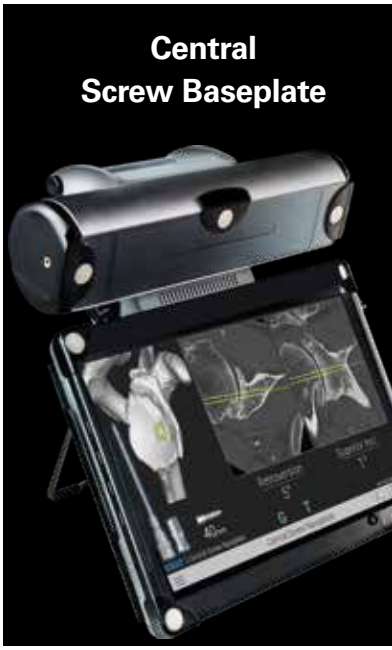
GPS SHOULDER

Operative Technique









GPS Shoulder v3.2, 3.2.1, 3.3 Consolidated Operative Technique

advita ORTHO

TABLE OF CONTENTS

SYSTEM OVERVIEW 1

GPS SHOULDER APPLICATION WORKFLOW OVERVIEW 2

DETAILED STEPS PRIOR TO GPS 3

- Patient and Station Positioning 3
- Surgical Step - Glenoid Preparation 4
- Case and Instrument Selection 9
- Connecting Trackers 10
- One-Step Calibration 11
- Final Confirmation 11
- Probe Orientation 12
- Surgical Acquisitions 13
- Verify Aquisitions 16

DETAILED OPERATIVE TECHNIQUE 18

- Legacy Anatomic Shoulder 18
- Legacy Reverse Shoulder 28
- ERGO Anatomic Shoulder 41
- ERGO Reverse Shoulder 53
- Cannulated Anatomic Shoulder 68
- Cannulated Reverse Shoulder 74
- ERGO Central Screw Baseplate 81



The GPS Shoulder Application was developed in conjunction with:

Ian Byram, MD
Bone and Joint Institute
of Tennessee
Nashville, TN

Emilie V. Cheung, MD
Stanford University
Palo Alto, CA

Pierre Henri Flurin, MD
Bordeaux-Merignac Clinic
Bordeaux, France

Bruno B. Gobbato
Jaraguá do Sul
Santa Catarina, Brazil

Richard B. Jones, MD
Southeastern Sports Medicine
Asheville, NC

Gabriella E. Ode, MD
HSS Sport Medicine Institute
Brooklyn, NY

Rick Papandrea, MD
Orthopaedic Associates
of Wisconsin
Milwaukee, WI

Moby Parsons, MD
The Knee Hip and Shoulder Center
Portsmouth, NH

Paul Saadi, MD
Dallas Bone and Joint
Dallas, TX

Kaveh Sajadi, MD
Lexington Clinic
Orthopedics Sports Medicine
Lexington, KY

Thomas Wright, MD
University of Florida
Gainesville, FL

Ari Youderian, MD
SCOS Orthopedic Specialists
Orange County, CA

Joseph Zuckerman, MD
NYU Langone
Orthopedic Hospital
New York, NY

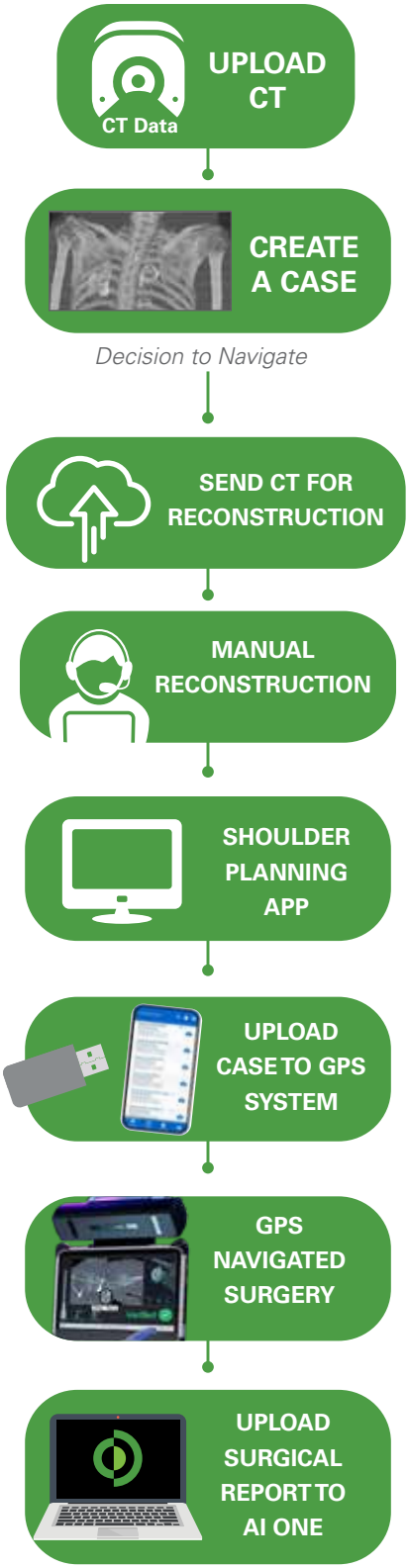


Screen Layout

Icon		Description
	Switch OFF	Switch OFF the station.
	AUGI App	Connect to AUGI App.
	Tools	Access maintenance options.
	Change Language	Change the default language of the software.
	Total Shoulder	Access detailed options related to total shoulder application.
	Screenshot	Take a screen shot of the current screen. The picture is recorded in the operative report.
	Go Forward	Go to the next step.
	Go Backward	Go to the previous step.
	Menu	Access to options (exit, reconnect trackers...)
	Exit	Exit the shoulder application.

GPS SHOULDER APPLICATION WORKFLOW OVERVIEW

Workflow: Preoperative Planning and GPS Surgery



Patient Positioning

The patient should be placed on an operating table in a supine position. The head of the operating table should be elevated approximately 30° in a modified beach chair position. A small bolster should be placed laterally behind the involved shoulder. The patient should be moved to the side of the table so that the upper extremity can be placed into maximum extension without obstruction by the operating table. Alternatively, a Captain's chair or similar positioning device can be used for proper patient positioning. The patient should be secured to the operating table to minimize any changes in position intraoperatively.

Once the patient is secure, the extremity is examined to assess the range of motion, with particular attention to external rotation with the arm at the side. If external rotation is restricted (i.e. internal rotation contracture) the need for more extensive subscapularis mobilization or lengthening procedures may be necessary. The entire upper extremity should be prepped to allow complete access to the operative area and full mobility during the procedure.

Station Positioning

With the patient in place, the GPS station may be set up. The station should be placed near the patient's opposite hip where visibility is optimal. Attach the GPS clamp to the bed rail under the patient's hips on the contralateral side, assuming there is one rail under the back, one rail under the hips, and one rail under the lower legs. Bring the clamp all the way up to the edge of the bed rail under the hips, toward the patient's head.

If patient positioning is too flat or supine, Tracker visibility with the station could be impeded. If the surgeon prefers not to adjust the patient position to a beach chair angle, the station should be adjusted on the table closer and superior to the hip. The arm holder/pad for the non-operative arm should be positioned toward the head (elbow pulled back) so the station can sit higher on the rail for better line of sight to the tracker.

Drape the patient once the station is in the optimal position (GPS station and arm are attached to bed rail). Connect all cables and the USB key before draping. Once the GPS station is draped, connectors are not accessible. Take the sterile drape by the two tabs and place it on the GPS Station from the top, with the transparent sheet on the screen side. Unroll the drape all along the mounting arm (if using the cart, unroll along the cart). Position the transparent sheet in front of the screen; exact positioning will then be done automatically. Remove the open windows protection and throw it away immediately.

Alternatively, the surgeon may choose to use the mobile cart, which provides flexibility for height adjustments and mobility between cases. The cart's offset arm allows the GPS station to remain in the sterile field. Draping application and removal can be performed quickly.



Figure 1

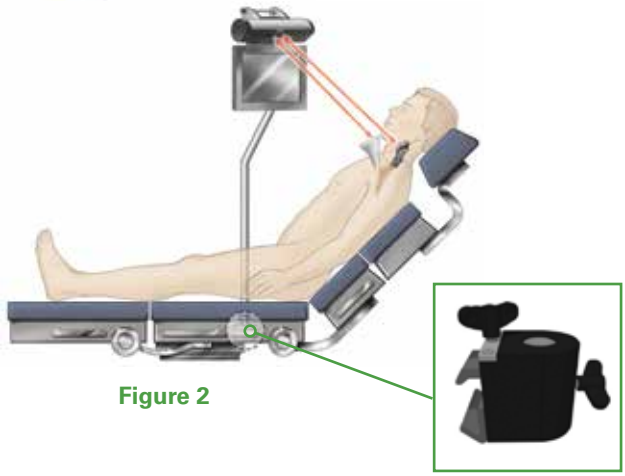


Figure 2

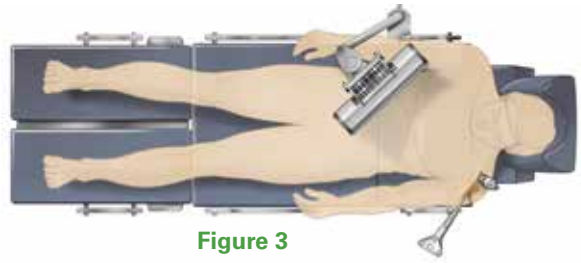


Figure 3

Note: *When draping, it is helpful to adjust the head holder all the way back, and turn the patient's head to the contralateral side if possible. This helps to keep the drapes and intubation away from obstructing the view of the trackers. It can also be helpful to tape down the drapes around the patient's head.*

Ensure the camera and station have line-of-sight to the incision to guarantee visibility throughout the technique *(Figures 1-3)*.

Note: *In a cold room or climate, start the station 30-45 min. in advance to ensure proper Tracker/camera visibility. When plugging in the station, first screw the power cable into the back of the station, then plug the other end of the power cable into the wall, and finally turn on the unit.*

DETAILED STEPS PRIOR TO GPS

SURGICAL STEP - GLENOID PREPARATION

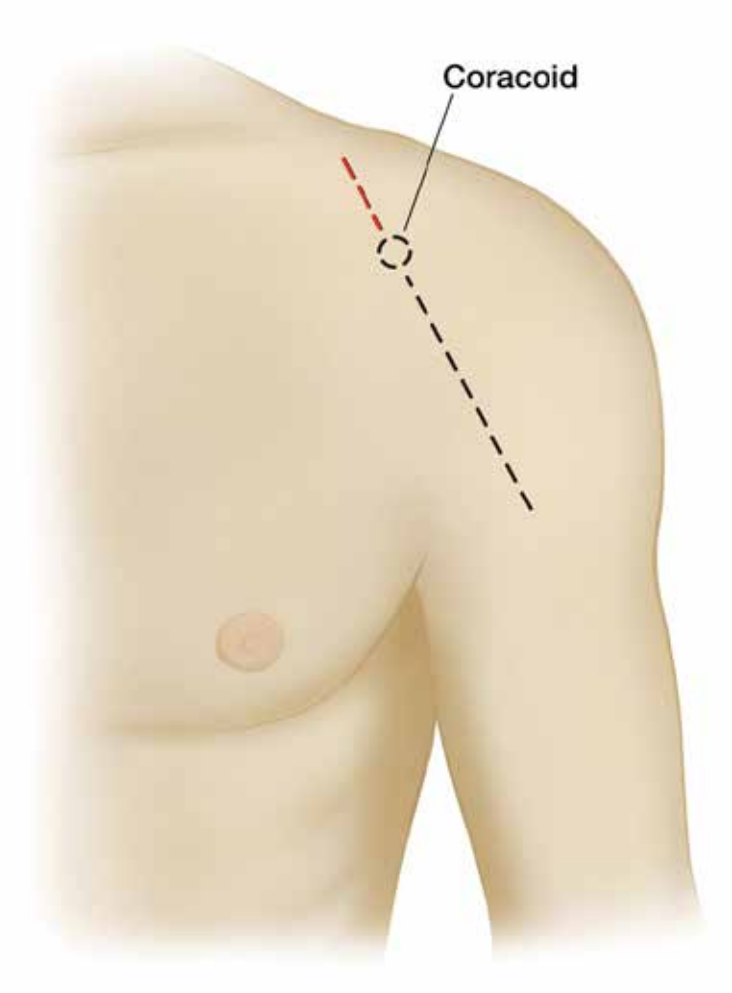


Figure 4

The position of the Tracker on the coracoid requires exposure of the coracoid bone. The incision should start 10mm proximal to the tip of the coracoid to guarantee exposure and minimize tissue tension throughout the case.

It is recommended to superiorly extend the incision to minimize soft tissue force on the Tracker fixation throughout the case *(Figure 4)*.

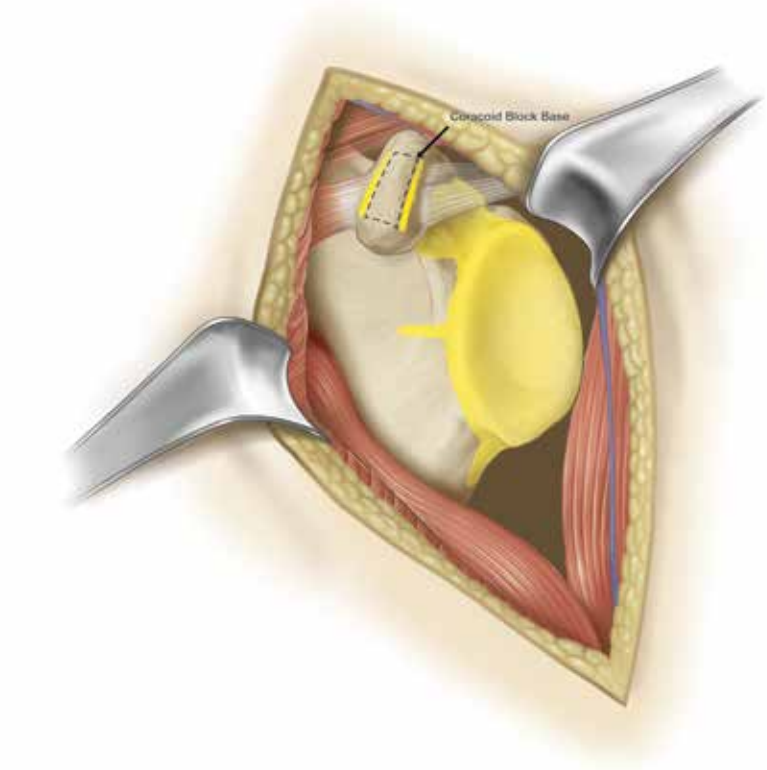


Figure 5

All areas in yellow must be exposed for acquisitions. All soft tissues and cartilage must be removed *(Figure 5)*. Removal of the coracoacromial ligament is not required for acquisitions.

