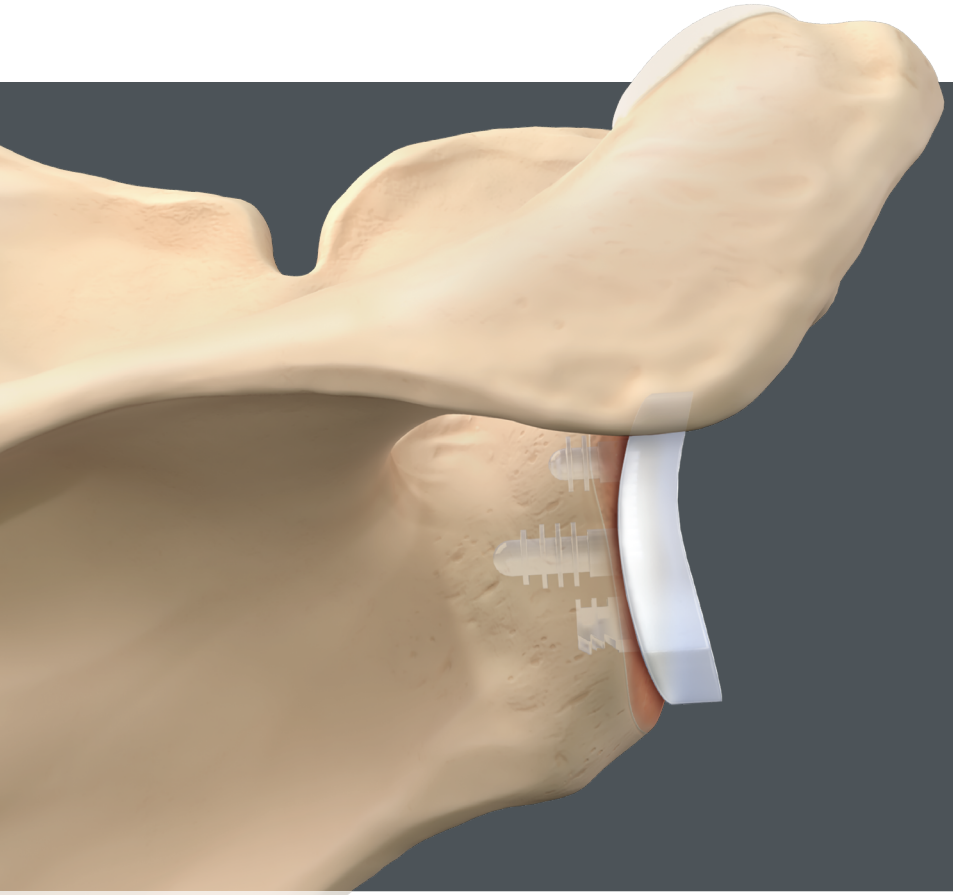
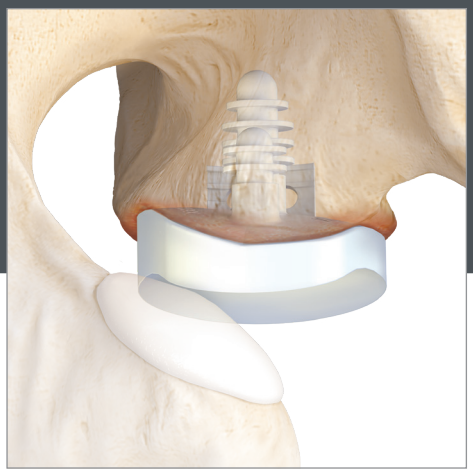
Univers VaultLock® Augmented Glenoid

Surgical Technique





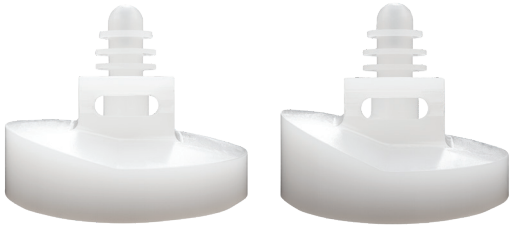
Arthrex®

Fluted Central Peg
- Immediate fixation
- OR efficiency

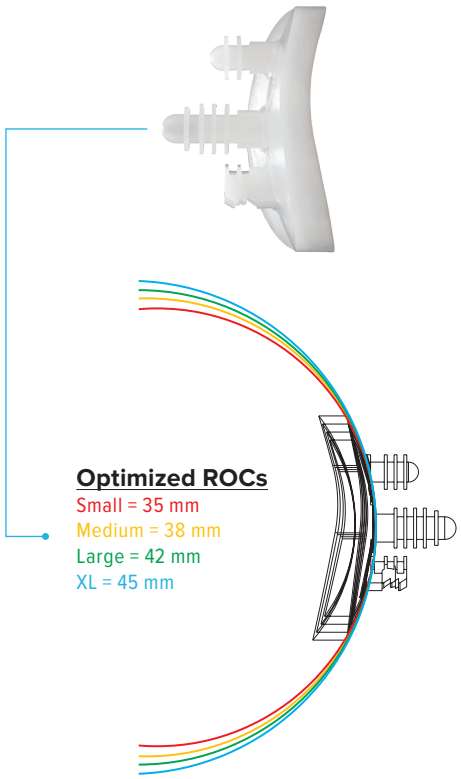
Inferior Keel
- Decreased cortical penetration compared to inferior pegs
- Multiple fixation features, including reverse barbs, flutes, and central cement fenestration

Superior Peg
- Enhanced immediate fixation
- Self-pressurizing design

Inline Configuration
- Combines all advantages of pegged and keeled implants including stability and preparation ease

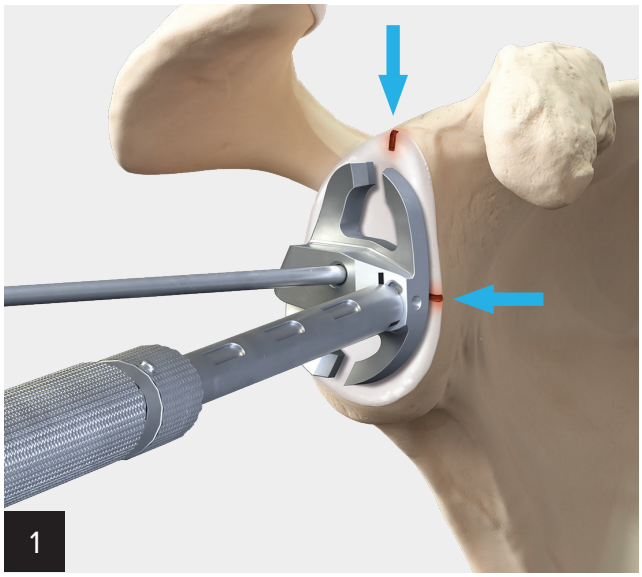


Augmented Sizes
- 15° and 25° half-wedge for bone preservation



Anatomic Backside Radius of Curvature (ROC)
- Matches glenoid poly to glenoid anatomy
- Bone-sparing reaming
- Simplified decision-making

