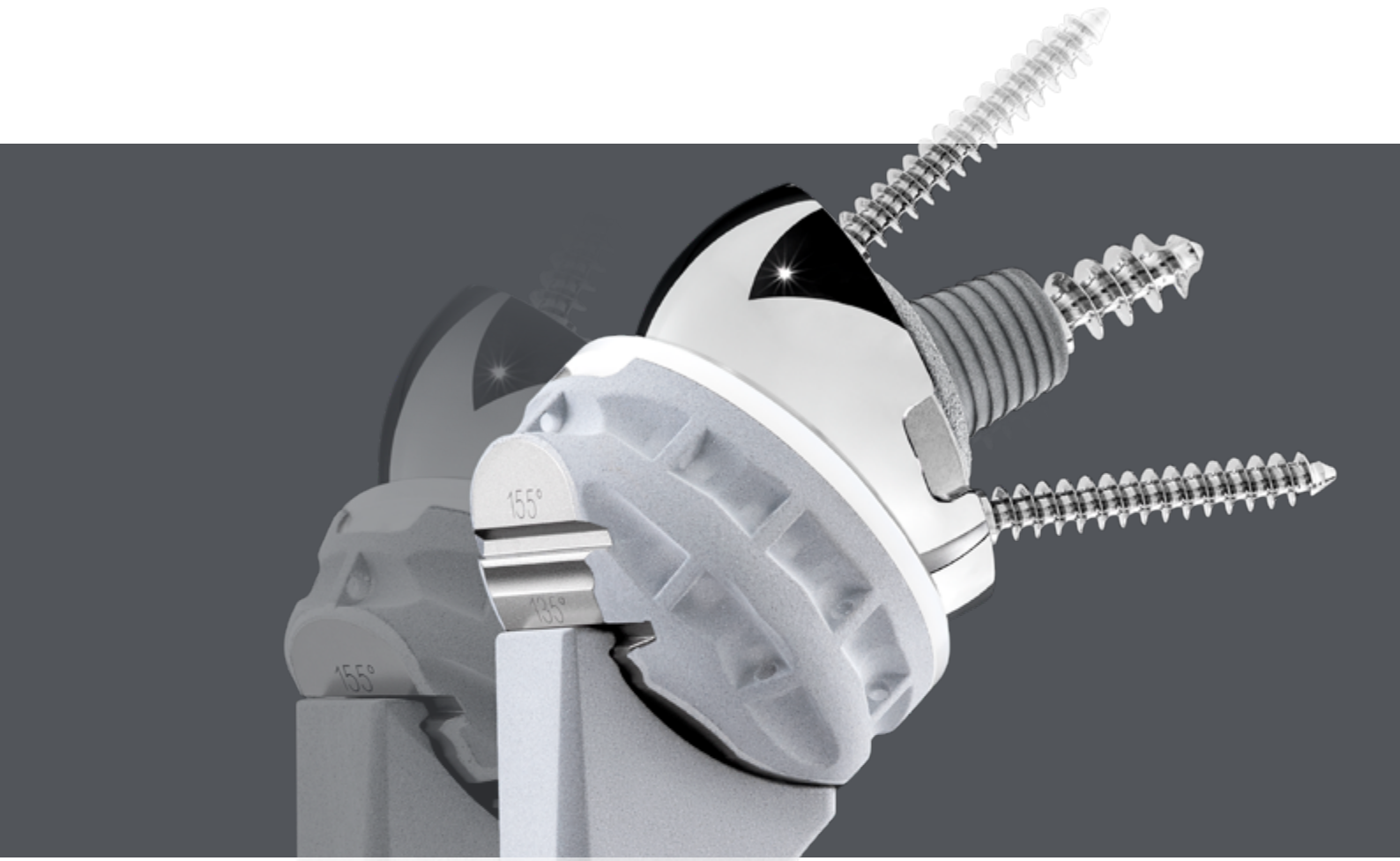
Univers Revers™ Shoulder System

Surgical Technique



Arthrex®

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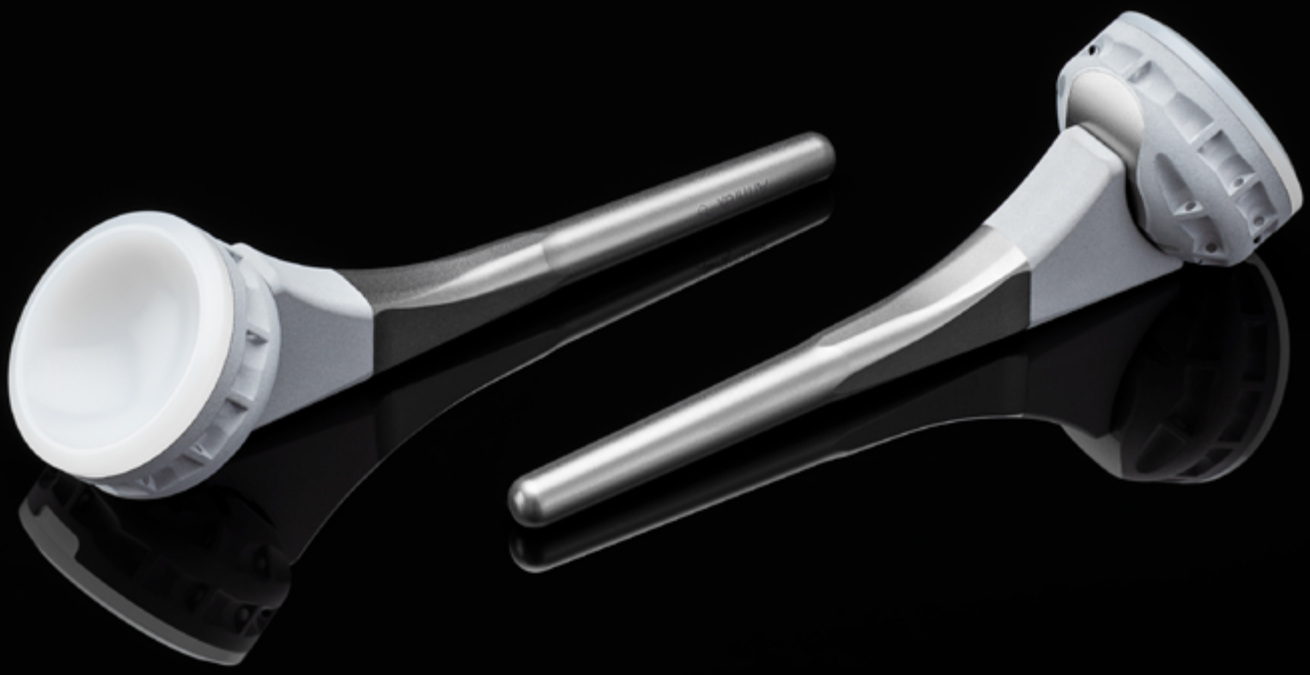
Implant Design Rationale

The Univers Revers total shoulder system is an essential component and complement to the Arthrex family of shoulder arthroplasty and fracture management products. The system is designed to restore function to shoulders with advanced cartilage disease in the presence of irreparable rotator cuff defects. The Univers Revers feature set and its design flexibility allows optimization of joint mechanics and deltoid tension for each patient. Developing a system that supports intraoperative decision-making was key to the design group. Features such as multiple inclination angles, cup sizes, metaphyseal offset, glenosphere geometries, options for attaching rotator cuff and tuberosity fragments to the prosthesis, as well as variable angle baseplate screws and linear / spacer tensioning options have been employed in the Univers Revers system. Arthrex understands surgery is about decisions and options.



System Features

Humeral Stems

- 135° and 155° inclination angle options in 1 universal stem body
- Rectangular proximal filling stem based on anatomic geometry of Univers II total shoulder system
- Calcium phosphate-coated proximal stem
- 1 mm size increments for optimized press-fit

Suture Cups, Liners, and Spacers

- 36 mm, 39 mm, 42 mm options
- Suture holes for tuberosity and cuff attachment
- Calcium phosphate-coated cup
- Centered and posterior offset options for bone preservation and anatomic placement
- Two polyethylene liners and 4 titanium spacer thicknesses for optimal soft-tissue balancing
- Standard and constrained liner options

Glenoid Components

- Locking and nonlocking variable-angle superior and inferior peripheral 4.5 mm screws
- Locking and nonlocking 6.5 mm central screws available in 5 lengths
- Calcium phosphate-coated baseplate
- Anatomically shaped baseplate available in 3 sizes
- Standard, inferior offset and lateralized glenosphere options available in 36 mm, 39 mm, and 42 mm

Preoperative Planning

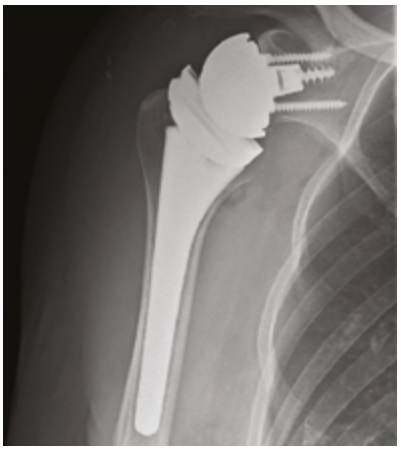
Preoperative planning may have the greatest impact on the surgical outcome, especially if it is overlooked. Good quality shoulder radiographs should include a true A/P, axillary lateral, and supraspinatus outlet view. The technician should use a reproducible process that generates images with consistent and predictable magnification for templating. The Univers Revers total shoulder system includes a set of templating transparencies for glenoid and humeral component sizing. Additional radiographic studies such as CT and MRI to evaluate glenoid geometry and soft-tissue quality, respectively, complement a thorough diagnostic workup.

Patient Positioning

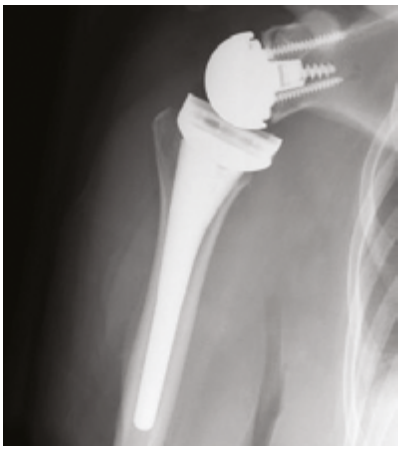
Following general anesthesia, place the patient in the beach chair position with the head inclined at approximately 30°, the legs at approximately 20°, and the knees in approximately 20° of flexion.

Support and stabilize the patient's head and neck with a ring-style headrest, maintaining their position throughout the procedure. Position the endotracheal tube and intravenous lines to the contralateral shoulder.

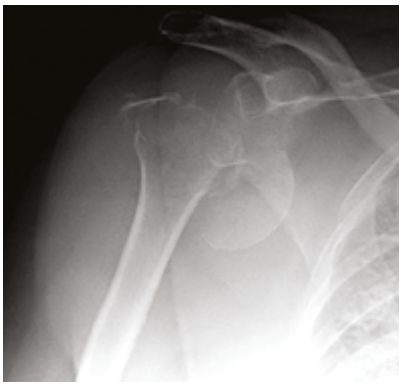
Bring the upper body to the edge of the operating table to allow full extension of the arm, essential to the exposure of the proximal humerus. A folded towel may be placed behind the medial border of the scapula to stabilize the glenoid position throughout the procedure. In addition, attach a kidney post to the table proximal to the patient's hip for stabilization while lateral traction is applied to the shoulder.



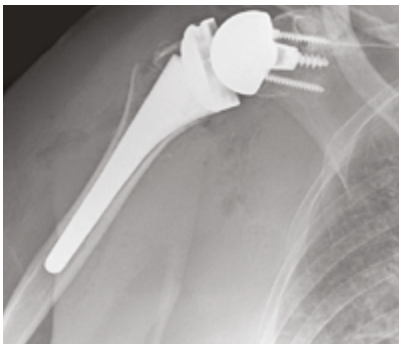
Univers Revers implant **135°**



Univers Revers implant **155°**



Preoperative proximal humeral fracture



Postoperative fracture repair with Univers Revers implant **(135° inclination)**

Deltopectoral Exposure
The deltopectoral incision begins at the inferior border of the midsection of the clavicle, proceeds at an angle over the coracoid prominence, and ends at the superolateral aspect of the axillary fold. The length of this incision can vary, depending on the exposure needed to provide adequate access and visualization of the joint, and may be influenced by patient-body habitus.

The skin incision often lies directly over the interval between the deltoid and pectoralis major muscles, and therefore over the cephalic vein, which clearly defines the junction between the deltoid and pectoralis major muscles. If the vein is not readily identifiable, the prominence of the coracoid marks the deltopectoral interval proximally. In addition, surgeons can identify the superior fibrous portion of the pectoralis tendon crossing the distal aspect of the incision. The cephalic vein is typically retracted lateral with the deltoid, although it may be retracted medial, based on the majority and direction of feeder vessels to the surrounding soft tissue.