Note: *Do not remove osteophytes or other bony landmarks before taking acquisitions, as these are necessary for proper use of the GPS system.*

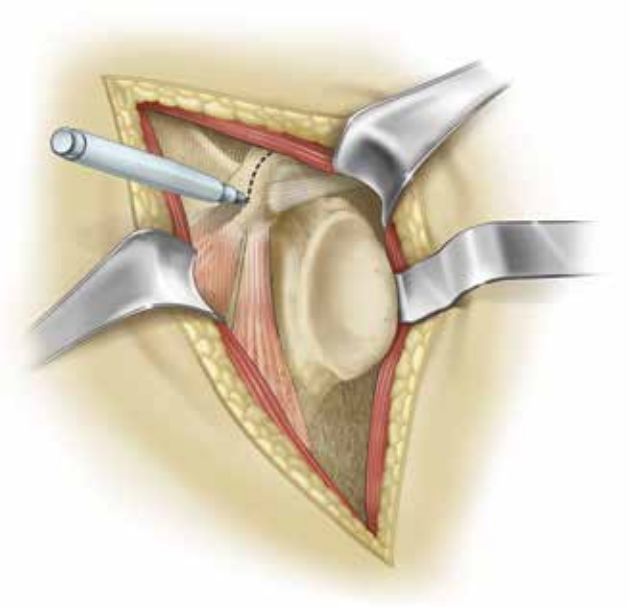


Figure 6

Remove anterior labrum and capsule and clear soft tissue from glenoid face *(Figure 6)*.

Carefully remove the hyaline cartilage from the glenoid surface using a Cobb elevator, ring curette, or comparable removal tool.

Note: *It is critical to perform all the prep work on the humeral side (e.g. head resection) and extra glenoid exposure needed for the acquisition points before pinning the* ***Coracoid Block****. This is to minimize joint movement and risk of block fixation movement once the Coracoid Block has been pinned.*

Continue exposing the glenoid by placing a blunt elevator under the subscapularis and releasing soft tissues attached to the anterior glenoid face. This will allow for better registration of the anterior glenoid border.



Figure 7



Figure 8



Figure 9

Once the coracoid is exposed, the side-specific Tracker block should be affixed to the bone ensuring the Tracker post is oriented toward the camera. Note the camera can maintain visibility up to 160°, but more direct focus leads to better signal strength.

Note: *For the first cases, extend the incision above the coracoid until it is determined how much exposure is needed for block placement.*

Note: *Before pinning the Coracoid Block, attach the G Tracker and hold the block up to where it will be pinned to the coracoid. This ensures Tracker visibility to the station before pinning, as it will not be able to be moved afterwards.*

Coracoid anatomy can vary so make sure that the threaded coracoid pins have solid bone purchase with the first try. This can be achieved by palpating or aiming with a small K-Wire through the posterior angled pin hole.

Step 1: Position the correct Coracoid Block on top of the coracoid so it is in line with the axis of the coracoid and so the trajectory of the screws will have good bone purchase, taking special care to ensure the posterior 30 degree angled pin will shoot down the base of the coracoid *(Figure 7).*

Step 2: Insert the short pin into the lateral slot in the block until hand tight. Aim for the middle of the slot so the block can self-adjust when the long pin is inserted *(Figure 8).*

Step 3: Insert the long pin into the medial hole of the block down the neck of the coracoid until hand tight. Carefully retighten pins, if necessary *(Figure 9).*



Figure 10



Figure 11

The block is now fixated and ready for Tracker attachment *(Figures 10 and 11).*

Note: *If the bone quality is dense, it can help to pierce the top cortex on the coracoid through the block holes with a small 1.6mm K-Wire (no larger) before inserting the threaded pins.*

Note: *Screws should be tightened by hand (to confirm the G Tracker fixation).*

Note: *It is imperative to keep the coracoid block free of soft tissue tension throughout the case, and to keep a retractor behind it at all times. If there are assistants holding retractors, it is important to not let the tissue encroach on the base of the block. It is a good idea to gently feel the fixation of the block throughout each navigated step, to ensure it is still robustly fixated.*

Use a gelpi, or similar self-retaining retractor, vertically to keep the coracoid block free of soft tissue tension. The retractor can be clamped to the patient's head drapes to enable hands-free retraction.

Note: *If robust fixation is not achieved the first time pinning the Coracoid Block to the bone, it is not advised to attempt repinning the block, creating additional holes in the bone.*



Figure 12

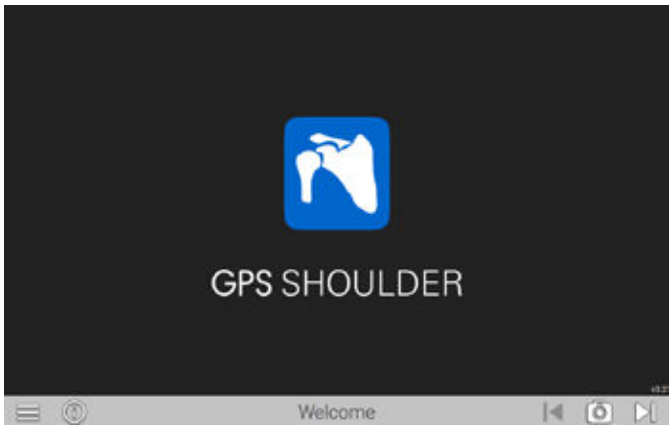


Figure 13

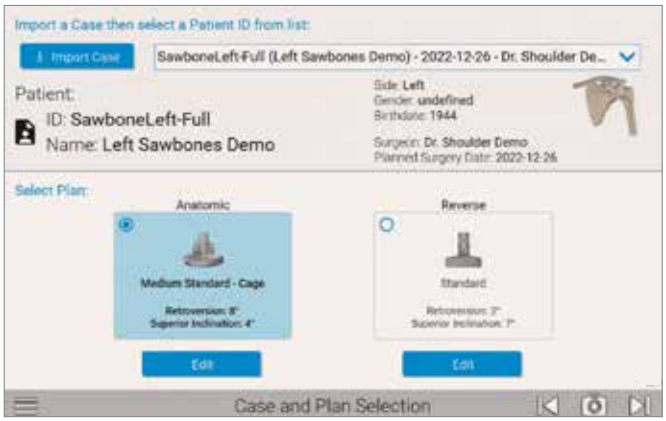


Figure 14

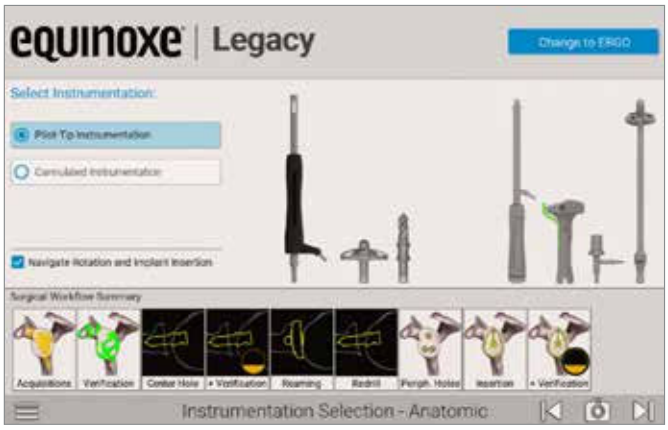


Figure 15

CASE AND PLAN SELECTION

Press the Shoulder Application icon on the GPS unit *(Figures 12 and 13)*. If using a USB to transfer a case, on the Case and Plan Selection screen *(Figure 14)*, select Import Case to import a case. If the case is already on the unit, click the box with the drop down and be sure to select the correct Patient ID. If using the AUGI App to transfer a case, once it is transfered, then click on the drop down menu and be sure to select the correct patient ID. Depending on what plans were exported, select the Anatomic or Reverse plans to navigate with GPS. Ensure the patient information displayed matches the patient in the OR.

Note: *A plan can still be edited or created based on what was imported by pressing the Edit or Create button under the Anatomic or Reverse sections.*

INSTRUMENTATION SELECTION

Next, on the instrumentation selection screen, verify the instrument set being used. If using Equinoxe Ergo GPS instruments, select the "change to Ergo button" at the top right of the screen. The "change to" button will only appear if your country has access to both Ergo and Legacy instruments *(Figure 15)*.

Next, select the option for either Pilot Tip or Cannulated instrumentation. Surgeons may also select/unselect whether they will be using the rotation and implant impaction/insertion instruments and features. Note that some features require the use of the rotation and impaction steps.

Verify that the correct orientation of the station setup by reviewing the Station Setup screen after advancing.

DETAILED STEPS PRIOR TO GPS

CONNECTING TRACKERS



Figure 16

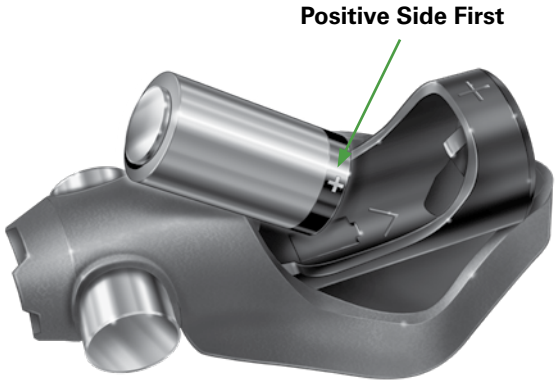


Figure 17

CONNECTING TRACKERS

The Seeking Tracker screen is displayed *(Figure 16)*. Insert batteries, positive side first, into the three Trackers **Probe Tracker (P)**, **Glenoid Tracker (G)**, and **Tool Tracker (T)** *(Figure 17)*.

Caution: Inserting negative side first or in reverse polarity may cause permanent damage to the Tracker.

Note: *Use only the dedicated sterile batteries provided in the GPS kit. Do not reuse or sterilize the batteries.*

Note: *Alternatively, trackers can be connected in later screens prior to starting the procedure.*

When the battery is properly inserted, a LED on each Tracker will illuminate solid red/orange then begin to blink green. Position the Trackers such that the LEDs face the GPS Unit. An audible tone will indicate when each Tracker connects to the GPS system. At the same time, the respective Tracker is highlighted on the Unit, and the LED illuminates solid orange. After the camera and three Trackers connect, the system will automatically advance to the next screen.

Note: *In a cold room or climate, start the station 30-45 min. in advance to ensure proper Tracker/camera visibility.*

Discard all used and unused batteries after completing the procedure.

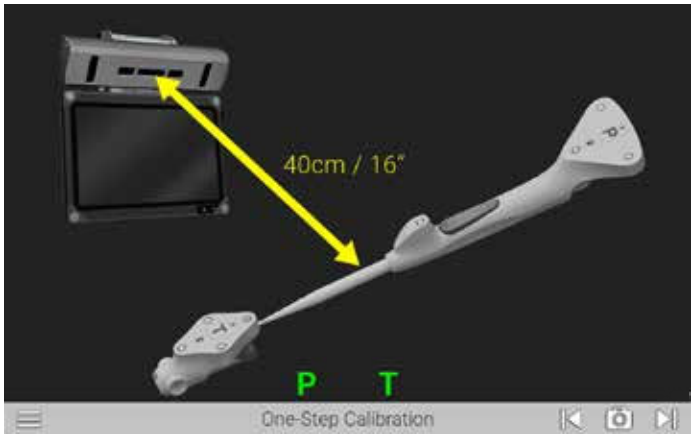


Figure 18



Figure 19

ONE-STEP CALIBRATION

Follow the onscreen prompts for calibrating the probe and Tracker. This step confirms that the probe's readings are accurate.

The One-Step Calibration screen is displayed *(Figure 18)*. Place the tip of the Probe Tracker (P) into the dimple node at the top of the T-Tracker. Hold both together **no more than** 16 inches (40 centimeters) from the display unit ensuring the white diodes are facing the camera.

When positioned correctly, the T and P status indicators on the display will appear green. Press the Forward button on the probe to initiate calibration. The progress bar will fill and an audible tone will indicate successful calibration. The system will automatically advance to the next screen.

Note: *This is the only point of the operation where the surgeon will be required to hold the trackers this close to the screen.*

Note: *After pairing, the surgeon may attach the T-Tracker to the GPS Driver at this point. At any point in the procedure where a Tracker is attached to an instrument, test the physical connection every time by firmly tugging on the Tracker once it is attached. The Tracker will remain in place if it is properly attached.*

FINAL CONFIRMATION

Once a case and instrument type have been selected, the surgeon will be shown a final confirmation screen that confirms the patient and preoperative plan. This now includes implant selection, planned version and inclination, implant location and % backside coverage. Be sure that all acquisitons must be performed **before** removing osteophytes *(Figure 19)*.

DETAILED STEPS PRIOR TO GPS

PROBE ORIENTATION

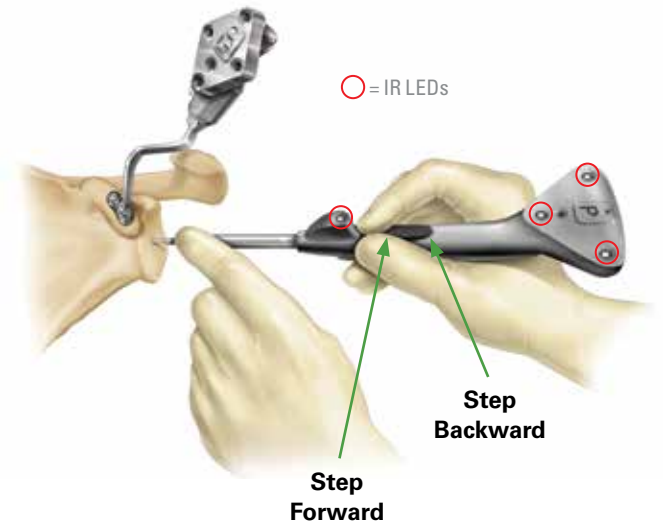
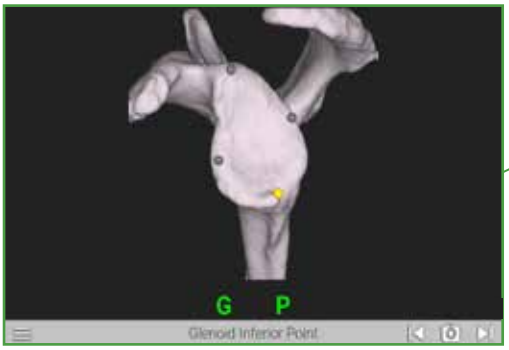


Figure 20



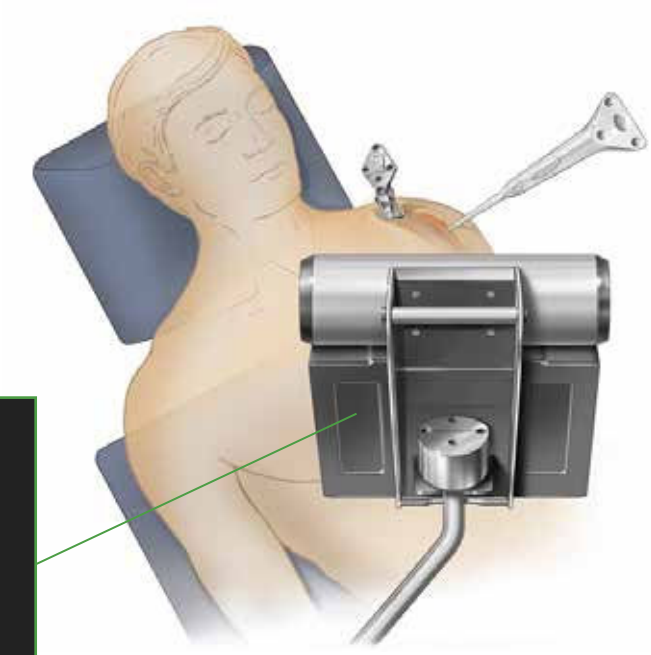


Figure 21

PROBE ORIENTATION

Before beginning registration, ensure that the G Tracker is completely seated on the coracoid block. Press the Probe Tracker (P) with the index finger on the Forward button making sure not to obstruct the IR LED between the button and the probe tip *(Figure 20)*.

