Surgical Technique

DELTA CTA™

DELTA CTA™ REVERSE SHOULDER PROSTHESIS

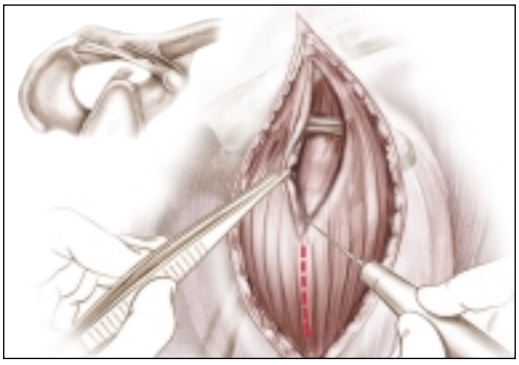
DePuy
a Johnson & Johnson company


Lateralised Cup
Glenosphere
Threaded Head Screw
Spherical
Head Screw
Metaglene
Epiphysis
Diaphysis

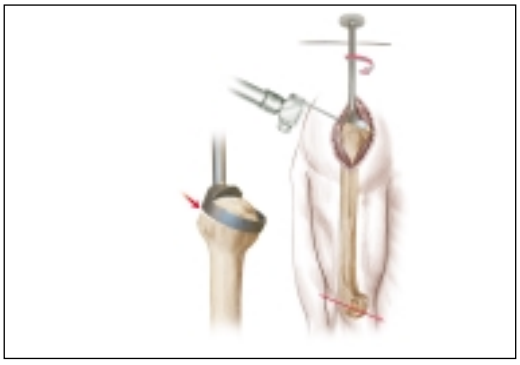
Contents

Surgical Steps

Superior lateral approach



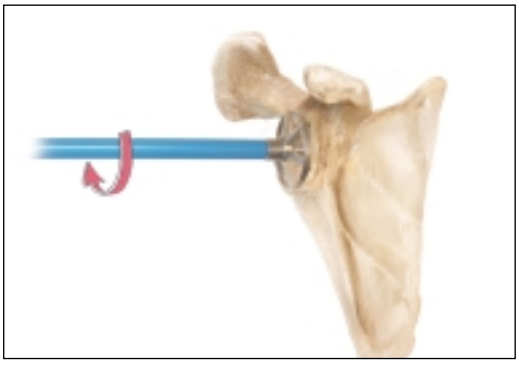
Resection of the humeral head



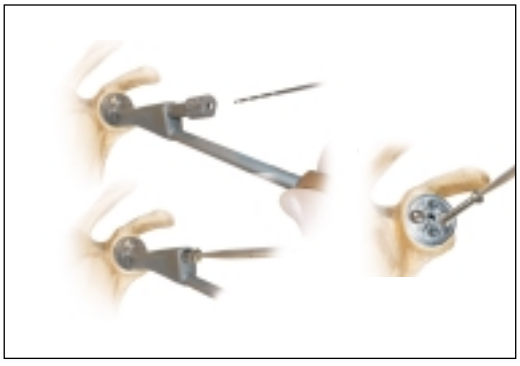
Diaphyseal preparation

Proximal reaming of the humerus

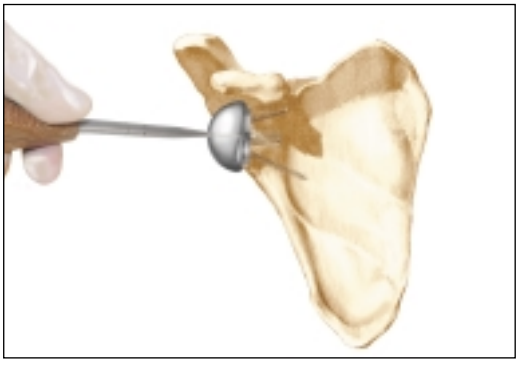
Preparation of the glenoid



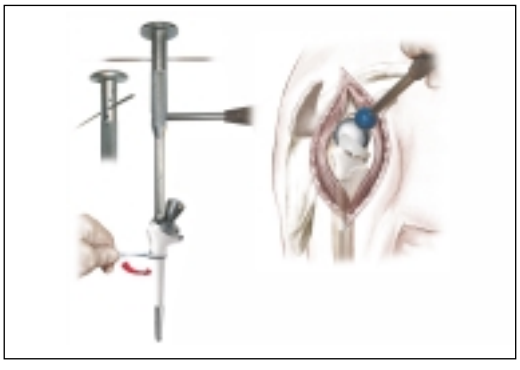
Insertion of the Metaglene



Glenosphere Placement



Insertion of the humeral Implant



Introduction

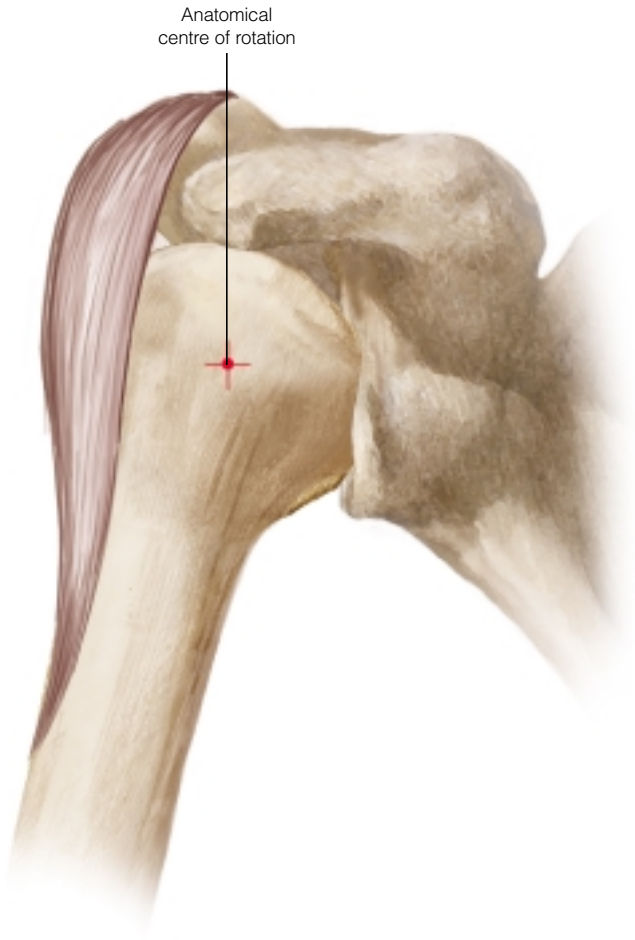


Figure 1

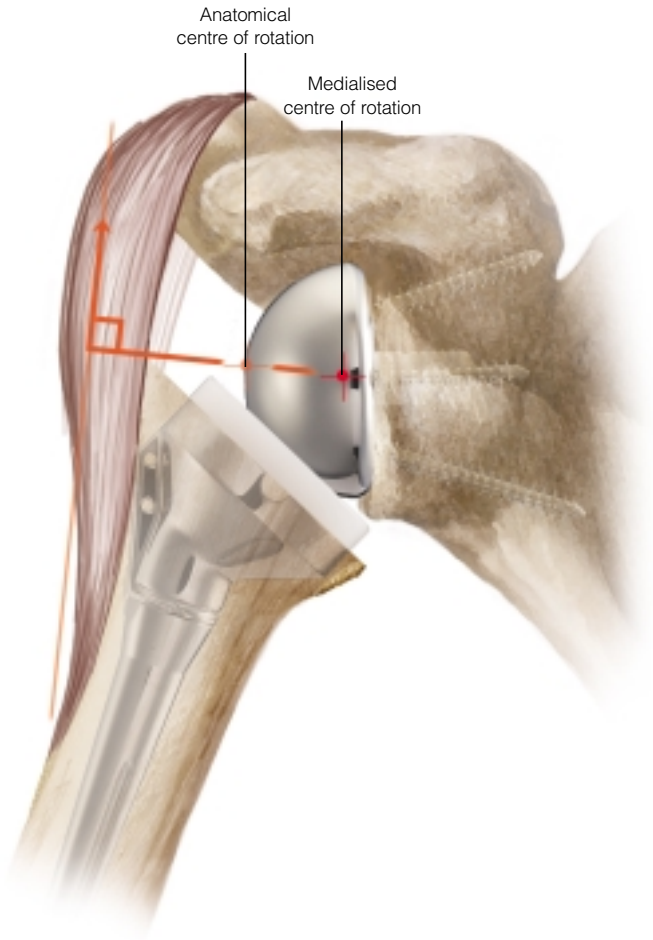


Figure 2

The Delta CTA™ Reverse Shoulder System is indicated for the treatment of glenohumeral arthritis when it is associated with irreparable rotator cuff damage and where conventional total shoulder arthroplasty may not be fully effective in restoring joint stability with an adequate range of movement.
The design avoids high shear forces associated with unstable conventional or hemi-arthroplasty, that can cause the implant to wear and loosen.

The Delta CTA™ prosthetic geometry reverses the normal relationship between scapular and humeral components, moving the centre of rotation medially and distally to increase the lever arm length of the deltoid muscle (Figures 1 and 2).

This allows the three muscles in the deltoid group to compensate for rotator cuff deficiency, drawing the articulating surfaces together to stabilise the joint and allow as near normal function as possible.

Pre-operative Planning

Figure 3

An initial assessment is made of the bone in the superior and inferior aspects of the glenoid, using radiographic and CT imaging in order to determine the suitability of the patient for treatment. The size of the glenoid vault is assessed to ensure that all four metaglene screws can be placed within glenoid bone.

Pre-operative planning is also carried out, using AP and lateral shoulder radiographs of known magnification, and the available template to confirm the size and alignment of the implant (Figure 3).