Once the interval is defined, separate the deltoid and pectoralis muscles with a self-retaining retractor, taking care to protect the cephalic vein. Separating the deltoid and pectoralis major muscles so the deltoid muscle is completely free from its origin to its insertion, especially along its deep surface, improves exposure and postoperative motion.

Next, identify the conjoined tendon complex consisting of the short head of the biceps and coracobrachialis muscles just beneath the interval. The muscular portion of the biceps (red) is the most lateral part of the conjoined tendon, with the tendinous portion (white) just medial to the visible muscle. Open the clavipectoral fascia just lateral to the “red stripe,” representing the muscular portion of the short head of the biceps. Identify and maintain the coracoacromial ligament in the superior aspect of the interval to aid anterior stability. Place a thin retractor (eg, Hohmann or Darrach) under the coracoacromial ligament to provide exposure to the superior aspect of the subscapularis and the rotator interval.

Frequently, the superior 1 cm to 1.5 cm of the pectoralis tendon is released to provide exposure to the inferior aspect of the subscapularis and the anterior circumflex vessels. Then externally rotate the arm to further expose the boundaries of the subscapularis muscle and tendon insertion.

The superior aspect of the subscapularis tendon is at the level of the coracoid base and can be clearly identified by excising part of the subcoracoid bursa and palpating the rotator interval capsule. The inferior border of the subscapularis tendon is at the level of the anterior circumflex vessels (“Three Sisters”).

It is important to be aware of the musculocutaneous nerve, which penetrates the coracobrachialis muscle 2.5 to 5 cm distally from the coracoid. The nerve may not be palpable within the surgical field, but one must consider its proximity to the conjoined tendon. With this in mind, the self-retaining retractor can be repositioned medially to include the conjoined tendon beneath the pectoralis major muscle.

The superior aspect of the rotator cuff will be degenerative and retracted medially to some degree in the presence of rotator cuff arthropathy.
The infraspinatus and subscapularis may be involved in addition to the supraspinatus tissue. Some surgeons will choose to debride the degenerative structures back to healthy musculotendinous tissue at this point in the surgical approach.

Identify the lateral border of the subscapularis tendon just medial to the bicipital groove and tag it with two # 2 FiberWire sutures in preparation for the subscapularis release.

At this point in the dissection, biceps management should be considered. As the subscapularis is released, the biceps tendon is readily available. The biceps may be tenodesed above or below the pectoralis tendon. Regardless of technique, the tendon should be tagged with a # 2 FiberWire suture for better control and manipulation.

Superolateral Exposure
Start the skin incision at the anterior border of the AC joint and follow the anterior border of the acromion, staying over rather than in front of it. When the incision reaches the anterolateral border of the acromion, angle it to follow the line of the arm for a distance of 3 cm to 4 cm. Following subcutaneous dissection, separate the anterior and middle deltoid muscle bundles 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 protect 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 has no tendon attachment to the acromion; therefore, release the anterior deltoid subperiosteally from its acromial insertion up to the AC joint. The humeral head will then be visible at the anterior edge of the acromion. Remove the subacromial bursa. If necessary, exposure may be improved by releasing the coracoacromial ligament and performing acromioplasty. If the biceps is still present, tenodesis may be performed at this point. Retain the teres minor and infraspinatus when present.

Subscapularis Release
Many surgeons perform a subscapularis tenotomy, leaving 5 mm of tendon attached to the lesser tuberosity for later soft-tissue repair. Begin subscapularis tenotomy in the rotator interval just lateral to the coracoid base, then turn it inferior 5 mm medial from its attachment to the lesser tuberosity. Continue the tenotomy inferiorly below the level of the anterior circumflex vessels, continuing along the humeral neck. Externally rotate the humerus to facilitate the release of the capsule from the humerus to the 6 o'clock position on the humerus.

Though not typical in reverse total shoulder arthroplasty, some surgeons perform a lesser tuberosity osteotomy when releasing the subscapularis muscle. When performing the lesser tuberosity osteotomy, first move the arm into internal rotation to improve access to the lesser tuberosity. Introduce a saw blade or a sharp curved 12 mm osteotome at the interval created at the insertion side of the subscapularis and resect approximately 4 mm to 5 mm of the lesser tuberosity. Occasionally, a Z-plasty should be performed in the event that the subscapularis was shortened by prior surgery or contracture.

A third and final option for subscapularis release is the peel technique. Sharply dissect the subscapularis, with the anterior capsule, off of the lesser tuberosity starting from the rotator interval superiorly, the bicipital groove laterally, and from just above the vascular structures inferiorly. As the tendon is dissected medially, external rotation of the humerus can aid in visualization until the tendon-capsule complex is completely free from the humerus.

Glenohumeral Capsule Release
Once the subscapularis tendon is released from the humerus, surgeons have an opportunity to release the anterior and inferior capsule with excellent direct visualization. This capsular release is a routine part of shoulder arthroplasty for patients with a loss of external rotation, most commonly seen in osteoarthritis patients. Place a ring retractor (Fukuda) across the glenohumeral joint and hook it on the posterior glenoid. Use the retractor to sublux the humerus posterior and lateral, placing tension in the inferior capsule. The junction between the muscular portion of the subscapularis (red) and the capsule (white) is clearly visualized. The axillary nerve is typically inferior to the muscular portion of the subscapularis and/or less than 1 cm from the capsule.

The nerve should be identified and protected. Introduce a Hohmann retractor and carefully retract the nerve along with the latissimus dorsi tendon. This is important as it will protect the delicate axillary nerve and will define and expose the inferior capsule. With tension in the capsule, release it from lateral to medial, ending at the 6 o'clock position on the glenoid. Bluntly separate the anterior capsule from the subscapularis and incise it sharply (capsulotomy). Finally, release the fibrous attachments from the lateral aspect of the coracoid to the subscapularis, completing mobilization of the subscapularis muscle. The release should remain lateral to the coracoid process to avoid injury to the nerve of the subscapularis and the brachial plexus.
This step will be necessary for improved range of motion. The lack of bone preparation at this stage of the procedure provides excellent visualization of all the involved structures, particularly the capsule and its relationship to the axillary nerve. Displace the subscapularis tendon medially under the coracoid process and hold it away from the surgical site with the self-retaining retractor in anticipation of preparing the humerus.

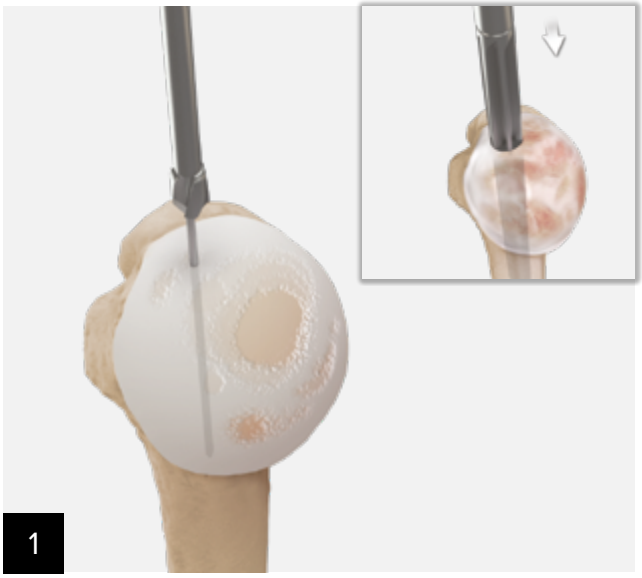
Humeral Head Exposure
Dislocate the humerus from the glenoid using a flat retractor (eg, Darrach) as a “shoehorn” to gently guide the humerus out of the glenoid. Externally rotate, extend, and adduct the arm until a direct view of the entire humeral articular surface is achieved.

Hold the arm in greater than 90° of external rotation, 20° to 30° of extension, and adduction against the operating room table. If complete exposure of the humeral head articular surface cannot be accomplished, further capsulotomy may be necessary. Following exposure of the humeral head, begin preparing the humerus per the Univers Revers surgical technique.

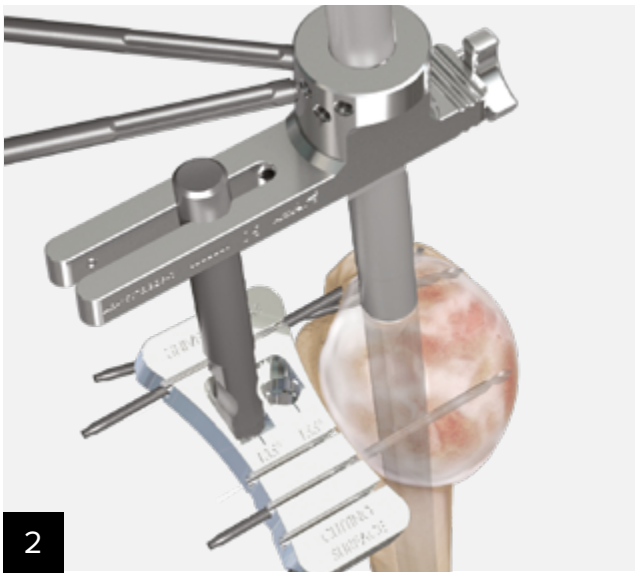
Glenoid Exposure
Begin glenoid exposure with a complete anterior/inferior capsulotomy as described above. This not only aides visualization of the entire glenoid, but improves motion postoperatively. Following the initial capsular release to the 6 o’clock position, further posterior release may be necessary for complete glenoid visualization. Once the axillary nerve is identified, capsular release may continue unimpeded until complete glenoid visualization is accomplished. If the glenoid remains poorly visualized after the release of the anterior, inferior, and posterior capsule, additional steps may be necessary to achieve a direct approach to the glenoid. For instance, verify humeral osteotomy because insufficient humeral head resection can result in poor glenoid visualization. Full release of the deltopectoral interval should be confirmed. Additional release of the pectoralis major tendon can be performed with tendon repair during closure. Up to 1.5 cm of the tendon can be released safely and without consequence to increase visualization.

On the deltoid side, the anterior attachment of the deltoid on the deltoid tubercle of the humerus can also be partially released. Once a direct view of the glenoid is possible, place a glenoid neck retractor along the anterior glenoid neck, as medial as possible. To help with glenoid exposure, it is recommended to place a glenoid retractor in the posterior inferior quadrant (5 o’clock position in a left shoulder and 7 o’clock position in a right shoulder) to retract the humerus posteriorly and inferiorly. This will help with the orientation of the glenoid, especially in cases where significant posterior erosion has occurred. In any case, the important principle is to have direct visualization of the face of the glenoid. Any malposition of the glenoid component can lead to early failure.

Following exposure of the native glenoid, begin preparing the glenoid per the Univers Revers surgical technique.

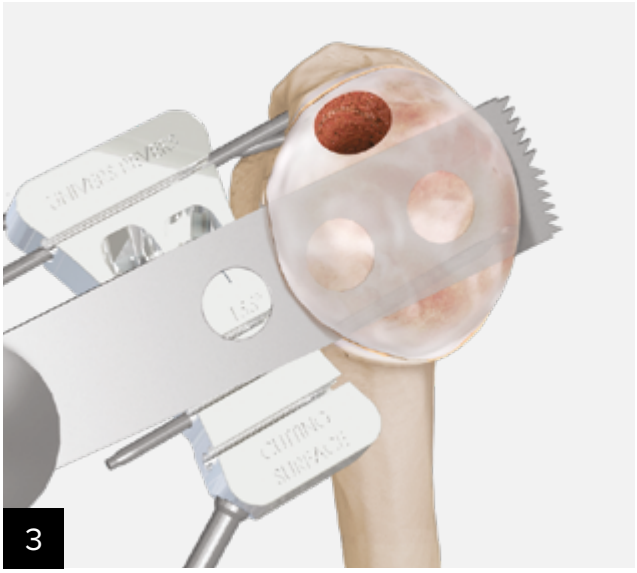


Establish the intramedullary entry point posterior to the bicipital groove. Make the initial entry point with the 2.4 mm guide pin, followed by a cannulated 6 mm drill to open up the hole in preparation for the IM reamer. Advance the 5 mm IM reamer to the depth mark and leave it in the canal.



Fix the resection guide / resection block assembly at desired angle (135° or 155°) and position on the IM reamer. Advance osteotomy guide pins into the humeral head to secure the resection guide / resection block. Remove the IM reamer and assembly, leaving the resection block in position.

Note: Optional version rods can be attached to the resection guide assembly at 0°, 20°, and 40° to crosscheck the resection block position.



Resect the humeral head using the resection block to guide the oscillating saw blade.

Note: The glenoid drill guide handle can be secured to the resection block for stabilization purposes, if necessary.

