

EXACTECH | EXTREMITIES

Operative Technique Addendum



equinox[®]

Laser Cage Glenoid with
Legacy Instruments

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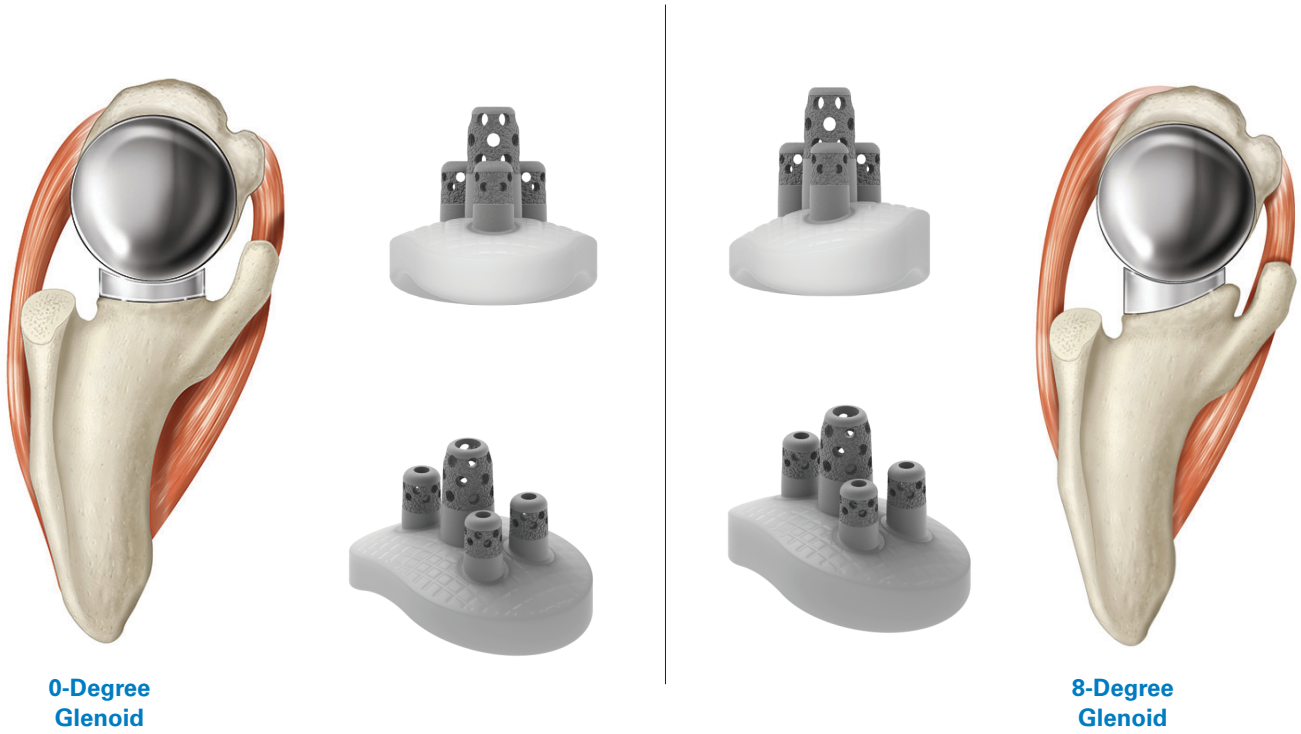
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EQUINOXE LASER CAGE GLENOID OVERVIEW

0-DEGREE/8-DEGREE LASER CAGE GLENOID OPTIONS & HUMERAL HEAD RADIAL MISMATCH



**0-Degree
Glenoid**

**8-Degree
Glenoid**

Table 1

EQUINOXE HUMERAL HEAD RADIAL MISMATCH ASSOCIATED WITH GLENOID/HUMERAL HEAD PAIRING

Humeral Head Sizes (Coverage Diameter x Height)

<i>Short Humeral Head (Curvature Diameter x Height)</i>	38x16mm	41x16mm	44x17mm	47x18mm	50x19mm	53x20mm
<i>Tall Humeral Head (Curvature Diameter x Height)</i>	38x19mm	41x20mm	44x21mm	47x22mm	50x23mm	53x24mm
<i>Expanded Humeral Head (Curvature Diameter x Height)</i>	N/A	N/A	N/A	47x26mm	50x27mm	53x28mm

<i>Glenoid Type</i>	<i>Sizes</i>	<i>Radius of Curvature</i>							
Standard (Cage and All Poly)	Small, Medium, Large	27mm (Alpha)	7.72	5.86	4.26	2.66	1.05	-0.56	
	Medium, Large, X-Large	31mm (Beta)	11.72	9.86	8.26	6.66	5.05	3.44	
Posterior Augment (Cage and All Poly)	Small	27.55mm	8.27	6.41	4.81	3.21	1.60	-0.01	
	Medium	29.7mm	10.42	8.56	6.96	5.36	3.75	2.14	
	Large/ X-Large	31.85mm	12.57	10.71	9.11	7.51	5.90	4.29	
						<i>Recommended Head/Glenoid Pairing</i>		<i>Acceptable Head/Glenoid Pairing</i>	

■ Not recommended

Glenoid Exposure

Retractors are provided to aid in glenoid exposure. A posterior glenoid retractor should be used to displace the proximal humerus posteriorly (i.e. Wolfe Retractor/Humeral Head Retractor, Dual Point Glenoid Retractor). Hohmann Retractors are placed superiorly and inferiorly around the glenoid.

The glenoid labrum is excised and an anterior and inferior capsular release is performed both for exposure and soft tissue mobilization. A formal posterior capsular release is only performed if adequate glenoid exposure cannot be obtained or if limitation of internal rotation is identified as a significant problem.

Some surgeons prefer to resect the biceps insertion and perform a biceps tenodesis. Biceps release and tenodesis will also enhance glenoid exposure. At this point, the degree and location of glenoid erosion can be visualized.

Note: Some key steps to adequate glenoid exposure are as follows:

- 1) Fully mobilize subdeltoid space
- 2) Release inferior capsule completely off the humerus by externally rotating humerus
- 3) Release anterior capsule and subscapularis from glenoid
- 4) Excise labrum and release anterior and inferior capsule (protect axillary nerve)
- 5) Resect adequate amount of humerus
- 6) Stretch posterior capsule with humeral head retractor pushing humerus posterior to the glenoid
- 7) Biceps release with excision of superior labrum will also assist with glenoid exposure
- 8) If exposure is not adequate after steps 1-7, release posterior inferior capsule and triceps origin (must isolate and retract axillary nerve for this procedure)
- 9) If still poor exposure (very rare), then a posterior capsule release should be performed.

Assessing Glenoid Version

Glenoid wear requires special consideration. With increasing posterior glenoid erosion, posterior humeral head subluxation occurs with secondary stretching of the posterior capsule. Options to treat this asymmetric wear include, most commonly, reaming eccentrically to lower the high (non-worn) side or using augmented glenoids to build up the worn side. In very severe cases, bone grafting to elevate the low (worn) side may also be another option. Additionally, the surgeon will

have the opportunity to modify the humeral head version on the humeral side by up to 7.5 degrees with the replicator plate if additional stability is required if using a platform stem.

Pre-operative planning is also available, which allows surgeons to use a 3D rendering of the patient's scapula to plan their case before surgery. Additionally, interoperative navigation is available utilizing ExactechGPS.

If the glenoid bone is inadequate (an uncommon occurrence), hemiarthroplasty should be performed with glenoid shaping to provide a concave surface for the humeral head.

Choosing the Glenoid

The Equinox System provides caged, all-poly pegged, and posterior augment glenoid options (details for all-poly pegged glenoids and posterior augment pegged glenoids can be found in operative techniques 718-01-30 and 718-01-32, respectively). The specific glenoid chosen should be based on surgeon preference and the patient's anatomy. For the medium and large glenoids, two articular curvatures are provided (alpha and beta) so that these sized glenoids can be matched with any size humeral head component (38mm -53mm) while at the same time obtaining an optimal radial mismatch (average 5.5mm). This is accomplished by choosing an alpha or beta glenoid based upon the humeral head diameter. The small glenoids are only provided in the alpha curvature. The extra-large glenoid is only provided in the beta curvature (*Table 1*).

NOTE: The Equinox Laser Cage Glenoid implants are inserted using steps included in this operative technique. The Laser Cage Glenoid operative technique presents an addendum to the Equinox Platform Shoulder System, and the Equinox Platform Shoulder System with Ergo Instruments operative techniques to include the Equinox Laser Cage Glenoid.¹²

Please refer to the anatomic shoulder section of the Equinox Platform Shoulder System operative techniques for information related to patient positioning, surgical approaches, and the preparation of the humerus and glenoid.¹² The steps described in this addendum address the specific 0-degree and 8-degree Laser Cage Glenoid implantation and revision steps.

CANNULATED OR PILOT-TIP METHOD OVERVIEW

REAMERS | PILOT-TIP OR CANNULATED

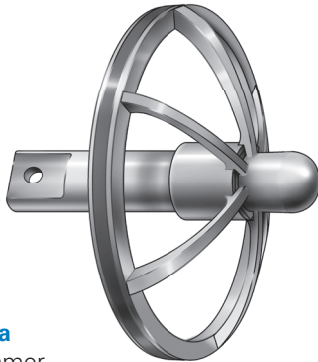


Figure 1a
Pilot Tip Reamer



Figure 1b
Cannulated Reamer

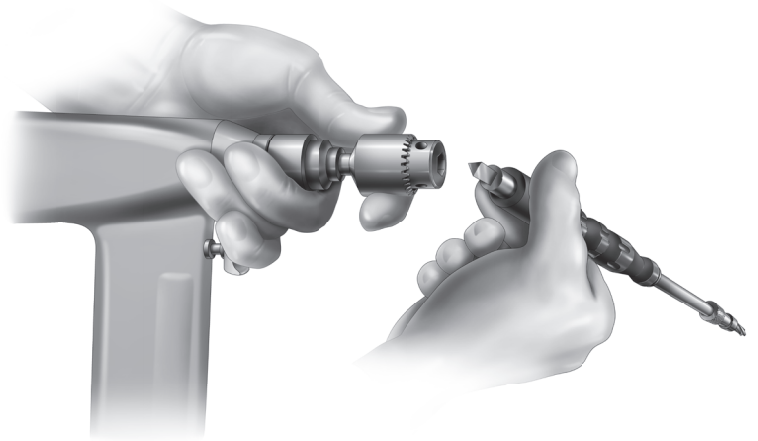


Figure 2
Connect Modular Driver

REAMERS | PILOT-TIP OR CANNULATED

The Equinox primary system provides two options to ream the glenoid:

- 1) **Pilot-Tip (315-25-11/12/13/14/15)** (Figure 1a)
- 2) **Cannulated Reamers (315-35-11/12/13/14/15)** (Figure 1b)

Pilot-Tip Reamers have a rounded-pilot, which provides the surgeon greater angular adjustability and thereby facilitates eccentric reaming. Cannulated Reamers rotate about a 0.079 inch K-wire and provide the surgeon maximum precision.