Always make sure the probe tip is on the anatomic landmark. Press and release the Forward button to begin registering acquisitions *(Figure 21)*.

For patch registration, place the probe tip on the anatomic landmark, **press and release** the Forward button ensuring the Probe is touching bone, **then** paint the anatomic reference shown on the screen using an S-like pattern. The button does not need to be held down for acquisitions.

Note: *To return to previous step or re-do an acquisition, rapidly double click the Back button on the probe. The probe must be visible in order for the buttons to be selected.*

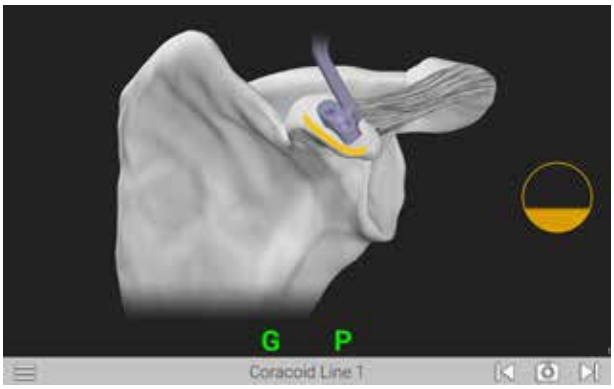


Figure 22
Line anterior of coracoid block

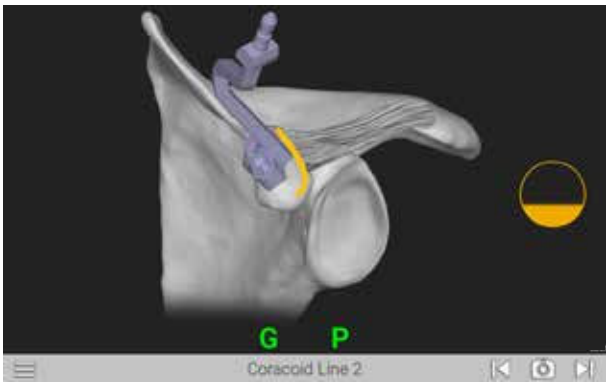


Figure 23
Line posterior of coracoid block

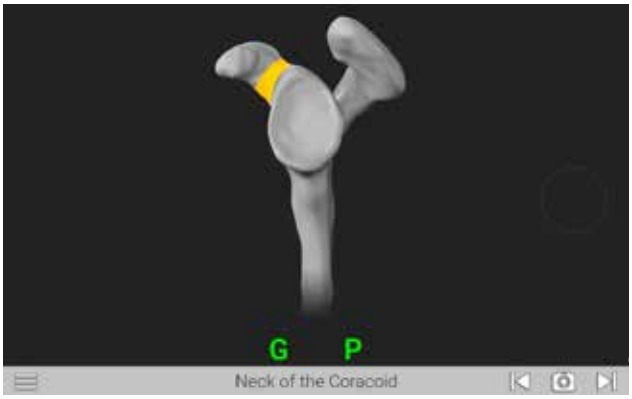


Figure 24
Neck of coracoid

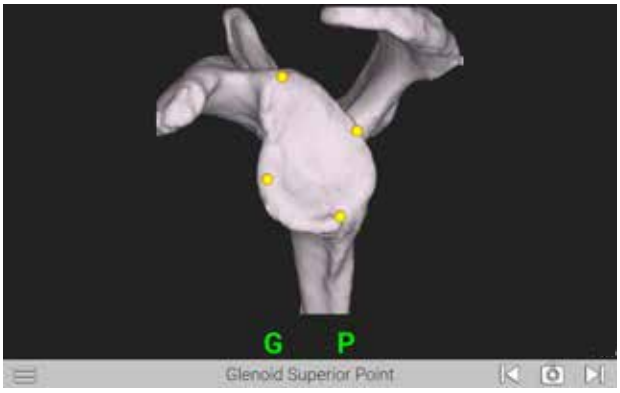


Figure 25
Four points on glenoid face: superior, inferior, anterior, posterior

SURGICAL ACQUISITIONS

Using a two handed approach, probe the acquisition points listed on each screen as guided by the system *(Figures 23-30)*. When the probe tip is in contact with the bony area to be acquired, press the Forward button on the probe handle. The system will begin to acquire points as soon as the button is pressed. The button should not be held down to continue acquiring points, it only needs to be pressed once per step. Move the probe tip across the bony surface until the system has acquired enough points and moves to the next step. This can also be indicated by the circle to the right of the anatomy filling up and then turning green with a check mark. Take care to keep the probe in contact with bone the entirety of the acquisition process, and try to capture as much surface area as possible in each acquisition patch.

If the probe tip is lifted off or if incorrect points are acquired, the surgeon can re-do the acquisitions by clicking the Backwards button on the probe handle twice in succession.

On all points on the side walls of the glenoid face (inferior scapular neck, anterior lines), probe as medial on the bone as possible to aid in registration.

DETAILED STEPS PRIOR TO GPS

SURGICAL ACQUISITIONS

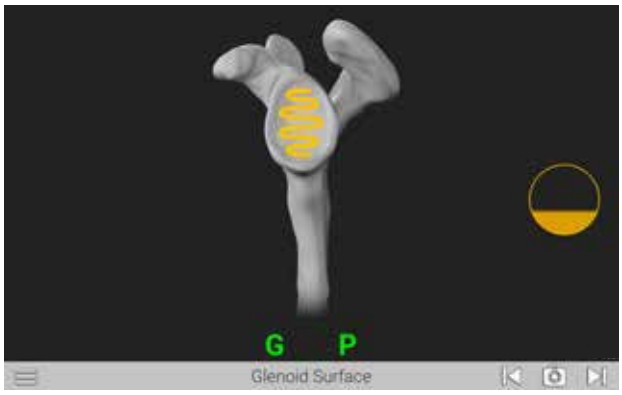


Figure 26a
Paint glenoid surface

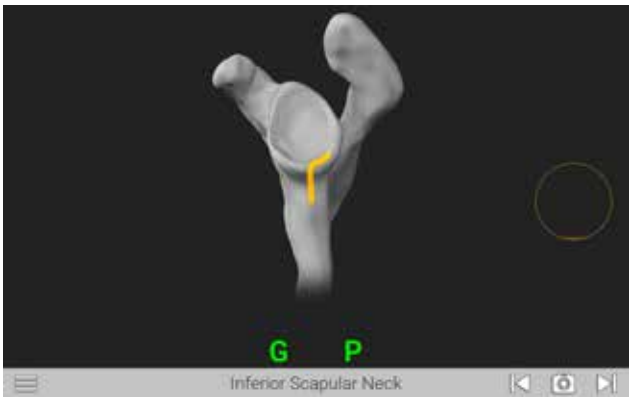


Figure 27
Inferior glenoid neck

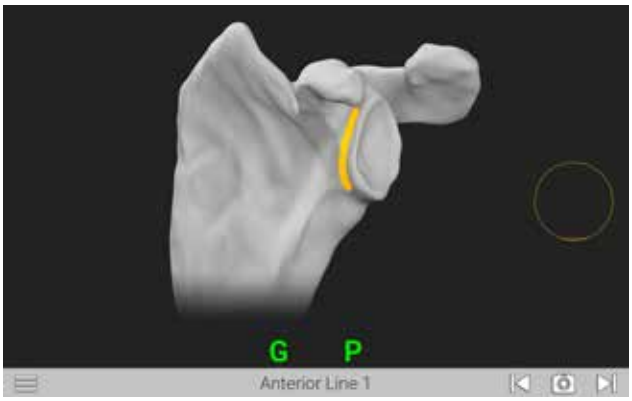


Figure 28
Superior/Inferior line on scapular wall anterior of glenoid face

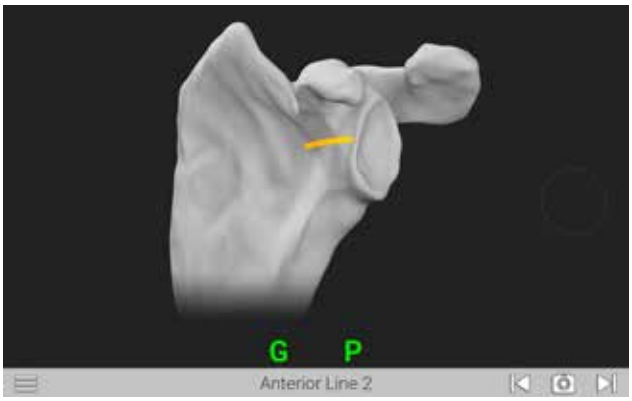


Figure 29
Medial/Lateral line on scapular wall anterior of glenoid face

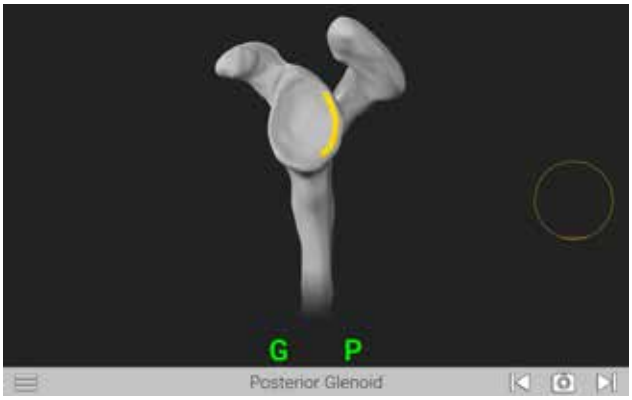


Figure 30
Line on posterior face of glenoid

Note: *Take care to sufficiently expose each acquisition area of all soft tissue and cartilage before probing points, so only bone is exposed and probed. Do not trim any osteophytes before taking acquisitions, even if they are a part of a specific acquisition area. The CT scan and 3D scapula model see only bone, so the surgeon must probe only bone for an accurate registration.*

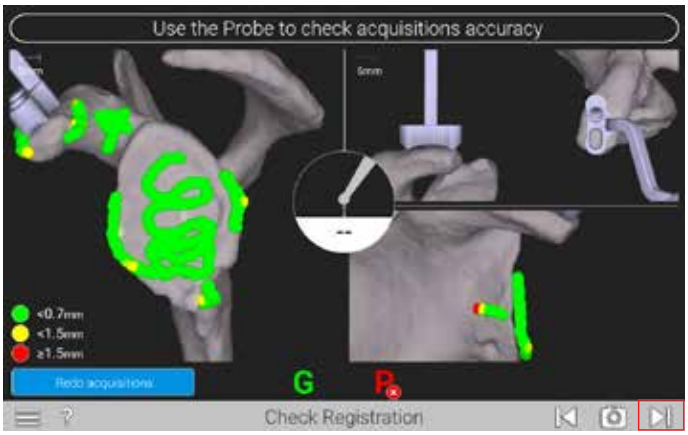


Figure 31

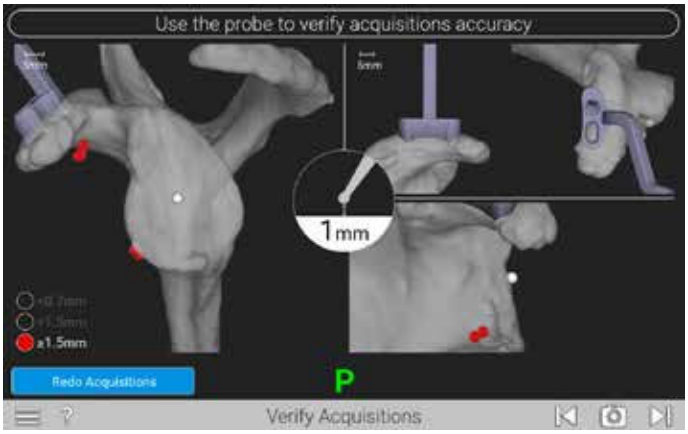


Figure 32

The system will digitize the acquisitions and generate a color map of the points for verification *(Figure 31)*.

Green points signify that acquired points match digital reconstruction within .7mm or less.

Yellow points signify that acquired points vary from .7 to 1.5mm from digital reconstruction.

Red points signify that acquired points vary more than 1.5mm from the digital reconstruction.

Surgeons should strive for all green points in the digitization. It is important to identify which acquisition areas may be inaccurate based on the color and locations of the points. For example, if there is a trail of yellow and red dots at the end of an acquisition area that extends off the surface of the bone, assume that the probe tip was lifted off of the bone surface before all points were acquired, and points were acquired in empty space.

Once all acquisitions obtained are green, the surgeon may verify accuracy by spinning around the scapula via the screen. This can also be achieved by using the mouse, clicking and then rotating the scapula. If acquisitions are accurate enough, an advance arrow will appear at the bottom right.

Surgeon may press on the color indicators on the bottom left to filter their view to the specific points acquired, as shown on *Figure 32*.