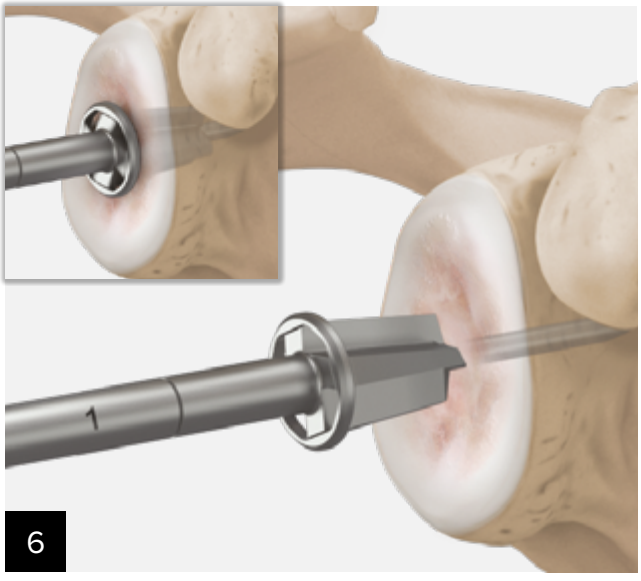
If preferred, prepare the humerus first and proceed to step 18 on page 15.

If glenoid preparation is preferred prior to humeral preparation, proceed to step 4 on page 11.

4

Remove the resection block and osteotomy guide pins. Impact resection Protector device onto humeral resected surface.

Note: Humeral Protector device size can be used to estimate metaphyseal cup size and maximum glenosphere size (S = 36 mm, M = 39 mm, L = 42 mm).



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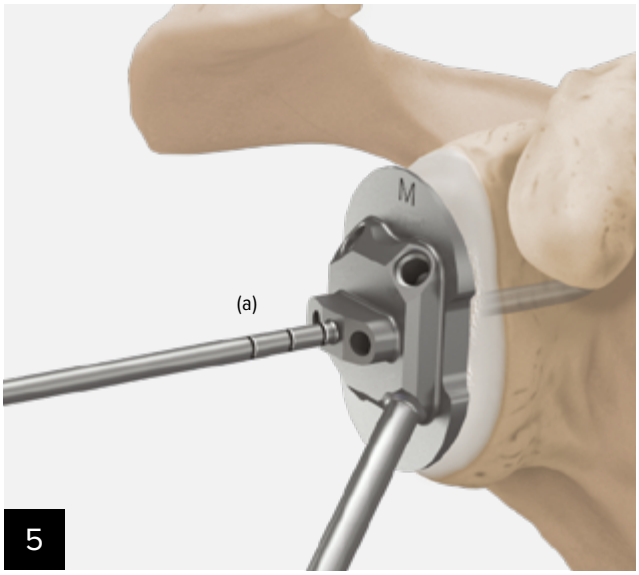
Advance the primary post reamer over the previously positioned 2.8 mm guide wire. Perform reaming until the depth stop contacts the glenoid surface. Remove the primary post reamer, leaving the guide wire in position.



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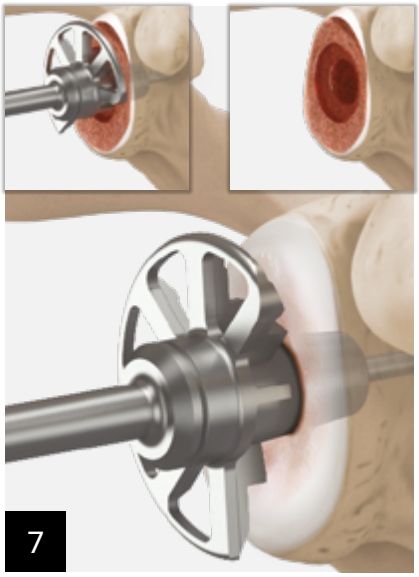
Determine the size of the glenoid drill guide (S, M, L) based on the size of the native glenoid. Advance the 2.8 mm guide wire to the desired depth through the 0° center hole on the drill guide. Central screw length can be noted from the laser lines at the drill guide surface (a). Leave the guide wire in place and remove the guide. See the chart below for glenosphere and cup options by baseplate size. Use of an inappropriate baseplate/glenosphere combination (eg, 36 mm glenosphere and medium baseplate) will lead to implant dissociation. Trial glenospheres can be connected to the baseplate.

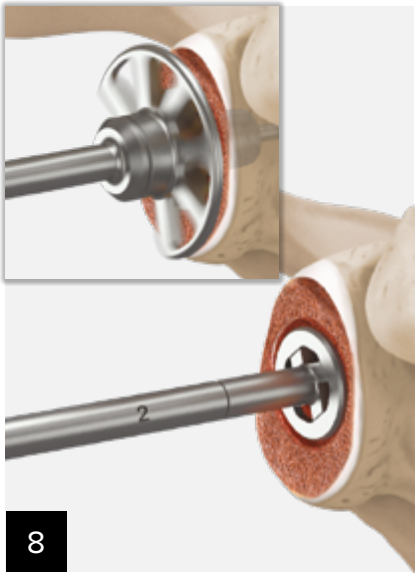
Please review the sizing chart carefully prior to selecting the baseplate and glenosphere sizes for the patient. Additional details can be found on page 28 of this brochure.

Baseplate Size	Glenosphere and Humeral Cup Size Options
Small	36 mm / 39 mm / 42 mm
Medium	39 mm / 42 mm
Large	42 mm

Note: The implanted baseplate size will determine the glenosphere size and corresponding humeral cup size.

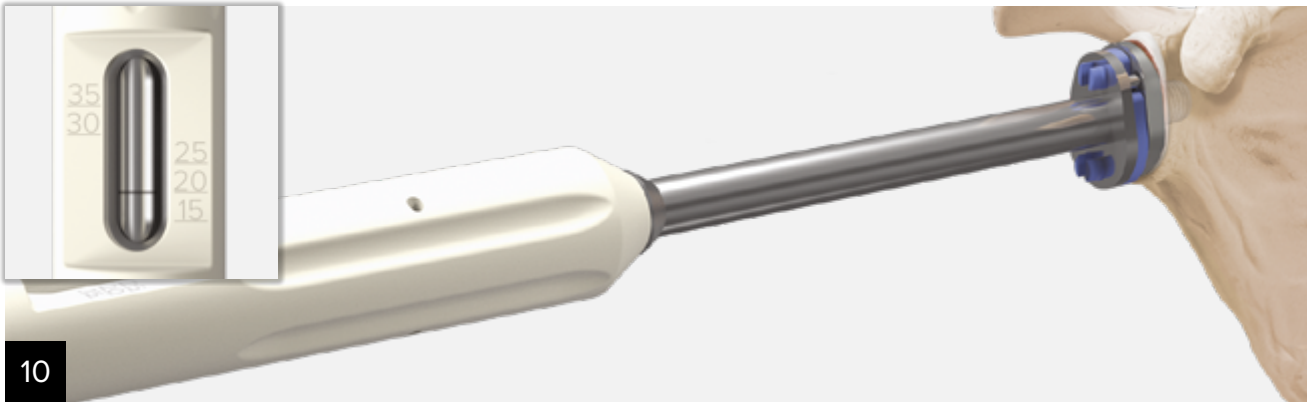


Advance final reamer (size matched to chosen baseplate size) over the guide wire. Perform reaming until the reamer no longer advances medially. Remove the reamer. Evaluate the glenoid surface to determine if the entire glenoid circumference has been reamed (inset). If circumferential reaming has been achieved, proceed to step 9. If not, proceed to step 8.

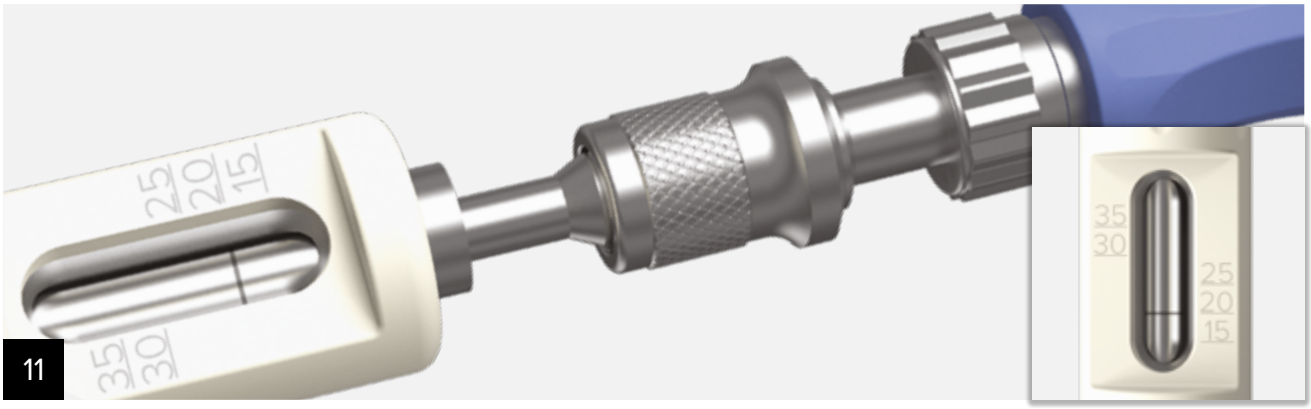


If further reaming is required, the correction post reamer will deepen the central post preparation, allowing for additional medialization. This is a controlled process that medializes the glenoid surface 1 mm. After use of the correction post reamer, it is important to again use the final reamer (inset). The correction post reamer may be used additional times to attain circumferential reaming. However, available glenoid bone stock must be considered.

Place the baseplate onto the Universal Glenoid baseplate impactor and impact fully onto the prepared glenoid surface. Visually confirm full seating of the baseplate. Hold the impactor in place during the preparation and implantation of the central screw as shown in steps 10 through 12.

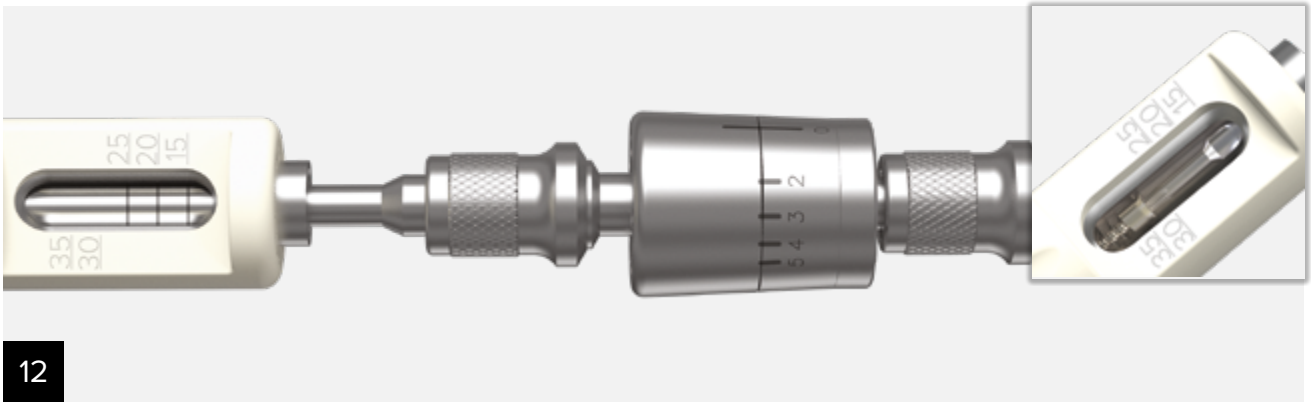


To prepare the glenoid for the central screw, insert the Trinity drill through the central hole of the Universal Glenoid baseplate impactor. The proximal window of the guide provides depth assessment. Determine the central screw length using the laser marked line on the drill (inset).



11

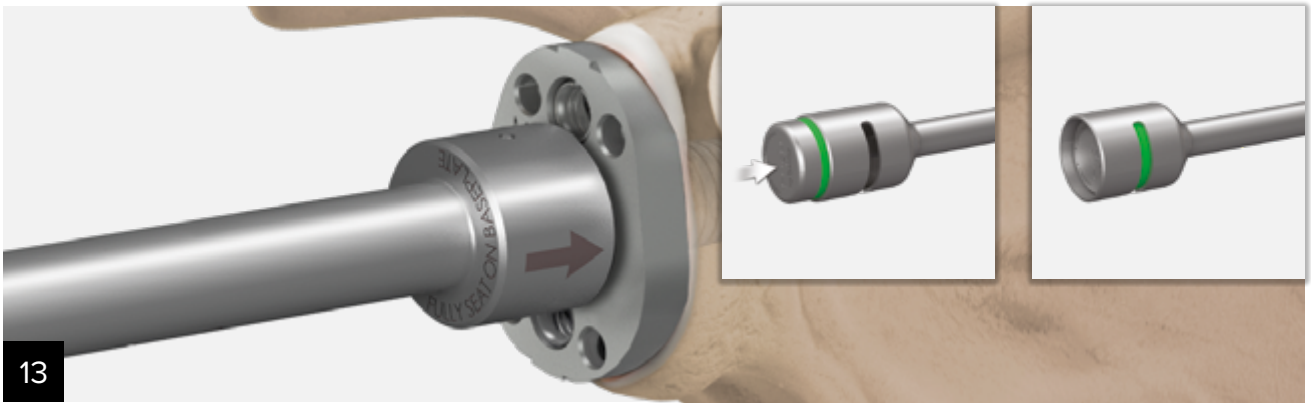
Assemble the tap to the ratcheting handle and insert it into the Universal Glenoid baseplate impactor. Looking into the proximal window of the impactor, advance the tap until the laser-marked line matches the same depth that was drilled in step 10 (inset).