Regardless of the reaming option, the first step is to identify the center of the glenoid (the point where the superior/inferior and anterior/posterior glenoid axes intersect); ensure that all glenoid osteophytes have been removed so that the true center of the glenoid can be accurately identified.

The diameter of each sized glenoid reamer corresponds to the height of each size glenoid implant; therefore, sequentially ream the glenoid until the reamer completely conforms the articular surface of the glenoid.

Note: The Modular Glenoid Driver is connected to the powered drill/hand piece via a Jacobs Chuck (Figure 2).



Figure A
Pilot Tip Option:
Drill Hole for Pilot Reamer,
and Ream the Glenoid

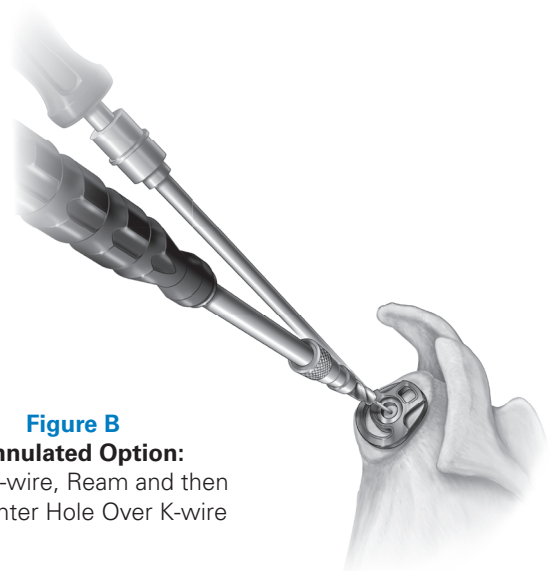


Figure B
Cannulated Option:
Insert K-wire, Ream and then
Drill Center Hole Over K-wire

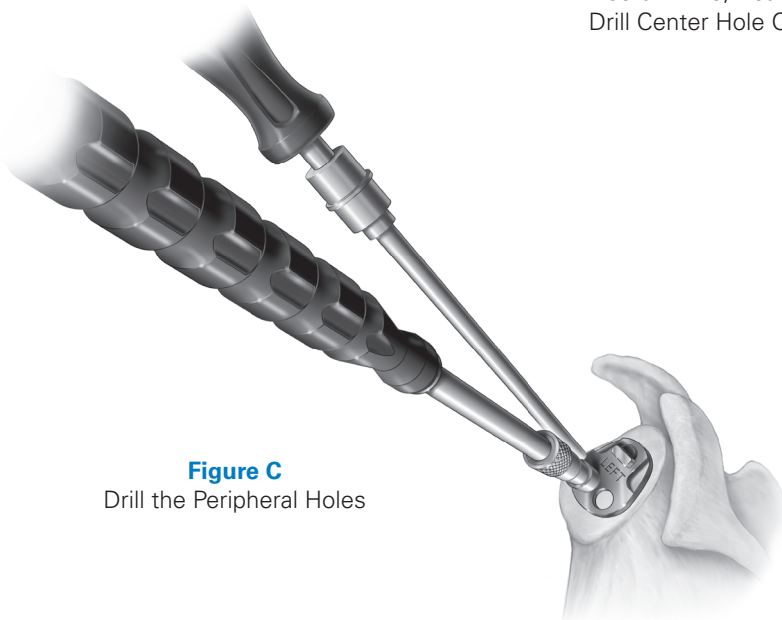


Figure C
Drill the Peripheral Holes



OPERATIVE TECHNIQUE OVERVIEW

Figure E
Insert the Trial Glenoid

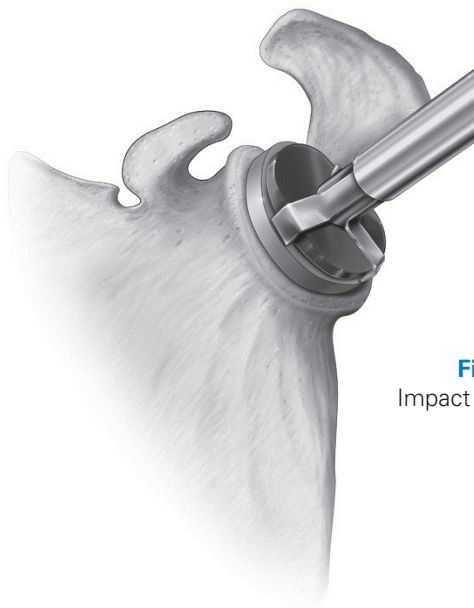
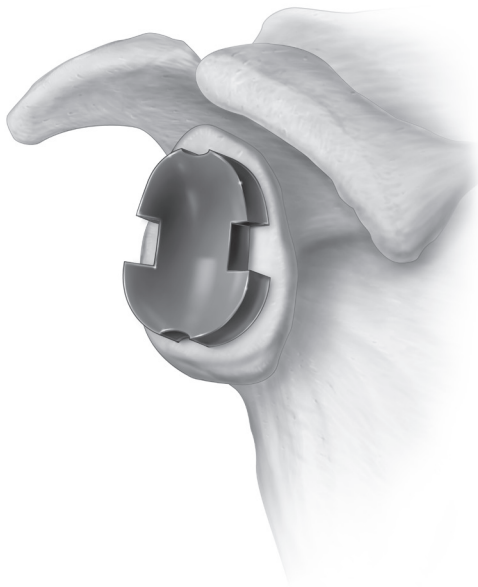


Figure G
Impact Final Glenoid

Figure D
Depth Gauge to Confirm Hole Depth

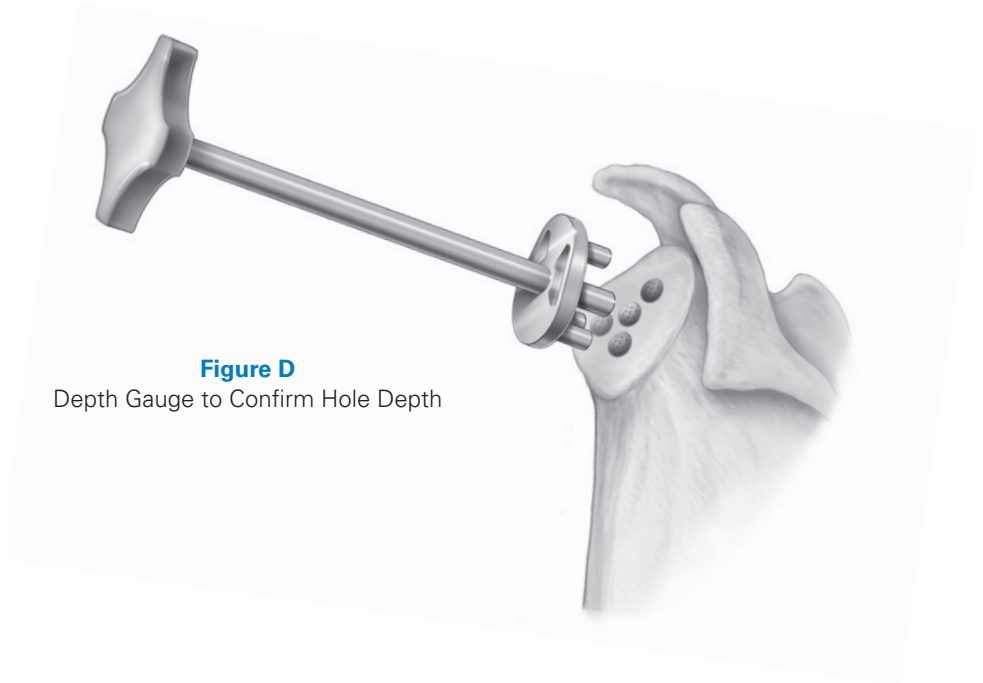
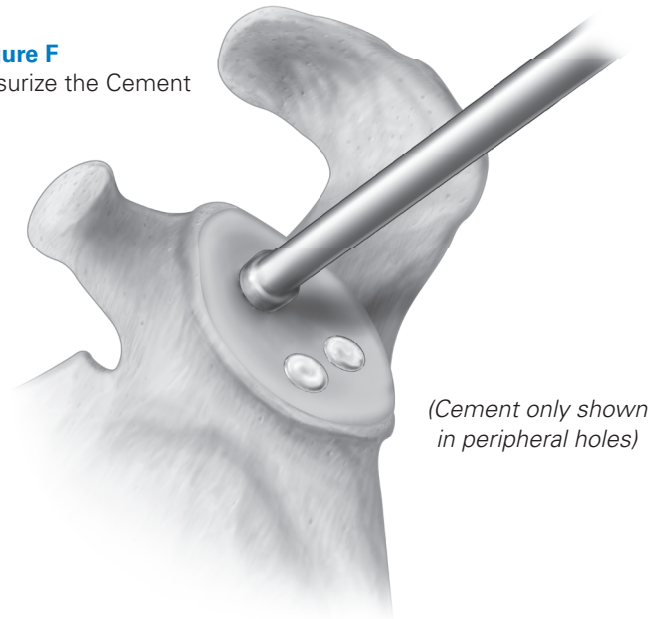


Figure F
Insert and Pressurize the Cement



*(Cement only shown
in peripheral holes)*

OPTION ONE: 0-Degree Laser Cage Glenoid

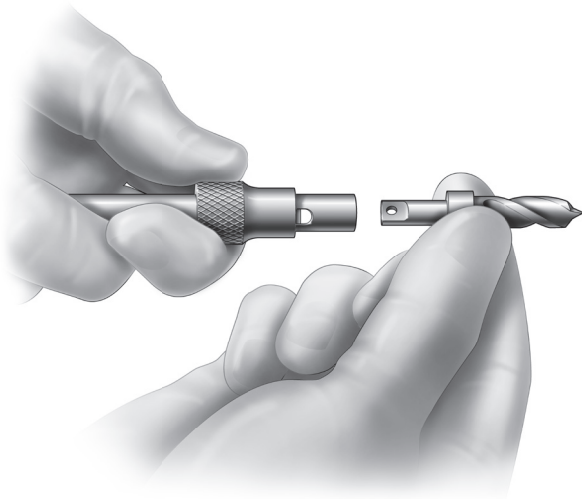


Figure 3

Connect Modular Center Peg/Keel Drill to Glenoid Driver



Figure 4

Drill Hole for Pilot-Tip

PILOT-TIP AND CANNULATED DRILLING CENTRAL HOLE

If using the Pilot-Tip Reamers (315-25-11, 12, 13, 14, 15), connect the **Modular Center Peg/Keel Drill (315-27-60)** to the **Modular Cannulated TriDrive (315-25-00)** and drill the hole for the **Pilot Tip** through the **Center Hole Peg Drill Guide (Left: 315-27-02 / Right: 315-27-03)** (Figures 3 and 4).