Note: *Use the probe tip to touch different surfaces on the scapula to see the probe tip show up on the screen; this will verify the probe is registering where the surgeon is physically touching the bone.*

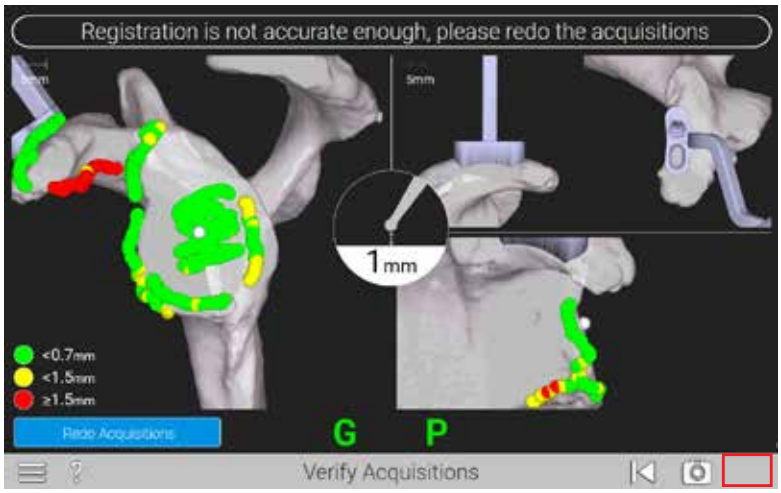


Figure 33



Figure 34

If acquisitions are not accurate enough to continue, the "Advance" button will be missing on the bottom right of the screen, as seen in the top image of *(Figure 33)*.

Using the Verify Acquisitions screen, identify which acquisitions need to be re-done based on the color map of the acquisitions.

To continue re-doing acquisitions, select "Re-do" and then select the landmarks to re-do *(Figure 34)*.

Note: *If there are several areas where the acquisition map is red, select the Select All button to re-do all acquisitions.*

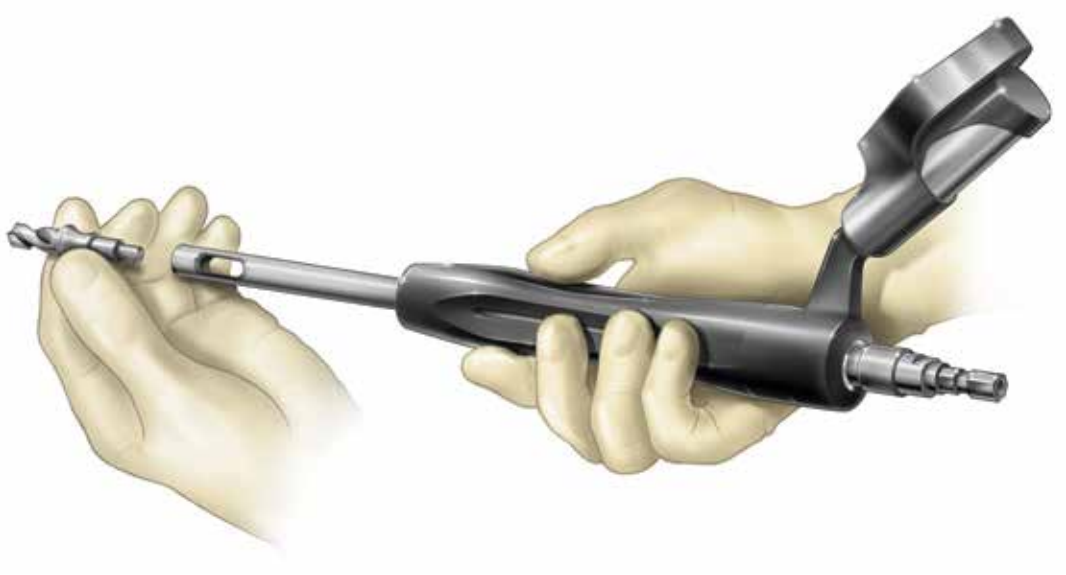


Figure 35

STEP 1: CENTER HOLE DRILL

Once registration is completed, attach the T-Tracker onto the **GPS Driver (531-25-00)**. Then attach the GPS Center Drill to prep the central peg for the glenoid hole *(Figure 35)*.

Before attaching the center drill, attach the T-Tracker onto the GPS Driver. Ensure the tracker is fixated on the tracker post with the tracker face aiming in the direction of the pilot tip of the driver.

Note: *It is helpful to utilize a "tug test" both rotationally and vertically to ensure the tracker is properly fixated on the instrument and to ensure it does not move.*

Note: *At any point in the procedure, the surgeon may use the probe to advance to the next screen by pressing the forward button twice while facing the camera.*

WARNING: *Don't assemble or disassemble devices in the surgical field.*

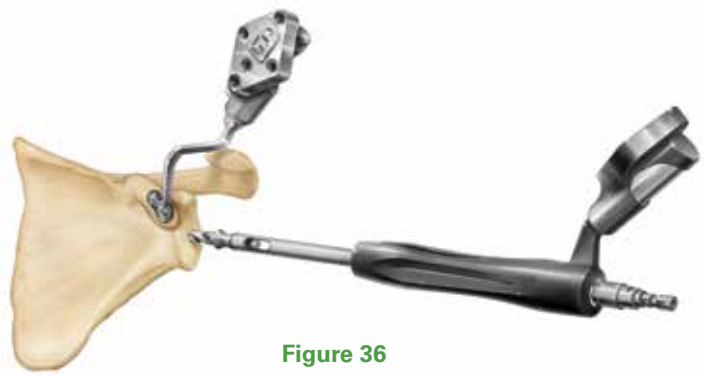


Figure 36

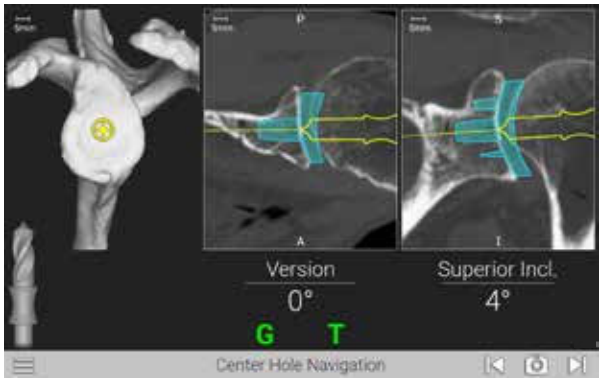


Figure 37

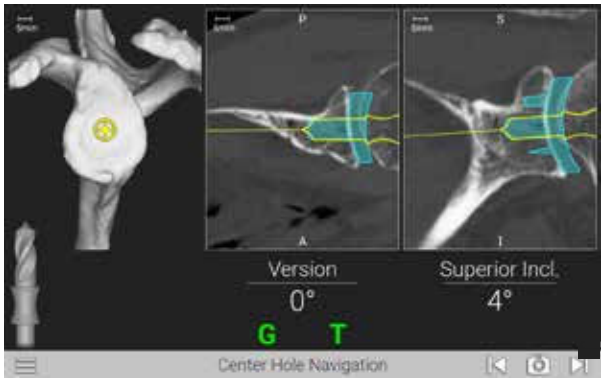


Figure 38

	Implant	Implant Length (mm)	Drill to Use	Drill Flute Length (mm)	Overdrill Amount (mm)
ANATOMIC	Cage Glenoid	14.5	531-27-60 (GPS)	18.7	4.2
	Cage Glenoid - 8° Augment	15.9	531-27-60 (GPS)	18.7	2.8
	Laser Cage Glenoid	14.6	531-27-60 (GPS)	18.7	4.1
	Laser Cage Glenoid - 8 degree Augment	15.9	531-27-60 (GPS)	18.7	2.8
	Pegged Glenoid - Standard	11.7	531-27-60 (GPS)	18.7	7.0
	Pegged Glenoid - 8° Posterior Augment	11.6	531-27-60 (GPS)	18.7	7.1
	Pegged Glenoid - 16° Posterior Augment	12.2	531-27-60 (GPS)	18.7	6.5
	Keeled	16	531-27-60 (GPS)	18.7	2.7

Note: *Not all instruments and implants are available in every market.*

Use the GPS Driver to drill the glenoid center hole *(Figure 36)*. Follow the on-screen guidance to orient the GPS Driver according to the plan.

For positioning of the drill, the tip of the drill is indicated by a yellow dot.

The planned position is indicated by a blue dot.

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

The orientation is guided by the circular cross-hair indicator. When the target is perfectly aligned, the screen will display the cross-hair superimposed on the yellow dot *(Figures 37 and 38)*.

Note: *The numbers shown for version and inclination are displayed according to the preoperative plan.*

Note: *The surgeon may deviate from this plan if desired and must reflect the same deviation on the Ream and Central Cage Drill steps. This screen includes an image of the orientation that is synchronized with the CT scan slices to visualize the cortices.*

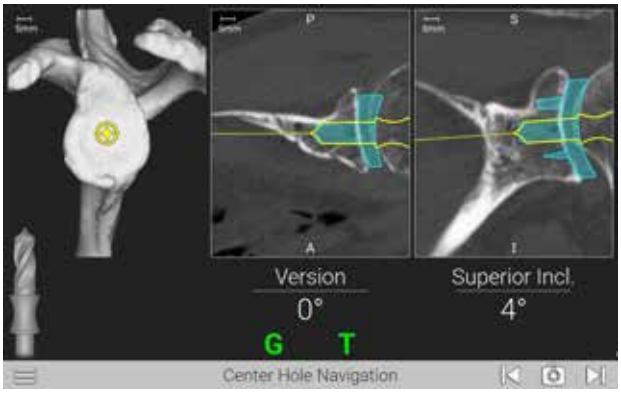


Figure 39

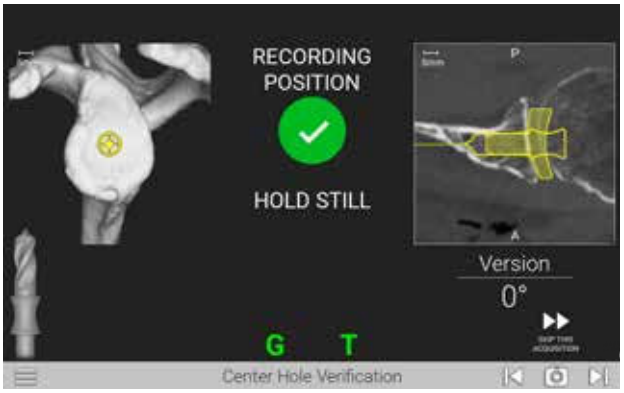


Figure 40

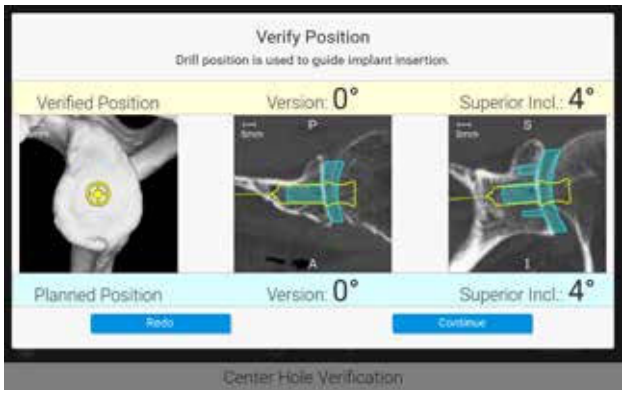


Figure 41

Drill the center cage hole for the Anatomic Glenoid Implant using the on-screen guidance. Once the drill is fully seated, the surgeon may advance to the next screen but **do not take the drill out of the bone** *(Figure 39).*

Note: *At any point in the procedure, the surgeon may use the probe to advance to the next screen by pressing the forward button twice while facing the camera.*

VERIFY POSITION

With the drill still fully seated in the bone, hold the Driver in place over the drilled axis to capture the position of the planned implant. The system will adjust the original plan to where the drill was actually placed. The system will advance to the next step automatically, accurately recording the drill axis location and orientation *(Figure 40).*

A pop-up will appear showing the verified position of the drill vs. the planned position. If the surgeon would like to re-do the digitization, press Re-do. If the surgeon accepts the digitization, press Continue *(Figure 41).*



Figure 42



Figure 43

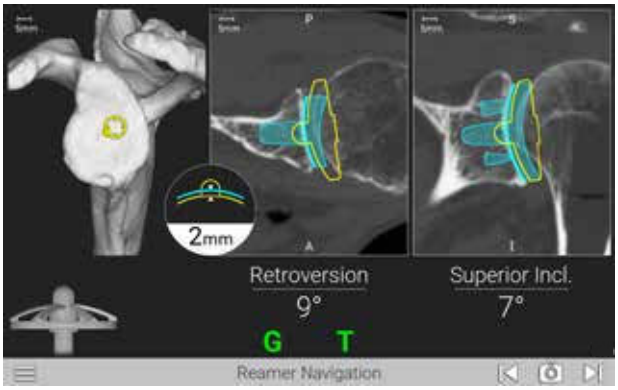


Figure 44

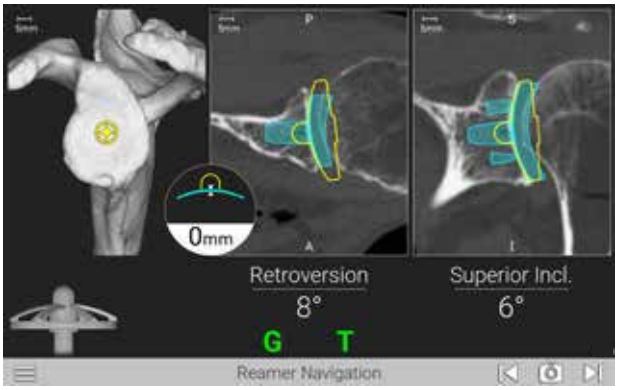


Figure 45

STEP 2: GLENOID REAMING

Select a **Anatomic Nubbed Reamer** per Equinoxe® surgical technique (OPTECH-000204) and attach to the **GPS Driver** *(Figures 42 and 43).*

Follow the on-screen guidance to ream according to the plan *(Figures 44 and 45).* The reaming screen is guided in a similar fashion to the pilot-hole guidance, with real-time feedback on the position of the pilot-tip and reamer curvature relative to the planned depth.

Press the Next arrow to proceed and detach the reamer.