Surgical Approach and Patient Positioning

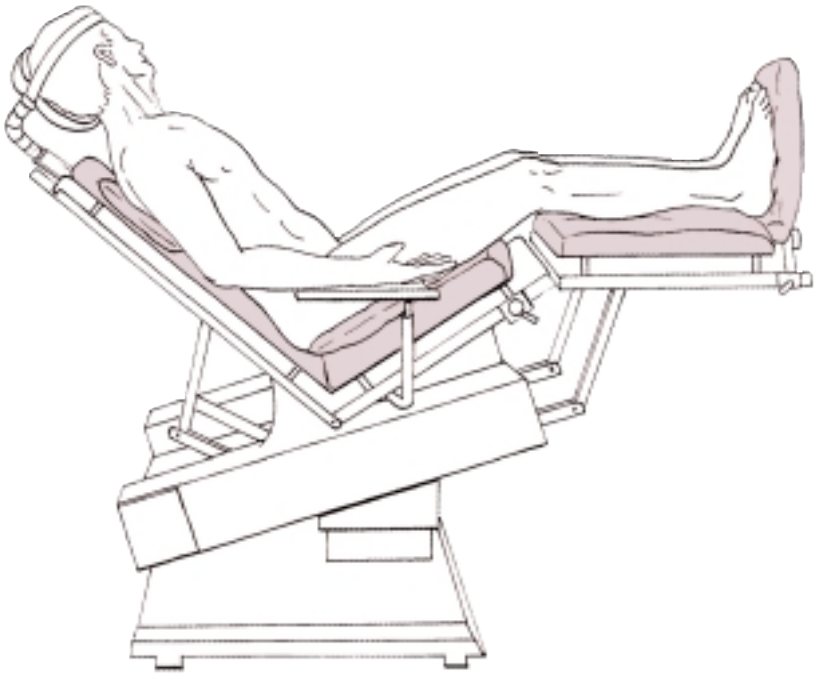


Figure 4

The patient should be in the deck chair position, with the affected arm completely free and resting on a support (Figure 4).

Superior Lateral Approach

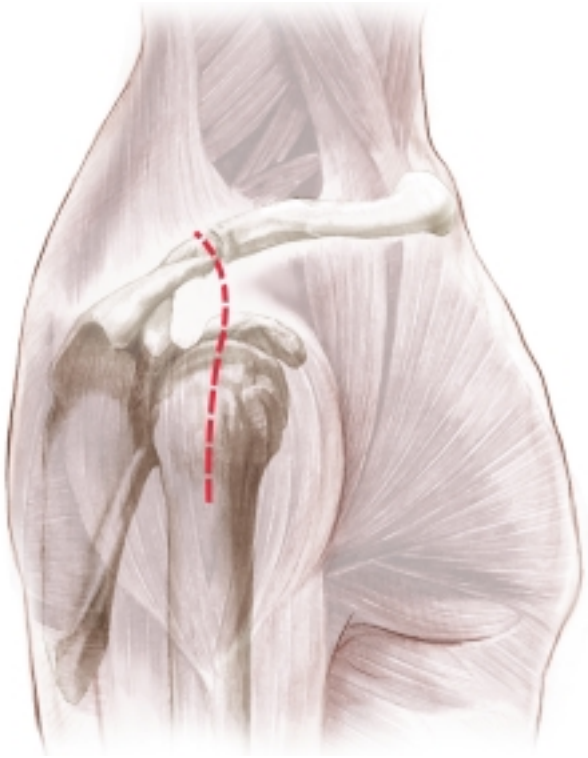


Figure 5

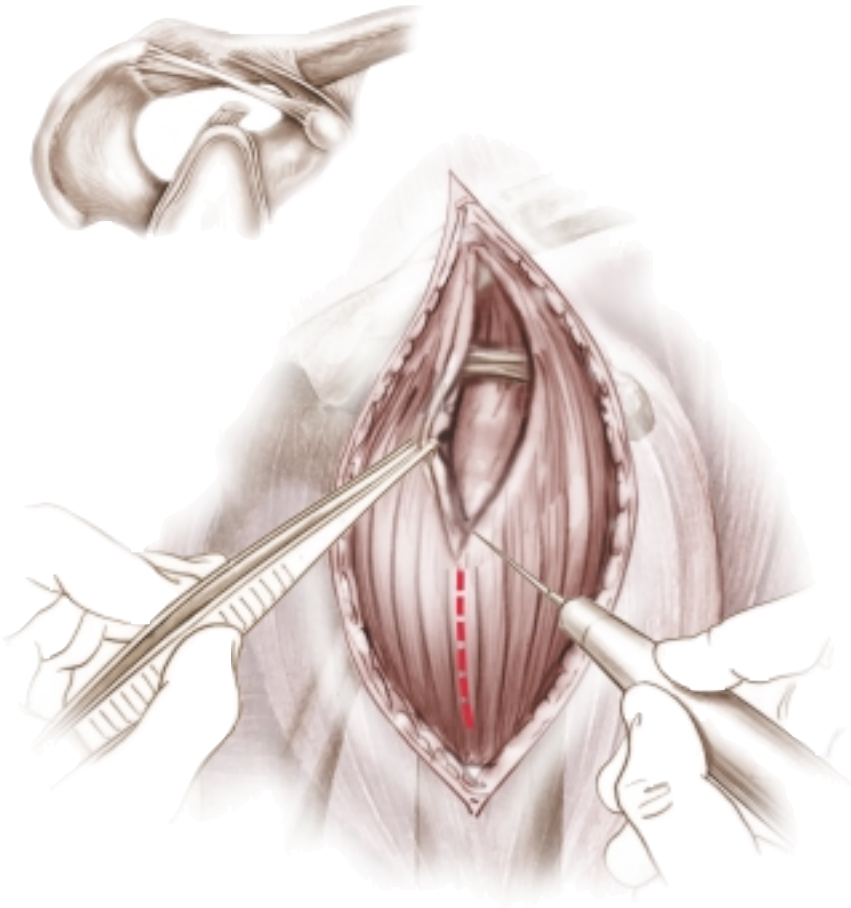


Figure 6

The quality and ease of implantation rely on a superior lateral approach (Figure 5). A delto-pectoral approach is also appropriate and the choice depends mainly on surgeon preference and clinical parameters. Revision surgery for instance usually dictates a delto-pectoral approach as it allows for a longer humeral incision when faced with a difficult removal of the humeral stem. Used for classic rotator cuff repairs, the superior lateral approach allows a clear visualisation of the glenoid and therefore facilitates greatly the implantation of the glenoid components of the prosthesis.

The incision is started at the level of the AC joint, follows the anterior aspect of the acromion and finishes vertically downwards for 4 cm (Figure 6). Following subcutaneous dissection, the anterior and middle deltoid muscle bundles are separated opposite the lateral margin of the acromion, using blunt dissection (the dissection should not extend beyond 4 cm from the external aspect of the acromion in order to preserve the axillary nerve). When the subacromial bursa is visible, gentle longitudinal traction in line with the limb will allow a retractor to be placed in the subacromial space.

The anterior deltoid is released subperiosteally from its acromial insertion up to the AC joint.
The humeral head is then visible at the anterior edge of the acromion – the subacromial bursa is removed.
If necessary, exposure may now be improved by dividing the AC ligament and performing acromioplasty.
The limb is then externally rotated and the head is dislocated anterosuperiorly to facilitate positioning of the cutting guide. If the biceps is still present, it should be tenodenised in the bicipital groove. Retain the teres minor and infraspinatus when present.

Humeral Head Resection

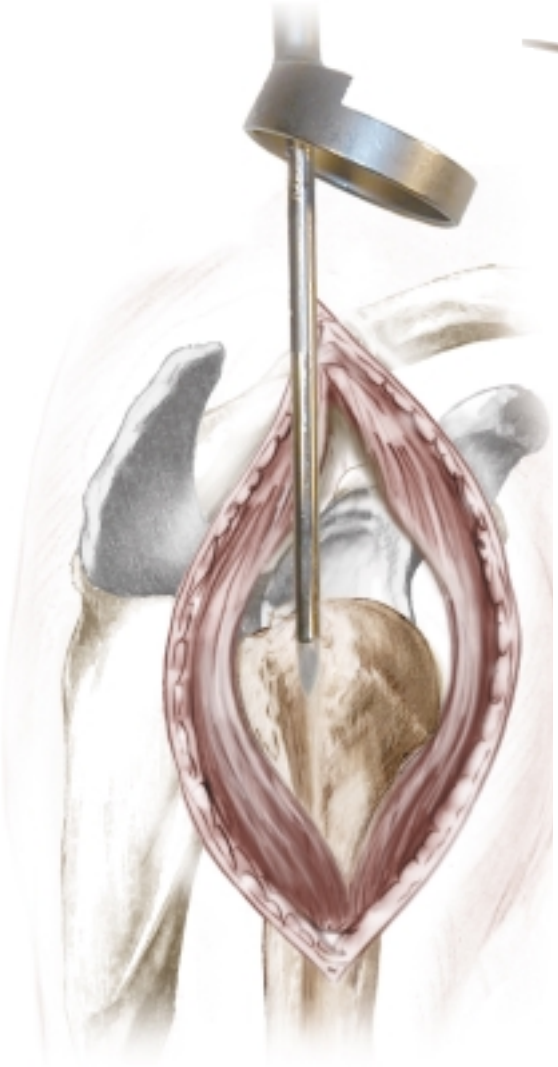


Figure 7

Figure 8A

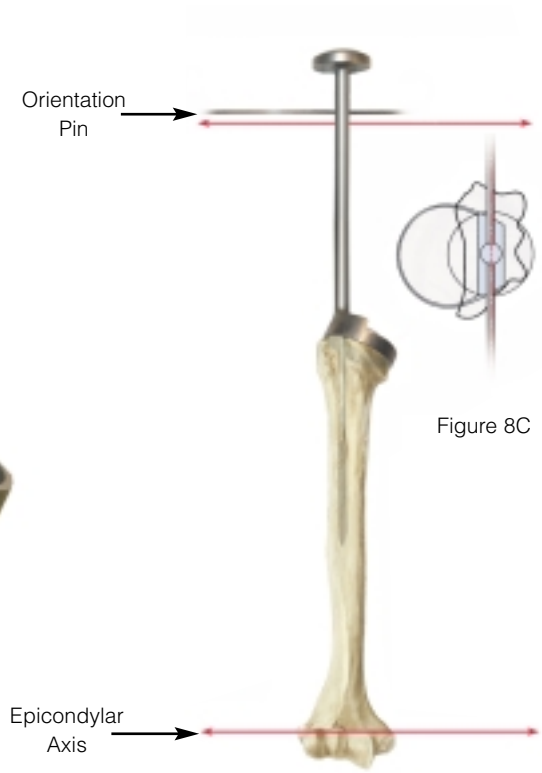


Figure 8C

Figure 8B

An initial entry hole is made in the proximal humerus using an awl.
The awl tip is centred over and in line with the long axis of the humerus, at the junction of the intratubercular groove and the articulating surface of the humeral head (Figure 7).