Note: Ensure that the central cage hole is drilled on-axis relative to the prepared glenoid. Off-axis drilling can lead to misaligned peg holes and prestress the poly/peg interfaces.

DETAILED OPERATIVE TECHNIQUE

PILOT TIP REAMING

OPTION ONE: 0-Degree Laser Cage Glenoid

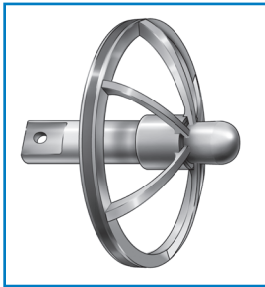


Table 2
Color Coded Reamers & Trials

Size	Color of Reamer & Trials
S	Blue
M	Green
L	Purple
XL	Orange

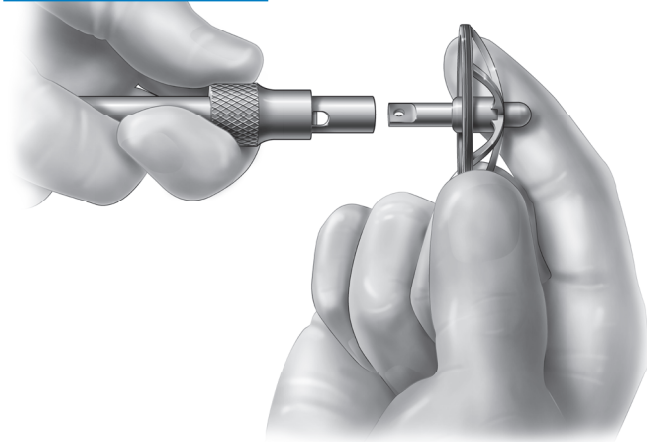


Figure 5

Connect Modular Primary Pilot Tip Reamer to Glenoid Driver

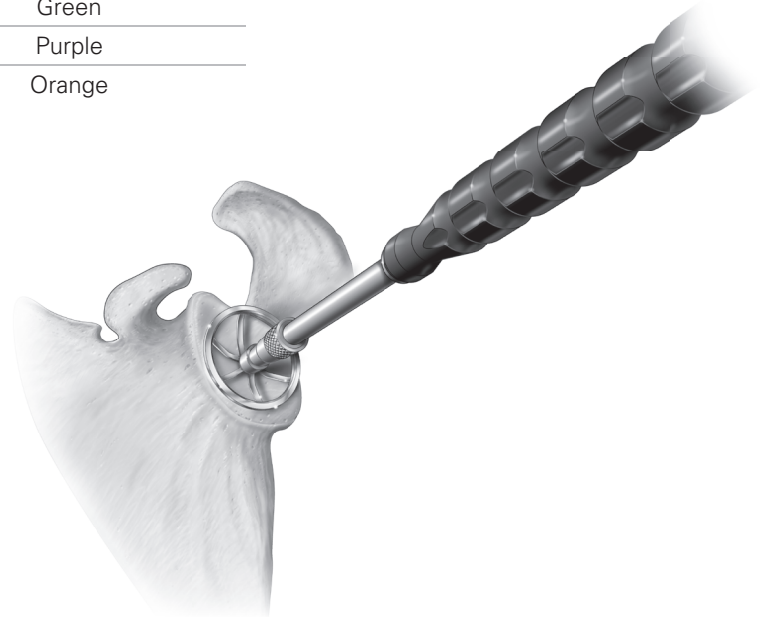


Figure 6

Ream the Glenoid

PILOT TIP REAMING

An **Extra-Small Glenoid Reamer (315-25-11)** is provided for each reamer type to aid the surgeon in the initial preparation. Connect the appropriately sized **Modular Pilot-Tip Reamer (315-25-12,13,14,15)** (note that the reamers are color coded) to the Modular Driver (*Figure 5* and *Table 2*). Sequentially ream the glenoid to the appropriate size (*Figure 6*). If substantial posterior glenoid erosion is evident, eccentrically ream the glenoid to restore version and ensure the implant is fully supported.

Note: Start the reamer prior to engaging bone.

Note: The central hole may need to be redrilled if substantial reaming has occurred, otherwise the depth of the center hole may not be sufficient.

OPTION ONE: 0-Degree Laser Cage Glenoid

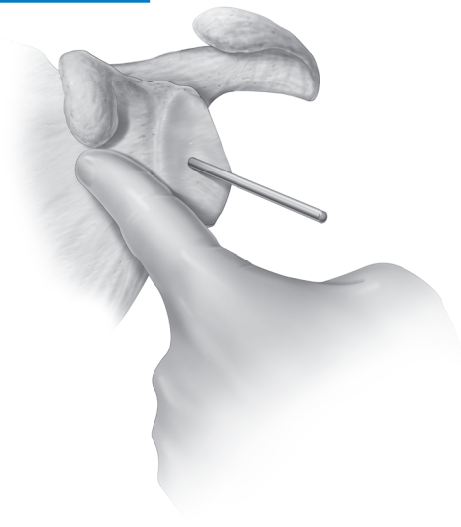
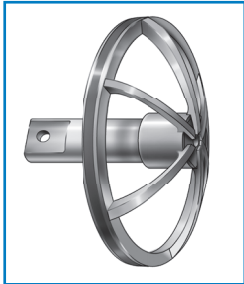


Figure 7
Insert 0.79in. (2mm) K-wire



Figure 8
Connect Modular Primary
Cannulated Reamer to
Glenoid Driver

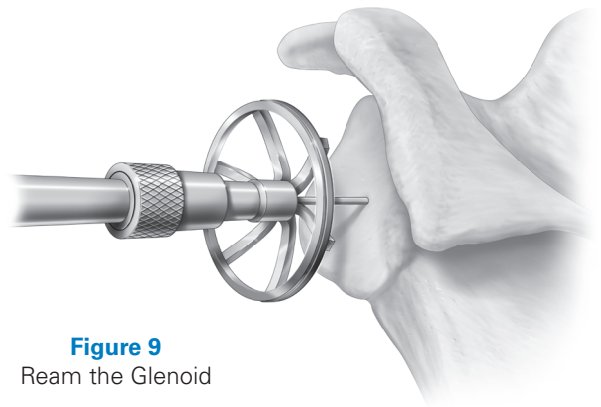


Figure 9
Ream the Glenoid

CANNULATED REAMING

If using the Cannulated Reamers, drill the 0.079 inch (2mm) K-wire in the center of the glenoid (*Figure 7*).

Connect the appropriately sized **Modular Cannulated Reamer (315-35-11,12,13,14,15)** [note: the reamers are color-coded] to the **Modular Cannulated TriDrive (315-25-00)** (*Figure 8*). Sequentially ream the glenoid over the central K-wire to the appropriate size (*Figure 9*).

DETAILED OPERATIVE TECHNIQUE

DRILL CENTER HOLE & PERIPHERAL PEGS AND TRIAL GLENOID

OPTION ONE: 0-Degree Laser Cage Glenoid

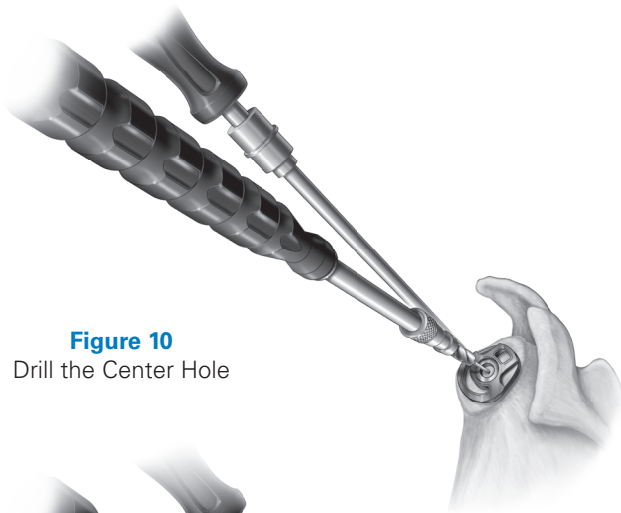


Figure 10
Drill the Center Hole

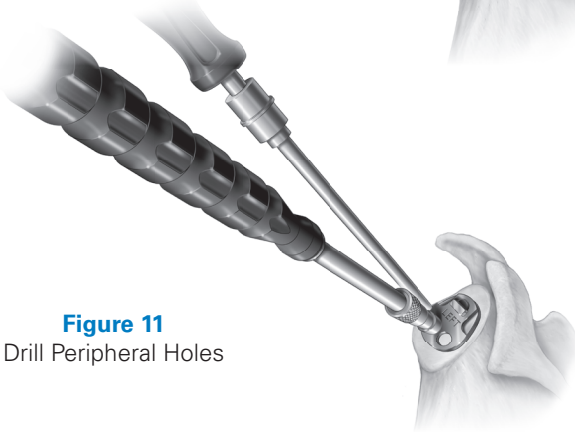


Figure 11
Drill Peripheral Holes

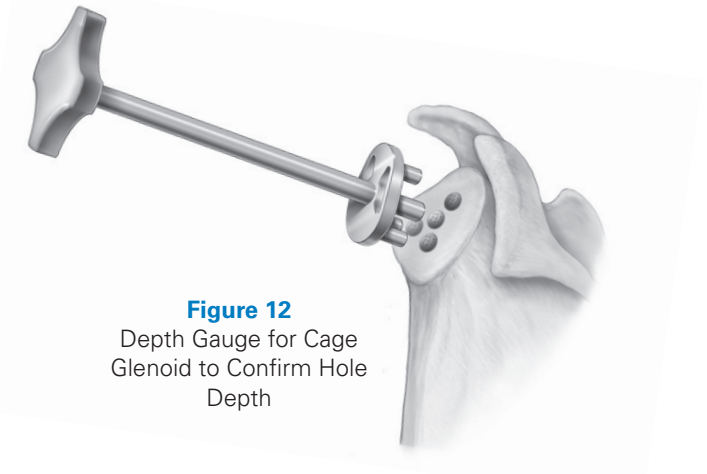


Figure 12
Depth Gauge for Cage
Glenoid to Confirm Hole
Depth



Figure 13
Insert the Trial Glenoid

DRILLING CENTER HOLE & PERIPHERAL PEGS AND TRIAL GLENOID

After reaming, connect the Modular Cannulated Center Peg/Keel Drill to the Modular Driver and drill the center hole through the Center Hole Drill Guide (Figure 10).