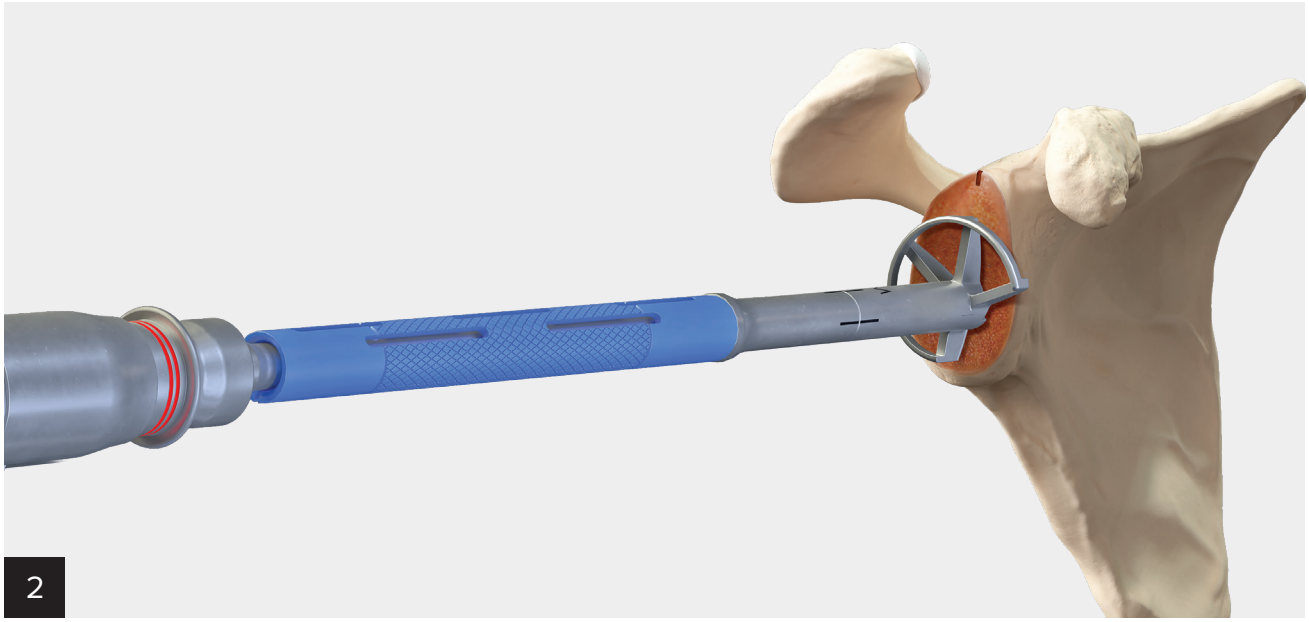
Optimized ROCs
- Anatomic solution with subchondral, bone-preserving design



1

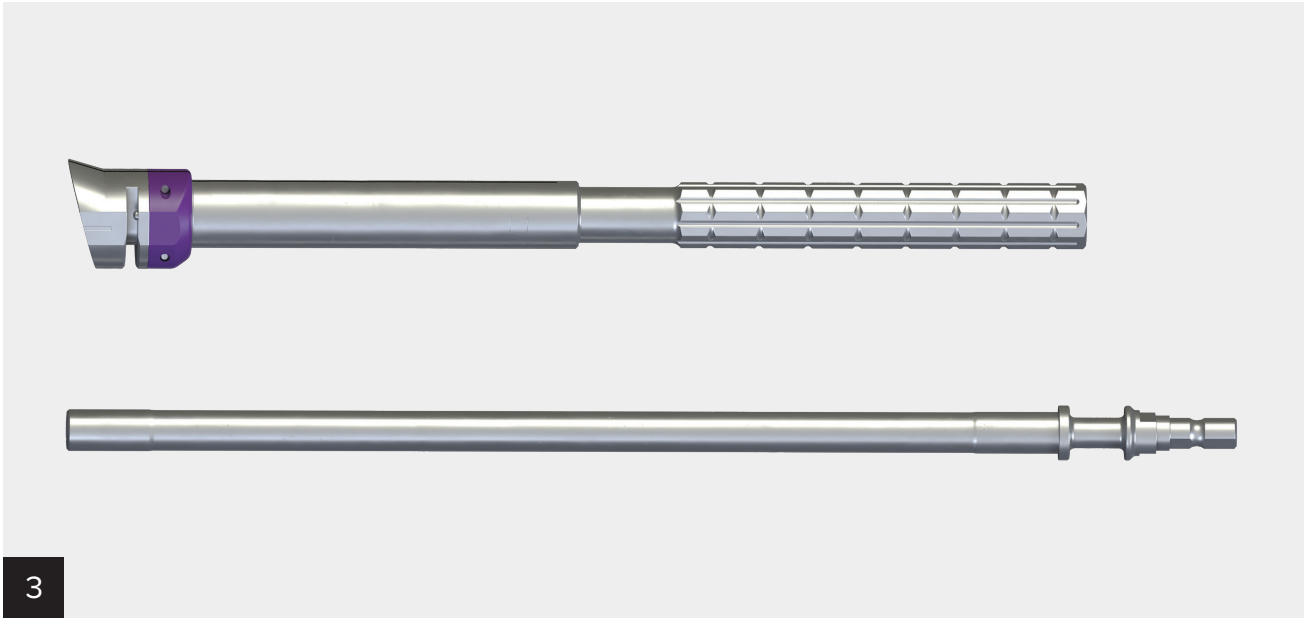
Glenoid Guidewire Placement
Obtain complete exposure of the glenoid articular surface. Assemble the appropriately sized pin guide to the handle and place the 2.8 mm guidewire. Mark the anterior (high side) of the glenoid with a pen or electrocautery. A mark 180° opposite of this location can also be made as either of these can be used to assist in orienting instrumentation while reaming the glenoid.

Note: The pin guide has small windows for making superior and inferior marks on the glenoid face (as shown). These marks can also be useful for orientation later in the procedure.



2

Paleo Glenoid Reaming
Attach the properly sized modular VaultLock reamer to the reamer shaft and place it over the guide pin. To prepare the surface for the prosthetic glenoid, carefully ream the glenoid surface to remove cartilage while sparing subchondral bone.