Note: *When preparing for augmented glenoid components, be aware that the drilling axis is different from the reaming axis. The system accounts for this; the surgeon does not need to adjust for this mismatch.*

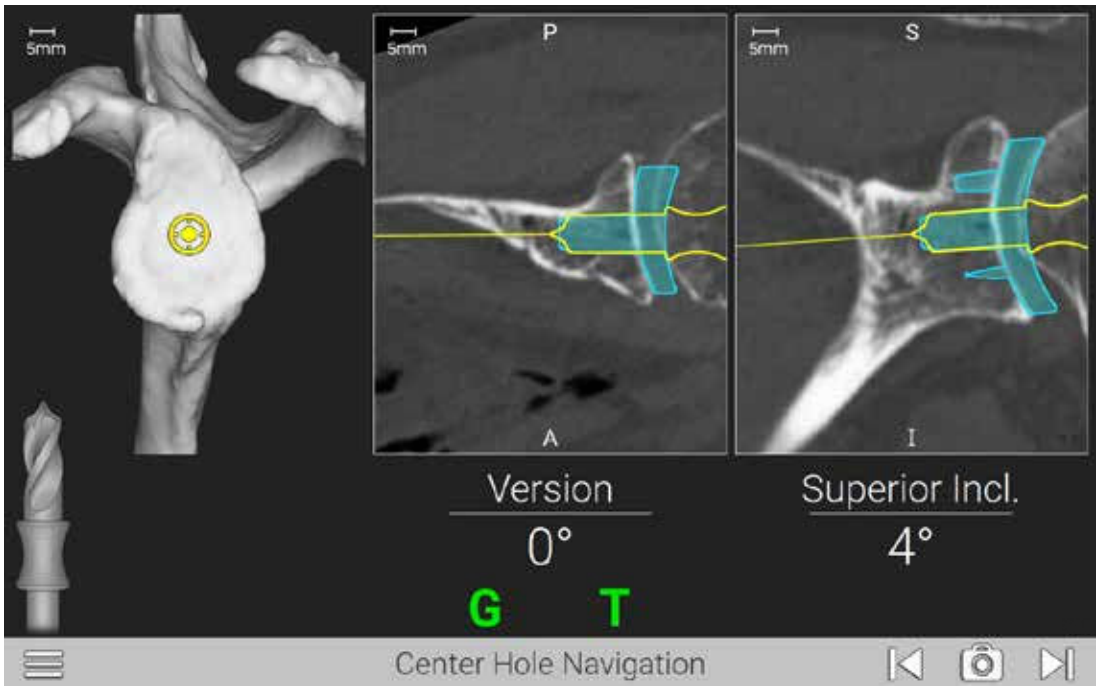


Figure 46

POTENTIAL RE-DRILL

If the surgeon reams more than 2mm of glenoid bone, re-attach the center drill to the GPS Driver and re-drill the center hole to ensure proper depth for implant seating *(Figure 46)*.



Figure 47



Figure 48

STEP 3: PERIPHERAL PEG DRILL

Remove the T-Tracker from the **GPS Driver** and attach it to the **Zimmer-Hudson Adapter (301-09-80)**. Ensure the Tracker is facing the direction of the indicated shoulder with the laser marking on the post under the Tracker (i.e. left for left, right for right).

Note: *It is helpful to utilize a "tug test" both rotationally and axially to ensure the tracker is properly fixated on the instrument and to ensure it does not move.*

Attach the male end of the Zimmer-Hudson adapter to the Zimmer-Hudson handle, and the female end of the Zimmer-Hudson adapter to the appropriate **Peripheral Peg Drill Guide** for the planned anatomic glenoid implant, with the drill guide size marking reading right side up in the direction of the Tracker. Ensure that the drill guide bottoms-out and fully engages with the Zimmer-Hudson Adapter, and that the collar of the Zimmer-Hudson Adapter fully deploys over the male end of the Zimmer-Hudson drill guide *(Figure 47)*.

Next, attach the **Peripheral Peg Drill (315-27-63 in the ERGO Conventional Instruments Tray)** to the GPS Driver *(Figure 48)*.



Figure 49



Figure 50

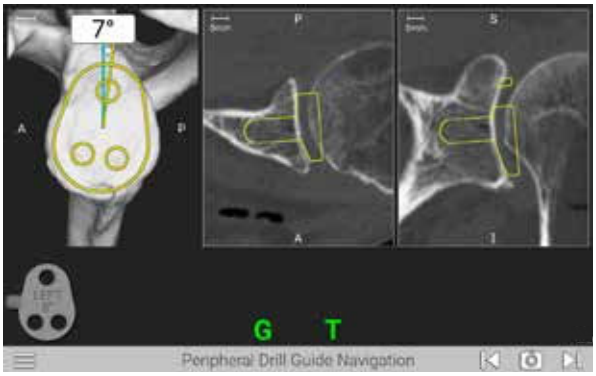


Figure 51

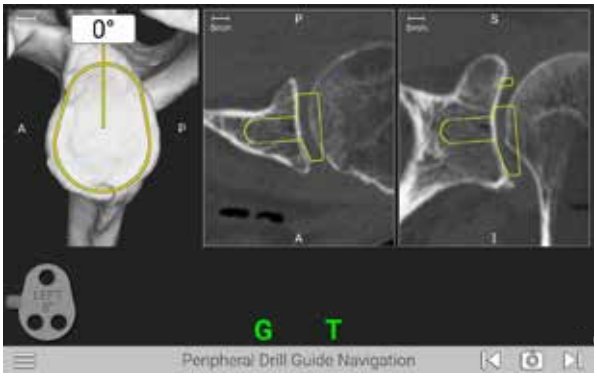


Figure 52

With one hand, hold the Peripheral Drill Guide and Zimmer-Hudson Adapter assembly with the T-Tracker attached. With the other hand, insert the Peripheral Peg Drill into the Peripheral Peg Drill Guide *(Figures 49 and 50)*.

Use the angle measurement on the screen to adjust the Peripheral Peg Drill Guide to the plan *(Figure 51)*.

The surgeon will want to rotate the Peripheral Peg Drill Guide to match the yellow line with the blue line. The degrees shown on screen represent the variability of the angle to plan, **not the overall planned rotation of the implant** *(Figure 52)*.

Drill each of the 3 peripheral peg holes, then remove all drills with guide. When finished drilling peripheral peg holes, remove the tools and advance the screen.



Figure 53

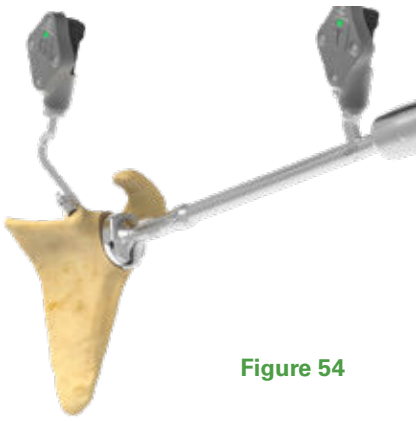


Figure 54

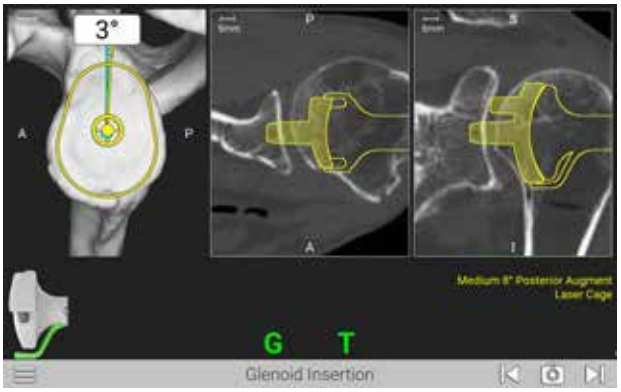


Figure 55

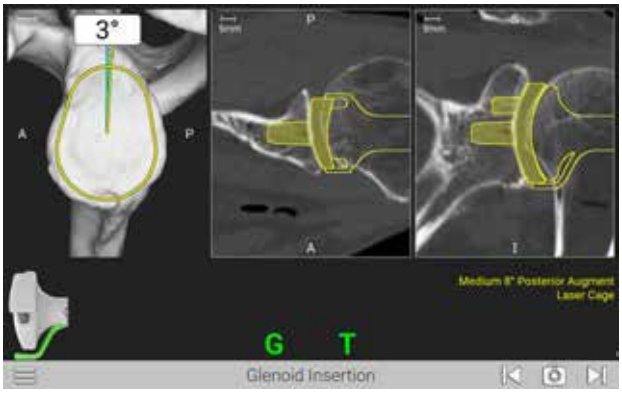


Figure 56

STEP 4: IMPLANT INSERTION

Attach the appropriate anatomic **Glenoid Inserter Impactor Tip** to the **GPS Impactor Handle (531-07-05)**. After removing the T-Tracker from the Zimmer-Hudson Adapter from the prior step, place it onto the GPS Impactor Handle, again ensuring left for left, right for right *(Figures 53 and 54)*.

Note: *It is helpful to utilize a "tug test" both rotationally and vertically to ensure the tracker is properly fixated on the instrument and to ensure it does not move.*

Only Equinoxe ERGO Impactor Tips are compatible (315-54 02/03/04/05 and 315-55-02/03/04/05).

Use the onscreen prompts to place and impact the implant according to the plan *(Figures 55 and 56)*. The screen will indicate the implant being impacted and it will show the corresponding color inserter to use for that specific implant.

Again, the degrees shown on screen represent the variability of the angle to plan, not the overall planned rotation of the implant. Once implant is fully seated, **do not remove the impactor and inserter**.

Note: *Ensure the superior portion of the implant is always oriented in the same direction as the Tracker.*

WARNING: *Don't assemble or disassemble devices in the surgical field.*

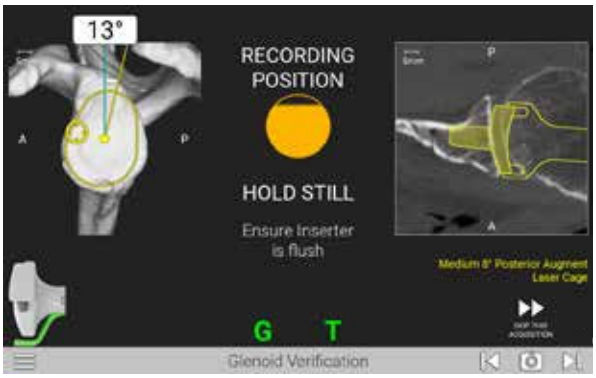


Figure 57

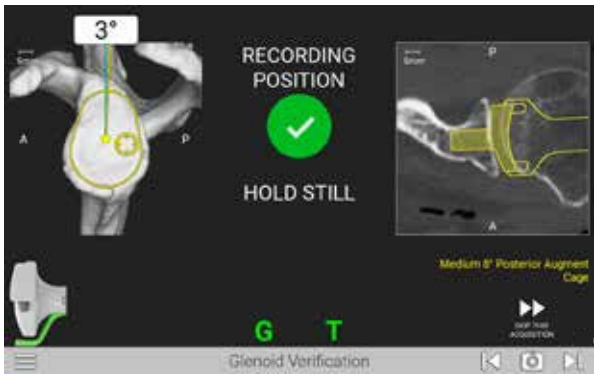


Figure 58

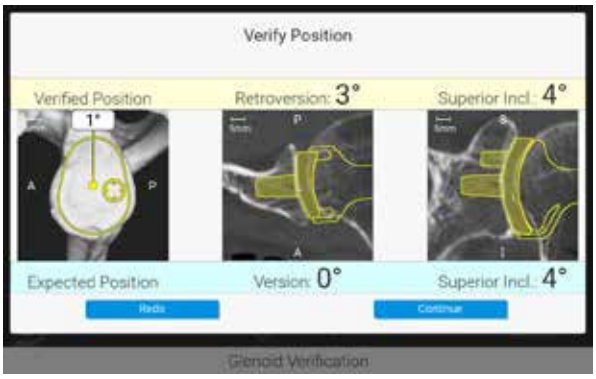


Figure 59

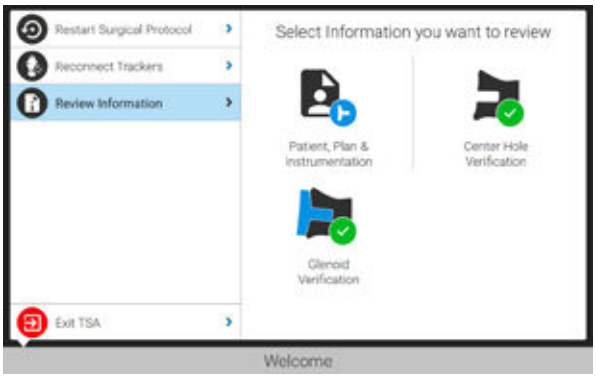


Figure 60

VERIFY POSITION

After implanting, hold the Impactor Handle and ensure the Inserter is still and flush against the implant face *(Figure 57)*. Press the Next button on the screen to capture the position of the implant placement *(Figure 58)*.

A pop-up will appear showing the verified position of the implant vs. the planned position. If the surgeon would like to redo the digitization, press Re-do *(Figure 59)*. If the surgeon accepts the digitization, press Continue to capture the verified implant placement. Once the navigated part of the procedure is complete, remove the G Tracker and Coracoid Block.

Complete remaining surgical steps per Equinoxe Ergo surgical technique. At the end of the case, the sales representative will run GetStationLog on the GPS system to upload the case. Make sure to upload all cases to AI One. Case reports showing the final verified implant placement are available on the surgeon's AI One account.

Note: *You can always review the plan by pressing the menu button and selecting "Review Information" from the pop-up menu on the left (Figure 60).*

LEGACY REVERSE SHOULDER



Figure 61

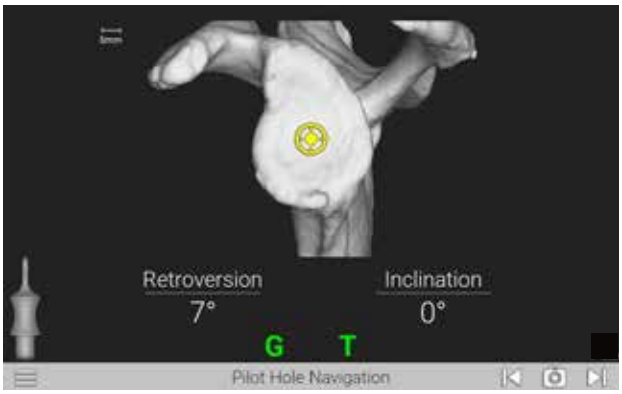


Figure 62

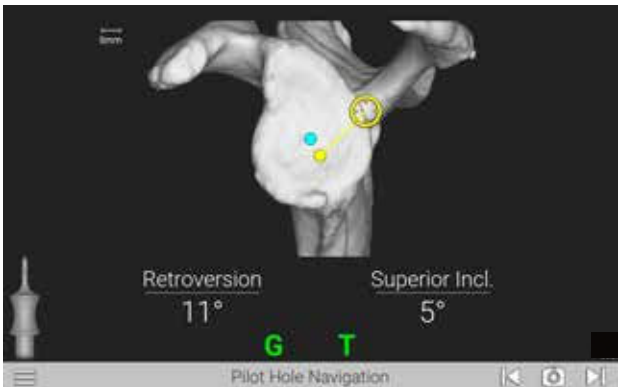


Figure 63

STEP 1: PILOT TIP DRILL

Once registration is completed, attach the **2.0mm Drill (included in the sterile packed 531-20-00)** to **GPS Driver (531-25-00)** create the pilot hole for reaming *(Figure 61)*.

