER SELECTION



Figure 36

## Attaching the Centraliser

Select the CHARNLEY Modular Centraliser that corresponds to the diameter of the femoral canal (refer to table). After selecting the right size of centraliser, slide it over the distal tip of the stem and push the end over the tip of the stem (Figure 36).

Size	Centraliser 1 Canal Size	Centraliser 2 Canal Size
Flanged 40	13.0-14.5 mm	15.0 mm+
Extra Heavy Flanged 40	15.0-16.5 mm	17.0 mm+
Roundback 40	13.0-14.5 mm	15.0 mm+
Roundback 40	13.0-14.5 mm	15.0 mm+
Narrow Roundback 45	13.0-14.5 mm	15.0 mm+
Flanged 45	13.0-14.5 mm	15.0 mm+
Extra Heavy Flanged 45	15.0-16.5 mm	17.0 mm+

# CEMENTING TECHNIQUE



Figure 37



Figure 38

## Cement Technique

Mix DePuy Synthes bone cement using the CEMVAC® Vacuum Mixing System. Attach the syringe to the CEMVAC cement injection gun. Assess the viscosity of the cement, the cement is ready for insertion when it has taken on a dull, doughy appearance and does not adhere to the surgeon's glove. Start at the distal part of the femoral canal and inject the cement in a retrograde fashion, allowing the cement to push the nozzle gently back, until the canal is completely filled and the distal tip of the nozzle is clear of the canal (Figure 37).

Cut the nozzle and place a DePuy Synthes femoral pressuriser over the end. The DePuy Synthes cement should be pressurised to allow good interdigitation of the cement into the trabecular bone. Continually inject cement during the period of pressurisation (Figure 38). Use the Femoral Prep Kit curettes to remove excess bone cement. Implant insertion can begin when the cement can be pressed together without sticking to itself.

A full description of this technique is available in the DePuy Synthes Cementing Surgical Technique Cat No: 4010-030-000.

# FEMORAL STEM IMPLANTATION



Figure 39

## Inserting the CHARNLEY Modular Implant

Place the stem inserter in the oval location hole. Angle the inserter tip slightly to help push the stem into a neutral position (Figure 39).

Introduce the implant in line with the long axis of the femur. Its entry point should be lateral, close to the greater trochanter. Do not use the neck cut as a reference. During insertion, thumb pressure is maintained on the cement at the medial femoral neck.

The stem is introduced until it reaches the templated level, and is seated approximately at the neck resection. Pressure is maintained until polymerisation is complete. A final trial reduction is carried out to confirm joint stability and joint movement.

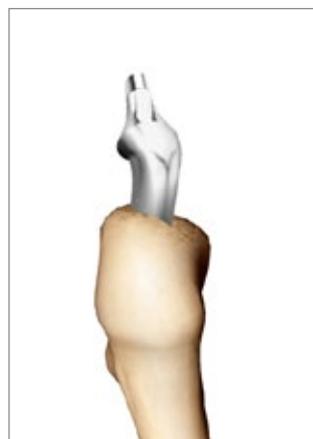
The stem is correctly seated when the pre-operatively determined level is reached. Remove excess cement with a curette. Maintain pressure until the cement is completely polymerised.

### Correctly Aligned Stem

Entry point posterior and lateral at piriformis fossa



Posterior View  
Stem aligned centrally in the canal



Lateral View  
Stem aligned centrally in the canal



Medial View  
Stem aligned centrally in the canal

### Malaligned Stem

Entry point too anterior and medial



Posterior View  
Stem in varus



Lateral View  
Stem in retroversion and tip against posterior cortex



Medial View  
Stem in retroversion and tip against posterior cortex



Figure 40



Figure 41

### Impacting the Femoral Head

Next, place the trial head on the implant and perform a final trial reduction (Figure 40). Remove the trial head and irrigate and clean the prosthesis to ensure the taper is free of debris. Place the appropriate head onto the taper and lightly tap the head into place using the head impactor. Reduce the hip to carry out a final assessment of joint mechanics and stability (Figure 41).

**Note:** A ceramic head should be twisted on the stem and lightly impacted.

### Closure

Closure is based on the surgeon's preference and the individual case. The closure should be tested throughout the hip range of motion.

# APPENDIX

## Optional Canal Reaming



Figure 42

The CHARNLEY Modular Hip System is designed as a broach-only system, to maximise the strength of the bone / cement interface. CHARNLEY Modular Hip System reamers are available for surgeons who prefer to ream the intramedullary canal; however, **aggressive reaming is not recommended**. Perform any reaming by hand and not by power, which prevents burnishing of the endosteal surface and compromising the cement's ability to interdigitate into the stable cancellous bone.