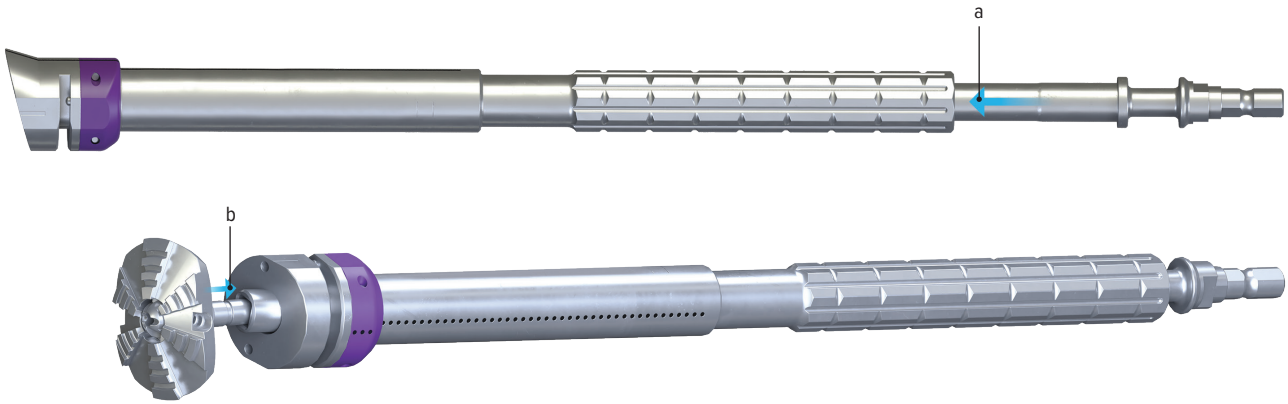


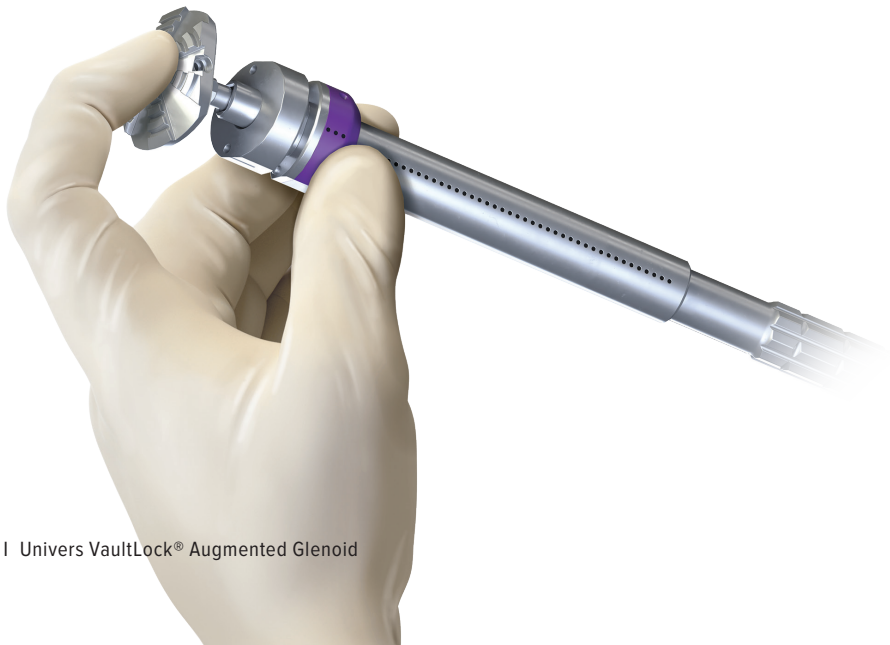
3

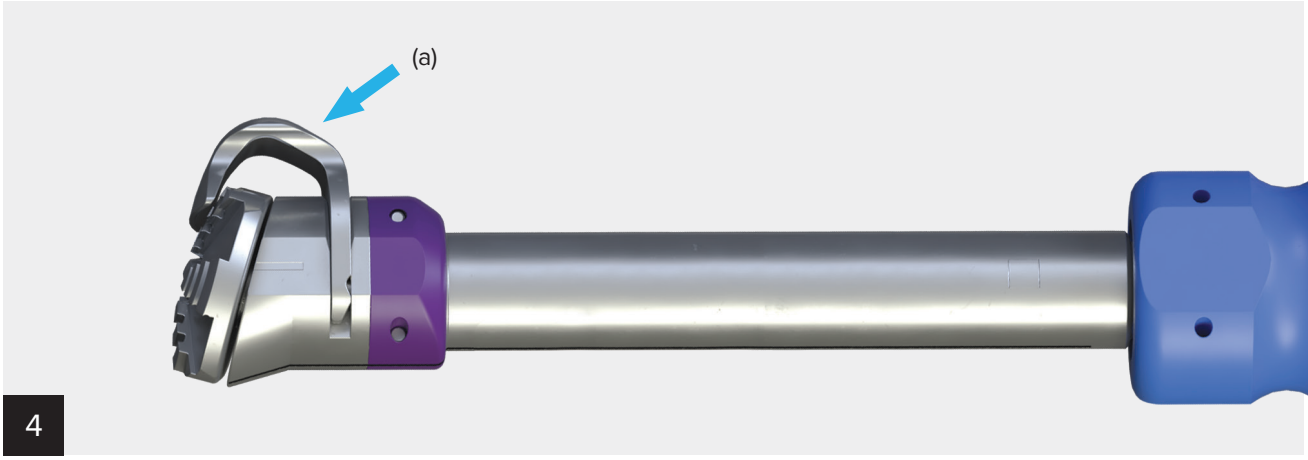
Neo Glenoid Reaming

Select the angled reaming sleeve that matches the augment size selected. Insert the inner reamer shaft through the angled reamer sleeve **(a)**. Couple the disposable angled reamer to the inner reamer shaft **(b)**. A tactile coupling should be felt.

Augment	Color
15°	Purple
25°	Blue



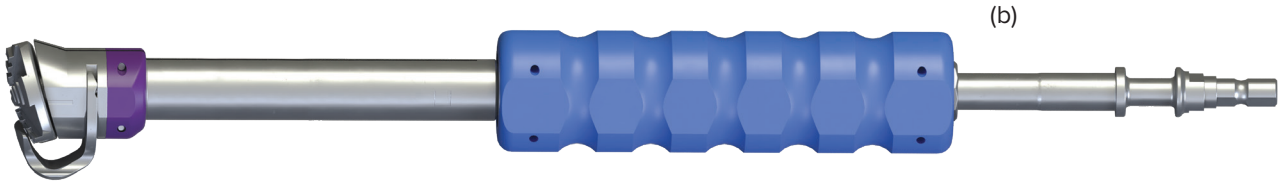


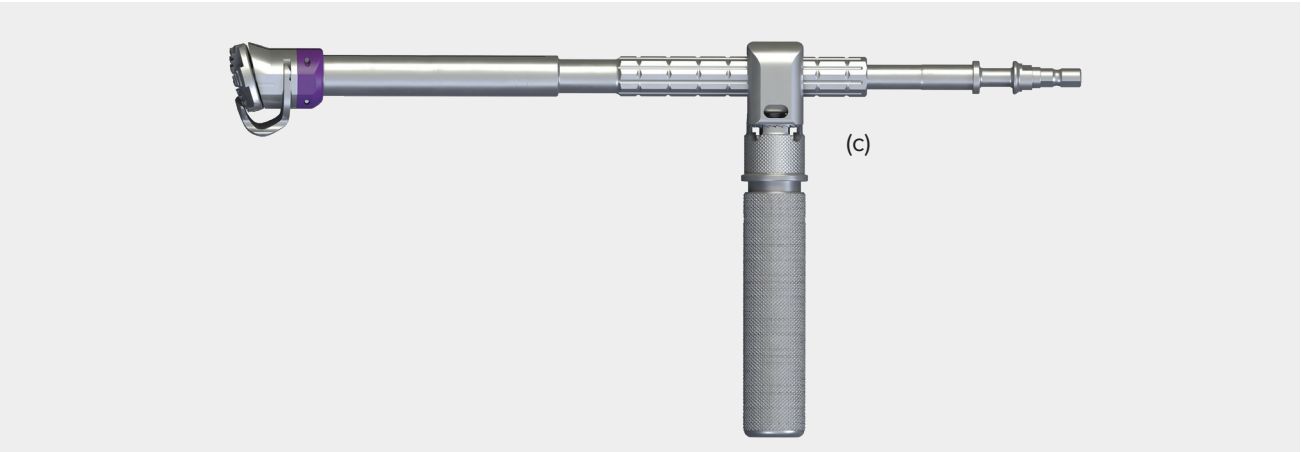


4

Insert the reaming depth stop **(a)** into the slots near the face of the angled reamer sleeve. This depth stop is sized to match the implant and prevents overmedializing while reaming the neo glenoid, thus aligning the neo and paleo reamed surfaces within the center of the glenoid face.