Follow the on-screen guidance to place the components according to the plan. Both the pilot hole and K-Wire insertion screens are guided in a similar fashion with real-time feedback on the position of the Driver *(Figure 62)*.

Note: *Avoid applying a bending force to the GPS Driver or using the GPS Driver to retract the humeral head as this may cause fracture of the pilot tip drill.*

Note: *The numbers are displayed according to Friedman axis.*

This screen includes an image of the orientation that is synchronized with the CT scan slices to visualize the cortices.

For positioning of the Drill, the tip of the Drill is indicated by a yellow dot.

The planned position is indicated by a blue dot.

The orientation is guided by the circular crosshair indicator. When the target is perfectly aligned, the screen will display the crosshair superimposed on the yellow dot. Follow the on-screen guidance to drill the center *(Figure 63)*.

Note: *Avoid applying a bending force to the GPS Driver or using the GPS Driver to retract the humeral head as this may cause fracture of the pilot tip feature.*

WARNING: *Don't assemble or disassemble devices in the surgical field.*



Figure 64



Figure 65

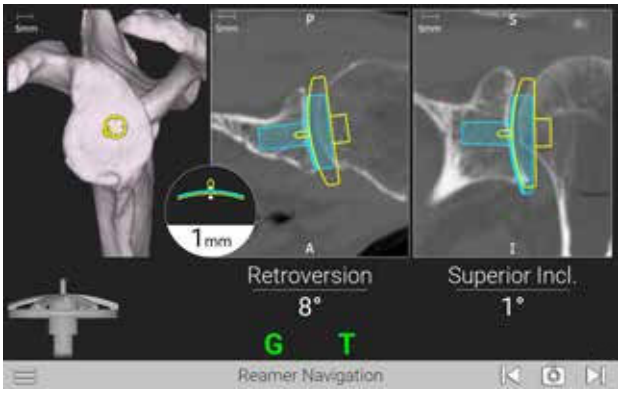


Figure 66

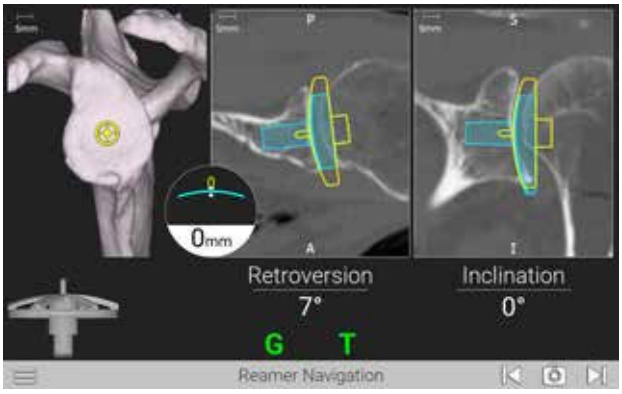


Figure 67

STEP 2: GLENOID REAMING

Select a **Reverse Pilot Tip Reamer** per Equinoxe surgical technique (OPTECH-000204) and attach to the GPS Driver *(Figures 64 and 65)*.

Follow the on-screen guidance to ream according to the plan *(Figures 66 and 67)*. The reaming screen is guided in a similar fashion to the pilot-hole guidance, with real-time feedback on the position of the pilot-tip and reamer curvature relative to the planned depth. Press the Next arrow to proceed and detach the reamer.

Note: *When preparing for augmented glenoid components, be aware that the drilling axis is different from the reaming axis. The system accounts for this; the surgeon does not need to adjust for this mismatch.*

DETAILED OPERATIVE TECHNIQUE

LEGACY REVERSE SHOULDER





Implant	Implant Length (mm)	Drill to Use	Drill Flute Length (mm)	Overdrill Amount (mm)
Standard Glenoid Plate	16.6	531-27-60 (GPS)	18.7	2.1
10° Superior Augment Glenoid Plate	18.3	531-27-60 (GPS)	18.7	0.4
8° Posterior Augment Glenoid Plate	16.8	531-27-60 (GPS)	18.7	1.9
10mm Extended Cage Glenoid Plate	26.6	315-27-60 **(Legacy Equinoxe)**	24.7	-1.9*
Superior Posterior Augment Glenoid Plate	23.3	315-27-60 **(Legacy Equinoxe)**	24.7	1.4
Small Standard Glenoid Plate	13.1	531-27-60 (GPS)	18.7	5.6
Small 10° Superior Augment Glenoid Plate	14.3	531-27-60 (GPS)	18.7	4.4
Small 8° Posterior Augment Glenoid Plate	13.9	531-27-60 (GPS)	18.7	4.8
Small 10mm Extended Cage Glenoid Plate	23.1	315-27-60 **(Legacy Equinoxe)**	24.7	1.6
Small Superior Posterior Augment Glenoid Plate	17.9	531-27-60 (GPS)	18.7	0.8

Standard Baseplate
Small Baseplate

Note: *Not all instruments and implants are available in every market.*

**All center drills for GPS are used without a drill guide. Drill into native glenoid bone first, and then add the graft and drill into the graft, as the drill is short. Alternatively, chase the hole with the 315-15-38 extended drill.*



Figure 68



Figure 69

STEP 3: CENTER DRILL

Attach the corresponding **Center Cage Drill Bit** to the **GPS Driver** *(Figure 68)*. Be sure to use the correct drill based on the implant being used. Refer to the chart above.

Drill the center cage hole for the **Reverse Glenoid Baseplate** *(Figures 69)*. Once the drill is fully seated, the surgeon may advance to the next screen, **but do not take the drill out of the bone**.

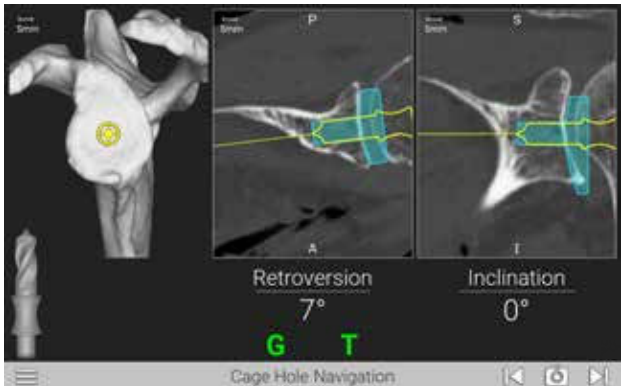


Figure 70



Figure 71

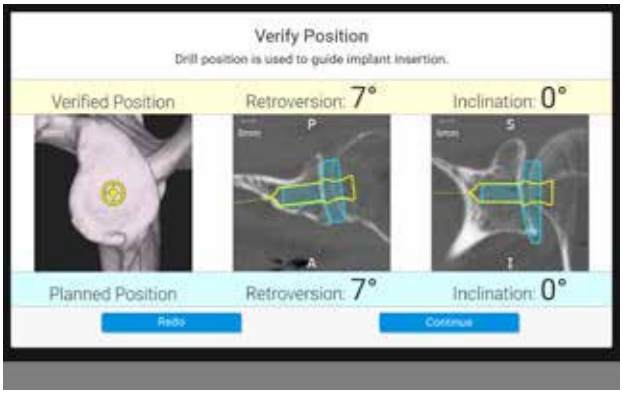


Figure 72

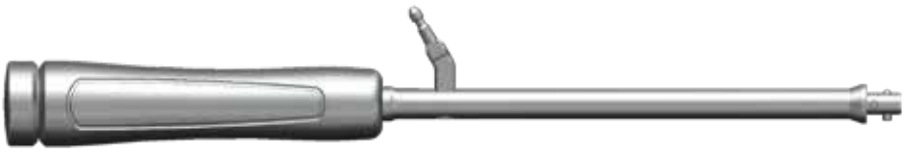
VERIFY POSITION

With the drill still fully seated in the bone, hold the **GPS Driver** in place over the drilled axis to capture the position of the planned implant. The system will adjust the original plan to where the drill was actually placed *(Figures 70 and 71)*.

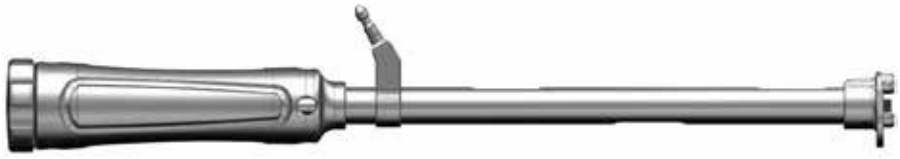
The system will advance to the next screen automatically, accurately recording the drill axis location and orientation.

A pop-up will appear showing the verified position of the drill vs. the planned position *(Figure 72)*. If the surgeon would like to re-do the digitization, press Re-do. If the surgeon accepts the digitization, press Continue.

Baseplate Inserter Chart



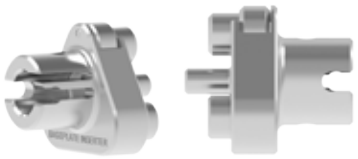
GPS Impactor Handle



GPS Reverse Inserter Handle

Figure 73

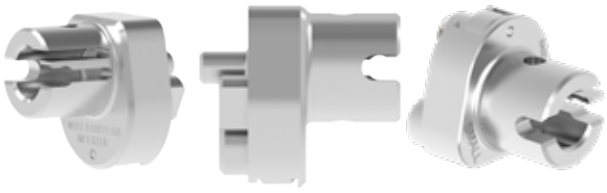
GPS Impactor Handle
Compatible Baseplate Inserters



321-19-13 — Ergo Inserter (Pilot)



321-19-14 — Ergo Inserter



321-35-23 and 321-35-24 —
Ergo Small Reverse Baseplate Inserter

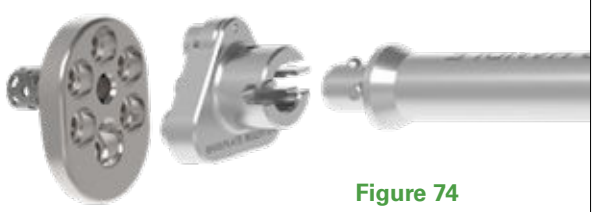


Figure 74



Figure 75



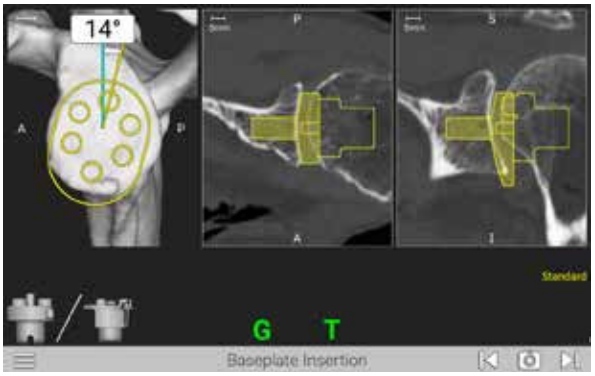


Figure 76

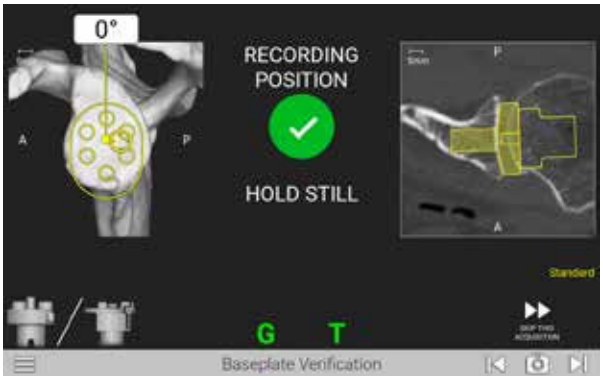


Figure 77

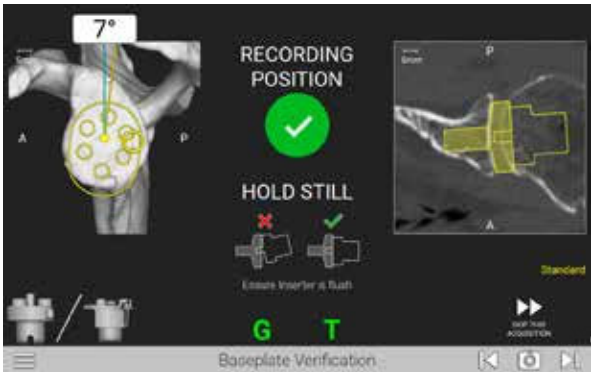


Figure 78

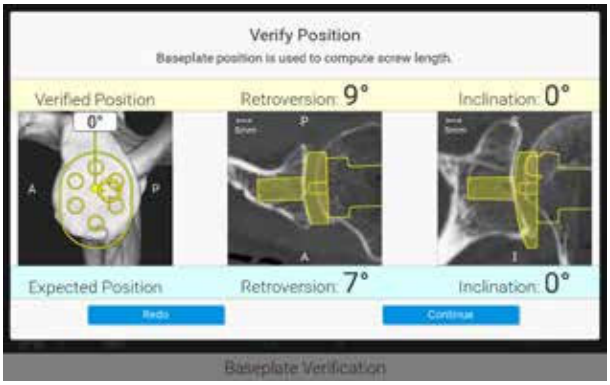


Figure 79

STEP 4A: IMPLANT INSERTION

GPS IMPACTOR HANDLE

Attach the appropriate corresponding reverse baseplate Impactor Tip to the **GPS Impactor Handle (531-07-05)** *(Figure 73)*. Attach the T-Tracker to the Handle (ensuring left for left, right for right) *(Figure 74)*. Finally, place the planned baseplate onto the tip of the Baseplate Inserter *(Figure 75)*.

Note: *It is helpful to utilize a "tug test" both rotationally and vertically to ensure the tracker is properly fixated on the instrument and to ensure it does not move.*

Note: *Ensure the superior portion of the implant is always oriented in the same direction as the Tracker.*

WARNING: *Don't assemble or disassemble devices in the surgical field.*

Align the blue and yellow dots as done previously, while referencing the angular measurements, to impact the implant based on the plan. The blue line represents the planned angle of the implant's rotation and will always be facing vertically. Because of this, the surgeon might notice that the scapula is rotated on this step *(Figure 76)*. Once the baseplate inserter is flush against the implant after being impacted, you may advance to the next screen, but do not remove the Impactor Handle and Baseplate Inserter Tip from the baseplate.