## Alternative Femoral Neck Resection



Figure 43

Attach the smallest distal reamer to a T-handle and progressively increase the reamer diameter until adequate femoral canal clearing is achieved. Clear the canal without disturbing quality cancellous bone, which is needed for bone cement interdigitation (Figure 42).

The depth marks along the reamer shaft correspond to stem size, and reaming should stop when the appropriate depth mark is level with the femoral head, which generally corresponds to the tip of the trochanter. Leave the final distal reamer in place. If the reamer is not centred in the pilot hole, the pilot hole is not correctly positioned and should be enlarged. Note the reamer size used since this information will help determine the appropriate restrictor and distal centraliser.

**Note:** The surgeon may resect the head before canal reaming using the neck resection template.



Figure 44

### Neck Resection

Set the calliper to the distance measured during pre-operative templating between the superomedial point of the femoral head and the level of resection. Place one leg of the calliper on the superomedial point of the femoral head. Mark the level of resection where the point of the other leg touches the medial cortex (Figure 43).

Introduce the neck resection guide over the canal probe or distal reamer. Ensure the guide touches the femoral head and the anterior cortex of the greater trochanter.

Align the appropriate saw guide with the resection mark. There are two saw guide slots, one for Standard and the other for CDH stems (Figure 44). Both are clearly marked on the template. Perform an osteotomy on the femoral neck using an oscillating saw. Remove the resection guide and the distal reamer once a sufficiently deep cut has been made.

Complete the neck resection of the femoral head.

# ORDERING INFORMATION

## Femoral Heads

### 22.225 mm 9/10 CERAMAX® Head

136522110	22.225 mm 9/10 CERAMAX Head Neck Length -3
136522120	22.225 mm 9/10 CERAMAX Head Neck Length +0

### 28 mm 9/10 CERAMAX Head

136528110	28 mm 9/10 CERAMAX Head Neck Length -3
136528120	28 mm 9/10 CERAMAX Head Neck Length +0
136528130	28 mm 9/10 CERAMAX Head Neck Length +3

### 32 mm 9/10 CERAMAX Head

136532110	32 mm 9/10 CERAMAX Head Neck Length -3
136532120	32 mm 9/10 CERAMAX Head Neck Length +0
136532130	32 mm 9/10 CERAMAX Head Neck Length +3

### 36 mm 9/10 CERAMAX Head

136536110	36 mm 9/10 CERAMAX Head Neck Length -3
136536120	36 mm 9/10 CERAMAX Head Neck Length +0
136536130	36 mm 9/10 CERAMAX Head Neck Length +3

### 28 mm 9/10 ULTAMET™ Head

962700100	28 mm 9/10 ELITE Head Neck Length -3
962701100	28 mm 9/10 ELITE Head Neck Length +0
962702100	28 mm 9/10 ELITE Head Neck Length +3
962703100	28 mm 9/10 ELITE Head Neck Length +6

### 36 mm 9/10 ULTAMET Head

962710000	36 mm 9/10 Ultamet™ Head Neck Length -3
962711000	36 mm 9/10 Ultamet™ Head Neck Length +0
962712000	36 mm 9/10 Ultamet™ Head Neck Length +3
962713000	36 mm 9/10 Ultamet™ Head Neck Length +6

### 22.225 mm ELITE Modular Heads 9/10 Taper

962730000	22.225 mm ELITE Modular Head -3
962567000	22.225 mm ELITE Modular Head +0
962731000	22.225 mm ELITE Modular Head +3
962529000	22.225 mm ELITE Modular Head +6

### 26 mm ELITE Modular Heads 9/10 Taper

962569000	26 mm ELITE Modular Head -3
962570000	26 mm ELITE Modular Head +0
962732000	26 mm ELITE Modular Head +3

### 28 mm ELITE Modular Heads 9/10 Taper

962572000	28 mm ELITE Modular Head -3
962573000	28 mm ELITE Modular Head +0
962734000	28 mm ELITE Modular Head +3
962747000	28 mm ELITE Modular Head +6

### 32 mm ELITE Modular Heads 9/10 Taper

962574000	32 mm ELITE Modular Head -3
962575000	32 mm ELITE Modular Head +0
962735000	32 mm ELITE Modular Head +3