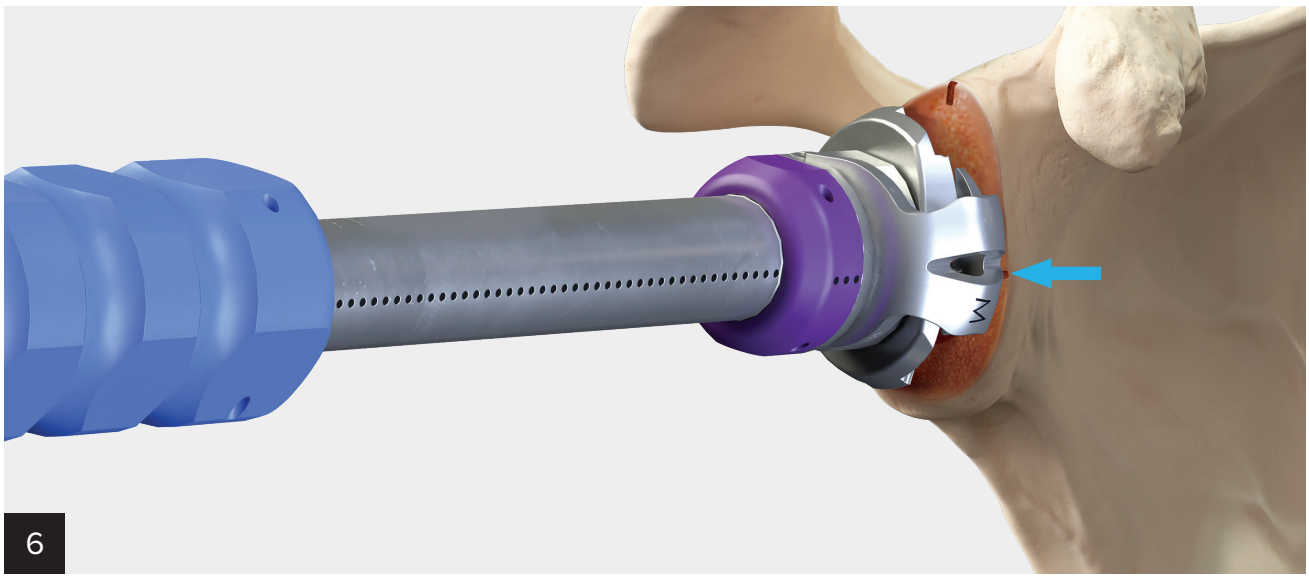
5





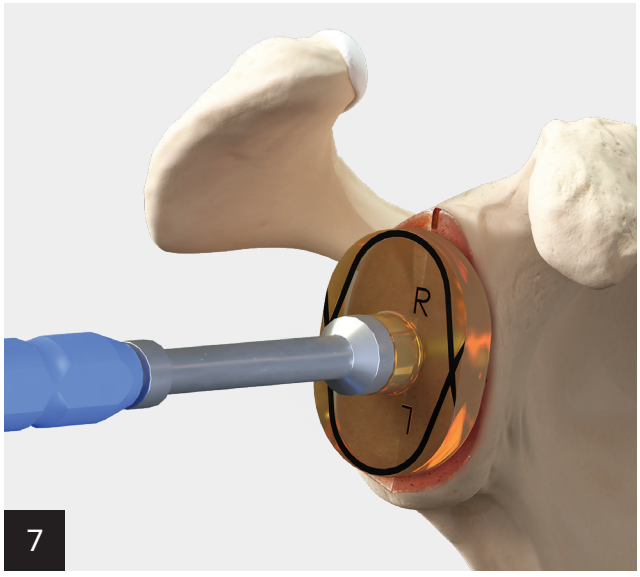
Before attaching the reamer assembly to the powered hand equipment, the orientation sleeve **(b)** or orientation handle **(c)** can be attached to help maintain rotational control while reaming.

Note: If using the orientation handle (c) it is helpful to align the handle with the anterior dotted line on the angled reamer sleeve.



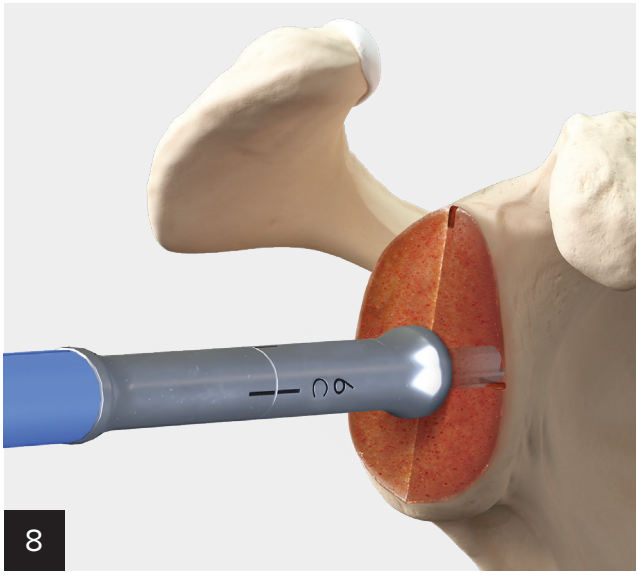
6

Neo Ream
Insert the angled reamer assembly over the guide pin. Rotate the reamer assembly about the pin so that the dotted line on the shaft aligns with the anterior (high side) mark on the glenoid face.



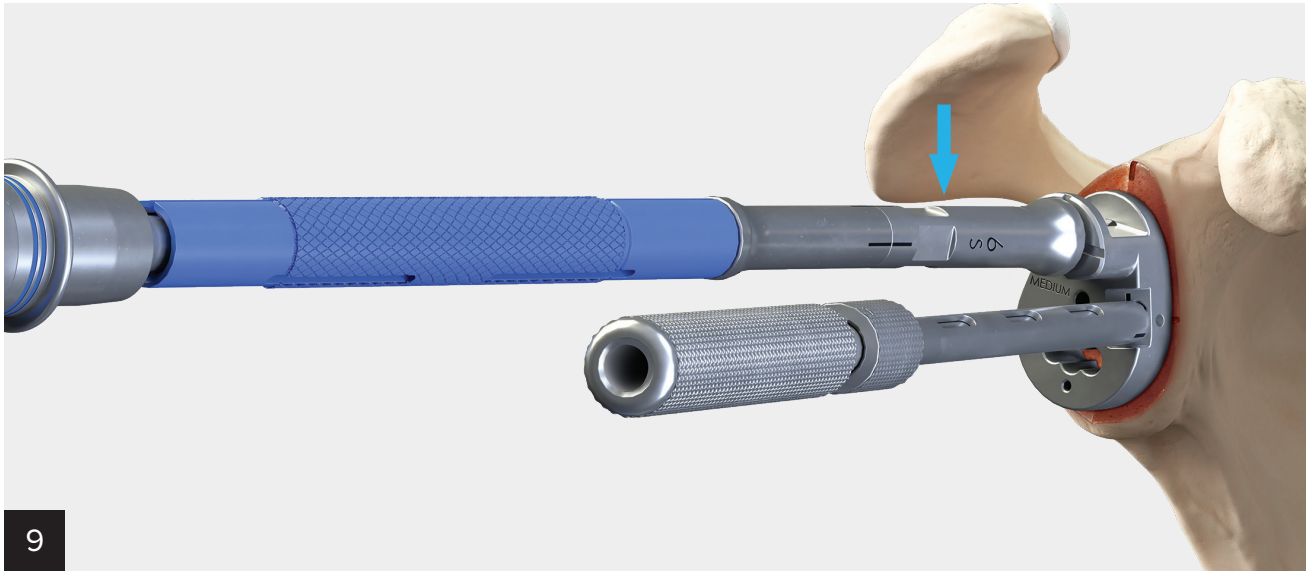
7

Ream Verification
Place the ream verification guide over the guidewire. Hold the guide firmly onto the face for tactile feel, confirming the glenoid is reamed properly to mate with the backside geometry of the Univers VaultLock® augmented implant. If required, repeat the paleo and neo reaming steps.



8

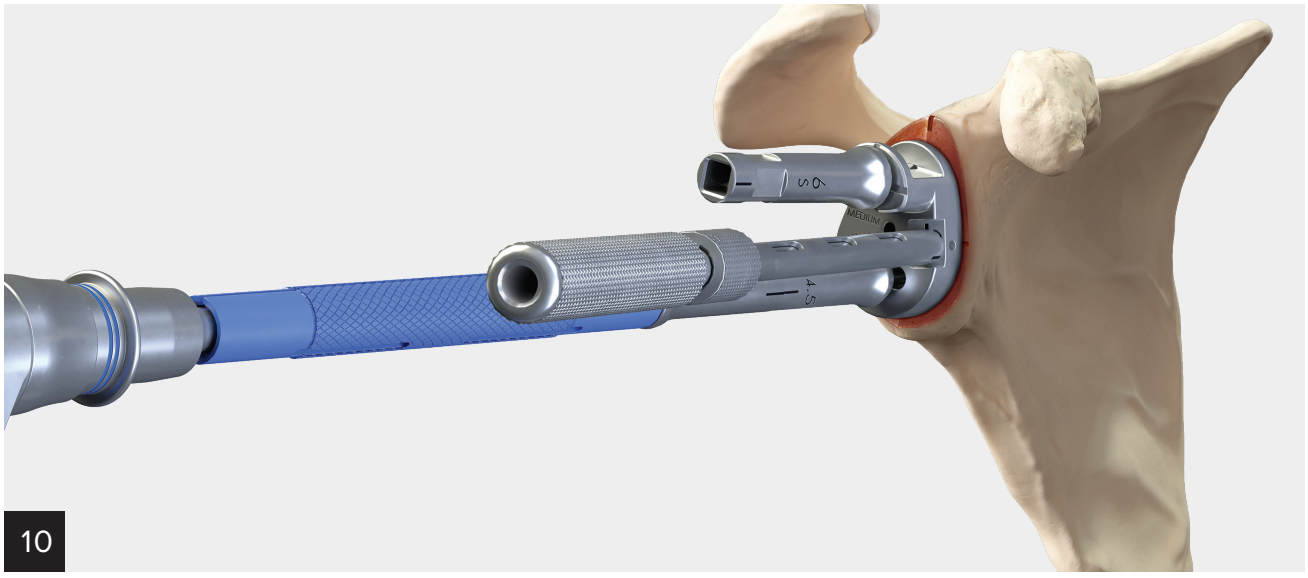
Central Hole
Prepare for the central peg hole by placing the 6 mm drill over the guide pin. Advance the drill until the positive stop reaches the glenoid surface, taking care to maintain alignment of the pin to the trajectory of the drill.