12

The central hole of the baseplate accepts both compression and locking screws, depending on surgeon preference and the patient's bone quality. Once selected, the central screw is placed directly in the proximal window as shown (inset), and is then advanced with the Trinity long T15 driver. When the screw is fully seated, the 3 laser-marked lines will align with the 15, 20, and 25 markings on the Trinity guide. At this time, remove the guide from the face of the baseplate.

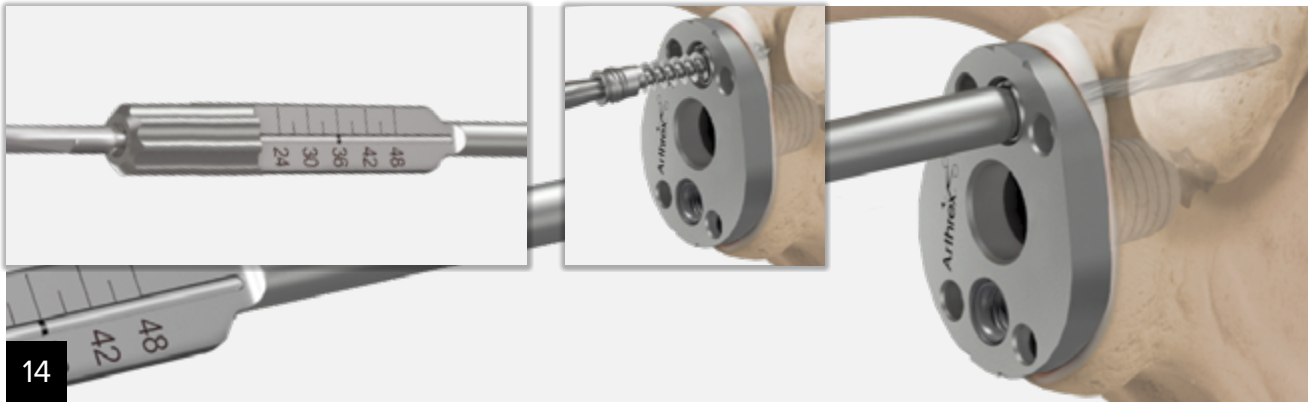
Note: Torque must not exceed 5 Nm.



13

Using the central screw depth gauge, ensure the central screw is adequately seated by confirming green is visible through the gauge window. If any green on the inner shaft is visible in the window, the central screw is deep enough within the baseplate socket for secure glenosphere Morse taper engagement. If no green is visible in the window, the central screw must be driven more medial to ensure it does not interfere with Morse taper engagement.

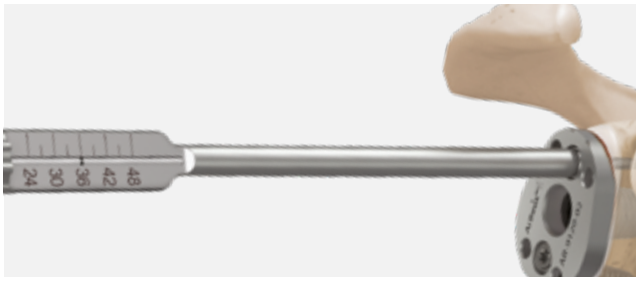
Note: Failure to do so may result in disassociation between the glenosphere and the baseplate.

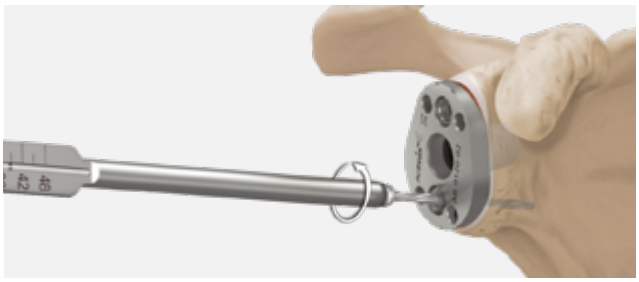


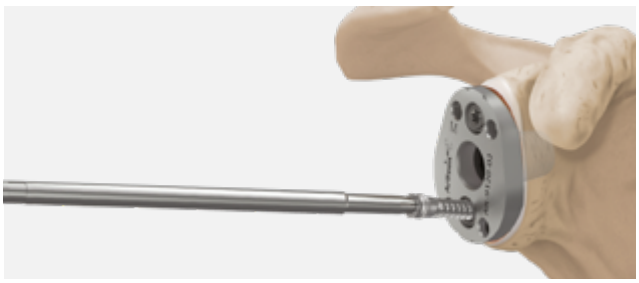
14

Thread the peripheral screw drill guide in the superior bushing and drill to desired depth using the 2.5 mm drill. Insert and fully seat the screw until completely flush with the baseplate surface.
Note: Torque must not exceed 5 Nm.

15







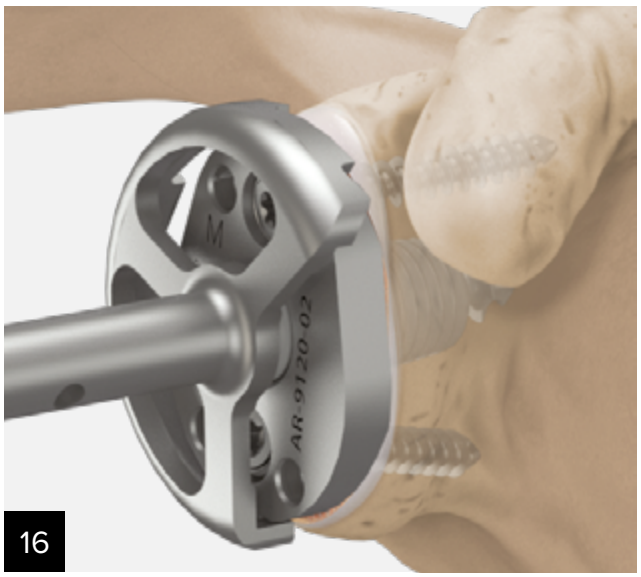
Glenoid bone quality should be considered during screw selection and placement. Typical configuration is a compression central screw and locked peripheral screws. Peripheral screws are typically placed either parallel to the central screw or slightly divergent.

Thread the peripheral screw drill guide into the inferior bushing and drill (with 2.5 mm drill) to desired trajectory and depth, taking note of depth marks on the drill guide and drill.

Note: Unthread the drill guide before removing the drill.

This helps maintain bushing alignment. Insert and fully seat the screw until it is completely flush with the base-plate surface.

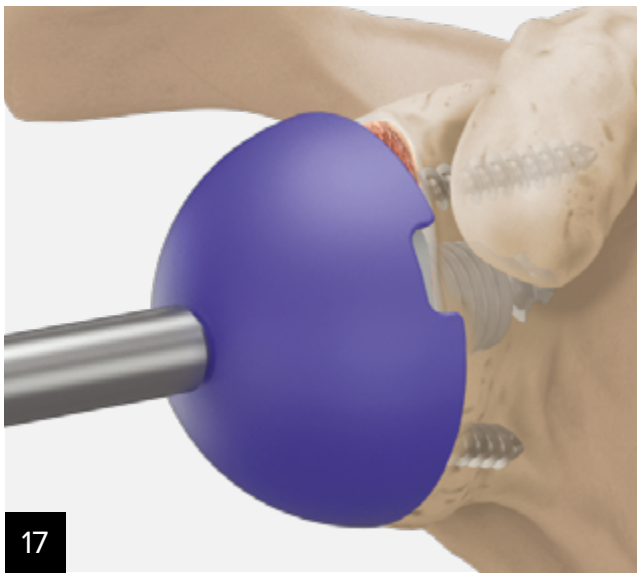
Note: Torque must not exceed 5 Nm.



16

Using the coring (peripheral) reamer of the same size as the baseplate and glenosphere, insert and rotate the reamer clockwise to clear all tissue from the footprint of the glenosphere. Once the tissue is cleared, perform one full revolution in a counterclockwise direction. If the coring reamer contacts the peripheral screw heads in either direction, it will be necessary to fully seat the screws to ensure proper glenosphere seating and engagement.

Note: If a glenosphere larger than the baseplate is chosen, it is necessary to ream in a stepwise fashion with multiple coring reamers up to the glenosphere size chosen.



17

Trial glenospheres can be connected to the baseplate using the trial inserter.

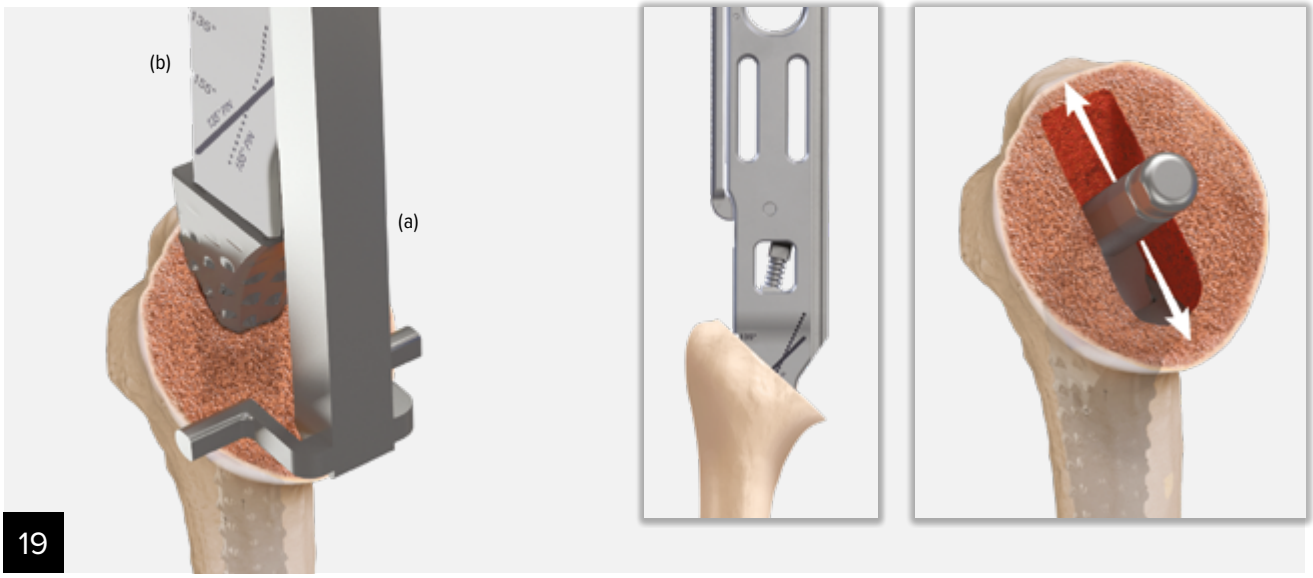
Note: Lateralized glenospheres are recommended for 135° neck shaft angle implants and inferiorized glenospheres for 155° neck shaft angle implants. Glenosphere sizes and cup/liner sizes must be matched. Glenospheres are offered standard, +4 mm lateral offset, and 2.5 mm inferior offset.

Humeral Preparation

18

Ream the IM canal by advancing the IM reamers to depth mark. It is recommended not to exceed the 8 mm reamer during this step, as cortical chatter need not be achieved based on stem geometry.

Note: If being used in a fracture, progressive IM reaming past 8 mm is acceptable.



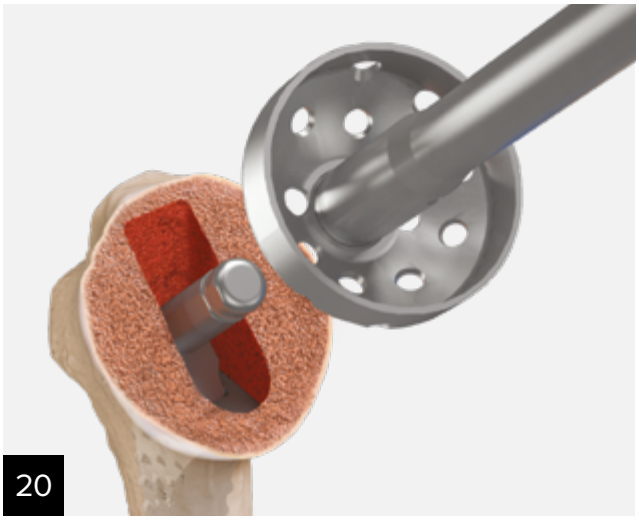
19

Attach the broach handle to the 6 mm broach.