The orientation pin is then passed through the hole in the resection guide corresponding to the desired retroversion (Figure 8A). Preferably, this will be 0° since excessive retroversion will restrict joint rotation, especially in internal rotation. Retroversion is calculated with reference to the axis of the humeral epicondyles (Figure 8B).

The tip of the cutting guide is located in the entry hole and the guide is passed down the humeral canal until it rests on the humeral head.
With the humeral resection guide rim located on the humeral head, the orientation pin is aligned with the transcondylar axis (Figure 8C).

Humeral Reaming

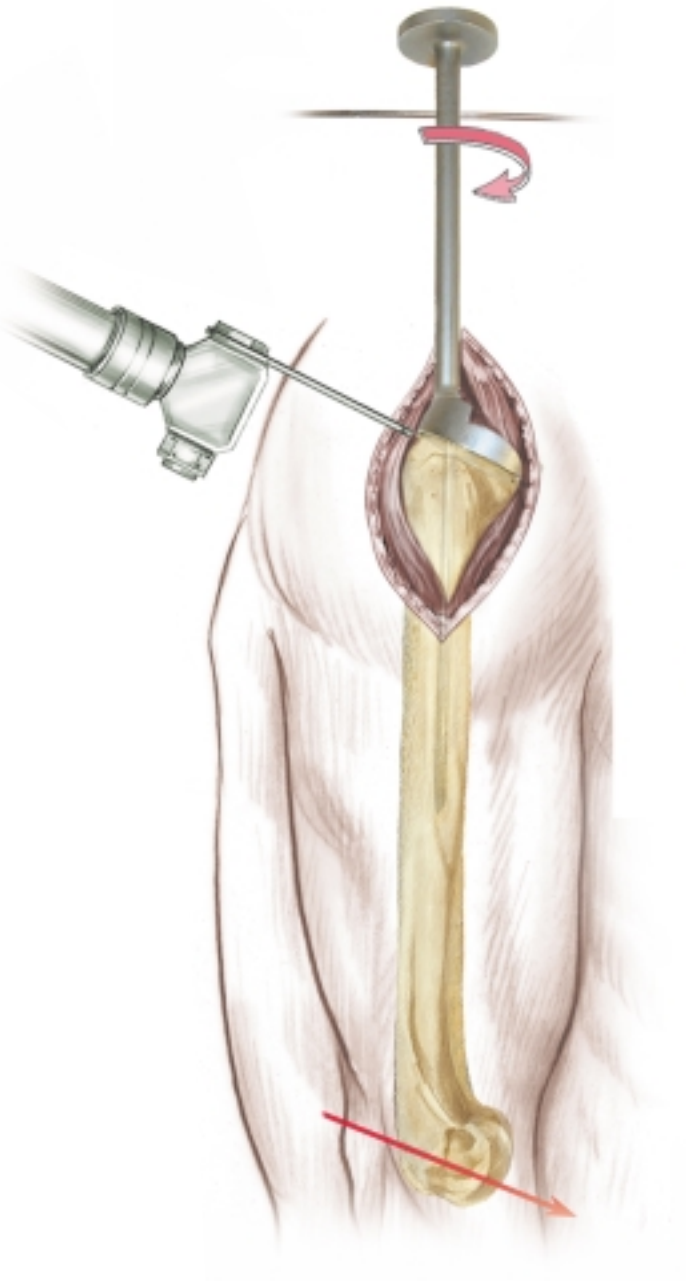


Figure 9

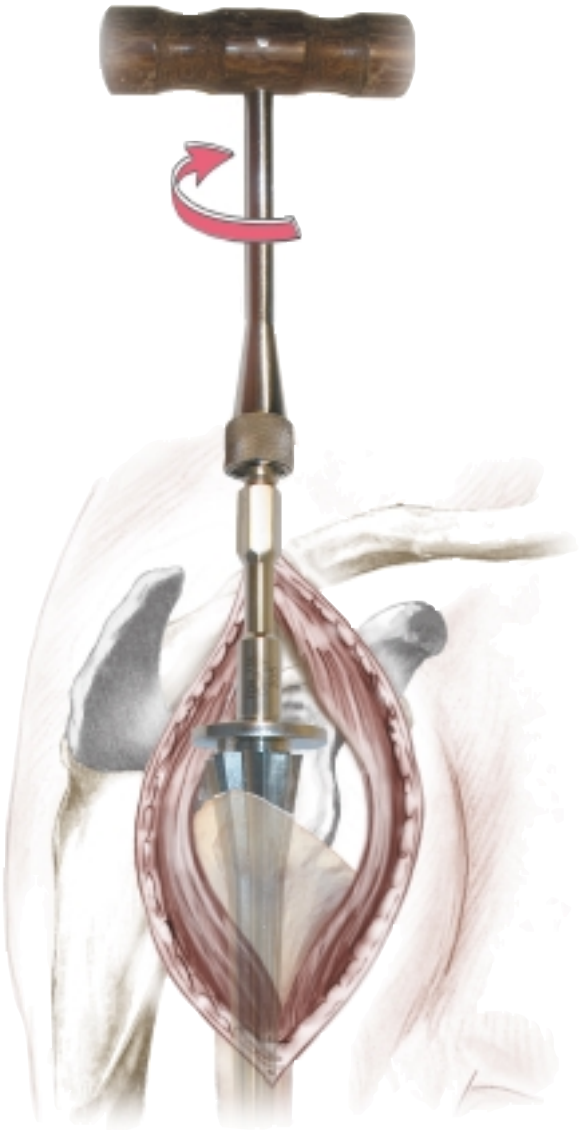


Figure 10

The humeral head resection is initiated in line with the inferior aspect of the humeral cutting guide (135°), the humeral cutting guide is removed and the resection completed (Figure 9). The initial resection removes a minimal amount of bone. More bone may be removed if necessary.

A forked retractor is passed under the scapula to lower the humerus. If this provides a clear sight of the glenoid surface, the resection level is correct. If not, a further resection may be carried out.

Starting with the smallest diameter distal reamer attached to the T-Handle, the distal humeral canal is reamed in line with the long axis of the humerus (Figure 10). The final reamer should not exceed the templated proximal diameter (up to size 4). Reaming stops when the flange of the reamer is level with the resection.

Power reaming should not be used to ream the humerus.

Distal Humeral Reaming (Revision Surgery)

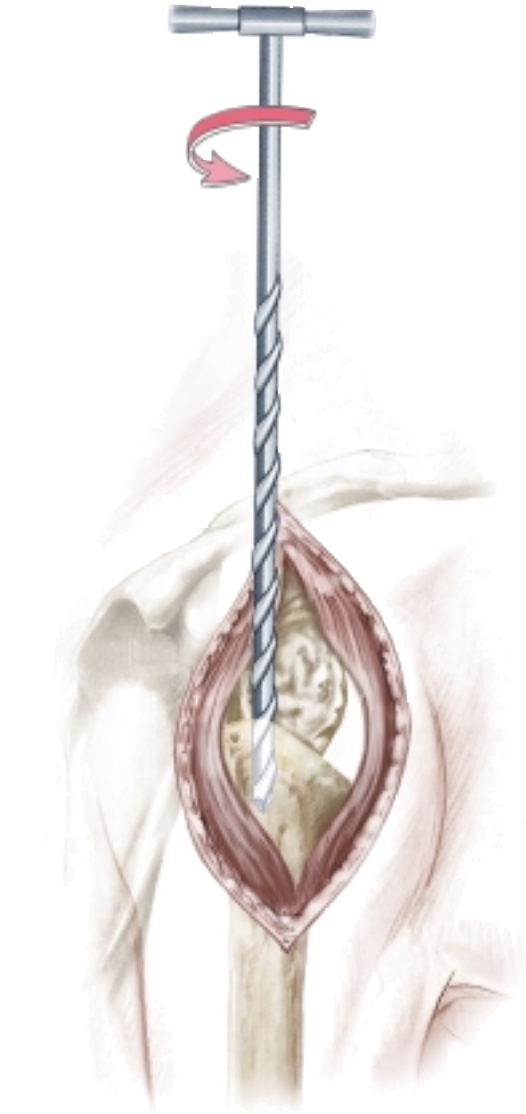


Figure 11

If a long stem is to be implanted, 150 mm and 180 mm diaphyseal revision reamers should be used in conjunction with the rigid reamers that are included within the Delta CTA™ revision instrumentation (Figure 11).

In addition to the reamers in the accompanying table, 5 mm and 6 mm diameter reamers are provided as start-up reamers.