Note: Ensure that the central cage hole is drilled on-axis relative to the prepared glenoid. Off-axis drilling can lead to misaligned peg holes and prestress the poly/peg interfaces.

Connect the **Modular Peripheral Peg Drill (315-27-62)** to the Modular Driver and drill the three peripheral holes through the **Peripheral Peg Drill Guide (Left: 315-27-04 / Right: 315-27-05)** (Figure 11).

Note: Ensure that the peripheral peg holes are drilled on-axis relative to the central cage hole. Off-axis drilling can lead to misaligned peg holes and prestress the poly/peg interfaces.

Insert the **Peripheral Peg Holding Pins (315-27-40)** into the Peripheral Hole Drill Guide, as needed. Prior to insertion of the trial, use the provided **Cage Glenoid Depth Gauge (315-26-05)** to ensure that the holes were prepared to the defined depth (Figure 12). If depth gauge is not fully seated, re-drill holes as needed.

Note: The Holding Pins were designed to fit conveniently in Allis clamps for easy insertion.

Finally, ensure proper seating and sizing by inserting the **Trial Glenoid (315-12-02,03,04,05)** (Figure 13). Since the peg pattern/spacing is the same on all sizes, the surgeon may easily upsize or downsize the glenoid to achieve the best coverage (provided that all the cortical bone was reamed).

OPTION ONE: 0-Degree Laser Cage Glenoid

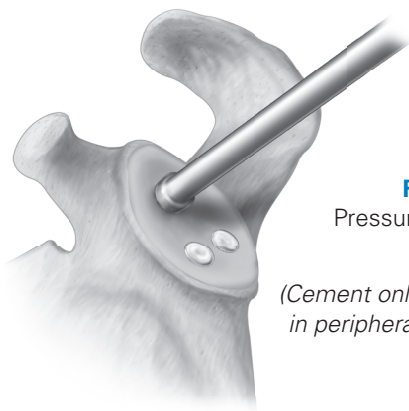


Figure 14
Pressurize the Cement

(Cement only shown in peripheral holes)

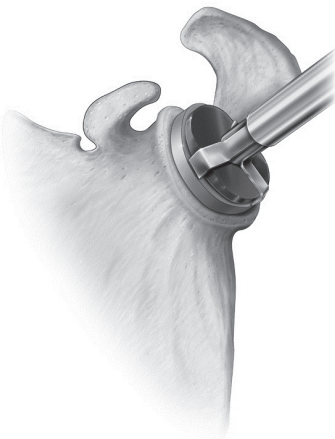


Figure 15
Seat Glenoid Component Using Spider Glenoid Impactor



Off-Center Impactation



Off-Axis Impactation



Off-Axis & Off-Center Impactation



On-Axis Impactation

Figure 16
Glenoid Impactation

Cementing The Glenoid / Final Glenoid Implantation

Prepare the glenoid by first copiously irrigating the holes to clear any debris. Place thrombin-soaked surgigel, or a similar hemostatic agent, in the prepared peg holes. Cement should be placed on the glenoid and in each of the drilled peripheral peg holes. After placing cement, the Peg Pressurizers should be used to pressurize the cement in the glenoid (Figure 14).

A second injection of cement with thumb pressurization is then completed. Cement is then applied to cover the entire backside of the glenoid component.

Final Glenoid Implantation

The glenoid component is then seated using the **Spider Glenoid Inserter Tip (315-30-02,03,04,13,14,15)** (Figure 15). Ensure the approximately sized Spider Glenoid Impactor Tip is fully assembled to the impactor handle before striking.

Note: Ensure straight line visibility for cage insertion.

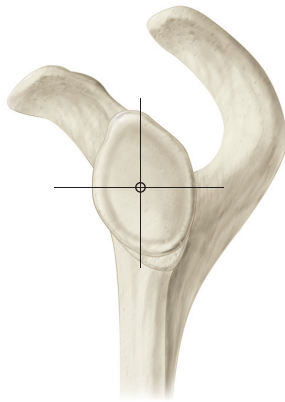
Note: Only impact the glenoid component in the center of the articular surface on-axis with the central cage, ensuring the impactor tip remains assembled throughout the insertion process. Do not impact off-axis and/or off center as shown in Figure 16 above as this can lead to damage to the poly/peg interfaces.

Strike the **Impactor Handle (321-07-05)** with a mallet to ensure that the glenoid component is in complete contact with the bone. Apply firm, steady pressure on the glenoid with either the Glenoid Impactor or with digital pressure until polymerization is complete. Run a small elevator around the edge of the glenoid component to ensure there is no interposed soft tissue. Excess cement around the edges of the glenoid implant is removed before the cement polymerizes.



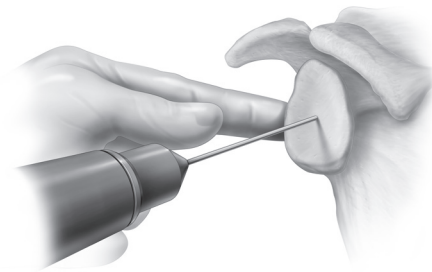
8-DEGREE GLENOID – POSTERIOR AUGMENT OVERVIEW

CANNULATED METHOD



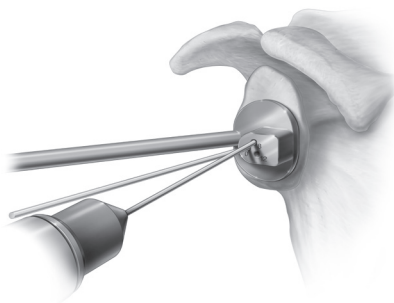
A

Determine Glenoid Center



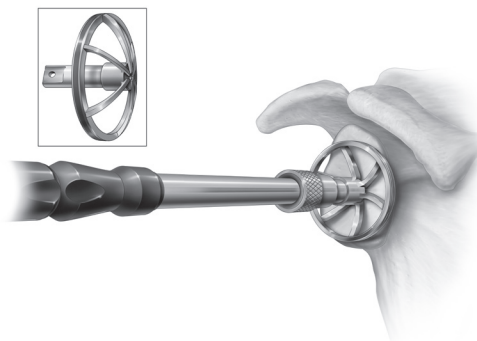
B

Insert Zero Degree K-wire Along Central Axis of Scapula (Masten's Point)



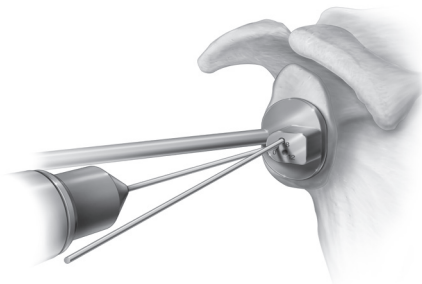
C

Insert Eight Degree K-wire, Off-Axis Reaming Angle



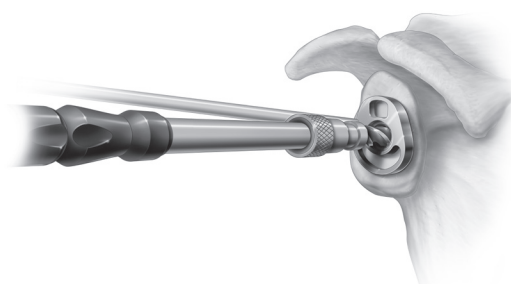
D

Ream the Glenoid Over the Eight Degree K-Wire



E

Re-insert Zero Degree K-wire

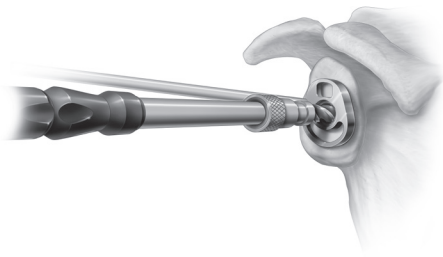


F

Drill Over Zero Degree K-wire to Establish Axis of Central Peg

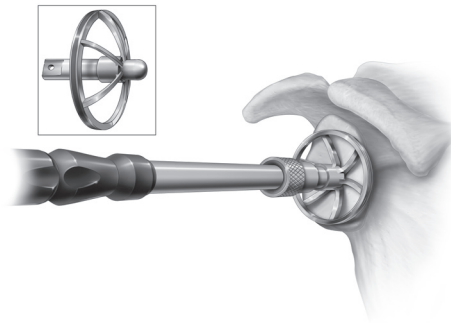
8-DEGREE GLENOID – POSTERIOR AUGMENT OVERVIEW

PILOT TIP METHOD



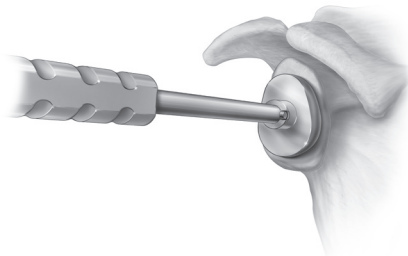
A

Drill Hole for Pilot Tip Reamer



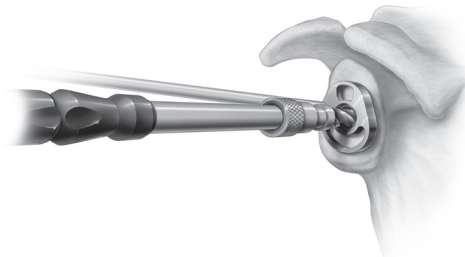
B

Ream Glenoid Eight Degrees from Neutral



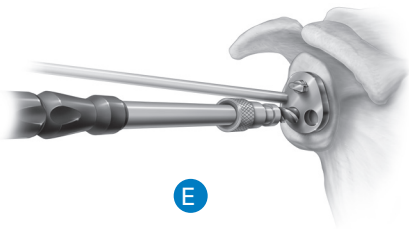
C

Use Reaming Guides for Verification



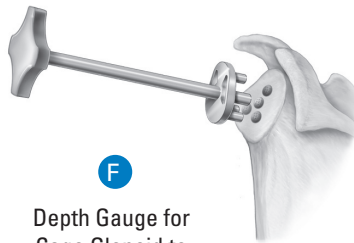
D

Re-drill Central Hole



E

Drill Peripheral Holes



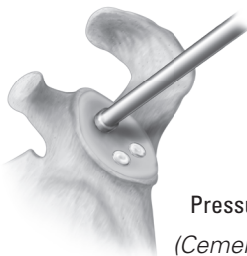
F

Depth Gauge for Cage Glenoid to Confirm Hole Depth



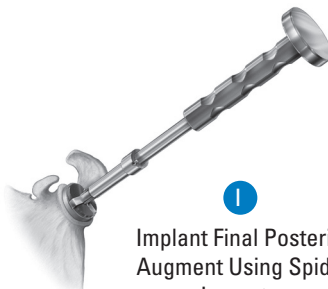
G

Trial the Posterior Augment Glenoid



H

Pressurize Cement
(Cement only shown in peripheral holes)