9

Superior Hole
Place the drill guide into position and drill for the superior hole. Detach the drill and keep it in place to hold guide orientation.

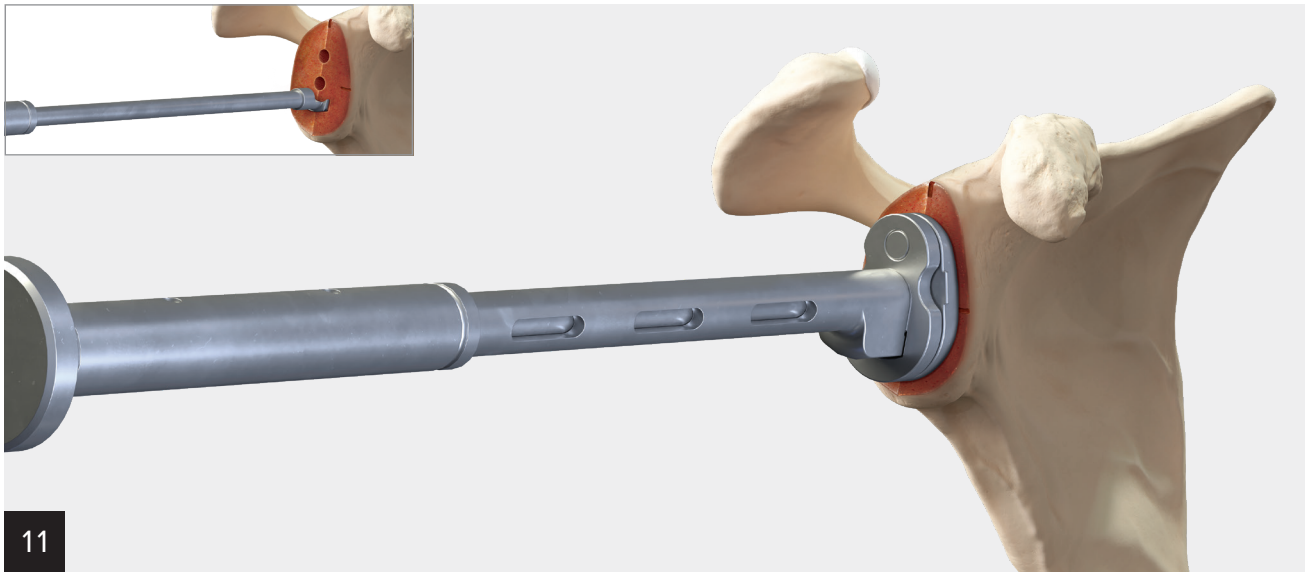
Note: Flats on the proximal edge of the drill can be used with an angled clamp to facilitate detaching.



10

Inferior Drill
Use the 4.5 mm drill to prepare the 3 inferior holes. Once these holes are drilled, remove the guide from the glenoid face.

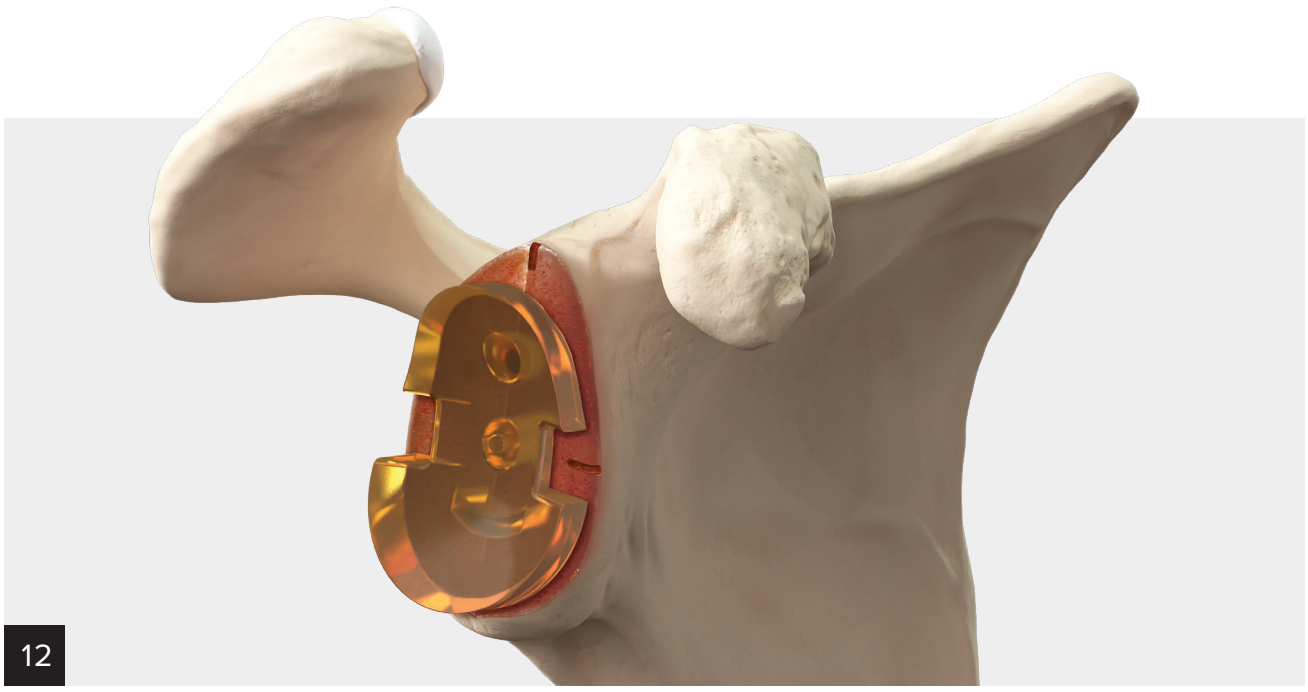
Note: Insert the drill into the guide before activating it. There is a mechanical stop on the drill for depth control.



11

Inferior Punch
Place the appropriate tip on the broach. The tips are sized to match the augment angle and anatomical side (eg, 15° right). Engage the pegs of the broach into the superior and central holes. Use a mallet to advance the glenoid broach into the roughly prepared slot.

Optional (inset): Alternatively, use the pegged glenoid punch to prepare the keel slot. Advance only until the shoulder of the punch is flush with the bone surface.



12

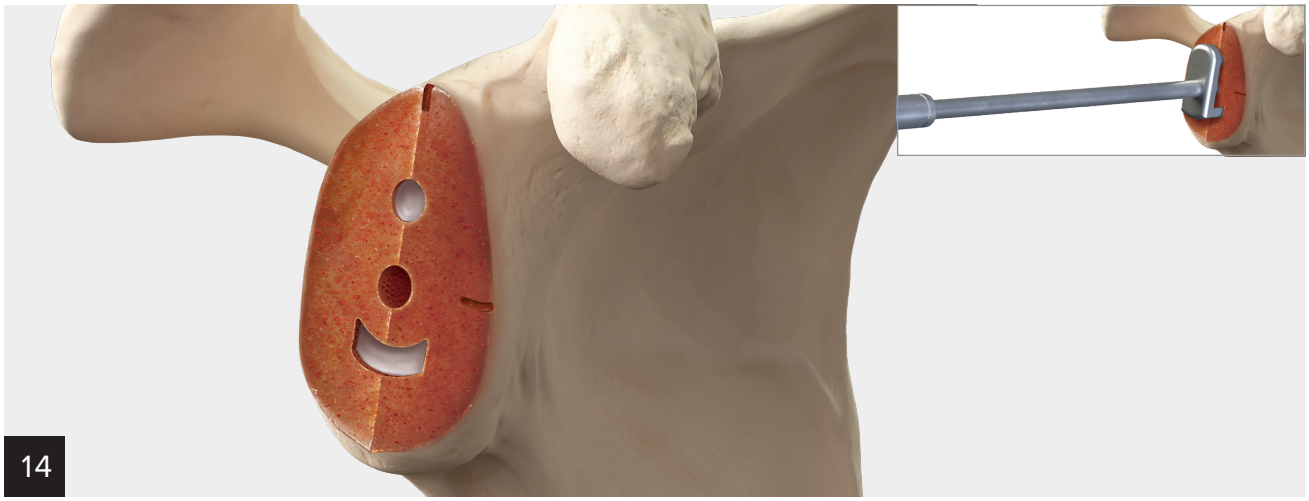
Trial
Insert the Univers VaultLock® augmented glenoid trial manually or using forceps. This trial will verify backside curvature and hole depth.