VERIFY POSITION

After implanting, hold the Impactor Handle and Inserter still and flush against the implant face. Press the Next button on the screen to capture the position of the implant placement, which will adjust the original plan to where the surgeon placed the implant *(Figure 77)*. Ensure the impactor handle is seated flush to the face of the baseplate while verifying its position *(Figure 78)*. A pop-up will appear showing the verified position of the drill vs. the planned position. If the surgeon would like to re-do the digitization, press Re-do. If the surgeon accepts the digitization, press Continue *(Figure 79)*.

After removing the T-Tracker from the GPS Impactor Handle, carefully place it on the GPS Driver.

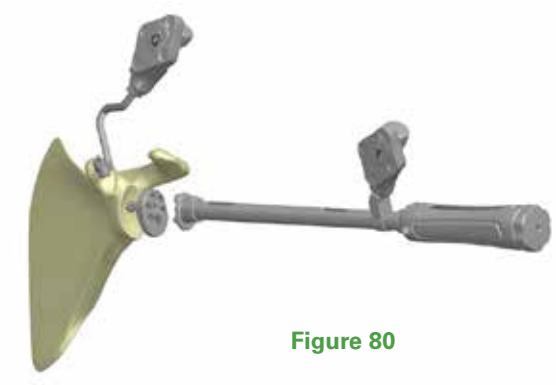


Figure 80

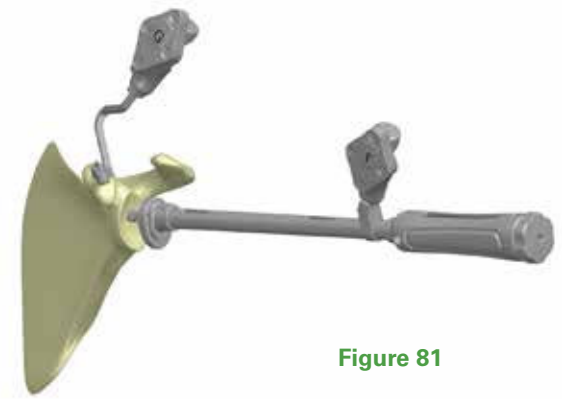


Figure 81

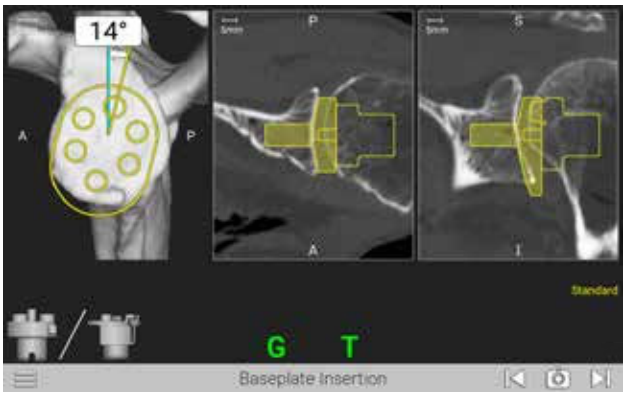


Figure 82

STEP 4B: IMPLANT INSERTION

GPS REVERSE INSERTER HANDLE

Attach the T-Tracker to the **GPS Reverse Inserter Handle (531-07-07)** (ensure left for left, right for right). Place the planned baseplate onto the tip of the Reverse Inserter Handle and use the knob at the top of the Reverse Inserter Handle to fasten it to the planned baseplate *(Figures 80 and 81)*.

Align the blue and yellow dots as done previously, while referencing the angular measurements, to insert the implant based on the plan. The blue line represents the angle of the implant's planned rotation and will always be facing vertically. Because of this, the surgeon might notice that the scapula is rotated on this step *(Figure 82)*.

Once the planned Baseplate is fully seated on the Glenoid after impaction, you may advance to the next screen, but do not remove the GPS Reverse Inserter Handle from the baseplate.

Note: *While detaching the baseplate with the knob feature, make sure to support the handle with other hand to maintain the inserter orientation.*

Note: *It is helpful to utilize a "tug test" both rotationally and vertically to ensure the tracker is properly fixated on the instrument and to ensure it does not move.*

Note: *The Reverse Inserter Handle is compatible with both Standard Baseplate and Small Baseplate.*



Figure 83

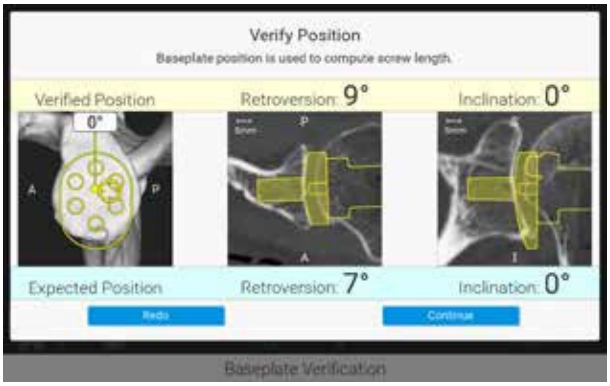


Figure 84

VERIFY POSITION

After implanting, hold the GPS Reverse Inserter Handle still and flush against the implant face. Press the Next button on the screen to capture the position of the implant placement, which will adjust the original plan to where the surgeon placed the implant *(Figure 83)*.

A pop-up will appear showing the verified position of the drill vs. the planned position. If the surgeon would like to re-do the digitization, press Re-do. If the surgeon accepts the digitization, press Continue *(Figure 84)*.

Using the knob at the top of the Reverse Inserter Handle, make sure to turn it counter-clockwise to unscrew it from the impacted baseplate.

Note: *Always ensure the Inserter Handle is adequately supported after baseplate insertion until it's disconnected from the baseplate.*

Note: *For small baseplates, slide implant over the rTSA Handle's peg features, then pre-load the top peg's flexure while rotating the handle's knob.*

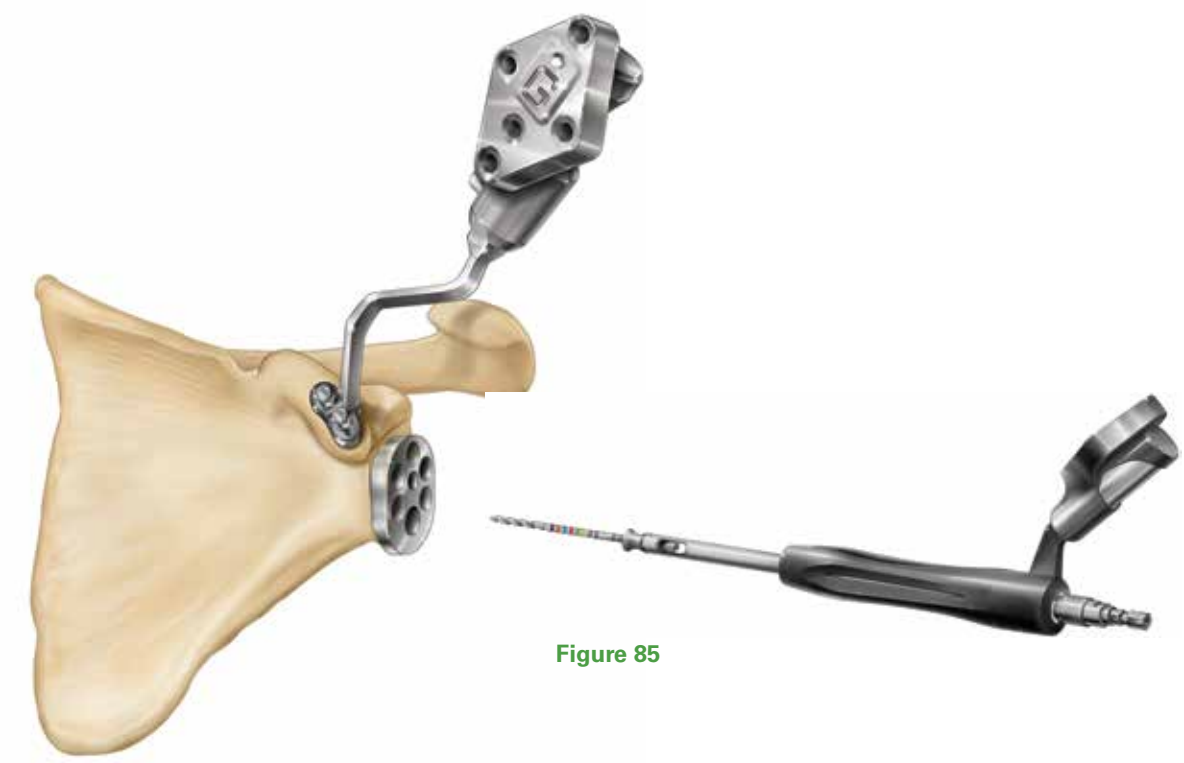


Figure 85

STEP 5: COMPRESSION SCREW NAVIGATION

Attach the **3.2mm GPS Drill (included in the sterile packed 531-20-00)** to the GPS Driver *(Figure 85)*. The 3.2 GPS Drill is sterile packed specifically for use with GPS. If not done already, re-attach the T-Tracker onto the GPS Driver.

Note: *It is helpful to utilize a "tug test" both rotationally and vertically to ensure the Tracker is properly fixated on the instrument and to ensure it does not move.*

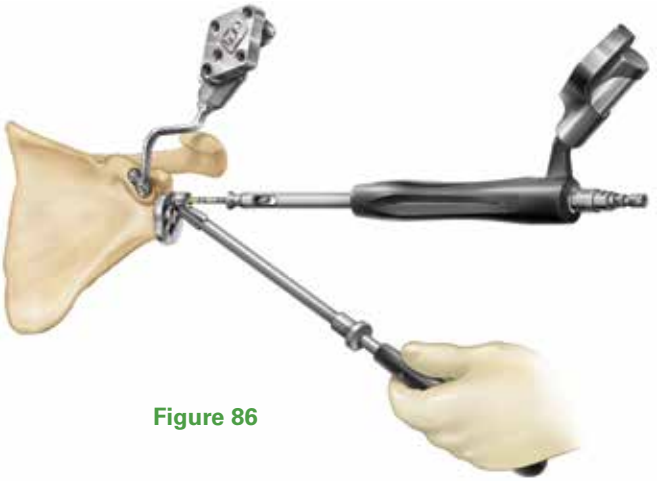


Figure 86

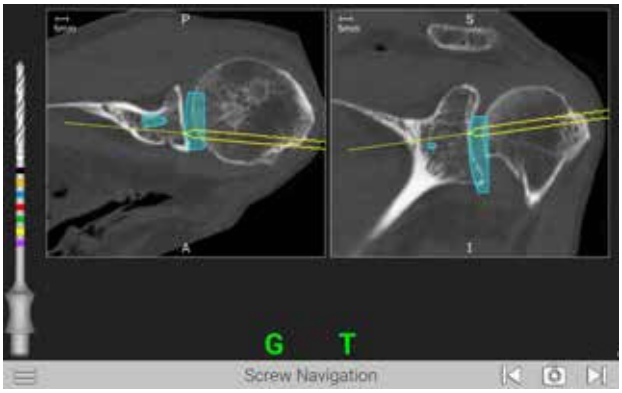


Figure 87

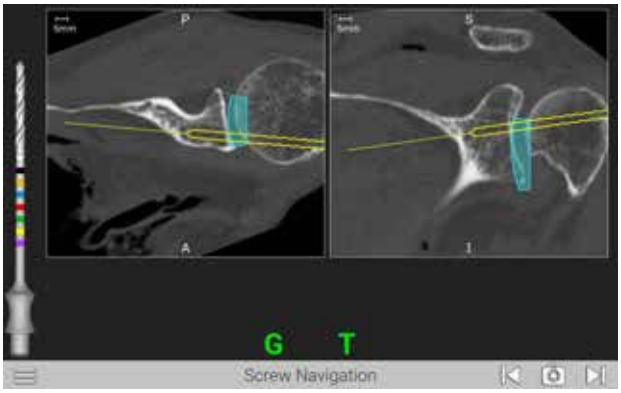


Figure 88

Place the **Drill Guide** into the preferred hole of the Glenoid Plate and insert the Drill through the Guide *(Figure 86)*.

Note: *The baseplate holes and guide tip should be cleared of debris before screwing holes, as this can affect the depth indication (on the screen and on the drills).*

The screen will display the trajectory of the Drill to allow for aiming for bicortical fixation, for example *(Figures 87 and 88)*. If the implant placement has successfully digitized, information related to the screw length will appear on the screen, along with active screw hole location.

Drill the **GPS 3.2mm Drill** through the **Drill Guide** and Baseplate hole. Once finished drilling the holes, be sure to disconnect the 3.2mm Drill from the Driver and remove it from the Drill Guide.

Note: *Ensure the drill depth indicator reaches the base of the numeric engraving for the respective screw length.*

Note: *Since the GPS Driver uses a snap fit connection, the surgeon must drill in reverse upon removal of the drill bit from the bone.*

Once the GPS technique is complete, remove the G Tracker and Coracoid Block before Glenosphere insertion.

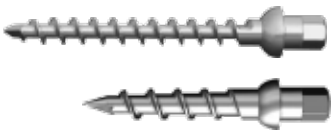
Complete remaining surgical steps per Equinoxe surgical technique (OPTECH-000204). At the end of the case, the sales representative will run GetStationLog on the GPS system to upload the case to the passkey. Make sure to upload all the cases to AI One.