I

Implant Final Posterior Augment Using Spider Impactor



J

Final Implanted Posterior Augment Glenoid

OPTION TWO: 8-Degree Laser Cage Glenoid

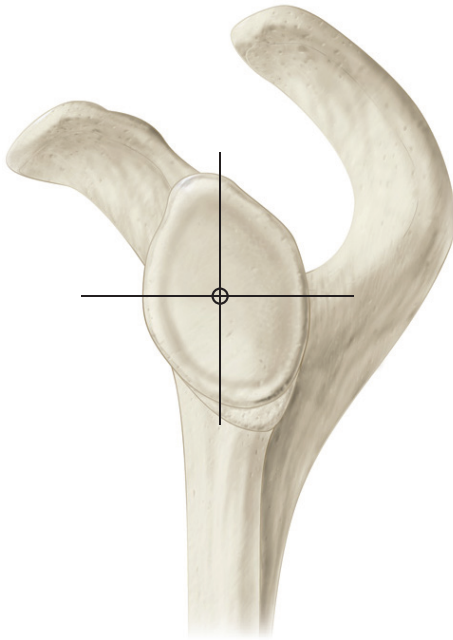


Figure 17

Determine Glenoid Center

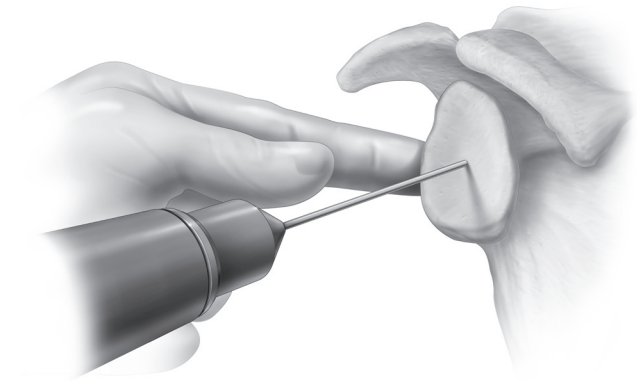


Figure 18

Insert Zero-Degree K-wire Along Central Axis of the Scapula to Establish the Central Peg Axis (Masten's Point)

CANNULATED & FREEHAND METHOD

Determining Preoperative Retroversion

Utilize the Equinox planning app to determine preoperative retroversion and desired amount of correction.

Glenoid Center

Identify the center of the glenoid (the point where the superior/inferior and anterior/posterior glenoid axes intersect); ensure that all glenoid osteophytes have been removed so that the true center of the glenoid can be accurately identified (Figure 17).

Establishing Neutral Axis

Once the center axis has been determined, establish a neutral axis via Matsen's point (Figure 18).

Note: Posterior Augment Glenoids can be used to treat anterior glenoid defects by using the opposite side implant. For example, treat a right anterior defect using a left Posterior Augment Glenoid implant.

OPTION TWO: 8-Degree Laser Cage Glenoid

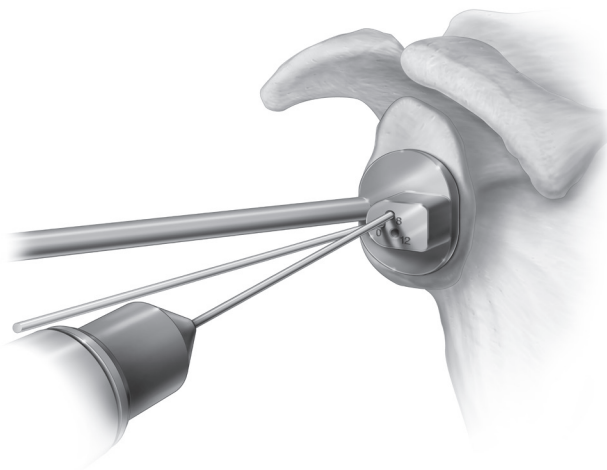


Figure 19

Insert Eight-Degree K-wire Eight Degrees Posteriorly Offset From Central Axis of Scapula

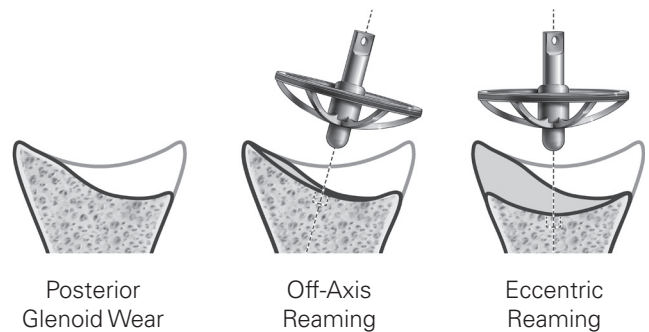


Figure 20

Bone Conservation

CANNULATED OFF-AXIS REAMING

Insert the zero-degree **Glenoid K-wire (315-35-00)** along the central axis of the glenoid to establish the axis of the glenoid pegs. Insert the eight degree K-wire eight degrees off-axis from the zero degree K-wire using the **Posterior Augment K-wire Alignment Guide (315-27-11)** to establish the glenoid reaming axis (*Figure 19*).

Note: Eight degrees is used to off-axis ream the glenoid in order to correct for the posterior glenoid defect as this corresponds to the build-up of the Posteriorly Augmented Glenoid implant.

Remove the zero-degree K-wire and Posterior Augment K-wire Alignment Guide.

Note: Off-axis reaming removes less bone than would occur ordinarily during eccentric reaming to correct the same defect (i.e., reaming down the high side). For example, compare the bone removed between off-axis reaming and eccentric reaming of a defect (*Figure 20*).

OPTION TWO: 8-Degree Laser Cage Glenoid

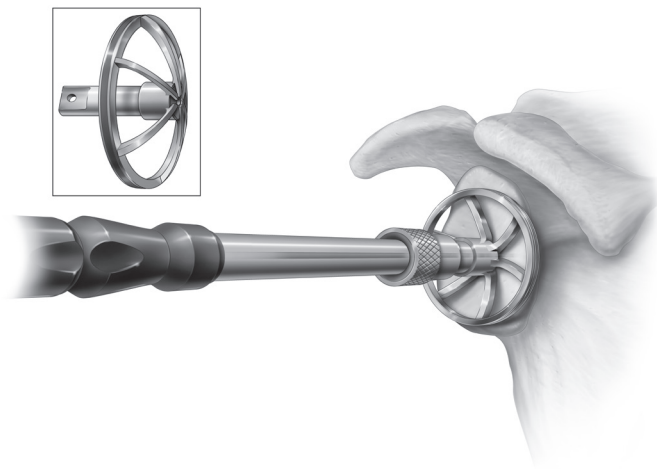


Figure 21

Ream the Glenoid Over the Eight Degree K-wire

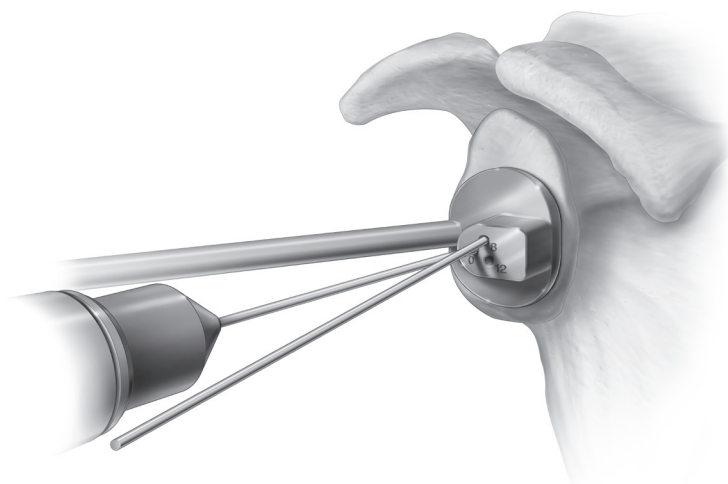


Figure 22

Re-Insert Zero-Degree K-wire Which Aligns with Central Axis of Scapula

CANNULATED OFF-AXIS REAMING

Reaming The Glenoid

An Extra-Small Modular aTSA Reamer is provided to aid the surgeon in the initial preparation. Connect the appropriately sized reamer to the Cannulated Glenoid Reamer Driver. Sequentially ream the glenoid over the K-wire to the appropriate size (*Figure 21*).

After reaming, re-insert the zero-degree K-wire to re-establish the axis of drilling the glenoid pegs. Remove the eight-degree K-wire and the Posterior Augment K-wire Alignment Guide (*Figure 22*).

OPTION TWO: 8-Degree Laser Cage Glenoid

CANNULATED METHOD - Center Hole Drilling

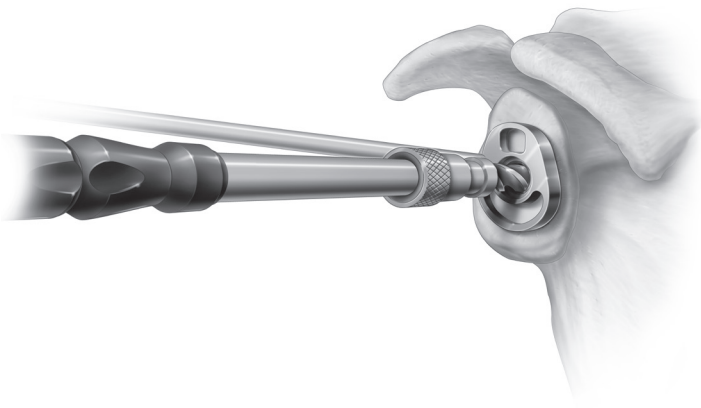


Figure 23

Drill Central Hole Over the 2mm Zero-Degree K-wire

PILOT-TIP METHOD - Pilot-Tip Drilling

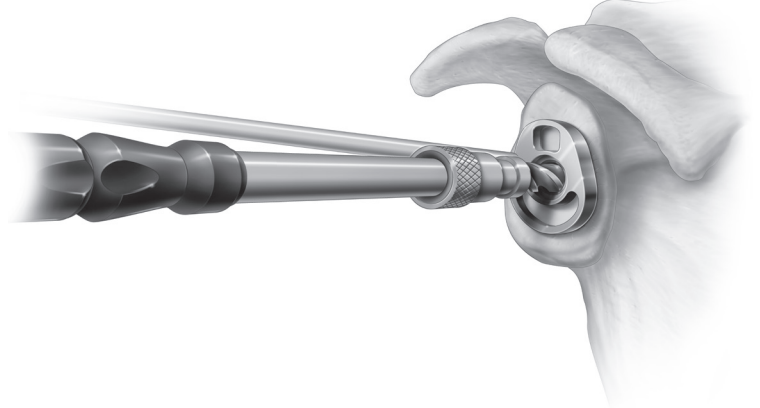


Figure 24

Drill Pilot-Tip Hole for Pilot Reamer

CANNULATED METHOD - CENTER HOLE DRILLING

Drill the central hole for the Posterior Augment Glenoid over the zero-degree 2mm K-wire (e.g., central axis of the scapula) using the **Posterior Augment Center Hole Drill Guide (LEFT 315-27-12 / RIGHT 315-27-13)**, the 2mm K-wire, and the **Cannulated Center Peg Drill (315-27-63)** (Figure 23).