13

Implantation

Prior to cementing the glenoid, use the graft compression tool to place graft around the central peg of the implant. Graft can be obtained from the humeral head or from the reamers and drills after preparing the glenoid.

Place the graft into the compression tool then clamp the tool onto the central peg and twist the implant 180°. Repeat the process so the graft fully covers the central peg.

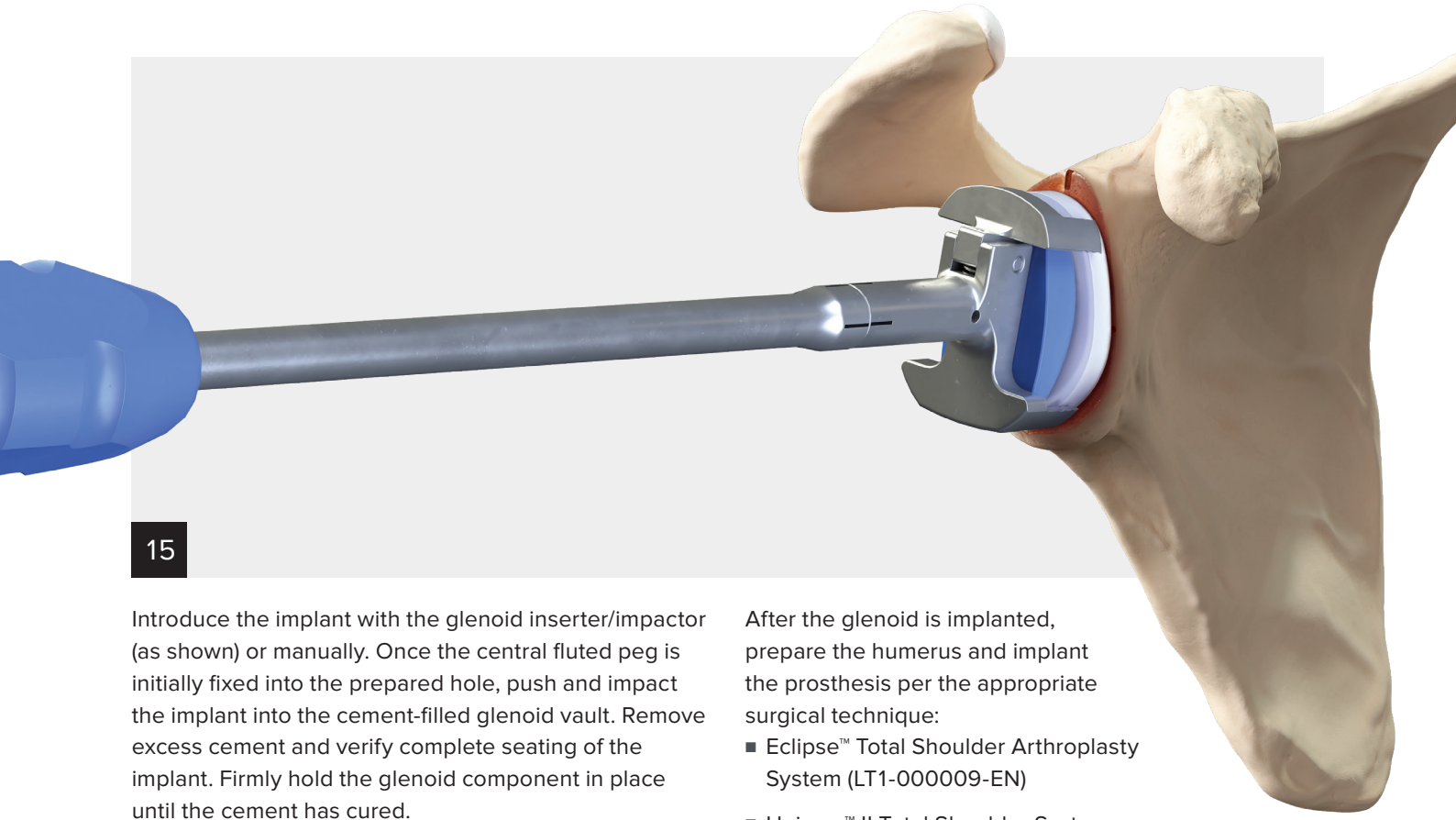


14

Implantation

Remove bone and soft-tissue debris from the glenoid with irrigation and suctioning. Hemostasis should be achieved before placing the cemented glenoid. Once the glenoid has been fully prepared, open the appropriately sized implant and press bone cement into the fenestration on the inferior keel and around the superior peg.

Pack the inferior slot and superior peg hole with cement using a syringe or finger. To create adequate cement interdigitation within the glenoid vault, impact the cement into the slot and superior hole using the cement pressurizer (inset). Alternate between cementing and pressurizing until a sufficient quantity of cement has filled the glenoid vault. Prior to inserting the glenoid component, the superior hole and inferior slot should be filled with cement again.



15

Introduce the implant with the glenoid inserter/impactor (as shown) or manually. Once the central fluted peg is initially fixed into the prepared hole, push and impact the implant into the cement-filled glenoid vault. Remove excess cement and verify complete seating of the implant. Firmly hold the glenoid component in place until the cement has cured.

After the glenoid is implanted, prepare the humerus and implant the prosthesis per the appropriate surgical technique:

- Eclipse™ Total Shoulder Arthroplasty System (LT1-000009-EN)
- Univers™ II Total Shoulder System (LT1-0701-EN)
- Univers™ Apex Total Shoulder System (LT1-0702-EN)