For Complete Code Listings for PINNACLE please use:

PINNACLE Product Code Catalogue DSEM/JRC/0615/0319

## Femoral Head Trials

### Trial Heads 22.225 mm

252222001	ELITE Trial Head 22.225 mm, -3
252222002	ELITE Trial Head 22.225 mm, +0
252222003	ELITE Trial Head 22.225 mm, +3
252222004	ELITE Trial Head 22.225 mm, +6

### Trial Heads 26 mm

252226001	ELITE Trial Head 26 mm, -3
252226002	ELITE Trial Head 26 mm, +0
252226003	ELITE Trial Head 26 mm, +3

### Trial Heads 28 mm

252228001	ELITE Trial Head 28 mm, -3
252228002	ELITE Trial Head 28 mm, +0
252228003	ELITE Trial Head 28 mm, +3
252228004	ELITE Trial Head 28 +6

### Trial Heads 32 mm

252232001	ELITE Impl Trial Head 32 mm, -3
252232002	ELITE Impl Trial Head 32 mm, +0
252232003	ELITE Impl Trial Head 32 mm, +3

### CHARNLEY Modular Trial Heads 22.225 mm

962736000	CHARNLEY Modular EXCEL™ Trial Head 22.225 mm, -3
962615000	CHARNLEY Modular EXCEL Trial Head 22.225 mm, 0
962737000	CHARNLEY Modular EXCEL Trial Head 22.225 mm, +3
962550050	CHARNLEY Modular EXCEL Trial Head 22.225 mm, +6

### CHARNLEY Modular Trial Heads 26 mm

962617000	CHARNLEY Modular EXCEL Trial Head 26 mm, -3
962616000	CHARNLEY Modular EXCEL Trial Head 26 mm, 0
962738000	CHARNLEY Modular EXCEL Trial Head 26 mm, +3

### CHARNLEY Modular Trial Heads 28 mm

962620000	CHARNLEY Modular EXCEL Trial Head 28 mm, -3
962619000	CHARNLEY Modular EXCEL Trial Head 28 mm, 0
962739000	CHARNLEY Modular EXCEL Trial Head 28 mm, +3
962751000	CHARNLEY Modular EXCEL Trial Head 28 mm, +6

### CHARNLEY Modular Trial Heads 32 mm

962623000	CHARNLEY Modular EXCEL Trial Head 32 mm, -3
962622000	CHARNLEY Modular EXCEL Trial Head 32 mm, 0
962740000	CHARNLEY Modular EXCEL Trial Head 32 mm, +3

## Femoral Implants

### CHARNLEY Modular Femoral Prosthesis

962562000	CHARNLEY Modular Femoral Prosthesis, CDH
962535001	CHARNLEY Modular Femoral Prosthesis, SNS 35
962535002	CHARNLEY Modular Femoral Prosthesis, Flanged 35
962550000	CHARNLEY Modular Femoral Prosthesis, Flanged 40
962540000	CHARNLEY Modular Femoral Prosthesis, Ex H 40
962566000	CHARNLEY Modular Femoral Prosthesis, RB 40
962565000	CHARNLEY Modular Femoral Prosthesis, RB Narrow 40
962578000	CHARNLEY Modular Femoral Prosthesis, RB 45
962579000	CHARNLEY Modular Femoral Prosthesis, Flanged 45
962545001	CHARNLEY Modular Femoral Prosthesis, Ex H 45

## Femoral Trials

### CHARNLEY Modular Trial Femoral Prosthesis

963035000	CHARNLEY Modular Trial Femoral Prosthesis, CDH
963035002	CHARNLEY Modular Trial Femoral Prosthesis, SNS 35
963035001	CHARNLEY Modular Trial Femoral Prosthesis, Flange 35
963031000	CHARNLEY Modular Trial Femoral Prosthesis, Flanged 40
963040001	CHARNLEY Modular Trial Femoral Prosthesis, Ex H 40
963030000	CHARNLEY Modular Trial Femoral Prosthesis, RB 40
963034000	CHARNLEY Modular Trial Femoral Prosthesis, RB Narrow 40
963032000	CHARNLEY Modular Trial Femoral Prosthesis, RB 45
963033000	CHARNLEY Modular Trial Femoral Prosthesis, Flanged 45
963045001	CHARNLEY Modular Trial Femoral Prosthesis, Ex H 45