Diaphyseal references	Reamer references
Size 1, length 150 mm (ref. DHR115H/DHC115B) Size 1, length 180 mm (ref. DHR118H/DHC118B)	7.5 mm diameter (ref. ALR 075)
Size 2, length 150 mm (ref. DHR215H/DHC215B) Size 2, length 180 mm (ref. DHR218H/DHC218B)	8 mm diameter (ref. ALR 008)
Size 3, length 150 mm (ref. DHR315H/DHC315B) Size 3, length 180 mm (ref. DHR318H/DHC318B)	9 mm diameter (ref. ALR 009)

Proximal Reamer Guide Assembly

Figure 12

The proximal reaming guide, 36 mm or 42 mm, corresponding to the templated epiphysis size, is screwed to the trial diaphyseal stem that matches the distal reamer diameter. The assembly is mounted on the humeral stem impactor and introduced in line with the long axis of the humerus (Figure 12).

Proximal Humeral Reaming

Figure 13

Figure 14

The orientation pin is passed through the hole in the impactor handle and the previously selected version angle is checked.

The assembly is impacted into the humeral canal until the appropriate mark (36 mm or 42 mm) on the impactor reaches the level of the resection (Figure 13).

Retroversion is again checked and the impactor is removed, leaving the reaming guide in place.

The appropriate size of proximal humeral reamer, (36.1, 36.2 or 42.2 mm) is mounted on the T-Handle.

The humerus is then reamed until the flange of the reamer is level with the osteotomy, and contact is made with cortical bone (Figure 14).

If necessary, the reaming guide can be inserted more deeply to ensure that the proximal reamer reaches the level of osteotomy.

Reaming is now complete and the reamer, reamer guide and trial stem are extracted from the humerus.

Trial Humeral Implantation

Figure 15

The trial epiphyseal component is attached to the trial diaphyseal stem, and the assembly is mounted onto the humeral stem impactor (Figure 15). It may be necessary to remove a wedge of cortical bone to accommodate the lateral fin on the epiphyseal component. The assembly is impacted into the humeral canal, ensuring the diaphyseal fin does not impinge upon the lateral cortex of the humerus. The humeral stem impactor is then removed, leaving the trial humeral components in place.

Exposure of the Glenoid

Figure 16

A forked retractor is positioned on the axillary margin of the scapula, under the inferior glenoid labrum, to reflect the humerus down or backward, depending on the approach taken. The labrum is excised and an extensive periglenoid capsulotomy is performed. Any peripheral osteophytes should be removed to restore the natural anatomic shape of the glenoid (Figure 16).

Preparation of the Glenoid

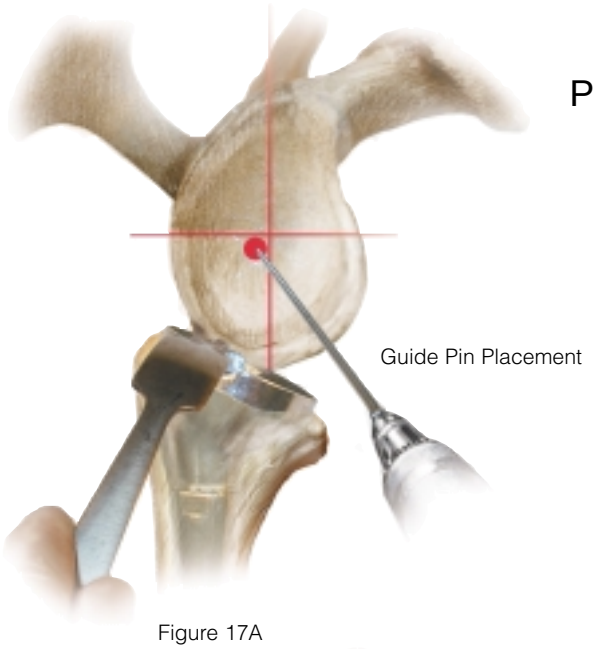


Figure 17A

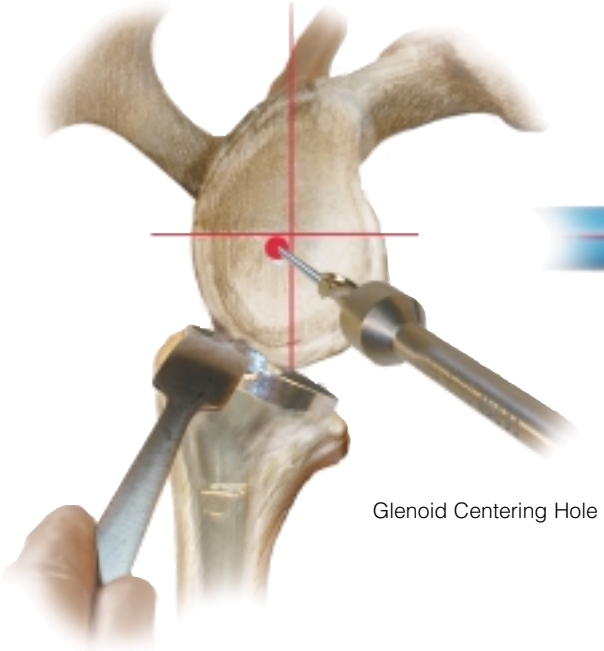


Figure 17B

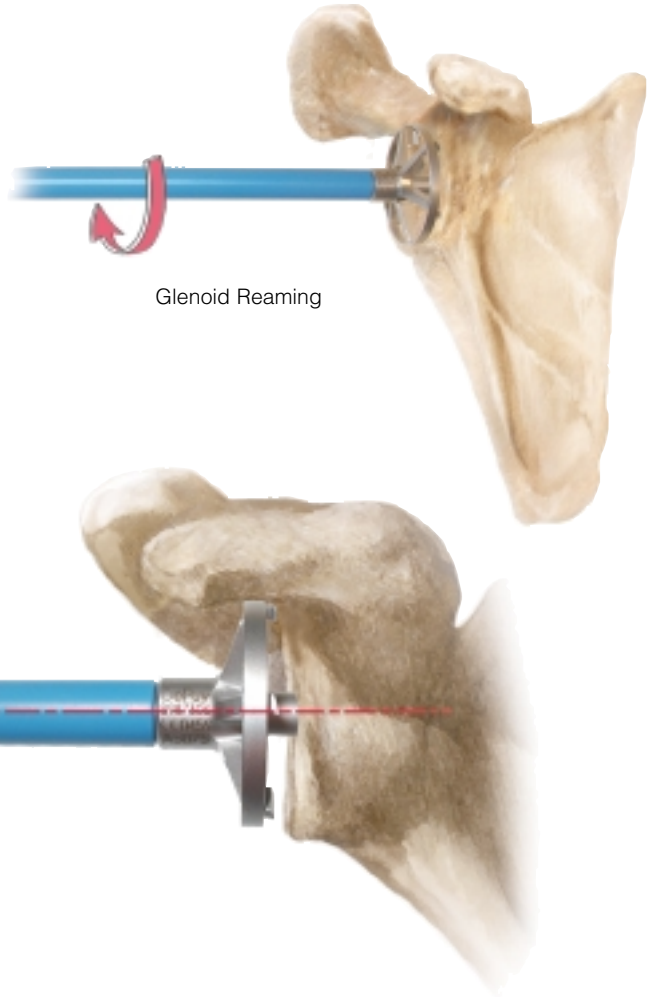


Figure 18

The major and minor axes of the glenoid are then marked using diathermy. The 2.5 mm guide pin is attached to the power tool and an entry point is created just posterior and inferior to the intersection of the axes (Figure 17A). The location for this entry point may be checked using radiographic and CT imaging combined with X-ray templates. It should be as inferior as possible, while ensuring that sufficient space is available to place the inferior screw in cancellous bone for its entire length.

The cannulated stop drill is attached to the power source and the glenoid centering hole is completed over the guide pin (Figure 17B).

The glenoid reamer is attached to the power source and the reamer pilot shaft is introduced into the glenoid centring hole. In cases of osteoporotic bone, hand reaming should be used.

Ensure that the reamer is not in contact with bone before applying power since this may damage the glenoid.

The glenoid is then reamed until a smooth platform devoid of cartilage is created for the Metaglene, with sufficient depth to accommodate its peripheral rim (Figure 18). The depth should be checked before implantation of the prosthesis. If sufficient peripheral depth is not achieved, the glenosphere will not fully engage with the taper on the Metaglene, and further reaming should be carried out until the tray is fully seated.