Ordering Information

Implants

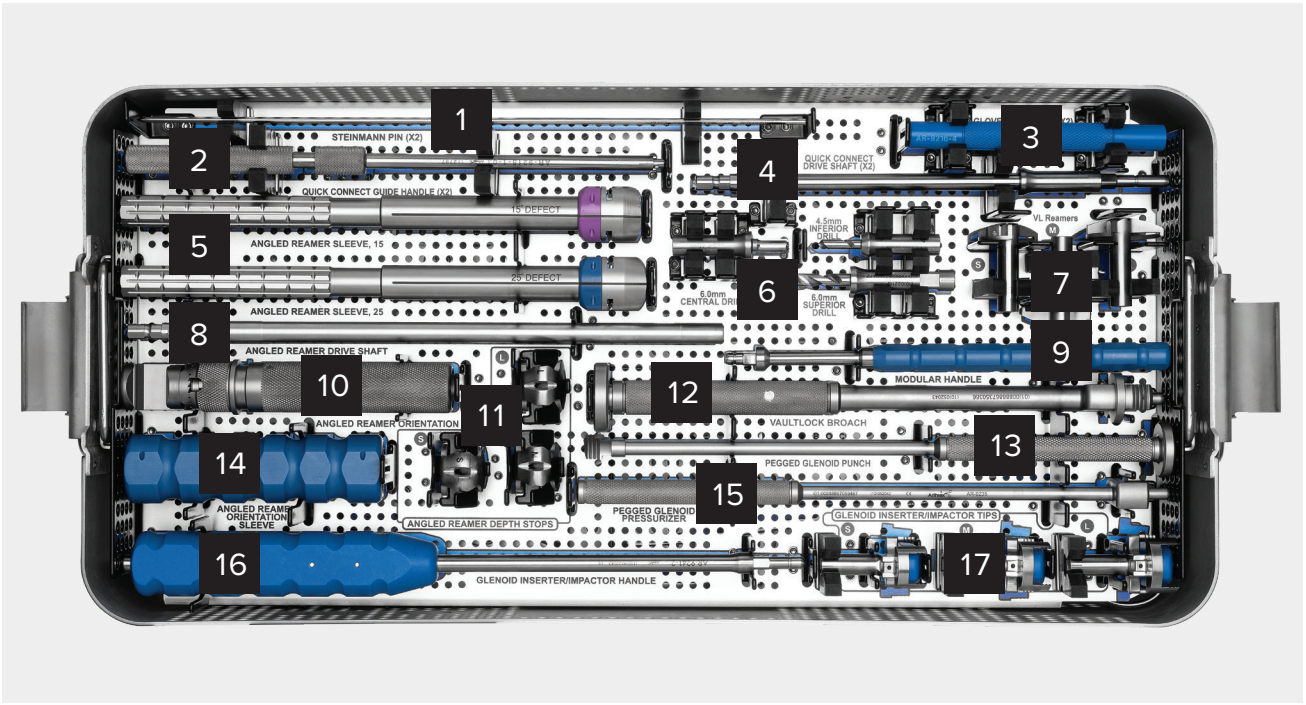
Product Description	Item Number
Augmented Univers VaultLock® Glenoid, small, 15°, left	AR-**9107-01-15L**
Augmented Univers VaultLock Glenoid, small, 15°, right	AR-**9107-01-15R**
Augmented Univers VaultLock Glenoid, small, 25°, left	AR-**9107-01-25L**
Augmented Univers VaultLock Glenoid, small, 25°, right	AR-**9107-01-25R**
Augmented Univers VaultLock Glenoid, medium, 15°, left	AR-**9107-02-15L**
Augmented Univers VaultLock Glenoid, medium, 15°, right	AR-**9107-02-15R**
Augmented Univers VaultLock Glenoid, medium, 25°, left	AR-**9107-02-25L**
Augmented Univers VaultLock Glenoid, medium, 25°, right	AR-**9107-02-25R**
Augmented Univers VaultLock Glenoid, large, 15°, left	AR-**9107-03-15L**
Augmented Univers VaultLock Glenoid, large, 15°, right	AR-**9107-03-15R**
Augmented Univers VaultLock Glenoid, large, 25°, left	AR-**9107-03-25L**
Augmented Univers VaultLock Glenoid, large, 25°, right	AR-**9107-03-25R**

Disposable Instruments

Product Description	Item Number
Angled Reamer, small	AR-**9275-S**
Angled Reamer, medium	AR-**9275-M**
Angled Reamer, large	AR-**9275-L**
DynaNite® Virtual Implant Positioning™ Glenoid Pin, nitinol, 2.8 mm	AR-**5400-400NS**
Univers™ II Pin Set	AR-**9207S**

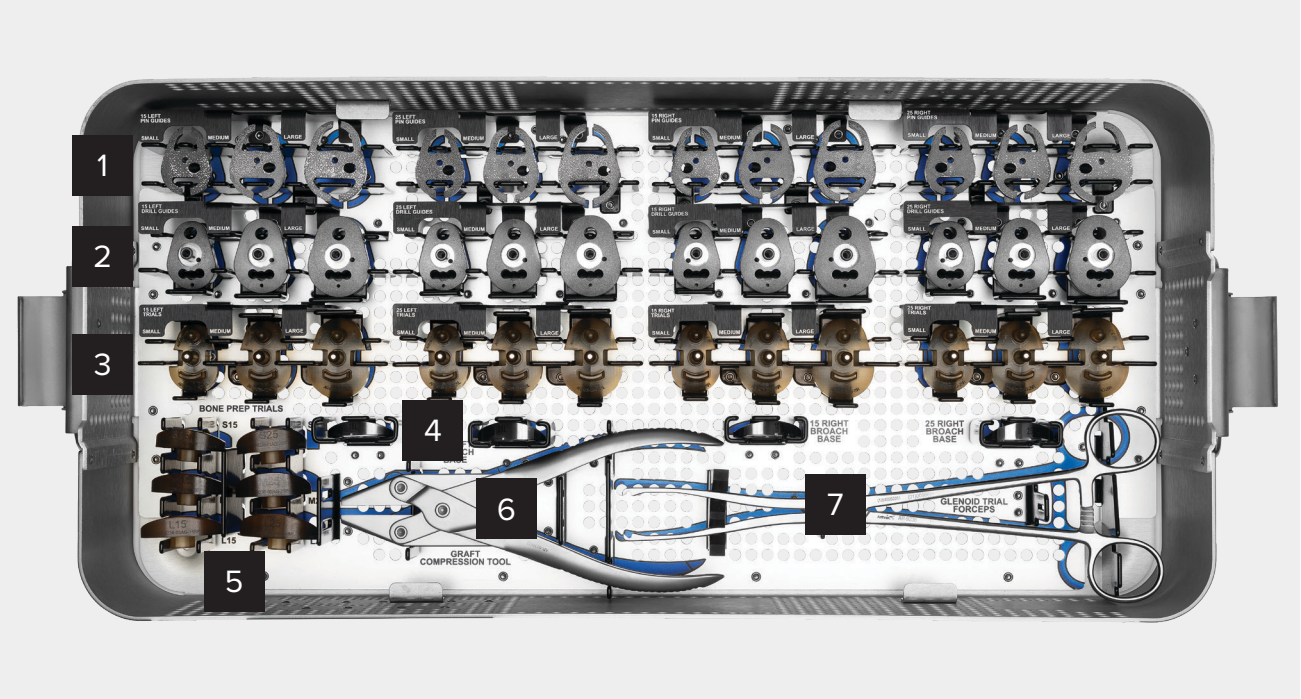
Special Order

Product Description	Item Number
Augmented Univers VaultLock Glenoid, extra large, 15°, right	AR-**9107-04-15R**
Augmented Univers VaultLock Glenoid, extra large, 15°, left	AR-**9107-04-15L**
Augmented Univers VaultLock Glenoid, extra large, 25°, right	AR-**9107-04-25R**
Augmented Univers VaultLock Glenoid, extra large, 25°, left	AR-**9107-04-25L**
Angled Reamer, extra large	AR-**9275-XL**
Instruments for Augmented Univers VaultLock Glenoid, extra large	AR-**9217AGC-XL**



Top Tray (AR-9217AVS)