Note: In smaller patients, a monoblock 5 mm broach should be considered.

The size 5 is available in monoblock configurations of 135° and 155° or in a modular stem that can only be used in 135° inclination. Connect the broach alignment guide (a) to the broach handle (b). Progressively broach to desired fit. The broach depth mark (135° and 155°) represents the minimum impaction line. The laser-marked lines (c) represent the location of the reamer guide pin, which should be medially aligned in the canal. Disconnect the handle and leave the broach in the IM canal. Check A/P position of the broach and choose the appropriate central or offset reamer guide pin. Insert the reamer guide pin into the broach.

Note: In instances of using the size 5 monoblock stems, there are dedicated trials for both 135° and 155° with integral guide pins.



20

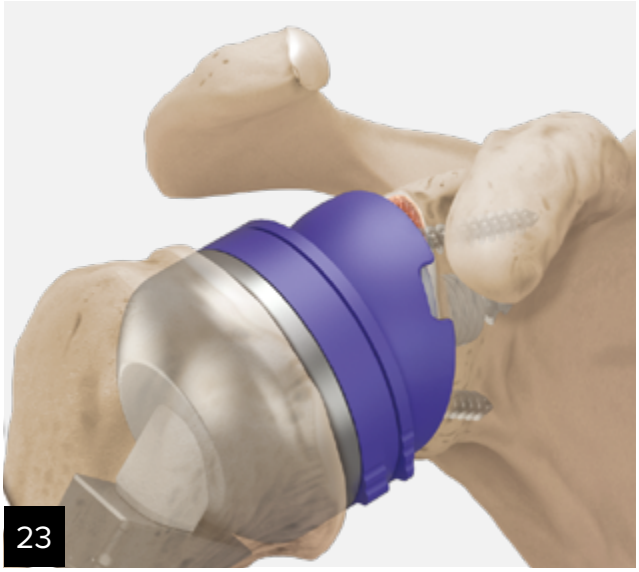
Place the reamer and pin into the trial and select appropriate size humeral cup reamer. The reamer guide pin provides a positive stop to ream to the appropriate depth.

21

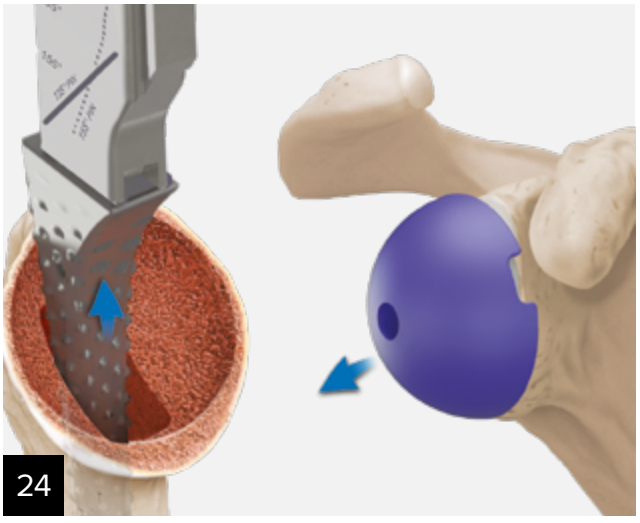
Once reaming is complete, remove the reamer guide pin and leave the broach in position.
Connect the corresponding humeral trial cup (angle, diameter, and offset) to the broach.

Connect trial humeral liners and spacers as needed for tissue balancing. Polyethylene liners are available in 3 mm and 6 mm; titanium trial spacers are available in +6 mm, +9 mm, +12 mm and +15 mm.

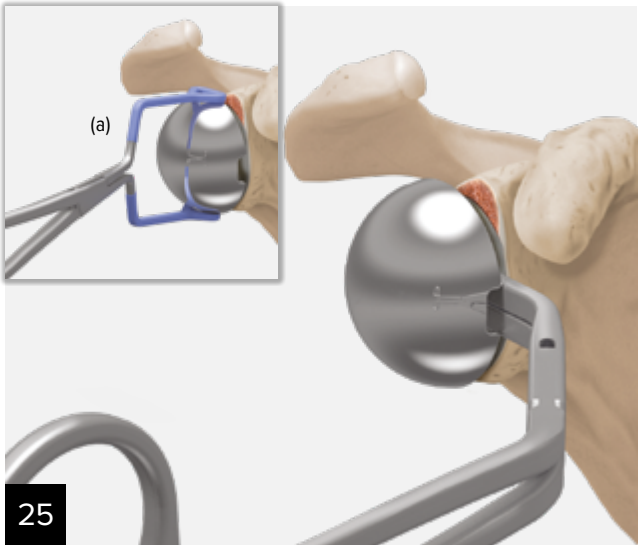
Note: Spacers should be used only in combination with +3 mm liners.



Perform trial reduction to assess stability and ROM. Appropriately tension so that there is no translation and the conjoined tendon and deltoid are under tension.

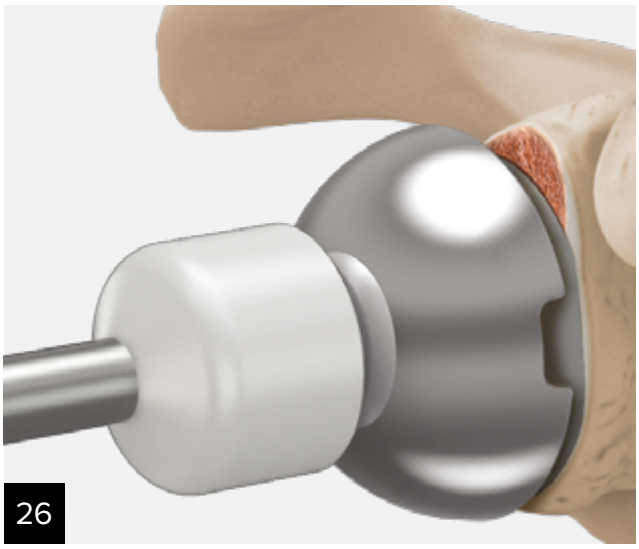


Once adequate tension has been achieved, remove the humeral components and trial glenosphere.
The humeral broach can be removed using the broach handle or the threaded extractor / impactor handle and slotted mallet.

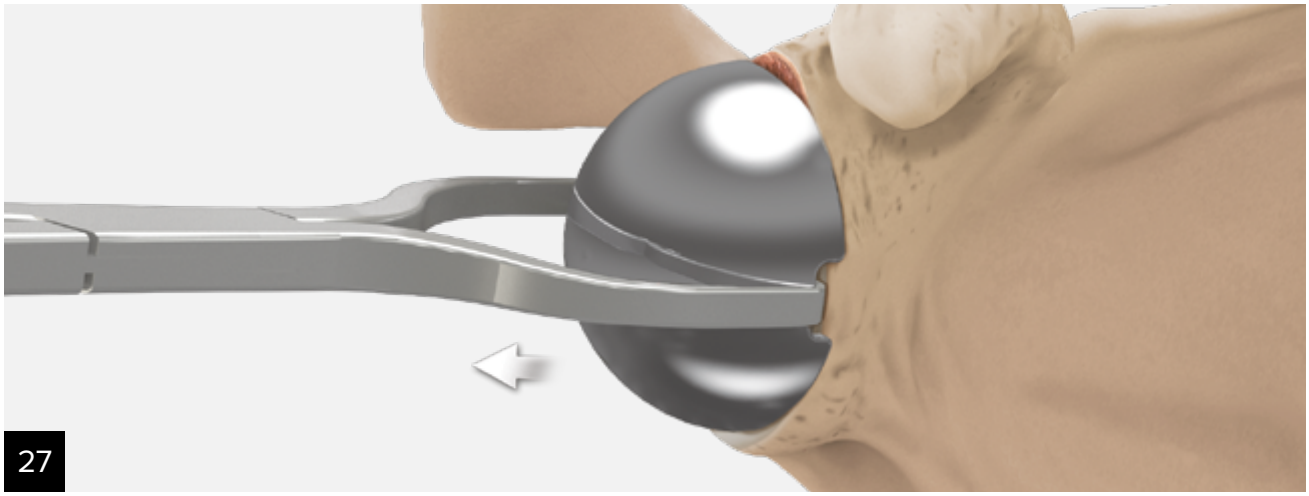


Then insert the definitive glenosphere into the baseplate. This can be facilitated by hand or by using insertion instruments, based upon surgeon preference. The definitive glenosphere has a male Morse taper that connects to the baseplate. Clean and dry the baseplate Morse taper. The glenoid forceps (a) and glenosphere inserter are options for guiding the glenosphere Morse taper into the baseplate.

Note: One of the recesses on the underside of the glenosphere should face anteriorly, should future removal be necessary.



Once the Morse taper junction is aligned, use the humeral liner / glenosphere impactor to apply an engaging force with consecutive mallet strikes to secure the glenosphere.



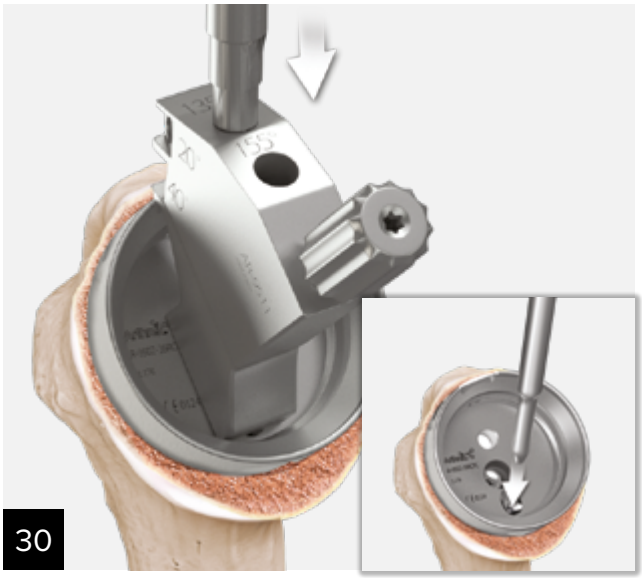
The glenosphere forceps are used to verify the integrity of the Morse taper connection between the glenosphere and baseplate. This required instrument provides a means for securely grasping the glenosphere and applying a distracting force. Proper technique is to place the tips 180° apart with one tip in one of three glenosphere slots. Once secure, apply a distracting force in line with and evenly distributed across the Morse taper.

28

Assemble the definitive humeral stem and suture cup based on trial sizes and angles previously determined. First, place the stem into the appropriate slot on the humeral assembly station and place the humeral cup screw guide into the cup (inset).

29

Insert the post / screw of the suture cup into the appropriate slot of the stem (135° or 155°) as shown (inset). These instruments ensure the screwdriver is aligned properly with the axis of the screw. Tighten the screw to at least **3 Nm** with the short modular T-15 screwdriver, torque-indicating adapter, and ratcheting handle.
Note: Torque must not exceed 5 Nm.



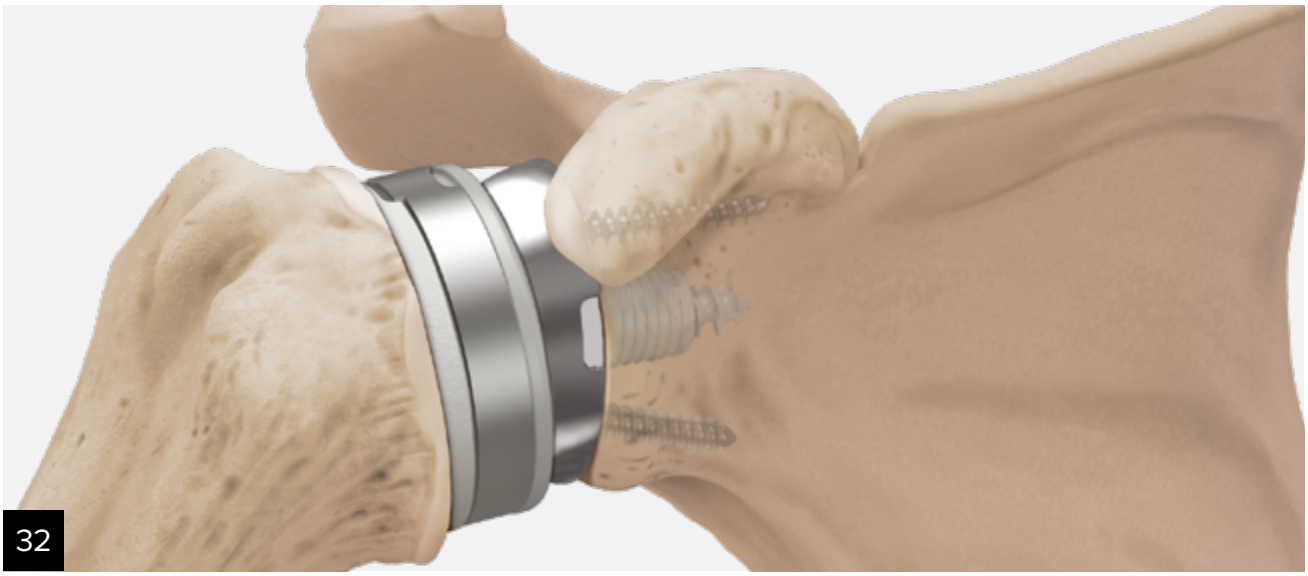
30

Thread the impactor / extractor adapter into the suture cup. Then thread the impactor / extractor handle into the proximal hole of the adapter, based on the chosen inclination angle. Impact the components into the humerus. Once fully seated, uncouple the adapter from the suture cup by unscrewing the thumb screw. Alternatively, the pointed impactor can be used to seat the implant (inset).