Implantation of the Metaglene

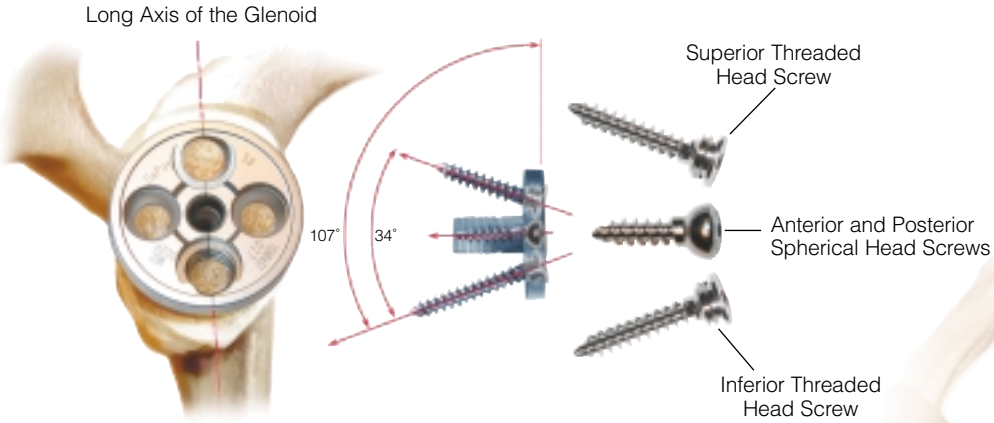


Figure 19

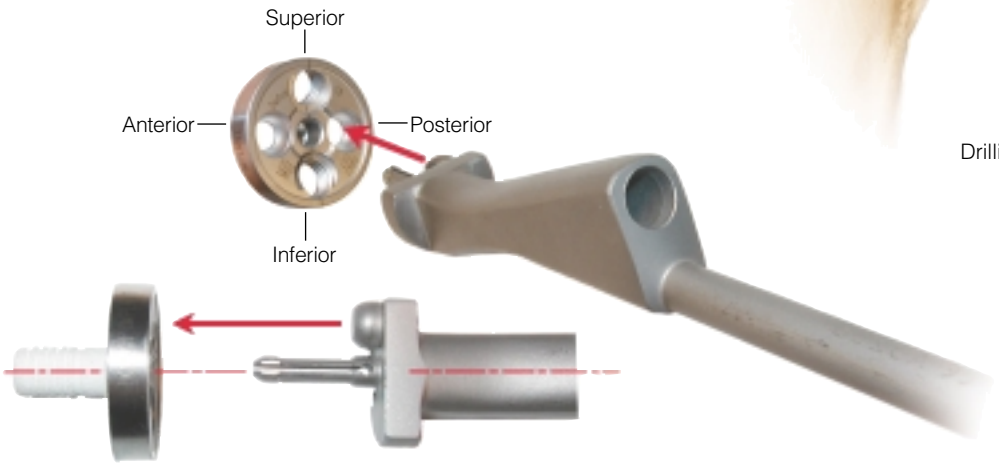


Figure 20

The Metaglene is available in one size for both 36 mm and 42 mm Glenospheres and is implanted without cement. Initial, primary mechanical stability is provided by the 4.5 mm diameter screws. When correctly positioned, the angled, threaded screw holes in the Metaglene should be aligned superiorly and inferiorly on the glenoid (Figure 19). A revision Metaglene is available and may be selected for cases of severe erosion of the glenoid cavity rim.

The definitive Metaglene is attached to the holder, with the drill guide covering the inferior threaded screw hole on the implant. Check that the Metaglene is accurately seated on the holder.

The assembly is inserted into the prepared glenoid with the superior and inferior holes aligned with the long axis of the glenoid.

Caution: It is imperative to use the Metaglene holder to insert the inferior and superior screws. The 34° angle between these two screws is fixed and cannot be altered.

Inferior and Superior Screw Placement

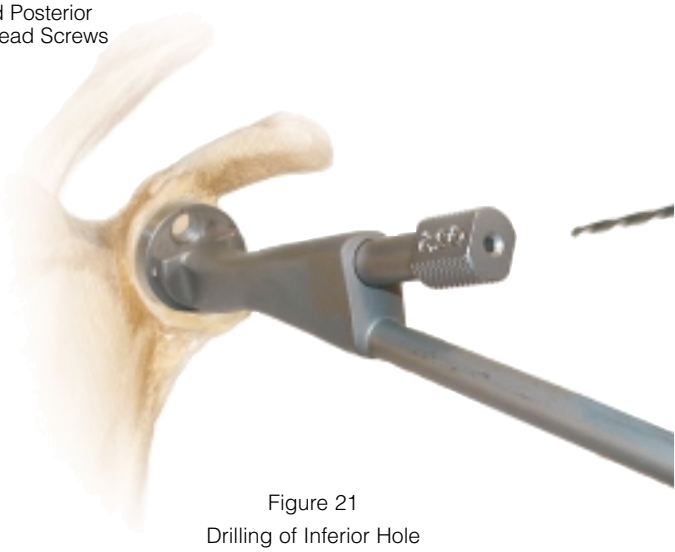


Figure 21
Drilling of Inferior Hole

Once the Metaglene has been manually aligned, the holder is tapped firmly so that the tray is impacted flat onto the prepared surface of the glenoid.

It is important to ensure that the Metaglene is fully seated, flat on the prepared glenoid, before it is screwed into position.

A drill bush 2 or 2.5 mm in diameter, depending on the quality of bone, is then inserted into the drill guide. The corresponding long drill (A5273/A5274) is selected, passed through the bush, and the inferior fixation hole is drilled (Figure 21).

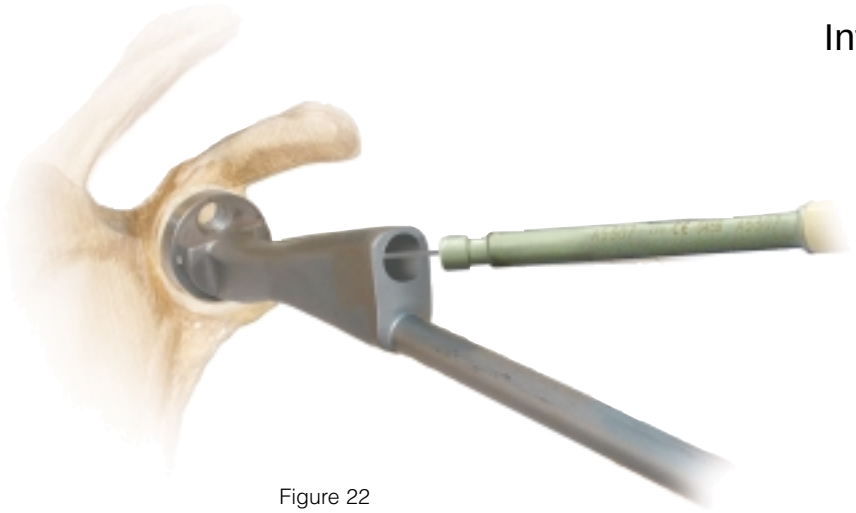


Figure 22
Depth Measurement

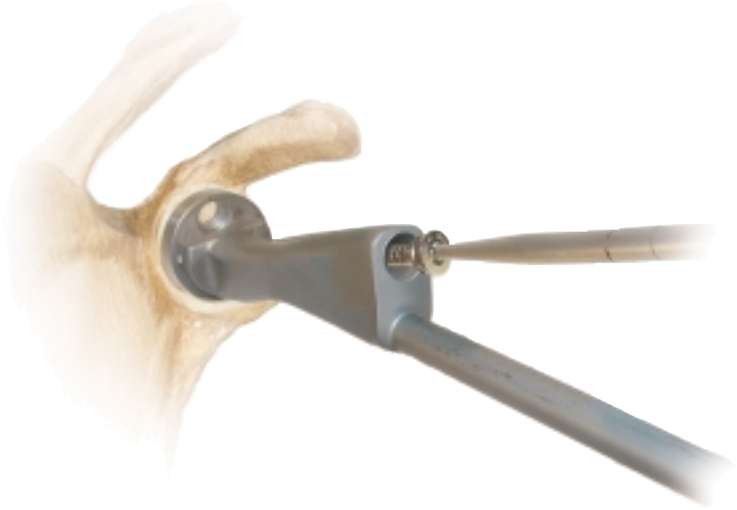


Figure 23
Screw Placement

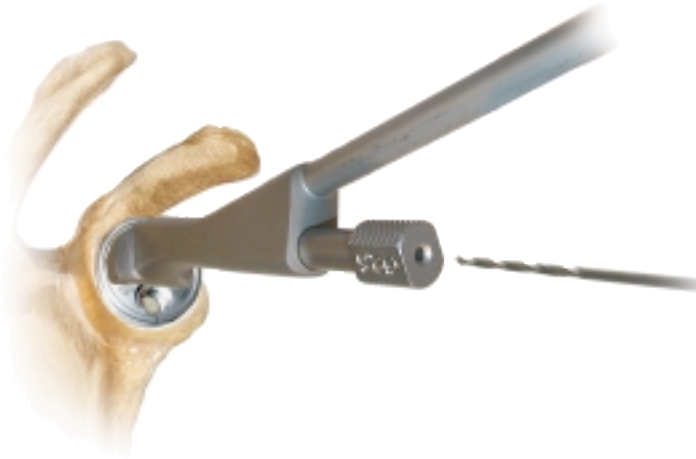


Figure 24
Drilling of Superior Hole

Laser etched depth markings on the long drills can help when choosing the most appropriate screw length.
A depth gauge is also provided. To use it, the drill bush should be removed to check the depth of the screw hole (Figure 22).
Threaded head screws must be used for the inferior and superior holes. The spherical head screws are designed for use only with anterior and posterior holes.

A threaded head screw of corresponding length to the measured depth is passed through the drill guide and screwed into the inferior fixation hole.
The screw should be fully tightened at this stage (Figure 23).

The Metaglene holder is then gently detached from the bearing tray and turned 180° to prepare the superior fixation hole in the same way as the inferior hole.
Its depth is measured and the appropriate threaded head screw is screwed into position (Figure 24), again ensuring it is fully tightened.

Anterior and Posterior Screw Placement

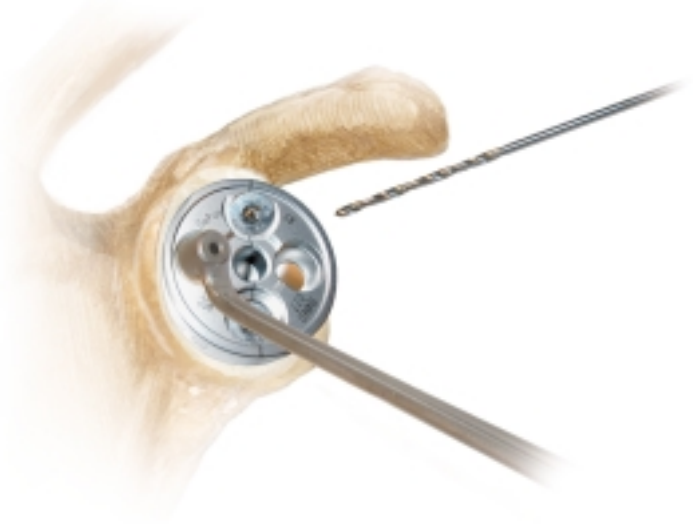


Figure 25
Anterior Hole Drilling

Figure 27
Screw Placement

Figure 26
Depth Measurement

Figure 28
Final Screw Tightening

The Metaglene holder is removed and the free hand drill guide of appropriate size, 2.0 or 2.5 mm, is located in the anterior fixation hole. Both anterior and posterior screw positions allow angulation of ± 20 degrees. The drill guide is used to set the most appropriate angle to ensure that each screw is located in reliable bone stock (Figure 25). Preferential position is usually chosen by palpating the anterior and posterior aspects of the scapula as well as examining the X-rays and CT scans.