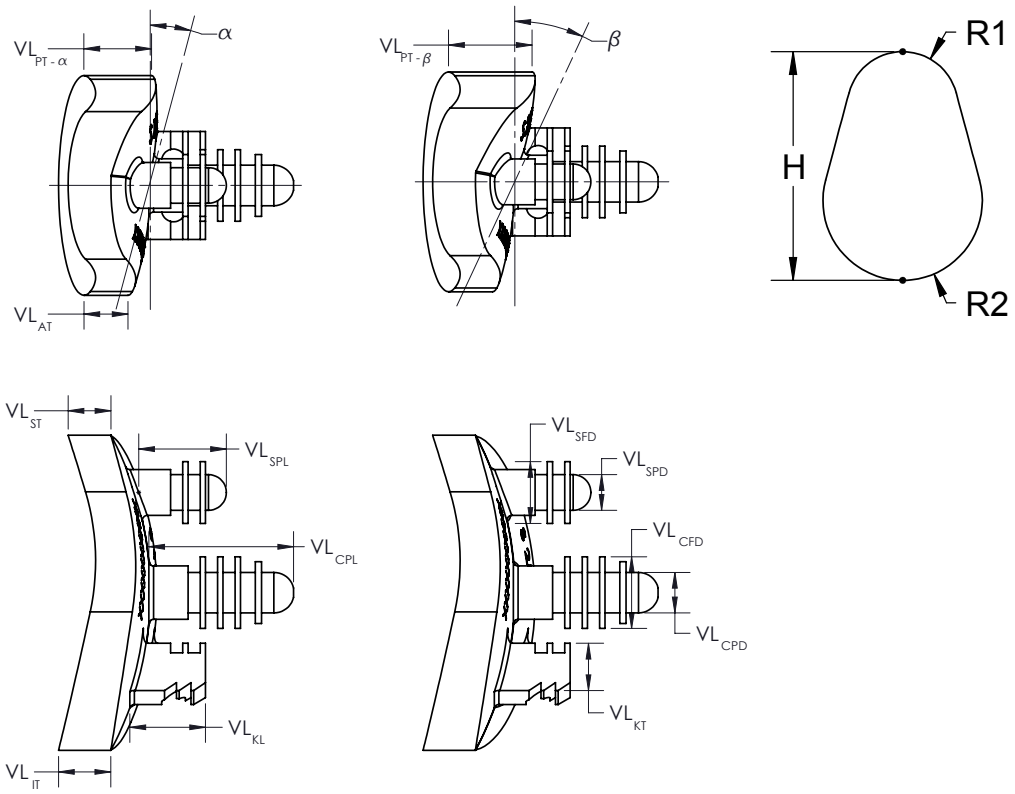
Label	Description	Item Number
1	2.8 mm Steinmann Pin	AR-**9207**
2	Quick Connect Handle (qty. 2)	AR-**9215-1-03**
3	Glove Protector (qty. 2)	AR-**9216-4**
4	Quick Connect Drive Shaft (qty. 2)	AR-**9617**
5	Angled Reamer Sleeve, 15 Degree	AR-**9297-15**
	Angled Reamer Sleeve, 25 Degree	AR-**9297-25**
6	6.0 mm Central Drill	AR-**9216AG**
	4.5 mm Inferior Drill	AR-**9239AG**
	6.0 mm Superior Drill	AR-**9221AG**
7	Small Modular Reamer	AR-**9228AG**
	Medium Modular Reamer	AR-**9229AG**
	Large Modular Reamer	AR-**9230AG**
8	Angled Reamer Drive Shaft	AR-**9676**
9	Modular Handle	AR-**9595**
10	Angled Reamer Orientation Handle	AR-**9678**
11	Angled Reamer Depth Stop, Small	AR-**9298-S**
	Angled Reamer Depth Stop, Medium	AR-**9298-M**
	Angled Reamer Depth Stop, Large	AR-**9298-L**
12	Univers VaultLock Augmented Broach	AR-**9233AG**
13	Pegged Glenoid Punch	AR-**9234**
14	Angled Reamer Orientation Sleeve	AR-**9679**
15	Pegged Glenoid Pressurizer	AR-**9235**
16	Glenoid Inserter/Impactor Handle	AR-**9241-2**
17	Glenoid Inserter/Impactor, Small	AR-**9241-01**
	Glenoid Inserter/Impactor, Medium	AR-**9241-02**
	Glenoid Inserter/Impactor, Large	AR-**9241-03**



Bottom Tray (AR-9217AVS)

Label	Description	Item Number
1	Augmented Univers VaultLock® Pin Guide, 15 Left (Small, Medium, Large)	AR-**9215-2AG/4AG/6AG-15L**
	Augmented Univers VaultLock Pin Guide, 25 Left (Small, Medium, Large)	AR-**9215-2AG/4AG/6AG-25L**
	Augmented Univers VaultLock Pin Guide, 15 Right (Small, Medium, Large)	AR-**9215-2AG/4AG/6AG-15R**
	Augmented Univers VaultLock Pin Guide, 25 Right (Small, Medium, Large)	AR-**9215-2AG/4AG/6AG-25R**
2	Augmented Univers VaultLock Drill Guide, 15 Left (Small, Medium, Large)	AR-**9231-01AG/02AG/03AG-15L**
	Augmented Univers VaultLock Drill Guide, 25 Left (Small, Medium, Large)	AR-**9231-01AG/02AG/03AG-25L**
	Augmented Univers VaultLock Drill Guide, 15 Right (Small, Medium, Large)	AR-**9231-01AG/02AG/03AG-15R**
	Augmented Univers VaultLock Drill Guide, 25 Right (Small, Medium, Large)	AR-**9231-01AG/02AG/03AG-25R**
3	Augmented Univers VaultLock Trial, 15 Left (Small, Medium, Large)	AR-**9236-01AG/02AG/03AG-15L**
	Augmented Univers VaultLock Trial, 25 Left (Small, Medium, Large)	AR-**9236-01AG/02AG/03AG-25L**
	Augmented Univers VaultLock Trial, 15 Right (Small, Medium, Large)	AR-**9236-01AG/02AG/03AG-15R**
	Augmented Univers VaultLock Trial, 25 Right (Small, Medium, Large)	AR-**9236-01AG/02AG/03AG-25R**
4	Augmented Univers VaultLock Broach Base, 15 Left	AR-**9233AG-15L**
	Augmented Univers VaultLock Broach Base, 25 Left	AR-**9233AG-25L**
	Augmented Univers VaultLock Broach Base, 15 Right	AR-**9233AG-15R**
	Augmented Univers VaultLock Broach Base, 25 Right	AR-**9233AG-25R**
5	Augmented Univers VaultLock Bone Prep Trial, Small (15, 25)	AR-**9236-01AG-15B/25BP**
	Augmented Univers VaultLock Bone Prep Trial, Medium (15, 25)	AR-**9236-02AG-15B/25BP**
	Augmented Univers VaultLock Bone Prep Trial, Large (15, 25)	AR-**9236-03AG-15B/25BP**
6	Graft Compression Tool	AR-**9236GT**
7	Glenoid Trial Forceps	AR-**9238**

Key Dimensions



Glenoid Dimensions

Size	H (mm)	R_1 (mm)	R_2 (mm)	T_1 (mm)	T_2 (mm)
Small	33.0	8.0	11.5	4.7	5.7
Medium	36.0	9.5	13.0	4.6	5.7
Large	39.0	11.0	14.5	4.5	5.6
Extra Large	42.0	12.5	16.0	4.4	5.5

Augment Specific Dimensions (α=15° β=25°)

Size	VL_{AT} (mm)	$VL_{PT-\alpha}$ (mm)	$VL_{PT-\beta}$ (mm)
Small	4.6	7.1	8.8
Medium	4.7	7.6	9.5
Large	5.0	8.2	10.4
Extra Large	5.2	8.8	11.2

Peg Dimensions

VL_{CPL}	15.3 mm
VL_{SPL}	9.0 mm
VL_{SPL}	9.0 mm
VL_{KL}	8.0 mm
VL_{KT}	4.3 mm
VL_{SFD}	6.5 mm
VL_{SPD}	3.7 mm
VL_{CFD}	7.5 mm
VL_{CPD}	4.2 mm

Radial Mismatch

Eclipse™ Total Shoulder Arthroplasty System

Univers VaultLock® Augmented Glenoid

Head Size (mm)	Small	Medium	Large	Extra Large
37	9.9 mm			
39	8.5 mm			
41	7.25 mm	8.75 mm		
43	6 mm	7.5 mm	9 mm	
45		6 mm	7.5 mm	9 mm
47		5 mm	6.5 mm	8 mm
49			5.5 mm	7 mm
51			4.5 mm	6 mm
53				5 mm
55				4 mm

Univers II™/Univers Apex Shoulder Arthroplasty System

Univers VaultLock Augmented Glenoid

Head Size (mm)	Small	Medium	Large	Extra Large
40	8.5			
42	7.5			
44	6.4	7.9		
46		6.8		
48		5.7	7.2	
50		4.6	6.1	
52			5.3	6.8
54			4	5.5
56				4.7

This description of technique is provided as an educational tool and clinical aid to assist properly licensed medical professionals in the usage of specific Arthrex products. As part of this professional usage, the medical professional must use their professional judgment in making any final determinations in product usage and technique. In doing so, the medical professional should rely on their own training and experience, and should conduct a thorough review of pertinent medical literature and the product's directions for use. Postoperative management is patient-specific and dependent on the treating professional's assessment. Individual results will vary and not all patients will experience the same postoperative activity level and/or outcomes.

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