### Acetabular Cups

965122038	CHARNLEY LPW Cup 22.225/38 mm
965122040	CHARNLEY LPW Cup 22.225/40 mm
965122043	CHARNLEY LPW Cup 22.225/43 mm
965122047	CHARNLEY LPW Cup 22.225/47 mm
965122050	CHARNLEY LPW Cup 22.225/50 mm
965122053	CHARNLEY LPW Cup 22.225/53 mm
965222040	CHARNLEY Flanged Cup 22.225/40 mm
965222043	CHARNLEY Flanged Cup 22.225/43 mm
965222047	CHARNLEY Flanged Cup 22.225/47 mm
965222050	CHARNLEY Flanged Cup 22.225/50 mm
965222053	CHARNLEY Flanged Cup 22.225/53 mm
965322040	CHARNLEY OGEE Cup 22.225/40 mm
965322043	CHARNLEY OGEE Cup 22.225/43 mm
965322047	CHARNLEY OGEE Cup 22.225/47 mm
965322050	CHARNLEY OGEE Cup 22.225/50 mm
965322053	CHARNLEY OGEE Cup 22.225/53 mm
965128040	ELITE PLUS™ LPW Cup 28/40 mm
965128043	ELITE PLUS LPW Cup 28/43 mm
965128047	ELITE PLUS LPW Cup 28/47 mm
965128050	ELITE PLUS LPW Cup 28/50 mm
965128053	ELITE PLUS LPW Cup 28/53 mm
965228040	ELITE PLUS Flanged Cup 28/40 mm
965228043	ELITE PLUS Flanged Cup 28/43 mm
965228047	ELITE PLUS Flanged Cup 28/47 mm
965228050	ELITE PLUS Flanged Cup 28/50 mm
965228053	ELITE PLUS Flanged Cup 28/53 mm
965326040	ELITE PLUS OGEE Cup 26/40 mm
965326043	ELITE PLUS OGEE Cup 26/43 mm
965326047	ELITE PLUS OGEE Cup 26/47 mm
965326050	ELITE PLUS OGEE Cup 26/50 mm
965326053	ELITE PLUS OGEE Cup 26/53 mm
965328040	ELITE PLUS OGEE Cup 28/40 mm
965328043	ELITE PLUS OGEE Cup 28/43 mm
965328047	ELITE PLUS OGEE Cup 28/47 mm
965328050	ELITE PLUS OGEE Cup 28/50 mm
965328053	ELITE PLUS OGEE Cup 28/53 mm

962517000	ELITE PLUS OGEE Cup 32/47 mm
962518000	ELITE PLUS OGEE Cup 32/50 mm
962519000	ELITE PLUS OGEE Cup 32/53 mm

### Centralisers

960092000	CHARNLEY Size 1 Centraliser (Pmma)
960093000	CHARNLEY Size 2 Centraliser (Pmma)

### Cement Restrictors (Polyethylene)

546010000	Cement Restrictor Size 1
546012000	Cement Restrictor Size 2
546014000	Cement Restrictor Size 3
546016000	Cement Restrictor Size 4
546018000	Cement Restrictor Size 5
546020000	Cement Restrictor Size 6
546022000	Cement Restrictor Size 7
546002000	Cement Restrictor Inserter

### Cement Restrictor Trials

546030000	Cement Restrictor Trial 1
546032000	Cement Restrictor Trial 2
546034000	Cement Restrictor Trial 3
546036000	Cement Restrictor Trial 4
546038000	Cement Restrictor Trial 5
546040000	Cement Restrictor Trial 6
546042000	Cement Restrictor Trial 7

### Instruments

962040000	CHARNLEY Neck Osteotomy Guide
252200506	ELITE In-line Broach Handle
962901000	EXCEL Broach Rb40n
962902000	EXCEL Broach Rb40
962903000	EXCEL Broach Fl40
962582000	EXCEL Broach Rd45
962583000	EXCEL Broach Fl45
962913000	EXCEL Broach Cdh
962045000	CHARNLEY Curette Small
962046000	CHARNLEY Curette Medium
962047000	CHARNLEY Curette Large
200142000	EXCEL T Handle
200118501	IM initiator
235410000	Muller Awl Reamer With Hudson End
210512000	Canal Reamer 10
210514000	Canal Reamer 11
210515000	Canal Reamer 12
210516000	Canal Reamer 13
200225000	Anteversio Osteotome Medium
200165000	EXCEL Femoral Head Impactor
252200502	ELITE PLUS Stem Introducer

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CA#DSEM/JRC/0716/0668 Issued: 07/16