31

A second trial reduction should be performed with the trial liner, trial spacer (if applicable), and definitive glenosphere. After proper stability and ROM are assessed, connect the definitive spacer (if required) with the short modular T-15 screwdriver, torque indicating adapter, and ratcheting handle. Tighten the screw to at least 3 Nm. Last, impact the liner (inset).
Note: Torque must not exceed 5 Nm. Note: Spacers should be used only in combination with +3 mm liners.

Final Reduction and Closure



Reduce the shoulder and complete wound closure.

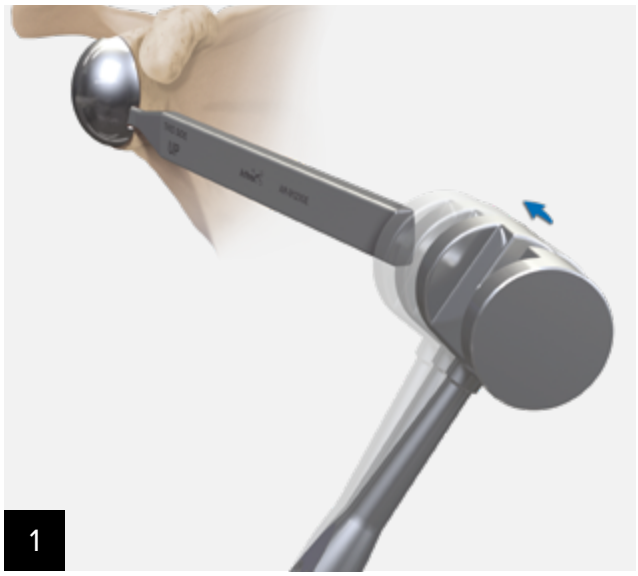
Removal of Humeral Implants

There are multiple options for removing the humeral components of the Univers Revers system, as depicted below.

Once the liner is removed, if only a small amount of bony growth is evident or the stem is loose, assemble the impactor / extractor adaptor and handle to the cup and then use the slotted mallet to remove the entire assembly.

With more growth around the suture cup, thread the impactor / extractor handle directly to the suture cup and lever to assist in detaching the cup from the bone. In some cases, the construct can be removed with the handle in this orientation.

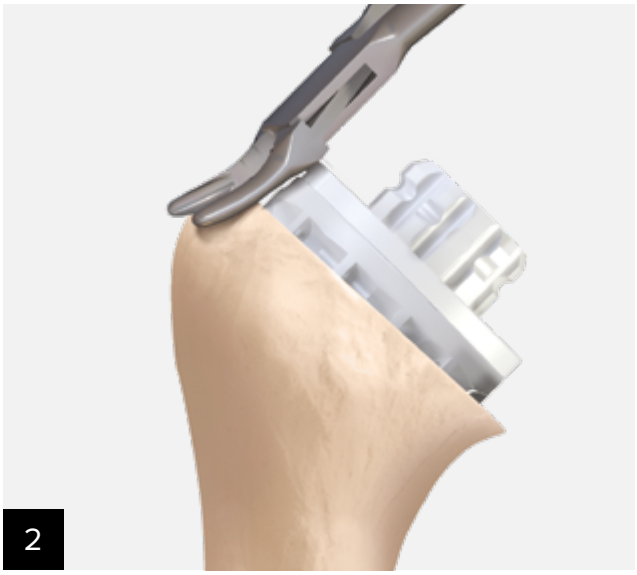
In cases where there is substantial bony growth to the Univers Revers stem, remove the suture cup by loosening the screw and pass the osteotomes along the flat surfaces to loosen the stem. Then thread the impactor / extractor handle directly to the stem prior to using the slotted mallet for removal.



Remove the glenosphere from the baseplate by placing the glenosphere extractor into one of the windows on the anterior side. The extractor tip must be positioned between the baseplate and the glenosphere. This can be confirmed by gently rocking extractor laterally. Then lightly tap the distal end of the extractor with a mallet to release the Morse taper connection.

After the screws are removed, thread the baseplate extractor into the central hole. Toggle or twist the handle to assist in detaching bony growth from the baseplate. Use the slotted mallet for removing the baseplate.

Remove the glenoid components and reverse humeral liner. Place the trial CA adapter on the suture cup as shown. The trial CA adapter can also be placed directly onto a humeral spacer if it is already implanted. Size the CA adapter and corresponding trials with the suture cup. Note the size matrix below for compatability of the CA head sizes.



Use a rongeur or saw to remove any excess bone at the tuberosities. This is critical to establishing clearance for the lateral flange of the CA head and to ensure that the implant seats properly.

Compatibility Matrix - Revers CA Heads With CA Adapters

		Univers Revers™ Total Shoulder System CA Heads		
		44/17	50/19	56/22
Univers Revers CA Adapters	**36 mm**	✔	✔	✔
	39 mm	✖	✔	✔
	42 mm	✖	✔	✔

Legend: Compatible ✔ Not Compatible ✖

Trial the glenohumeral joint to determine the appropriate CA head size.

Once the appropriately sized implants have been determined, thread the stem / cup impactor handle securely to the CA adaptor. Then impact the implant onto the Univers Revers suture cup, taking care to ensure the tab of the CA adapter is aligned with the lateral slot of the suture cup.

Then impact the CA head with the liner / glenosphere impactor.

Note: While the "hood" of the Revers CA head is intended to be placed laterally, if the inclination of the suture cup is set at 155°, it may be preferable to rotate the Univers Revers CA head 180° placing the "hood" medially.

This may allow for optimized medial (and lateral) coverage with the head. Using the trial CA head enables surgeons to make this determination.

Prior to closure, assess stability and mobility with the final implants in place. Begin wound closure with thorough irrigation, removing any remaining soft tissue and bone debris. Obtain hemostasis with electrocautery. Assess hemostasis and if excessive bleeding is found, place a single hemovac wound drainage device into the deep layer. If possible, repair the subscapularis while monitoring external rotation. Repair the deltoid and pectoralis major muscles with a side-to-side closure using # 1 absorbable suture. Repair the subcutaneous layer with # 2-0 interrupted absorbable suture. Finally, use a # 3-0 suture for skin closure, supporting it with Steri-Strip* skin closures. If used, secure the hemovac drain and initiate suction. The drain is usually removed on the first post-operative day.

Rehabilitation Protocol*
As described by Peter Habermeyer, MD

Postoperative Weeks 0 - 3
Immobilization: Abduction pillow, may be removed for therapeutic exercises and bathing. Motion exercises: Start immediately with scapular patterns. Passive shoulder mobilization should be restricted to 30° flexion, 30° abduction, 0° external rotation and 60° internal rotation. Isometric exercises of the elbow and wrist as well as grip strengthening.

Restrictions: No active internal rotation or backwards extension.

Postoperative Weeks 4 - 6
Immobilization: Abduction pillow continued at night but may be removed during the day.

Motion exercises: Start with pain free active assisted ranges of motion within a limit of 90° flexion, 60° abduction, 60° internal rotation and 30° external rotation. Continue isometric strengthening of the elbow, wrist and hand.

Restrictions: No resisted internal rotation or backwards extension.

Postoperative Weeks 7 - 12
Immobilization: Abduction pillow discontinued.

Motion exercises: Start with free range of motion. Use therapy bands. Active mild resistance exercises for the deltoid muscle and for the thoracic muscle group (scapular stabilizers).

Sports activity: Start with breast stroke swimming, jogging, workout of core and lower extremities.

Postoperative Weeks 13 - 16
Motion exercises: Progressive muscle strengthening, preferably with isokinetic machine training. Increase range of motion exercise to achieve full motion, with passive stretching at end ranges. Advance to functional strengthening, including plyometric exercises and core strengthening.

Important note: This protocol is based on the experiences of Dr. Habermeyer. Each treating surgeon is responsible for the individual rehabilitation protocols of their patients. These may vary based on bone / tissue quality, the challenges of the individual case and the surgeon's assessment of the surgical result.

Ordering Information

Glenoid Implants

Product Description	Item Number
Baseplate, S	AR-**9120-01**
Baseplate, M	AR-**9120-02**
Baseplate, L	AR-**9120-03**
Central screw, locking, 6.5 mm × 15 mm	AR-**9165-15**
Central screw, locking, 6.5 mm × 20 mm	AR-**9165-20**
Central screw, locking, 6.5 mm × 25 mm	AR-**9165-25**
Peripheral screw, locking, 4.5 mm × 24 mm	AR-**9145-24**
Peripheral screw, locking, 4.5 mm × 30 mm	AR-**9145-30**
Peripheral screw, locking, 4.5 mm × 36 mm	AR-**9145-36**
Peripheral screw, locking, 4.5 mm × 42 mm	AR-**9145-42**
Peripheral screw, locking, 4.5 mm × 48 mm	AR-**9145-48**
Central screw, nonlocking, 6.5 mm × 15 mm	AR-**9165-15NL**
Central screw, nonlocking, 6.5 mm × 20 mm	AR-**9165-20NL**
Central screw, nonlocking, 6.5 mm × 25 mm	AR-**9165-25NL**
Peripheral screw, nonlocking, 4.5 mm × 24 mm	AR-**9145-24NL**
Peripheral screw, nonlocking, 4.5 mm × 30 mm	AR-**9145-30NL**
Peripheral screw, nonlocking, 4.5 mm × 36 mm	AR-**9145-36NL**
Peripheral screw, nonlocking, 4.5 mm × 42 mm	AR-**9145-42NL**
Peripheral screw, nonlocking, 4.5 mm × 48 mm	AR-**9145-48NL**
Glenosphere, 36	AR-**9504S**
Glenosphere, 36 +2.5 inf	AR-**9504S-INF**
Glenosphere, 36 +4 lat	AR-**9504S-04**
Glenosphere, 39	AR-**9504M**
Glenosphere, 39 +2.5 inf	AR-**9504S-02**
Glenosphere, 39 +4 lat	AR-**9504M-04**
Glenosphere, 42	AR-**9504L**
Glenosphere, 42 +2.5 inf	AR-**9504M-02**
Glenosphere, 42 +4 lat	AR-**9504L-04**

Glenoid Instrumentation Set

Product Description	Item Number
Glenoid drill guide, S, 5° and -10°	AR-**9125-1**
Glenoid drill guide, S, 15°, 0°, and -20°	AR-**9125-10**
Glenoid drill guide, M, 5° and -10°	AR-**9125-2**
Glenoid drill guide, M, 15°, 0°, and -20°	AR-**9125-20**
Glenoid drill guide, L, 5° and -10°	AR-**9125-3**
Glenoid drill guide, L, 15°, 0°, and -20°	AR-**9125-30**
Glenoid drill guide handle	AR-**9125H**
Peripheral screw drill guide	AR-**9145DG**
Primary post reamer	AR-**9126RP**
Correction post reamer	AR-**9126RC**
Final reamer, S	AR-**9126R-01**
Final reamer, M	AR-**9126R-02**
Final reamer, L	AR-**9126R-03**
Universal Glenoid™ baseplate impactor	AR-**9165CDG**
Baseplate impactor drill, 2.8 mm	AR-**9165DDG**
Baseplate impactor central screw tap	AR-**9165TDG**
T15 driver shaft, short	AR-**9545-T15-01**
T15 driver shaft, medium	AR-**9545-T15-02**
T15 driver shaft, long	AR-**9545-T15-03**
Drill, 2.5 mm, qty. 2	AR-**9145K**
Central screw depth gauge	AR-**9165G**
Guide wire, 2.8 mm × 150 mm, qty. 2	AR-**9165K**
Central screw tap	AR-**9165T**
Extractor for baseplate	AR-**9120E**
Glenosphere extractor	AR-**9123GE**
Coring (peripheral) reamer, S	AR-**9127-01**
Coring (peripheral) reamer, M	AR-**9127-02**
Coring (peripheral) reamer, L	AR-**9127-03**
Shoulder arthroplasty slotted mallet	AR-**9231-21**
Torque indicating adapter	AR-**9545-T15H**
Ratcheting modular handle	AR-**1999HH**
Trial glenosphere, 36	AR-**9540SM**
Trial glenosphere, 36 +2.5 inf	AR-**9540SM-INF**
Trial glenosphere, 36 +4 lat	AR-**9540SM-04**
Trial glenosphere, 39	AR-**9540MD**
Trial glenosphere, 39 +2.5 inf	AR-**9540SM-02**
Trial glenosphere, 39 +4	AR-**9540MD-04**
Trial glenosphere, 42	AR-**9540LG**
Trial glenosphere, 42 +2.5 inf	AR-**9540MD-02**
Trial glenosphere, 42 +4 lat	AR-**9540LG-04**
Glenosphere forceps	AR-**9544**
Glenosphere instrument case	AR-**9501GC**