Note: Ensure that the central cage hole is drilled on-axis relative to the prepared glenoid. Off-axis drilling can lead to misaligned peg holes and prestress the poly/peg interfaces.

PILOT-TIP METHOD - PILOT-TIP DRILLING

If using the Pilot-Tip method, drill the hole for the pilot reamer tip through the Center Hole Drill Guide. The drill hole only needs to be as deep as the length of the pilot reamer tip (Figure 24).

DETAILED OPERATIVE TECHNIQUE

8-DEGREE PILOT TIP OFF-AXIS REAMING

OPTION TWO: 8-Degree Glenoid – Posterior Augment

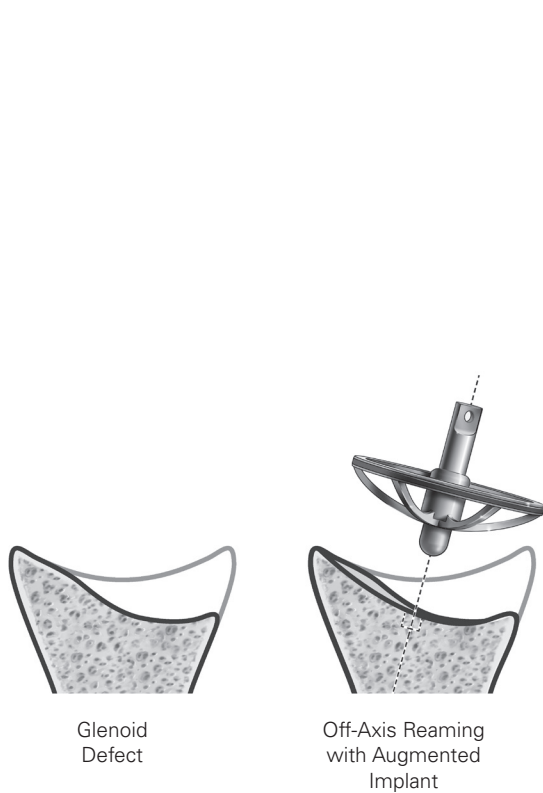


Figure 25
Bone Conservation

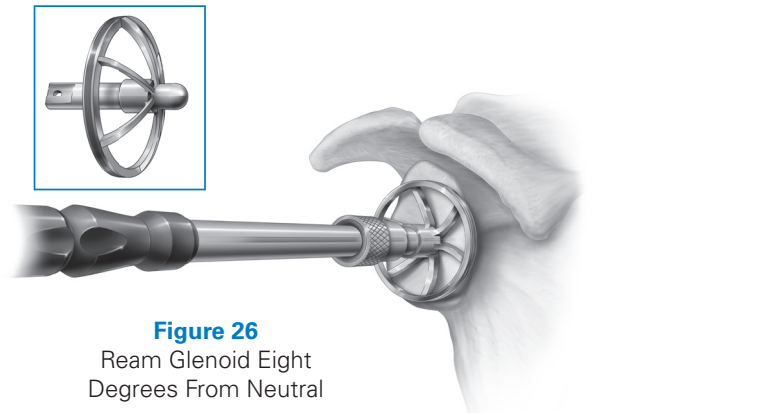


Figure 26
Ream Glenoid Eight
Degrees From Neutral

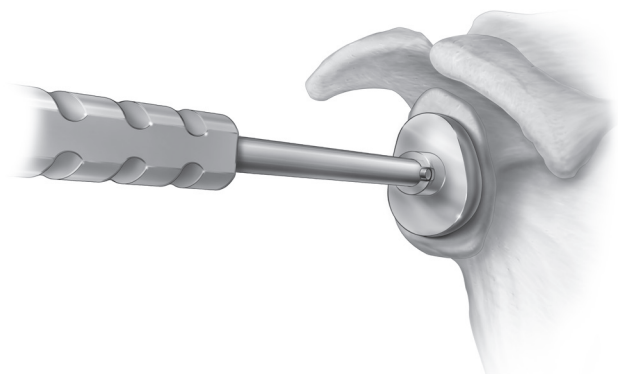


Figure 27
Use Reaming Guides for Verification

8-DEGREE PILOT TIP OFF-AXIS REAMING

Off-axis ream the glenoid using the appropriately sized pilot-tip glenoid reamer. Ream the glenoid eight-degree off-axis from the central axis of the scapula (*Figures 25 and 26*).

An Extra-Small Modular aTSA Reamer is provided to aid the surgeon in the initial preparation. Connect the appropriately sized Reamer to the Pilot Tip Glenoid Reamer Driver. Sequentially ream the glenoid to the appropriate size.

Use the clear **Posterior Augment Glenoid Reaming Guide (315-27-22,23,24,25,32,33,34,35)** (attached to the inserter) to verify that the reamed glenoid surface coincides with the eight-degree Posterior Augment Glenoid (*Figure 27*).

Note: Avoid applying a bending force to the pilot tip reamer or using the reamer to retract the humeral head as this may cause fracture of the 2mm K-wire or pilot tip.

Note: Check that the reamer or drill is engaged on the driver handle before starting.

Note: Start the reamer prior to engaging bone.

OPTION TWO: 8-Degree Glenoid – Posterior Augment

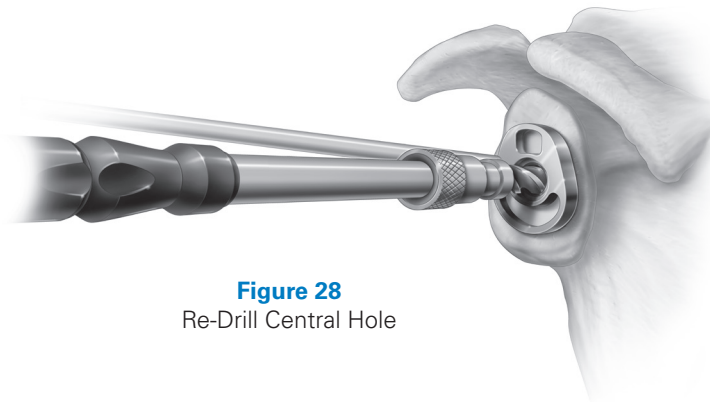


Figure 28
Re-Drill Central Hole

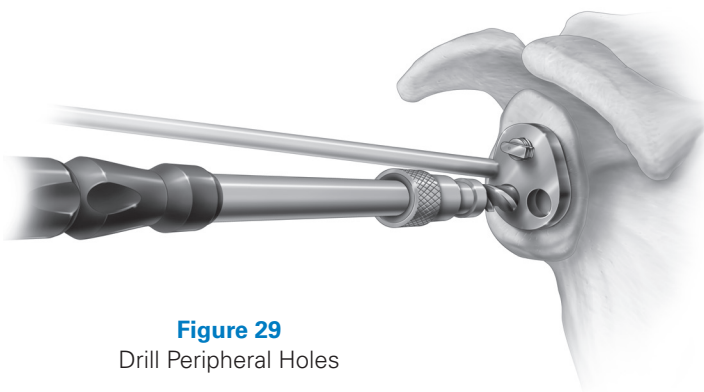


Figure 29
Drill Peripheral Holes

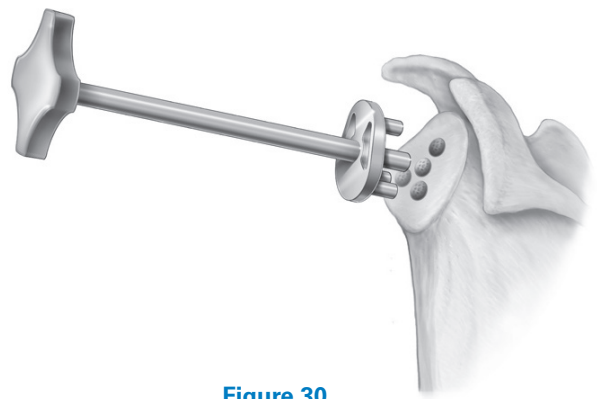


Figure 30
Depth Gauge for Cage Glenoid to Confirm Hole Depth

Drilling Central & Peripheral Peg Holes

Re-drill the central hole for the Posterior Augment Glenoid using the Posterior Augment Center Hole Drill Guide and the Non-Cannulated Center Peg Drill (Figure 28).

Note: Ensure that the central cage hole is drilled on-axis relative to the prepared glenoid. Off-axis drilling can lead to misaligned peg holes and prestress the poly/peg interfaces.

Drill peripheral holes for the Posterior Augment Glenoid using the **Posterior Augment Peripheral Hole Drill Guide (LEFT 315-27-14 / RIGHT 315-27-15)** and the **Peripheral Peg Drill (315-27-62)** (Figure 29). **Peripheral Peg Drill Guide Holding Pins (315-27-40)** are provided to facilitate holding of the Drill Guide.

Prior to insertion of the trial, use the provided **Depth Gauge (LEFT 315-26-21 / RIGHT 315-26-31)** to ensure that the holes were prepared to the defined depth (Figure 30). If the depth gauge is not fully seated, re-drill holes as needed.

Note: Ensure that the peripheral peg holes are drilled on-axis relative to the central cage hole. Off-axis drilling can lead to misaligned peg holes and prestress the poly/peg interfaces.