The anterior hole is drilled using the short drills with depth markings (MPG020/ MPG025). The drill guide is removed and the hole depth measured using the depth gauge (Figure 26).

A spherical head screw is introduced, and part tightened (Figure 27).
The same procedure is followed for the posterior screw. Both screws are then alternately fully tightened (Figure 28).

Trial Reduction

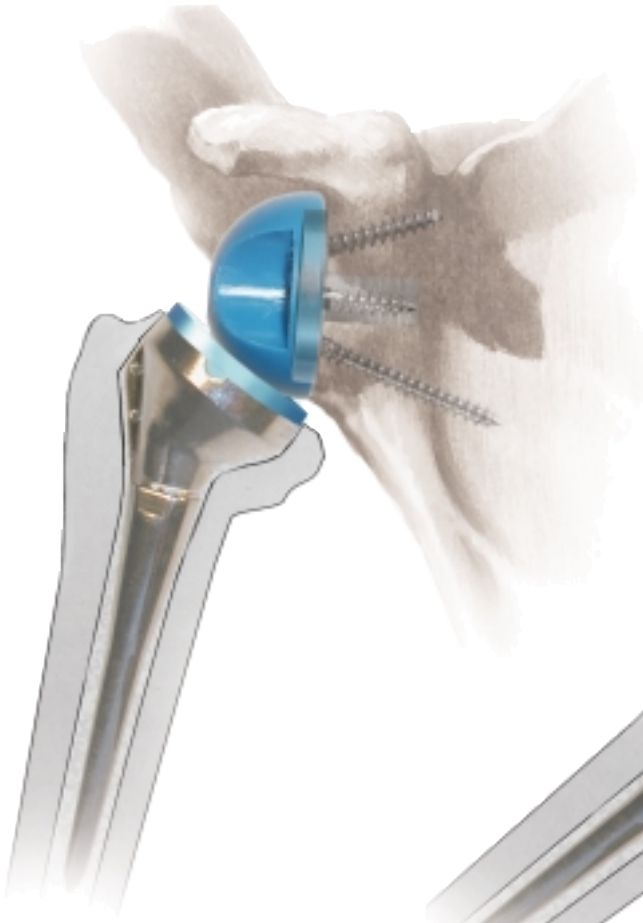


Figure 29

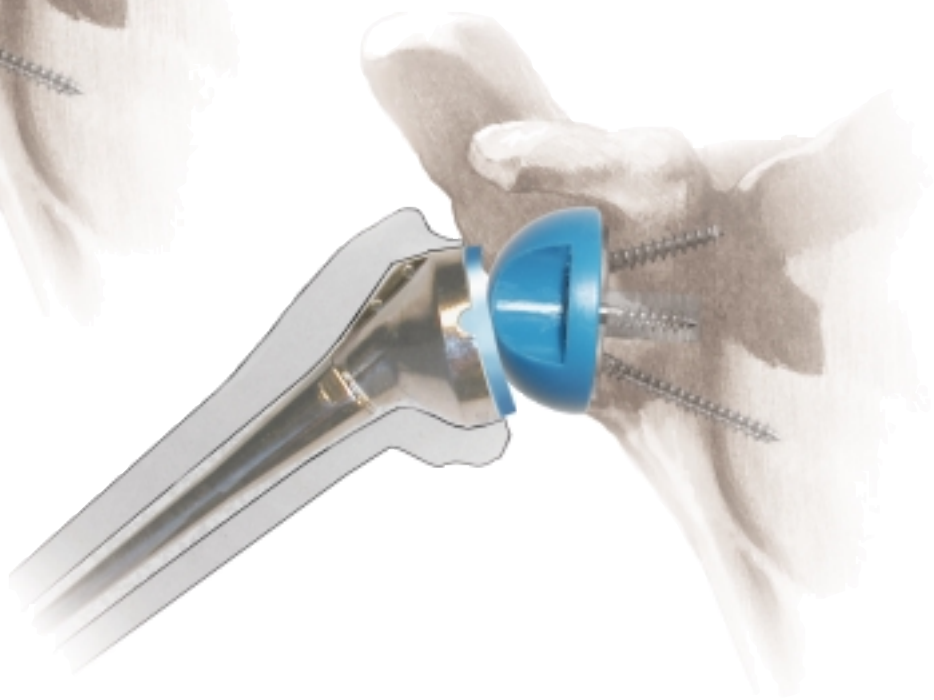


Figure 30

The appropriate trial glenosphere (36 mm or 42 mm) is attached to the Metaglene. The corresponding humeral cup trial is inserted into the humeral trial assembly. The shoulder is then reduced and assessed for a full range of movement.

Soft tissue tension is correct, when:

- The arm is pulled down and outward, approximately 5mm of humeral glenoid component separation is expected.
- The joint should remain stable when the arm is adducted, with no indication of subluxation. Only a small degree of superior lift-off is expected in extreme adduction (Figure 29). The lift-off will disappear during the arm elevation thanks to the deltoid contraction and the joint surface will be perfectly congruent (Figure 30).

To adjust joint tensioning, the lateralised cup is available in three thicknesses (+3 mm, +6 mm, +9 mm). If further soft tissue tension is required, a +9 mm metallic humeral spacer may be put in between the epiphysis and the cup. It should then be attached to the trial epiphyseal component, using the hexagonal head screwdriver. In case of muscular overtensioning, further humeral bone resection might be performed. Additional joint stability may be achieved by introducing a retentive, more constrained cup (+0 retentive, +6 retentive).

However those retentive cups should only be used in revision cases or to correct extreme instability. If the humeral cut is adequate, a lateralised cup will be sufficient in the majority of cases.