Optional

Product Description	Item Number
Glenosphere insertion forceps (poly / glenosphere)	AR-**9240**
Glenosphere inserter	AR-**9542**

Humeral Implants

Product Description	Item Number
Univers Revers™ stem, size 6	AR-**9501-06CPC**
Univers Revers™ stem, size 7	AR-**9501-07CPC**
Univers Revers™ stem, size 8	AR-**9501-08CPC**
Univers Revers™ stem, size 9	AR-**9501-09CPC**
Univers Revers™ stem, size 10	AR-**9501-10CPC**
Univers Revers™ stem, size 11	AR-**9501-11CPC**
Univers Revers™ stem, size 12	AR-**9501-12CPC**
Univers Revers™ cup, CaP coated, 36 mm (neutral)	AR-**9502-36CPC**
Univers Revers™ cup, CaP coated, 36 mm (+ 2 mm r / h)	AR-**9502-36RCPC**
Univers Revers™ cup, CaP coated, 36 mm (+ 2 mm l / h)	AR-**9502-36LCPC**
Univers Revers™ cup, CaP coated, 39 mm (neutral)	AR-**9502-39CPC**
Univers Revers™ cup, CaP coated, 39 mm (+ 2 mm r / h)	AR-**9502-39RCPC**
Univers Revers™ cup, CaP coated, 39 mm (+ 2 mm l / h)	AR-**9502-39LCPC**
Univers Revers™ cup, CaP coated, 42 mm (neutral)	AR-**9502-42CPC**
Univers Revers™ cup, CaP coated, 42 mm (+ 2 mm r / h)	AR-**9502-42RCPC**
Univers Revers™ cup, CaP coated, 42 mm (+ 2 mm l / h)	AR-**9502-42LCPC**

Product Description	Item Number
Humeral liner, 42 +3 mm	AR-**9503L-03**
Humeral liner, 42 +3 mm, constrained	AR-**9503L-03C**
Humeral liner, 42 +6 mm	AR-**9503L-06**
Humeral liner, 42 +6 mm, constrained	AR-**9503L-06C**
Humeral liner, 39 +3 mm	AR-**9503M-03**
Humeral liner, 39 +3 mm, constrained	AR-**9503M-03C**
Humeral liner, 39 +6 mm	AR-**9503M-06**
Humeral liner, 39 +6 mm, constrained	AR-**9503M-06C**
Humeral liner, 36 +3 mm	AR-**9503S-03**
Humeral liner, 36 +3 mm, constrained	AR-**9503S-03C**
Humeral liner, 36 +6 mm	AR-**9503S-06**
Humeral liner, 36 +6 mm, constrained	AR-**9503S-06C**
Humeral spacer, 39 +6 mm	AR-**9505-06**
Humeral spacer, 39 +9 mm	AR-**9505-09**
Humeral spacer, 39 +12 mm	AR-**9505-12**
Humeral spacer, 39 +15 mm	AR-**9505-15**
Humeral spacer, 42 +6 mm	AR-**9550-06**
Humeral spacer, 42 +9 mm	AR-**9550-09**
Humeral spacer, 42 +12 mm	AR-**9550-12**
Humeral spacer, 42 +15 mm	AR-**9550-15**
Humeral spacer, 36 +6 mm	AR-**9555-06**
Humeral spacer, 36 +9 mm	AR-**9555-09**
Humeral spacer, 36 +12 mm	AR-**9555-12**
Humeral spacer, 36 +15 mm	AR-**9555-15**

Optional

Product Description	Item Number
Univers Revers™ SutureCup, 36 (neutral)	AR-**9502F-36CPC**
Univers Revers™ SutureCup, 36 (+2 mm left)	AR-**9502F-36LCPC**
Univers Revers™ SutureCup, 36 (+2 mm right)	AR-**9502F-36RCPC**
Univers Revers™ SutureCup, 39 (neutral)	AR-**9502F-39CPC**
Univers Revers™ SutureCup, 39 (+2 mm left)	AR-**9502F-39LCPC**
Univers Revers™ SutureCup, 39 (+2 mm right)	AR-**9502F-39RCPC**
Univers Revers™ SutureCup, 42 (neutral)	AR-**9502F-42CPC**
Univers Revers™ SutureCup, 42 (+2 mm left)	AR-**9502F-42LCPC**
Univers Revers™ SutureCup, 42 (+2 mm right)	AR-**9502F-42RCPC**

Humeral Instrumentation Set

Product Description	Item Number
Cannulated drill, 6 mm	AR-**1206L**
Drill tip guide pin, 2.4 mm × 310 mm, qty. 2	AR-**1250L**
Stem/cup inserter/impactor	AR-**9202-09**
Universal T-handle, qty. 2	AR-**9202-15H**
IM reamer, 6 mm	AR-**9202-02H**
IM reamer, 7 mm	AR-**9202-01H**
IM reamer, 8 mm	AR-**9202-28H**
IM reamer, 9 mm	AR-**9202-29H**
IM reamer, 10 mm	AR-**9202-30H**
IM reamer, 11 mm	AR-**9202-31H**
IM reamer, 12 mm	AR-**9202-32H**
Broach alignment guide	AR-**9232**
Humeral resection guide assembly	AR-**9507RGDP**
Humeral cup reamer, 36	AR-**9508-36**
Humeral cup reamer, 39	AR-**9508-39**
Humeral cup reamer, 42	AR-**9508-42**

Product Description	Item Number
Humeral Protector™ device, S	AR-**9509-S**
Humeral Protector™, M	AR-**9509-M**
Humeral Protector™, L	AR-**9509-L**
Lever-locking broach handle, qty. 2	AR-**9510-2**
Version rod, qty. 2	AR-**9510-01**
Broach / trial, 6 mm	AR-**9510-06**
Broach / trial, 7 mm	AR-**9510-07**
Broach / trial, 8 mm	AR-**9510-08**
Broach / trial, 9 mm	AR-**9510-09**
Broach / trial, 10 mm	AR-**9510-10**
Broach / trial, 11 mm	AR-**9510-11**
Broach / trial, 12 mm	AR-**9510-12**
Reamer guide, 135° (neutral)	AR-**9510RG-C**
Reamer guide, 135° (+2 mm left)	AR-**9510RG-L**
Reamer guide, 135° (+2 mm right)	AR-**9510RG-R**
Stem/cup impaction/extraction adapter	AR-**9511**
Reamer guide, 155° (neutral)	AR-**9511RG-C**
Reamer guide, 155° (+2 mm left)	AR-**9511RG-L**
Reamer guide, 155° (+2 mm right)	AR-**9511RG-R**
Stem / cup trial extraction adapter handle	AR-**9512**
Trial Univers Revers™ cup, 36, 135°	AR-**9522-135**
Trial Univers Revers™ cup, 36, 135° (+2 mm L)	AR-**9522-135L**
Trial Univers Revers™ cup, 36, 135° (+2 mm R)	AR-**9522-135R**
Trial Univers Revers™ cup, 36, 155°	AR-**9522-155**
Trial Univers Revers™ cup, 36, 155° (+2 mm L)	AR-**9522-155L**
Trial Univers Revers™ cup, 36, 155° (+2 mm R)	AR-**9522-155R**
Trial Univers Revers™, 39, 135°	AR-**9520-135**
Trial Univers Revers™, 135° (+2 mm L)	AR-**9520-135L**
Trial Univers Revers™, 39, 135° (+2 mm R)	AR-**9520-135R**
Trial Univers Revers™, 39, 155°	AR-**9520-155**
Trial Univers Revers™, 39, 155° (+2 mm L)	AR-**9520-155L**
Trial Univers Revers™, 39, 155° (+2 mm R)	AR-**9520-155R**
Trial Univers Revers™, 42, 135°	AR-**9521-135**
Trial Univers Revers™, 42, 135° (+2 mm L)	AR-**9521-135L**
Trial Univers Revers™, 42, 135° (+2 mm R)	AR-**9521-135R**
Trial Univers Revers™, 42, 155°	AR-**9521-155**
Trial Univers Revers™, 42, 155° (+2 mm L)	AR-**9521-155L**
Trial Univers Revers™, 42, 155° (+2 mm R)	AR-**9521-155R**
Trial humeral liner, 36 +3 mm	AR-**9530S-03**
Trial humeral liner, 36 +3 mm, constrained	AR-**9530S-03C**
Trial humeral liner, 36 +6 mm	AR-**9530S-06**
Trial humeral liner, 36 +6 mm, constrained	AR-**9530S-06C**
Trial humeral liner, 39 +3 mm	AR-**9530M-03**
Trial humeral liner, 39 +3 mm, constrained	AR-**9530M-03C**
Trial humeral liner, 39 +6 mm	AR-**9530M-06**
Trial humeral liner, 39 +6 mm, constrained	AR-**9530M-06C**
Trial humeral liner, 42 +3 mm	AR-**9530L-03**
Trial humeral liner, 42 +3 mm, constrained	AR-**9530L-03C**
Trial humeral liner, 42 +6 mm	AR-**9530L-06**
Trial humeral liner, 42 +6 mm, constrained	AR-**9530L-06C**
Humeral liner / glenosphere impactor	AR-**9531**
Trial spacer, 36 +6 mm	AR-**9551-06**
Trial spacer, 36 +9 mm	AR-**9551-09**
Trial spacer, 36 +12 mm	AR-**9551-12**
Trial spacer, 36 +15 mm	AR-**9551-15**

Product Description	Item Number
Trial spacer, 39 +6 mm	AR-**9552-06**
Trial spacer, 39 +9 mm	AR-**9552-09**
Trial spacer, 39 +12 mm	AR-**9552-12**
Trial spacer, 39 +15 mm	AR-**9552-15**
Trial spacer, 42 +6 mm	AR-**9553-06**
Trial spacer, 42 +9 mm	AR-**9553-09**
Trial spacer, 42 +12 mm	AR-**9553-12**
Trial spacer, 42 +15 mm	AR-**9553-15**
Humeral assembly station	AR-**9532**
Humeral cup screw guide, 36 mm	AR-**9532-36**
Humeral cup screw guide, 39 mm	AR-**9532-39**
Humeral cup screw guide, 42 mm	AR-**9532-42**
Core set case 1	AR-**9500-GCT1**
Core set case 2	AR-**9500-GCT2**

Optional

Product Description	Item Number
Humeral resection block, 135°/155° (superolateral)	AR-**9507RGSL-1**
Superolateral version guide adapter	AR-**9507RGSL-2**
Univers Revers™ reduction tool	AR-**9545**

Required Disposables

Univers Revers Sterile Pin Set	AR-**9507S**
Drill tip guide pin, 2.4 mm	AR-**1250L**
Guide wire, 2.8 mm	AR-**9165K**
Osteotomy guide pin, 2.4 mm, qty. 2	AR-**13303-2.4**

Instruments Univers Revers™ Supplementary Set

Product Description	Item Number
Univers Revers™ IM reamer, size 5	AR-**9202-25H**
Univers Revers™ IM reamer, size 13	AR-**9202-33H**
Univers Revers™ IM reamer, size 14	AR-**9202-34H**
Univers Revers™ IM reamer, size 15	AR-**9202-35H**
Rasp handle, size 5	AR-**9510-05**
Reamer guide, size 5, 135°	AR-**9510-05-135**
Reamer guide, size 5, 155°	AR-**9510-05-155**
Univers Revers™ rasp / trial stem, size 13	AR-**9510-13**
Univers Revers™ rasp / trial stem, size 14	AR-**9510-14**
Univers Revers™ rasp / trial stem, size 15	AR-**9510-15**