OPTION TWO: 8-Degree Glenoid – Posterior Augment

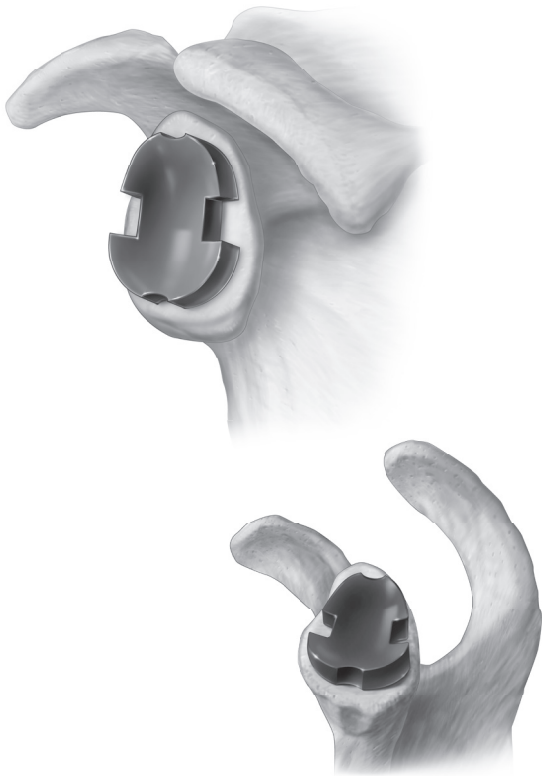


Figure 31

Trial the Posterior Augment Glenoid

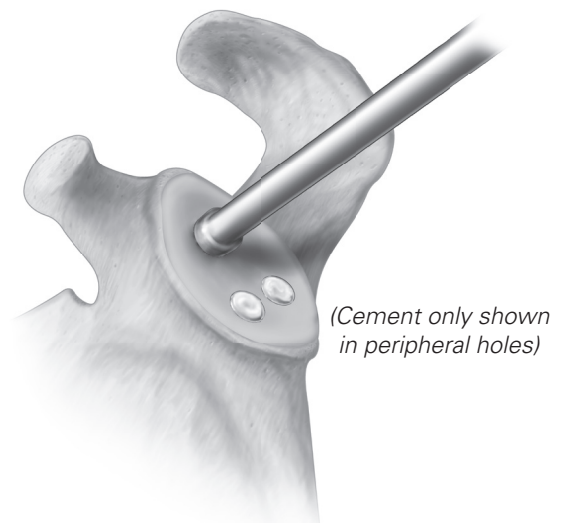


Figure 32

Pressurize the Cement

TRIALLING & CEMENTING

Use the eight-degree Posterior Augment Trial, 8 Degree (LEFT 315-12-22,23,24,25 / RIGHT 315-12-32,33,34,35) to ensure the glenoid holes are drilled deep enough and that reamed surface of the implant coincides with the reamed surface of the bone (*Figure 31*). Since the peg pattern/spacing is the same on all sizes, the surgeon may easily upsize or downsize the Cage Glenoid to achieve the best coverage (provided that all the cortical bone was reamed).

Note: Avoid levering on the Peripheral Peg Drill guide after drilling.

Note: Ensure that the peripheral peg holes are drilled on-axis relative to the central cage hole. Off-axis drilling can lead to misaligned peg holes and pre-stress the poly/peg interfaces.

CEMENTING THE CAGE GLENOID

Prepare the glenoid by first copiously irrigating the holes to clear any debris. Place thrombin-soaked surgigel, or a similar hemostatic agent, in the prepared peg holes. Cement should be placed on the glenoid and in each of the drilled peripheral peg holes. After placing cement, the Peg Pressurizers should be used to pressurize the cement in the glenoid (*Figure 32*).

A second injection of cement with thumb pressurization is then completed. Cement is then applied to cover the entire backside of the glenoid component.

OPTION TWO: 8-Degree Glenoid – Posterior Augment

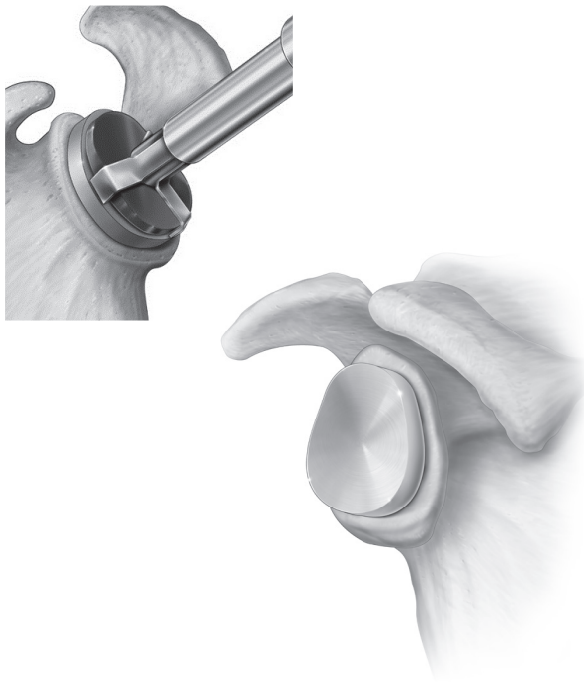


Figure 33

Seat Glenoid Component Using Spider Glenoid Impactor

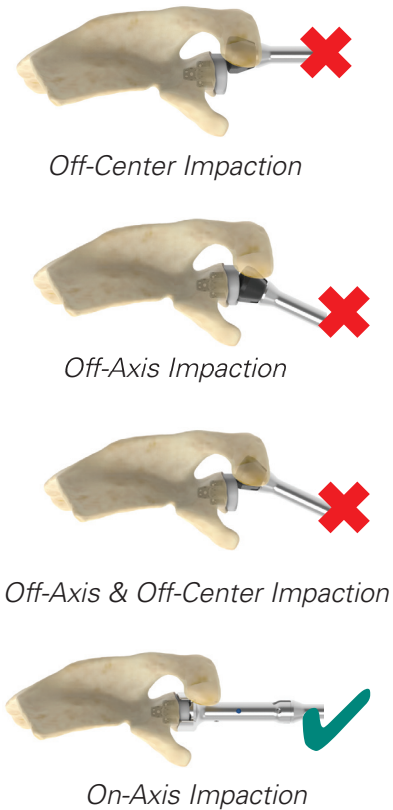


Figure 34

Glenoid Impaction

FINAL AUGMENTED GLENOID IMPLANTATION

The Posterior Augmented Glenoid component is then seated using the Spider Glenoid Impactor (Figure 33). Ensure the approximately-sized Spider Glenoid Impactor Tip is fully assembled to the impactor handle before striking.

Note: Ensure straight line visibility for cage insertion.

Note: Only impact the glenoid component in the center of the articular surface on-axis with the central cage, ensuring the impactor tip remains assembled throughout the insertion process. Do not impact off-axis and/or off center as shown in Figure 34 above as this can lead to damage to the poly/peg interfaces.

Note: When inserting the final implant, keep the inserter pointed up with a hand underneath until the implant is in the wound.

Strike the Impactor Handle with a mallet to ensure that the glenoid component is in complete contact with the bone. Apply firm, steady digital pressure on the glenoid until polymerization is complete. Run a small elevator around the edge of the glenoid component to ensure there is no interposed soft tissue. Excess cement around the edges of the glenoid implant is removed before the cement polymerizes.

DETAILED OPERATIVE TECHNIQUE

REMOVING THE CAGE GLENOID

OPTION TWO: 8-Degree Glenoid – Posterior Augment



Figure 35

Trepine Drill Guide & Modular Guide Handle



Figure 36

Trepine Drill Guide and Peripheral Peg Trepine Guide Insert



Figure 37

Cannulated Driver and Trepine Drill

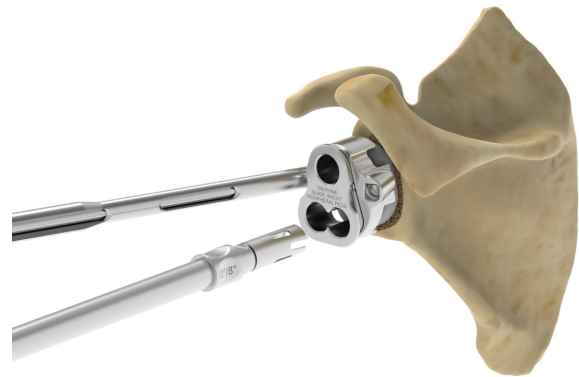


Figure 38

Insertion of Trepine Through Guide/Insert

REMOVING THE CAGE GLENOID

Should the implant need to be removed after implantation for any reason, instrumentation is available to facilitate revision.

Full Cage/Peg Depth Drilling

The appropriately sized **Trepine Drill Guide (315-58-02/03/04/05)** is connected to the Modular Glenoid Guide Handle by matching the laser marking on both the Glenoid Guide and Handle (*Figure 35*).

The **Peripheral Peg Trepine Guide Insert (315-58-11)** is snapped into the Guide. The Guide is then placed onto the face of the glenoid implant with care taken that it is fully seated on the articular surface.

With the Guide in position, the **Peripheral Peg Trepine Drill 0/8 Degree (315-58-13)** is connected to the **Cannulated Glenoid Reamer Driver (315-50-12)** (*Figure 37*) and inserted into one of the Guide holes (*Figure 38*). Drilling is commenced at a slow to moderate speed, ensuring that the Trepine is drilled on-axis. Once the Trepine has bottomed out on the Guide (*Figure 38*), remove it from the Guide along with the contained polyethylene/peripheral peg; after removing the peg from the Trepine, repeat these steps to remove all three peripheral pegs.

Note: The Trepine Drills have a close fit with the holes of the Guide Inserts. To avoid separating the Guide Insert from the Guide, ensure the Trepine Drill is removed directly on-axis to the Guide Insert hole. Additionally, digital pressure may be applied to the face of the Guide Insert during Trepine Drill removal.

OPTION TWO: 8-Degree Glenoid – Posterior Augment

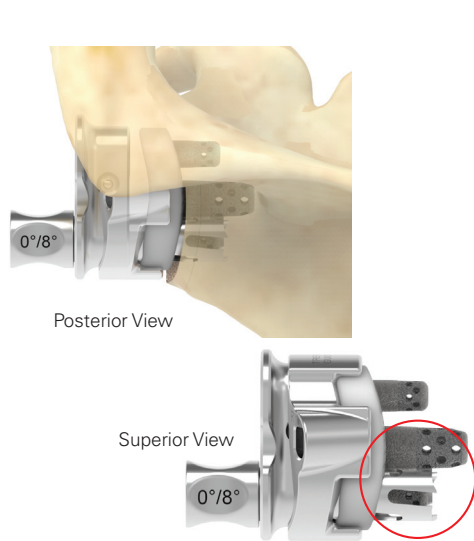


Figure 39
Trepine Drilled to Peg Tip

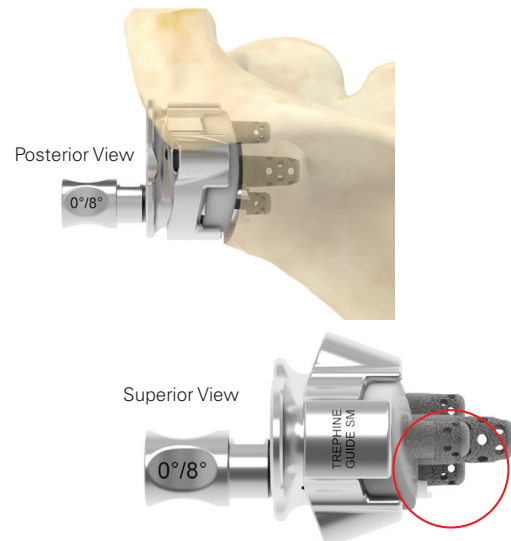


Figure 40
Trepine Drilled Through Poly Only

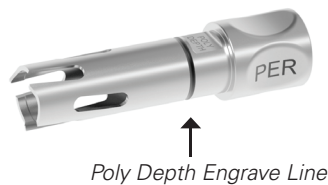


Figure 41
Poly Depth Line on Trepine

After removal of the Peripheral Peg Trepine Guide Insert from the Trepine Drill Guide, the **Central Cage Trepine Guide Insert (315-58-10)** is snapped into the Trepine Guide and the Guide is placed back onto the face of the implant.