Glenosphere Placement

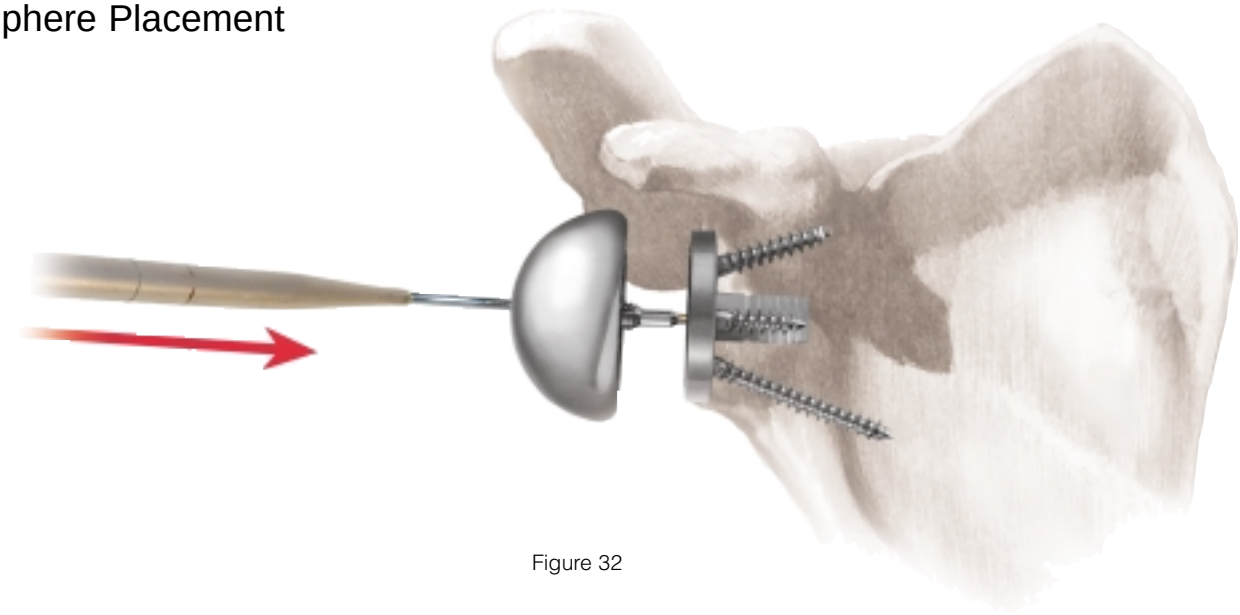


Figure 32

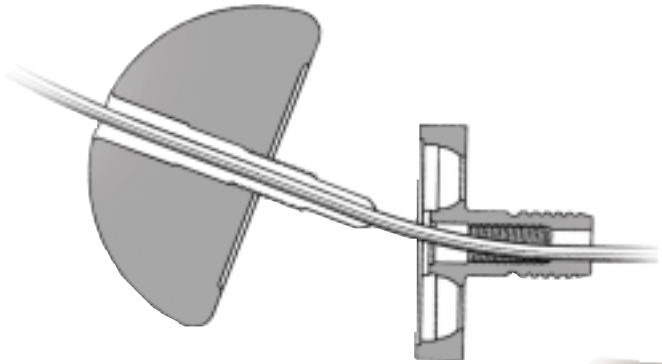


Figure 31

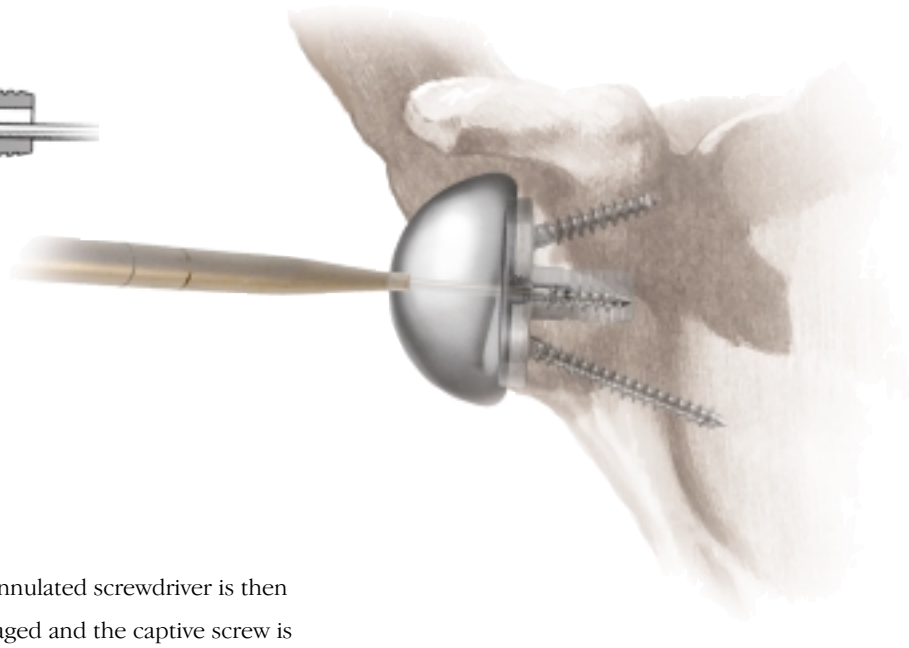


Figure 33

A 1.5 mm guide pin is inserted through the central hole of the Metaglene (Figures 31 & 32).
The 3.5 mm cannulated screwdriver is engaged in the definitive Glenosphere and guided over the 1.5 mm guide pin. After two or three turns, the cannulated screwdriver is disengaged and the glenoid bearing is checked to ensure that it is properly aligned.

The cannulated screwdriver is then re-engaged and the captive screw is tightened until the glenoid bearing closes on the taper of the bearing tray. Further impaction of the junction is then obtained by gently tapping the glenosphere using the glenosphere impactor and tightening again the glenosphere central screw.
Care should be taken to ensure that the glenoid bearing is fully locked onto the bearing tray (Figure 33).

Humeral Implant Insertion

Figure 34

Figure 35

The trial humeral assembly is extracted from the humerus. The corresponding definitive humeral epiphyseal component is attached to the impactor (Figure 34). The definitive diaphyseal component is screwed to the epiphyseal component. The two components are then locked tight, using the wrench and driver (Figure 35). It is important to ensure the two components are tightly locked together to reduce the chance of post operative disassembly.

If cementless components are selected, the assembly is introduced in the appropriate retroversion and the assembly is impacted into the humeral canal.

If the implant is to be cemented, a synthetic cement restrictor or bone plug is introduced into the distal humeral canal to restrict the passage of cement. Cement is injected into the humeral canal and, when the cement is at its appropriate viscosity, the implant assembly is introduced in line with the long axis of the humerus and in the chosen version angle. Pressure is maintained on the introducer until the cement is fully polymerised.

Humeral Implant Insertion

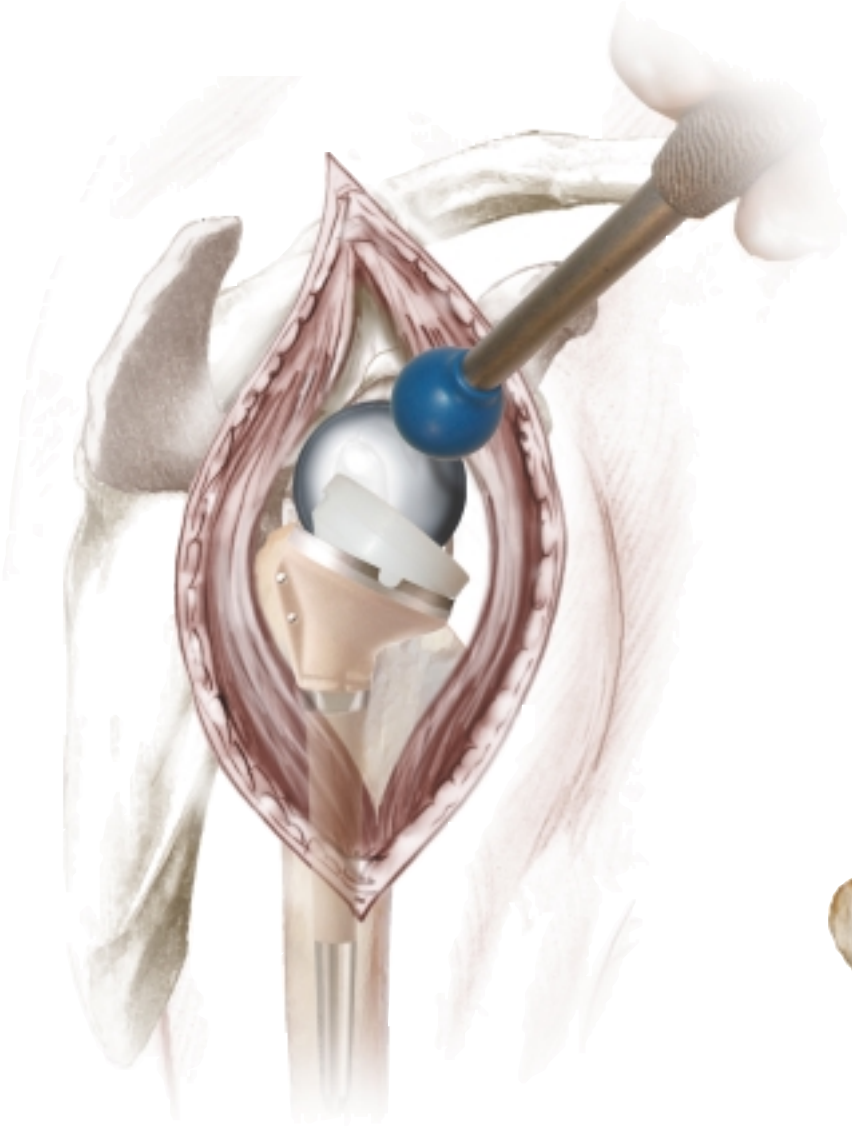


Figure 36

The definitive humeral cup is impacted using the cup impactor (Figure 36). The joint is reduced and a final assessment of joint stability and range of movement is carried out.

Hemi-arthroplasty

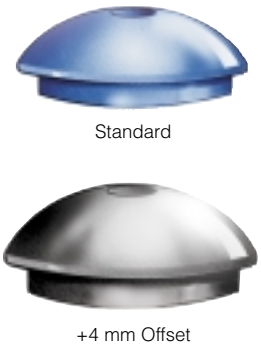


Figure 37

Figure 38

In cases of intra-operative fracture of the glenoid cavity, or revision of the Delta CTA™ glenoid, for example, a hemi-arthroplasty may be considered. Intermediate metallic heads are provided within the Delta CTA™ system to complete this procedure.
Two epiphyseal diameters, 36 and 42 mm, are available in standard and + 4 mm offset (Figure 37). The hemi heads can be assembled either directly onto the epiphysis or onto the metallic spacer. These should be introduced using the humeral head impactor (Figure 38).

Closure

Once the joint space is irrigated and cleared of debris, the anterior deltoid is firmly sutured at the fibrous acromial perimeter or using transosseous stitches. A drain is left in place.
Layered closure of the soft tissues normally leads to an adequate range of motion, without instability.

Post-operative Management

Appropriate post-operative physiotherapy is an important factor in the outcome of this procedure, since stability and mobility now depend on the deltoid alone. The physiotherapy programme, which should be planned to suit the individual patient, consists of two phases: early (6 weeks) and late.
Two days after the operation the patient can be mobile. This early phase is dedicated to gentle and gradual recovery of the passive range of shoulder motion: abduction of the scapula, anterior elevation and medial and lateral rotation. An abduction cushion may be used to relieve pressure on the deltoid. Physiotherapy is mainly performed with the patient supine, passive and with both hands holding a bar that is manipulated by the contralateral hand, as described by Neer.

The patient is encouraged to use the affected arm to eat and write but should not raise the arm. In conjunction with these exercises for scapulohumeral recovery, it is important to strengthen muscle connection with the scapula in order to facilitate muscle and implant function. Passive exercise in the swimming pool is recommended as soon as scars begin to form.
After the sixth or seventh week, active strengthening movements may be gradually added to the programme. These exercises, which closely follow everyday activities, are performed in a sitting or standing position, using conventional methods, with isometric exercises and resistance movements becoming increasingly important.
A series of exercises for rhythmic stabilisation of the upper arm as well as eccentric working on lowering the arms complete the strengthening of the muscles. Physiotherapy should be performed over a period of at least six months.