Revision Set

Product Description	Item Number
Univers Revers™ IM reamer, long, size 6, 150 mm	AR-**9506-06R**
Univers Revers™ IM reamer, long, size 9, 180 mm	AR-**9506-09R**
Univers Revers™ IM reamer, long, size 12, 180 mm	AR-**9506-12R**
Rasp / trial revers stem, size 6, long 150 mm	AR-**9510-06R**
Rasp / trial revers stem, size 9, long 180 mm	AR-**9510-09R**
Rasp / trial revers stem, size 12, long 180 mm	AR-**9510-12R**

Implants Univers Revers Supplementary Set

Product Description	Item Number
Univers Revers™ stem, CaP coated, monoblock, 135°, size 5	AR-**9501-05-135CPC**
Univers Revers™ stem, CaP coated, monoblock, 155°, size 5	AR-**9501-05-155CPC**
Univers Revers™ stem, CaP coated, size 13	AR-**9501-13CPC**
Univers Revers™ stem, CaP coated, size 14	AR-**9501-14CPC**
Univers Revers™ stem, CaP coated, size 15	AR-**9501-15CPC**

CA Head Implants

Product Description	Item Number
Univers Revers™ CA adapter assembly, 36 mm	AR-**9502-36ARCA**
Univers Revers™ CA adapter assembly, 39 mm	AR-**9502-39ARCA**
Univers Revers™ CA adapter assembly, 42 mm	AR-**9502-42ARCA**
Univers Revers™ CA humeral head, 44/17	AR-**9544-17RCA**
Univers Revers™ CA humeral head, 50/19	AR-**9550-19RCA**
Univers Revers™ CA humeral head, 56/22	AR-**9556-22RCA**

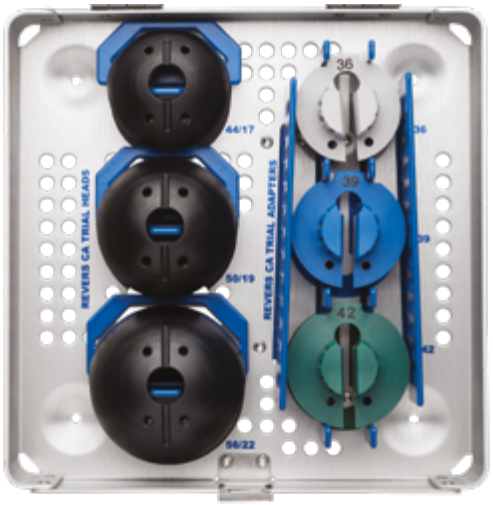
Revision Set

Product Description	Item Number
Univers Revers™, CaP coated, long, size 6, 180 mm	AR-**9501-06RCPC**
Univers Revers™, CaP coated, long, size 9, 180 mm	AR-**9501-09RCPC**
Univers Revers™, CaP coated, long, size 12, 180 mm	AR-**9501-12RCPC**

Implant Templates

Product Description	Item Number
Univers Revers™ x-ray templates	AR-**703**

Univers Revers™ CA Head and Adapter Trials (AR-9501HC-RCAS)



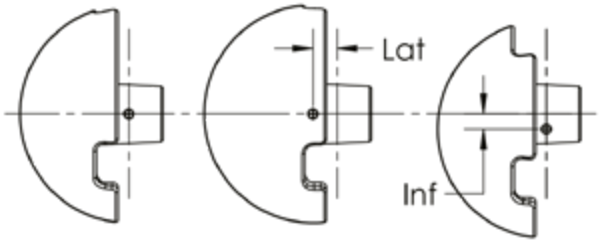
Univers Revers™ CA Head and Adapter Trials

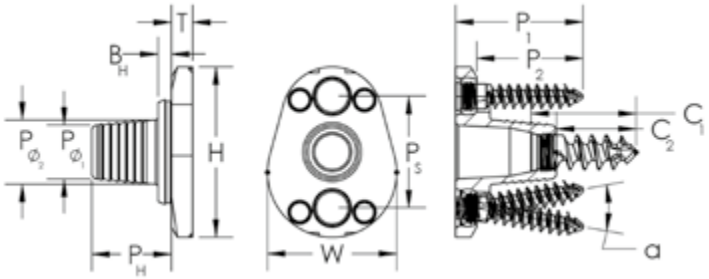
Pic.	Item Number	Qty.	Description
1	AR-**9522-17RCAT**	1	Univers Revers™ CA trial head, 44/17 mm
2	AR-**9522-19RCAT**	1	Univers Revers™ CA trial head, 50/19 mm
3	AR-**9522-22RCAT**	1	Univers Revers™ CA trial head, 56/22 mm
4	AR-**9522-36ARCAT**	1	Univers Revers™ CA trial adapter, 36 mm
5	AR-**9522-39ARCAT**	1	Univers Revers™ CA trial adapter, 39 mm
6	AR-**9522-42ARCAT**	1	Univers Revers™ CA trial adapter, 42 mm

Univers Revers™ Compatibility Matrix

		Stem	Size 6 - 15, 6 R, 9 R, 12 R *5 mm stem – Monoblock 135° and 155° options with 36 mm cup only								
		Cup Can be fixed at inclination angle of 135° or 155°	**36** Left	**36**	**36** Right	**39** Left	**39**	**39** Right	**42** Left	**42**	**42** Right
Optional		Spacer In combination with +3 mm liners only	**36** **6, 9, 12, 15 mm** (for 5-15 stems)			**39** **6, 9, 12, 15 mm** (for 6-15 stems)			**42** **6, 9, 12, 15 mm** (for 6-15 stems)		
		Liner	**36** +3 +6		**36** +3 +6	39 +3 +6		39 +3 +6	42 +3 +6		42 +3 +6
					Constrained			Constrained			Constrained
		Glenosphere	**36** +2.5 Inf	**36**	**36** +4 Lat	**39** +2.5 Inf	**39**	**39** +4 Lat	**42** +2.5 Inf	**42**	**42** +4 Lat
		Baseplate	**S**	●	●	●	●	●	●	●	●	●
			M				●	●	●	●	●	●
			L							●	●	●

Standard **Lateralized** **Inferiorlized**





Glenosphere Dimensions			
Size	Standard	Lateralized	Inferiorlized
36 mm 39 mm 42 mm	0 mm Lat 0 mm Inf	4 mm Lat 0 mm Inf	0 mm Lat 2.5 mm Inf

Baseplate Dimensions			
Size	H (mm)	W (mm)	PS (mm)
S	32	24.4	21
M	35	27.4	22
L	38	30.4	23

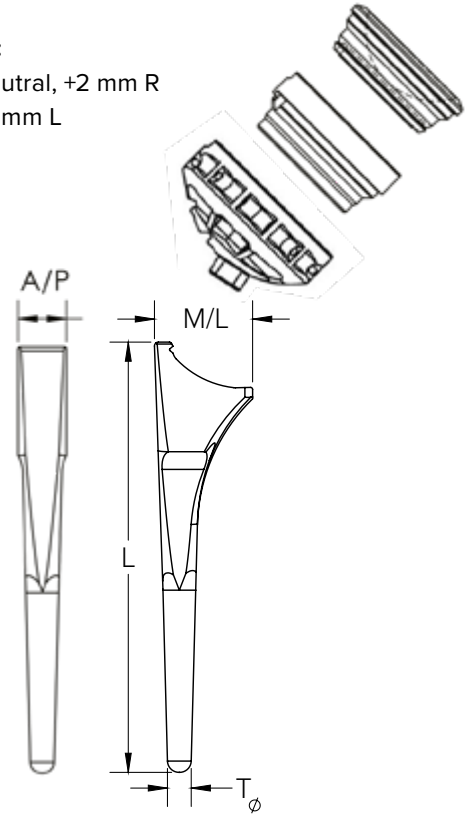
Baseplate Dimensions (same for all sizes)				
T (mm)	BH (mm)	PH (mm)	Pø1 (mm)	Pø2 (mm)
4	2.5	15	10.2	12.1

Baseplate Screw Dimensions				
P1 (mm)	P2 (mm)	C1 (mm)	C2 (mm)	a (°)
24	20	15	10	18
30	26	20	15	-
36	32	25	20	-
42	38	-	-	-
48	44	-	-	-

Liner:
Std +3 mm, +6 mm
Const +3 mm, +6 mm

Spacer:
+6 mm, +9 mm, +12 mm, +15 mm

Cup:
Neutral, +2 mm R
+2 mm L



135°, 155°
36 mm, 39 mm, 42 mm

Ø6.5 mm Central Screw
Ø4.5 mm Peripheral Screws
Locking and Nonlocking

Humeral Stem Dimensions					
Stem Size	Length, L (mm)	Revision Length (mm)	TØ (mm)	A/P (mm)	M/L (mm)
5 (Mono)	95	-	5.5	12.6	20.5 (155°) 22 (135°)
5 (Modular)	99	-	5.5	11.5	23.3
6	111	180	6.2	12.6	25.3
7	115	-	7.9	12.6	25.3
8	119	-	8.8	12.6	26.3
9	123	180	9.6	12.6	27.3
10	127	-	10.5	14.5	28.3
11	131	-	11.3	14.5	29.3
12	135	180	12.2	14.5	30.3
13	139	-	13.2	17.5	31.3
14	143	-	14	17.5	32.3
15	146	-	14.8	17.5	33.3

Indications

The Univers Revers shoulder prosthesis system is indicated for use in a grossly rotator cuff deficient glenohumeral joint with severe arthropathy or a previously failed joint replacement with a gross rotator cuff deficiency. The patient's joint must be anatomically and structurally suited to receive the selected implant(s), and a functional deltoid muscle is necessary to use the device.

The Univers Revers shoulder prosthesis system is indicated for primary, fracture, or revision total shoulder replacement for the relief of pain and significant disability due to gross rotator cuff deficiency.

(Humeral) stems are intended for cementless applications. The glenoid baseplate is CaP coated and is intended for cementless use with the addition of screws for fixation.

Contraindications

1. Insufficient quantity or quality of bone
2. Blood supply limitations and previous infections, which may retard healing
3. Foreign body sensitivity. Where material sensitivity is suspected, appropriate tests should be made and sensitivity ruled out prior to implantation
4. Any active infection or blood supply limitations
5. Conditions that tend to limit the patient's ability or willingness to restrict activities or follow directions during the healing period
6. The use of this device may not be suitable for patients with insufficient or immature bone. The physician should carefully assess bone quality before performing orthopedic surgery
7. Do not use for surgeries other than those indicated

Warnings

1. 6 mm offset humeral liners must not be used in combination with humeral spacers. Humeral spacers should only be used with 3 mm offset humeral liners.
2. Failure to properly align and completely seat the components together can lead to dissociation. Proper technique must be followed to ensure there is no bony or soft tissue interference between modular components. All screws must be adequately tightened to ensure they are not proud to prevent a mechanical interference between modular components. Thoroughly clean and dry tapers prior to attachment of modular components to avoid crevice corrosion and improper seating. Glenosphere forceps is required to verify integrity of the Morse taper connection between glenosphere and baseplate.
3. Postoperatively, until healing is complete the fixation provided by this device should be protected. The postoperative regimen prescribed by the physician should be strictly followed to avoid adverse stresses applied to the implant.
4. Detailed instructions on the use and limitations of the device should be given to the patient.
5. Any decision to remove the device should take into consideration the potential risk to the patient of a second surgical procedure. Implant removal should be followed by adequate postoperative management.
6. Removal of the device should be performed using standard surgical practices for device removal.
7. Preoperative and operating procedures, including knowledge of surgical techniques and proper selection and placement of the implant, are important considerations in the successful utilization of this device. The following operative situations may cause premature loosening and complications:
   - Extreme weakening of the bone structure in preparing the bone bed
   - Unsuitable selection of the implant size
   - Inadequate cleaning of the bone bed prior to implantation
   - Excessive use of force in placing or fastening the implant, provoking splintering fractures, or causing the bone to tear
8. An internal fixation device must never be reused. Reuse of this device could result in failure of the device to perform as intended and could cause harm to the patient and/or user.
9. Do not resterilize this device.

10. The appropriate Arthrex delivery system is required for proper insertion of the implant.
11. Only Arthrex delivery systems, instruments, and trial prostheses should be used for the implantation procedure.
12. Endoprostheses may not be processed mechanically or changed in any other way.
13. Do not implant any parts that have been scratched or damaged. An artificial joint is subject to wear and/or can loosen over a period of time. Wear and loosening may make it necessary to re-operate on an artificial joint.
14. An infection in an artificial joint may lead to implant removal.
15. This device should only be used in conjunction with other implants designed specifically for use with this system.
16. CaP coated device – fluid contact, other than the patient's blood, should be avoided to achieve the best ongrowth results.
17. This device has not been evaluated for safety and compatibility in the magnetic resonance (MR) environment. This device has not been tested for heating or migration in the MR environment. If the implant is manufactured from a metallic material, surgeons can expect that MR artifacts will be present during routine MR imaging.