With the Guide in position, the **Trepine Drill 0/8 Center Cage (315-58-12)** is inserted, and drilling is commenced at a slow/moderate speed (*Figure 39*). Once the drill has bottomed out, remove the Trepine and Guide, along with the center cage and remaining polyethylene body.

Note: The Trepine Drills should not be used to drill through the glenoid implant without the use of the Trepine Guide and Guide Insert.

POLY DEPTH DRILLING

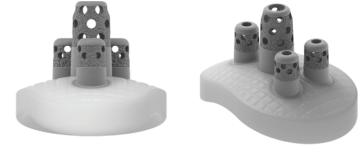
As an alternative technique, the Trephines can be used to drill through only the polyethylene body (*Figure 40*) by drilling down to the engrave line that is marked as "Poly Depth" (*Figure 41*) on both the peripheral peg and central cage drilling steps. The bulk of the poly can then be removed, leaving four poly cylinders exposed; these cylinders can then be grabbed with surgical pliers or a rongeur to twist each peg out individually.

IMPLANT & INSTRUMENT LISTING

CATALOG NUMBER PART DESCRIPTION

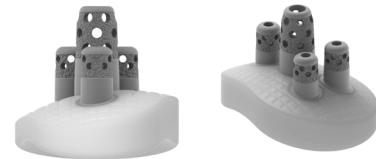
Laser Cage 0-Degree Glenoid

314-23-02	Laser Cage Glenoid Small, Alpha
314-23-03	Laser Cage Glenoid Medium, Alpha
314-23-04	Laser Cage Glenoid Large, Alpha
314-23-13	Laser Cage Glenoid Medium, Beta
314-23-14	Laser Cage Glenoid Large, Beta
314-23-15	Laser Cage Glenoid Extra-Large, Beta



Laser Cage 8-Degree Glenoid

314-24-22	Laser Cage Glenoid S, 8 Post Aug, Left
314-24-23	Laser Cage Glenoid M, 8 Post Aug, Left
314-24-24	Laser Cage Glenoid L, 8 Post Aug, Left
314-24-25	Laser Cage Glenoid XI, 8 Post Aug, Left
314-24-32	Laser Cage Glenoid S, 8 Post Aug, Right
314-24-33	Laser Cage Glenoid M, 8 Post Aug, Right
314-24-34	Laser Cage Glenoid L, 8 Post Aug, Right
314-24-35	Laser Cage Glenoid XI, 8 Post Aug, Right














INSTRUMENT LISTING




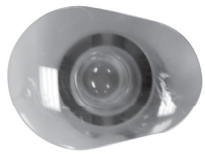
301-07-50	Screw Drive Handle
315-25-00	Modular Cannulated TriDrive
315-25-11	Modular Primary Pilot Tip Reamer, Extra-Small
315-25-12	Modular Primary Pilot Tip Reamer, Small
315-25-13	Modular Primary Pilot Tip Reamer, Medium
315-25-14	Modular Primary Pilot Tip Reamer, Large
315-25-15	Modular Primary Pilot Tip Reamer, Extra-Large
315-35-11	Modular Primary Cannulated Reamer, Extra-Small
315-35-12	Modular Primary Cannulated Reamer, Small
315-35-13	Modular Primary Cannulated Reamer, Medium
315-35-14	Modular Primary Cannulated Reamer, Large
315-35-15	Modular Primary Cannulated Reamer, Extra-Large
315-27-02	Center Hole Peg Drill Guide, Left
315-27-03	Center Hole Peg Drill Guide, Right
315-27-04	Peripheral Hole Peg Drill Guide, Left
315-27-05	Peripheral Hole Peg Drill Guide, Right
315-27-40	Peripheral Peg Drill Guide Holding Pin



INSTRUMENT LISTING

CATALOG NUMBER	PART DESCRIPTION	
315-27-60	Modular Center Peg/Keel Drill	
315-27-62	Modular Peripheral Peg Drill	
315-27-63	Modular Cannulated Center Peg Drill	
315-26-01	Cage Glenoid Depth Gauge	
315-12-02	Peg Trial, Small	
315-12-03	Peg Trial, Medium	
315-12-04	Peg Trial, Large	
315-12-05	Peg Trial, Extra-Large	
315-09-08	Pegged Cement Pressurizer Peripheral Peg	
315-30-02	Alpha Spider Glenoid Reamer/Inserter Tip, Small	
315-30-03	Alpha Spider Glenoid Reamer/Inserter Tip, Medium	
315-30-04	Alpha Spider Glenoid Reamer/Inserter Tip, Large	
315-30-13	Beta Spider Glenoid Inserter/Impactor Tip, Medium	
315-30-14	Beta Spider Glenoid Inserter/Impactor Tip, Large	
315-30-15	Beta Spider Glenoid Inserter/Impactor Tip, Extra-Large	
321-07-05	Impactor Handle	
315-07-06	Glenoid Impactor Tip	
321-07-10	Glenoid Plate Coring Reamer	
315-12-22	Posterior Augment Trial, 8 Degree, Small, Left	
315-12-23	Posterior Augment Trial, 8 Degree, Medium, Left	
315-12-24	Posterior Augment Trial, 8 Degree, Large, Left	
315-12-25	Posterior Augment Trial, 8 Degree, Extra-Large, Left	
315-12-32	Posterior Augment Trial, 8 Degree, Small, Right	
315-12-33	Posterior Augment Trial, 8 Degree, Medium, Right	
315-12-34	Posterior Augment Trial, 8 Degree, Large, Right	
315-12-35	Posterior Augment Trial, 8 Degree, Extra-Large, Right	

INSTRUMENT LISTING

CATALOG NUMBER	PART DESCRIPTION	
315-26-21	Depth Gauge, Left	
315-26-31	Depth Gauge, Right	
315-27-11	Posterior Augment Glenoid K-wire Alignment Guide	
315-27-12	Posterior Augment Center Hole Drill Guide, 8 Degree, Left	
315-27-13	Posterior Augment Center Hole Drill Guide, 8 Degree, Right	
315-27-14	Posterior Augment Peripheral Hole Drill Guide, 8 Degree, Left	
315-27-15	Posterior Augment Peripheral Hole Drill Guide, 8 Degree, Right	
315-27-22	Posterior Augment Glenoid Reaming Guide, 8 Degree, Small, Left	
315-27-23	Posterior Augment Glenoid Reaming Guide, 8 Degree, Medium, Left	
315-27-24	Posterior Augment Glenoid Reaming Guide, 8 Degree, Large, Left	
315-27-25	Posterior Augment Glenoid Reaming Guide, 8 Degree, Extra-Large, Left	
315-27-32	Posterior Augment Glenoid Reaming Guide, 8 Degree, Small, Right	
315-27-33	Posterior Augment Glenoid Reaming Guide, 8 Degree, Medium, Right	
315-27-34	Posterior Augment Glenoid Reaming Guide, 8 Degree, Large, Right	
315-27-35	Posterior Augment Glenoid Reaming Guide, 8 Degree, Extra-Large, Right	
315-35-00	Glenoid K-wire	

REVISION & DISPOSABLE INSTRUMENTS LISTING

CATALOG NUMBER

PART DESCRIPTION

315-58-02	Trephine Drill Guide, Small
315-58-03	Trephine Drill Guide, Medium
315-58-04	Trephine Drill Guide, Large
315-58-05	Trephine Drill Guide, X-Large
315-58-10	Trephine Guide Insert–Central Cage
315-58-11	Trephine Guide Insert–Peripheral Pegs
315-58-12	Trephine Drill–0 / 8 Deg, Center Cage
315-58-13	Trephine Drill–0 / 8 Deg, Peripheral



DISPOSABLE INSTRUMENTS

315-35-00	2.0mm Glenoid K-Wire
321-20-00	Drill Bit Kit, 2.0mm and 3.2mm



SYSTEM SPECIFICATIONS

(ALL DIMENSIONS IN MILLIMETERS)

GLENOIDS

Sizes	Fixation	Material	Radial Mismatch	Shape
Small	Cage, Peg	Compression Molded UHMWPE	Mean: 5.5	Anatomic (Pear)
Medium				
Large				
Extra Large	Cage, Peg			



HUMERAL STEM

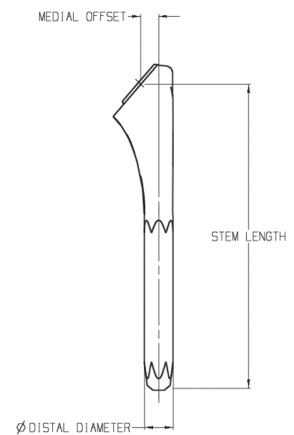
Distal Diameter	Length*	Inherent Medial Offset	Material	Surface Finish		Geometry	
				Proximal	Distal	Proximal	Distal
7	100	7.5	Ti-6Al-4V	16 grade grit blast	Hi-Brite Polish	Trapezoidal	Cylindrical with Flutes
8	102.5						
9	105						
10	107.5						
11	110	8.5					
12	112.5	9.5					
13	115						
14	117.5						
15	120						
17	125						
19	127.5						

*Measured from distal tip to center of proximal spherical bore

LONG STEM

Distal Diameter	Length	Inherent Medial Offset
8	175	7.8
8	215	
10*	200	
11*	200	

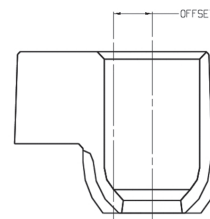
*Special order



REPLICATOR PLATES

Offset	Material	Offset Ranges*		Angle Ranges (°)	
		Med/Lat	Ant/Post	Inclination	Version
1.5	Ti-6Al-4V	0-14	0-6	125-140	+/-7.5
4.5					

*Includes effect of head offsets



REFERENCES

1. 718-01-30, Equinox Platform Shoulder System Operative Technique
2. 00-0000121, Equinox Platform Shoulder System with Ergo® Instruments Operative Technique

For additional device information, refer to the Equinox Laser Cage Glenoid Instructions for Use for a device description, indications, contraindications, precautions and warnings. For further product information, please contact Customer Service, Exactech, Inc., 2320 NW 66th Court, Gainesville, Florida 32653-1630, USA. (352) 377-1140, (800) 392-2832 or FAX (352) 378-2617.

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