Implants

EHC361B	Cemented Humeral Epiphysis, 36.1
EHC362B	Cemented Humeral Epiphysis, 36.2
EHC422B	Cemented Humeral Epiphysis, 42.2
EHR361H	Cementless Humeral Epiphysis, 36.1
EHR362H	Cementless Humeral Epiphysis, 36.2
EHR422H	Cementless Humeral Epiphysis, 42.2
DHC010B	85mm Cemented Humeral Diaphysis, Size 0
DHC110B	86mm Cemented Humeral Diaphysis, Size 1
DHC210B	88mm Cemented Humeral Diaphysis, Size 2
DHC310B	89mm Cemented Humeral Diaphysis, Size 3
DHC410B	94mm Cemented Humeral Diaphysis, Size 4
DHR000H	95mm Cementless Humeral Diaphysis, Size 0
DHR110H	96mm Cementless Humeral Diaphysis, Size 1
DHR210H	98mm Cementless Humeral Diaphysis, Size 2
DHR310H	99mm Cementless Humeral Diaphysis, Size 3
DHR410H	100mm Cementless Humeral Diaphysis, Size 4
4CHL336	Lateralised Humeral Cup, ø36, + 3 mm
4CHL636	Lateralised Humeral Cup, ø36, + 6 mm
4CHL936	Lateralised Humeral Cup, ø36, + 9 mm
4CHL342	Lateralised Humeral Cup, ø42, + 3 mm
4CHL642	Lateralised Humeral Cup, ø42, + 6 mm
4CHL942	Lateralised Humeral Cup, ø42, + 9 mm
4CHS036R	Medialised Retentive Humeral Cup, ø36, + 0 mm/ R
4CHS042R	Medialised Retentive Humeral Cup, ø42, + 0 mm/ R
4CHL636R	Lateralised Retentive Humeral Cup, ø36, + 6 mm/ R
4CHL642R	Lateralised Retentive Humeral Cup, ø42, + 6 mm/ R
RTH236	Humeral Spacer, ø36, + 9 mm
RTH242	Humeral Spacer, ø42, + 9 mm
TIH036	Humeral Head, ø36, + 0 mm
TIH436	Humeral Head, ø36, + 4 mm
TIH042	Humeral Head, ø42, + 0 mm
TIH442	Humeral Head, ø42, + 4 mm
MGC002H	Standard Metaglene
GSC236	Glenosphere Dia. 36 mm
GSC242	Glenosphere Dia. 42 mm
VFM4524	Metaglene Screws, Dia. 4.5 x 24 mm (Threaded Head)
VFM4530	Metaglene Screws, Dia. 4.5 x 30 mm (Threaded Head)
VFM4536	Metaglene Screws, Dia. 4.5 x 36 mm (Threaded Head)
VFM4542	Metaglene Screws, Dia. 4.5 x 42 mm (Threaded Head)
VFM4548	Metaglene Screws, Dia. 4.5 x 48 mm (Threaded Head)
VSM4518	Metaglene Screws, Dia. 4.5 x 18 mm (Spherical Head)
VSM4524	Metaglene Screws, Dia. 4.5 x 24 mm (Spherical Head)
VSM4530	Metaglene Screws, Dia. 4.5 x 30 mm (Spherical Head)
VSM4536	Metaglene Screws, Dia. 4.5 x 36 mm (Spherical Head)
VSM4542	Metaglene Screws, Dia. 4.5 x 42 mm (Spherical Head)

Humeral Preparation Instruments

GSH002	Humeral Resection Guide
ARR001	Orientation Pin
FPH361	Proximal Humeral Reamer, 36.1
FPH362	Proximal Humeral Reamer, 36.2
FPH422	Proximal Humeral Reamer, 42.2
FDH036N	Distal Humeral Reamer, Size 0, Dia. 36 mm
FDH136	Distal Humeral Reamer, Size 1, Dia. 36 mm
FDH236	Distal Humeral Reamer, Size 2, Dia. 36 mm
FDH336	Distal Humeral Reamer, Size 3, Dia. 36 mm
FDH436	Distal Humeral Reamer, Size 4, Dia. 36 mm
FDH142	Distal Humeral Reamer, Size 1, Dia. 42 mm
FDH242	Distal Humeral Reamer, Size 2, Dia. 42 mm
FDH342	Distal Humeral Reamer, Size 3, Dia. 42 mm
FDH442	Distal Humeral Reamer, Size 4, Dia. 42 mm
ITH003	Humeral Stem Impactor
EHF001	Forked Retractor
EHF002	Forked Retractor Large
GFP136	Proximal Reamer Guide, Dia. 36 mm
GFP142	Proximal Reamer Guide, Dia. 42 mm
IGF004	Reamer Guide Impactor/Extractor
CLE014	Diaphyseal Stem Locking Wrench
DHF010N	Humeral Diaphysis Trial, Size 0
DHF110	Humeral Diaphysis Trial, Size 1
DHF210	Humeral Diaphysis Trial, Size 2
DHF310	Humeral Diaphysis Trial, Size 3
DHF410	Humeral Diaphysis Trial, Size 4
EHF361	Humeral Epiphysis Trial, 36.1
EHF362	Humeral Epiphysis Trial, 36.2
EHF422	Humeral Epiphysis Trial, 42.2
REH236	Humeral Spacer Trial, ø36, + 9 mm
REH242	Humeral Spacer Trial, ø42, + 9 mm
A5469	Lateralised Humeral Cup Trial, ø36, + 3 mm
A5264	Lateralised Humeral Cup Trial, ø36, + 6 mm
A5468	Lateralised Humeral Cup Trial, ø36, + 9 mm
A5467	Lateralised Humeral Cup Trial, ø42, + 3 mm
A5261	Lateralised Humeral Cup Trial, ø42, + 6 mm
A5466	Lateralised Humeral Cup Trial, ø42, + 9 mm
A5265	Medialised Retentive Humeral Cup Trial, ø36, + 0 mm / R
A5262	Medialised Retentive Humeral Cup Trial, ø42, + 0 mm / R
A5263	Lateralised Retentive Humeral Cup Trial, ø36, + 6 mm / R
A5260	Lateralised Retentive Humeral Cup Trial, ø42, + 6 mm / R
TEH036	Humeral Head Trial, ø36, + 0 mm
TEH042	Humeral Head Trial, ø42, + 0 mm
TEH436	Humeral Head Trial, ø36, + 4 mm
TEH442	Humeral Head Trial, ø42, + 4 mm














Glenoid Preparation Instruments

A5266	Guide Pin, Dia. 2.5 mm	
A5267	Cannulated Stop drill	
A5075	Glenoid Surfacing Rasp, Dia. 36 mm	
A5076	Glenoid Surfacing Rasp, Dia. 42 mm	
PAM001	T-Handle	
A5271	Drill Bush, Dia. 2.0 mm	
A5272	Drill Bush, Dia. 2.5 mm	
GPM020	Drill Guide, Dia. 2.0 mm	
GPM025	Drill Guide, Dia. 2.5 mm	
A5326	Long S/I Drill Bit, Dia. 2.0 mm (170 mm Length)	
A5327	Long S/I Drill Bit, Dia. 2.5 mm (170 mm Length)	
MPG020	Short A/P Drill Bit, Dia. 2.0 mm (100 mm Length)	
MPG025	Short A/P Drill Bit, Dia. 2.5 mm (100 mm Length)	
A5273	Glenosphere Trial, Dia. 36 mm	
A5274	Glenosphere Trial, Dia. 42 mm	
9E03011	3.5 mm Hex. Head Screwdriver, Cannulated	
A5307	Screw Depth Gauge	
PRT001	Standard Impactor Holder	
EPT001	Humeral Head Impactor	
EPC032	Humeral Cup Impactor	
A5074	1.5 mm Guide Wire	
A5268	Metaglene Holder	

Trays

A5807	Glenoid Tray Base
A5806	Glenoid Tray Insert
A5812	Glenoid Tray Lid
A5815	Glenoid Tray Screw Rack
A5809	Humeral Tray 1 Base
A5808	Humeral Tray 1 Insert
A5813	Humeral Tray 1 Lid
A5811	Humeral Tray 2 Base
A5810	Humeral Tray 2 Insert
A5814	Humeral Tray 2 Lid
A5819	Tray Insert for Cups

Delta CTA™ Revision

Implants

DHC115B	150 mm Revision Cemented Humeral Diaphysis, Size 1
DHC215B	150 mm Revision Cemented Humeral Diaphysis, Size 2
DHC315B	150 mm Revision Cemented Humeral Diaphysis, Size 3
DHC118B	180 mm Revision Cemented Humeral Diaphysis, Size 1
DHC218B	180 mm Revision Cemented Humeral Diaphysis, Size 2
DHC318B	180 mm Revision Cemented Humeral Diaphysis, Size 3
DHR115H	150 mm Revision Cementless Humeral Diaphysis, Size 1
DHR215H	150 mm Revision Cementless Humeral Diaphysis, Size 2
DHR315H	150 mm Revision Cementless Humeral Diaphysis, Size 3
DHR118H	180 mm Revision Cementless Humeral Diaphysis, Size 1
DHR218H	180 mm Revision Cementless Humeral Diaphysis, Size 2
DHR318H	180 mm Revision Cementless Humeral Diaphysis, Size 3
MRC002H	Revision Metaglene

Instruments

ETH001	Standard Humeral Prosthesis Extractor
MDE001	Extraction Rod
MAI001	Slap Hammer
ITH003	Stem Extractor
TEP035	3.5 mm Hex. Head Screwdriver
TEP025	2.5 mm Hex. Head Screwdriver
ALR005	Diaphyseal Reamer, Dia. 5 mm
ALR006	Diaphyseal Reamer, Dia. 6 mm
ALR075	Diaphyseal Reamer, Dia. 7.5 mm
ALR008	Diaphyseal Reamer, Dia. 8 mm
ALR009	Diaphyseal Reamer, Dia. 9 mm
DHF115	150 mm Long Humeral Diaphysis Trial, Size 1
DHF215	150 mm Long Humeral Diaphysis Trial, Size 2
DHF315	150 mm Long Humeral Diaphysis Trial, Size 3
DHF118	180 mm Long Humeral Diaphysis Trial, Size 1
DHF218	180 mm Long Humeral Diaphysis Trial, Size 2
DHF318	180 mm Long Humeral Diaphysis Trial, Size 3
A5288	Metaglene Extractor

Trays

A5280	Tray Base
A5281	Tray Insert
A5279	Lid

DELTA

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