LEGACY INSTRUMENT LISTING

CATALOG NUMBER	PART DESCRIPTION	
	GPS Station V2+ or V2C	
I00025 or I00020	Main GPS Unit	
I00021	Power Supply	
J00010	Lower Mounting Arm	
J00012, J00020 or J00065	Upper Mounting Arm	
J00011	GPS Bedrail Clamp	
I00022	GPS Travel Case	
	GPS Station V3	
I00030	Main GPS Unit	
I00031	Power Supply	
J00010	Lower Mounting Arm	
J00065	Upper Mounting Arm	
J00011	GPS Bedrail Clamp	
I00032	GPS Travel Case	
	GPS Trackers	
A10003	GPS Probe	
A00203	GPS Probe V2	
A10005	GPS T-Tracker	
A00205	GPS T-Tracker V2	
A10006	GPS G-Tracker	
A00206	GPS G-Tracker V2	

Note: F Tracker currently used for knee and ankle cases only

	GPS Shoulder Mechanical Instruments	
531-07-05	Impactor Handle	
531-07-07	GPS Reverse Inserter Handle	
531-01-03	Coracoid Block Left	
531-01-04	Coracoid Block Right	
531-25-00	GPS Driver	
531-27-60	Center Drill Bit	

CATALOG NUMBER	PART DESCRIPTION	
	GPS Shoulder Legacy Mechanical Instruments	
531-27-63	Cannulated Center Drill Bit	
301-09-80	Zimmer-Hudson Ratchet Handle	
521-78-11	Pin Driver, Short Low Profile	
	GPS Shoulder Anatomic Instruments	
531-27-04	Peripheral Peg Drill Guide, Left	
531-27-05	Peripheral Peg Drill Guide, Right	
531-27-14	8 Degree Posterior Augment Peripheral Peg Drill Guide, Left	
531-27-15	8 Degree Posterior Augment Peripheral Peg Drill Guide, Right	
531-29-14	16 Degree Posterior Augment Peripheral Peg Drill Guide, Left	
531-29-15	16 Degree Posterior Augment Peripheral Peg Drill Guide, Right	
531-07-50	Zimmer-Hudson Adapter	
	GPS Shoulder Disposables	
531-78-20	GPS Shoulder Disposable Hex Pins	
531-20-00	Disposable Reverse Drill (2.0, 3.2mm drill bits)	
A10012 A10032	GPS Implant Kit V2 GPS V3 Disposable *Includes sterile drape, batteries and cleaning wipe*	

ERGO ANATOMIC SHOULDER



Figure 89

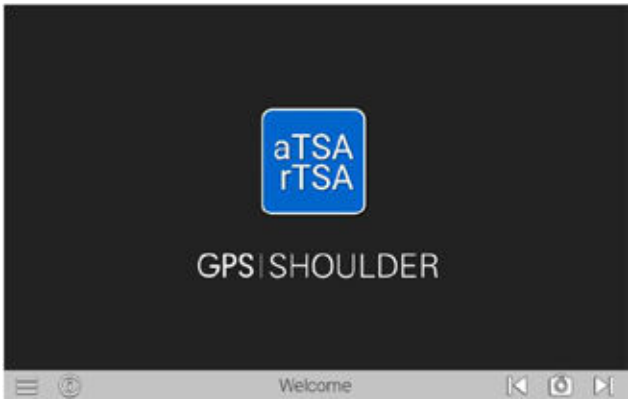


Figure 90

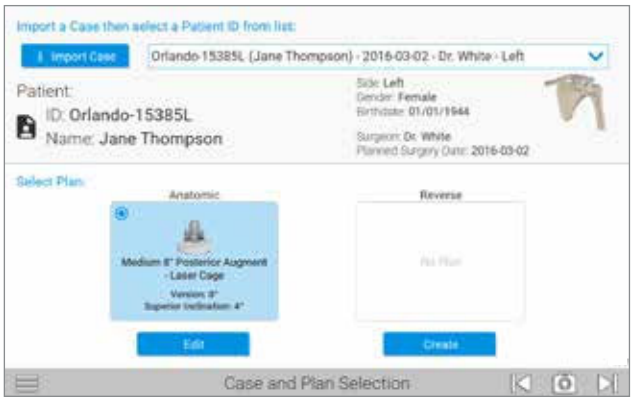


Figure 91

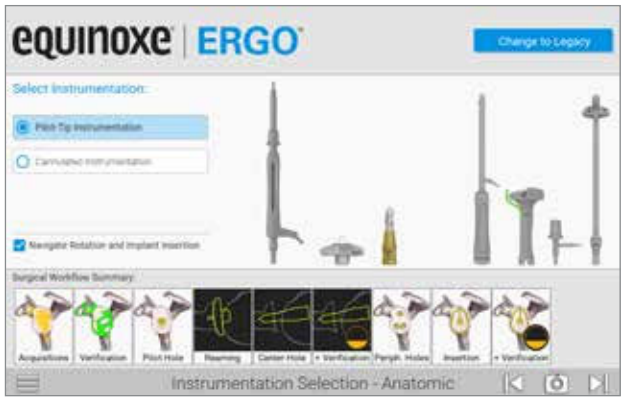


Figure 92

CASE AND PLAN SELECTION

Press the Shoulder Application icon on the GPS unit *(Figures 89 and 90)*. If using a USB to transfer a case, on the Case and Plan Selection screen *(Figure 91)*, select Import Case to import a case. If the case is already on the unit, click the box with the drop down and be sure to select the correct Patient ID. If using the AUGI App to transfer a case, once it is transfered, then click on the drop down menu and be sure to select the correct patient ID. Depending on what plans were exported, select the Anatomic or Reverse plans to navigate with GPS. Ensure the patient information displayed matches the patient in the OR.

Note: *A plan can still be edited or created based on what was imported by pressing the Edit or Create button under the Anatomic or Reverse sections.*

INSTRUMENTATION SELECTION

Next, on the instrumentation selection screen, verify the instrument set being used. If using Equinoxe Legacy GPS instruments, select the "change to Legacy button" at the top right of the screen and follow the 3.0 Equinoxe Legacy operative technique *(Figure 92)*.

Next, select the option for either Pilot Tip or Cannulated instrumentation. Surgeons may also select/unselect whether they will be using the rotation and implant impaction/insertion instruments and features.

Verify that the correct orientation of the station setup by reviewing the Station Setup screen after advancing.



Figure 93

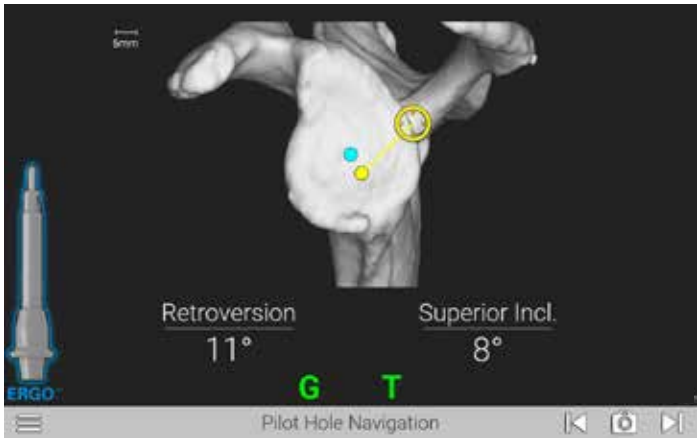


Figure 94

STEP 1: PILOT TIP DRILL

If not already done, carefully attach the **T-Tracker** to the **Pilot-tip Driver (531-55-00)**. Ensure the tracker is fixated on the tracker post with the tracker face aiming in the direction of the pilot tip of the driver.

Note: *It is helpful to utilize a "tug test" both rotationally and vertically to ensure the tracker is properly fixated on the instrument and to ensure it does not move.*

Use the Pilot-tip Driver to drill the glenoid pilot hole *(Figure 93)*.

Follow the on-screen guidance to orient the GPS Ergo Driver according to the plan. Both the pilot hole and K-Wire insertion screens are guided in a similar fashion with real-time feedback on the position of the Driver and K-Wire Guide *(Figure 94)*.

- For positioning of the drill, the tip of the drill is indicated by a yellow dot.
- The planned position is indicated by a blue dot.

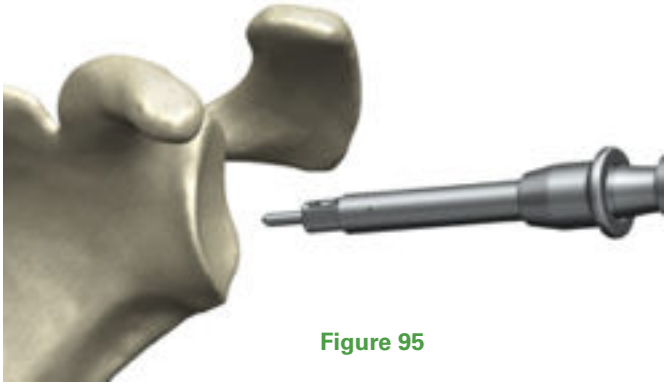


Figure 95

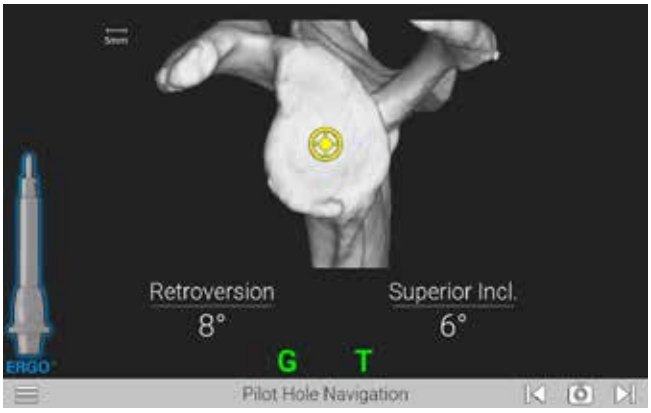


Figure 96

The orientation is guided by the circular cross-hair indicator. When the target is perfectly aligned, the screen will display the cross-hair superimposed on the yellow dot *(Figures 95 and 96)*.

Press the Next arrow to proceed.

Note: *At any point in the procedure, the surgeon may use the probe to advance to the next screen by pressing the forward button twice while facing the camera.*

Note: *Avoid applying a bending force to the GPS Driver or using the GPS Driver to retract the humeral head as this may cause fracture of the pilot tip feature.*

Note: *The numbers are displayed according to Friedman axis.*

WARNING: *Don't assemble or disassemble devices in the surgical field.*

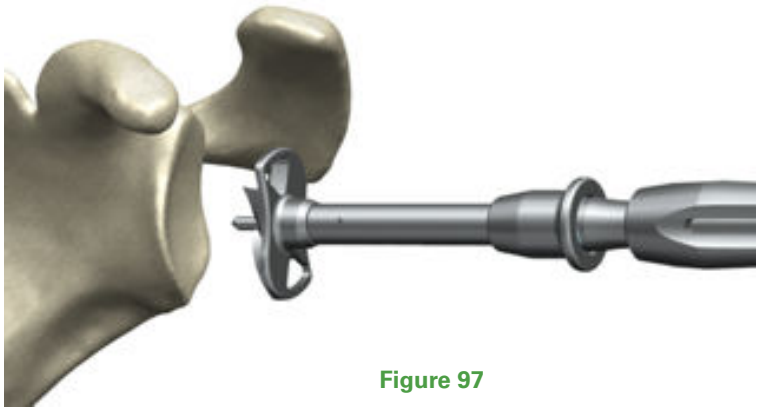


Figure 97

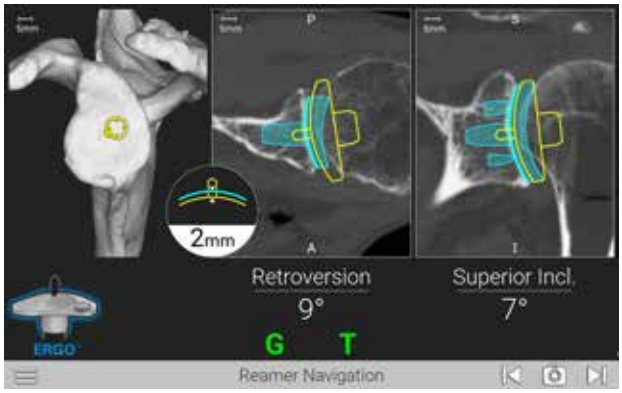


Figure 98

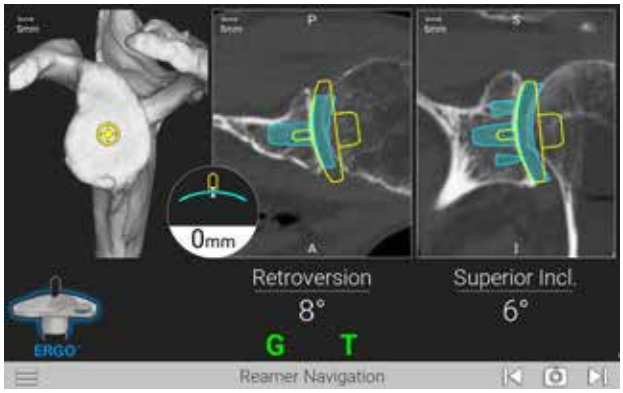


Figure 99

STEP 2: GLENOID REAMING

Select an Anatomic Reamer per the Equinoxe Ergo surgical technique (OPTECH-000204) and attach it to the **Pilot-tip Drive**r *(Figure 97)*.

Follow the on-screen guidance to ream according to the plan *(Figures 98 and 99)*. The reaming screen is guided in a similar fashion to the pilot-hole guidance, with real-time feedback on the position of the pilot-tip and reamer curvature relative to the planned depth.

Press the Next arrow to proceed and detach the reamer.

Note: *When preparing for augmented glenoid components, be aware that the drilling axis is different from the reaming axis. The system accounts for this; the surgeon does not need to adjust for this mismatch.*

	Implant	Implant Length (mm)	Drill to Use	Drill Flute Length (mm)	Overdrill Amount (mm)
ANATOMIC	Cage Glenoid	14.5	STD	19.3	4.8
	Cage Glenoid - 8° Augment	15.9	STD	19.3	3.4
	Laser Cage Glenoid	14.6	STD	19.3	4.7
	Laser Cage Glenoid - 8 degree Augment	15.9	STD	19.3	3.4
	Pegged Glenoid - Standard	11.7	STD	19.3	7.6
	Pegged Glenoid - 8° Posterior Augment	11.6	STD	19.3	7.7
	Pegged Glenoid - 16° Posterior Augment	12.2	STD	19.3	7.1
	Keeled	16	STD	19.3	3.3

Note: *Not all instruments and implants are available in every market.*

Note: *GPS Ergo Center Drills are coated to indicate size, reflected in the cell color. These color indications are also present on the relevant GPS screens. The standard GPS Ergo Drill is gold coated.*

Table 1

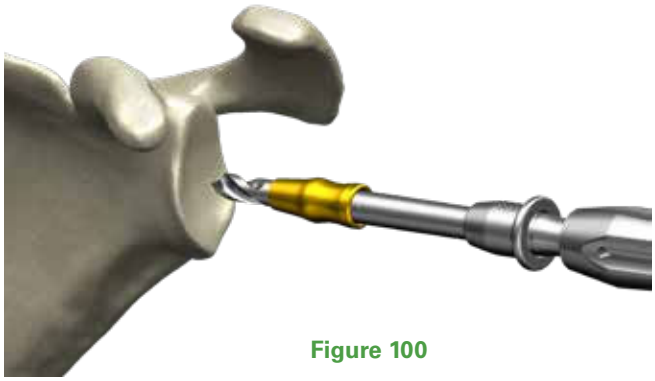


Figure 100

STEP 3: CENTER HOLE

Attach the corresponding GPS Ergo Center Drill to the Pilot-tip Driver *(Figure 100)*.

Be sure to use the correct drill for the appropriate implant by referencing the bottom-left portion of the GPS screen, which highlights the correct drill **(531-55-64)**.

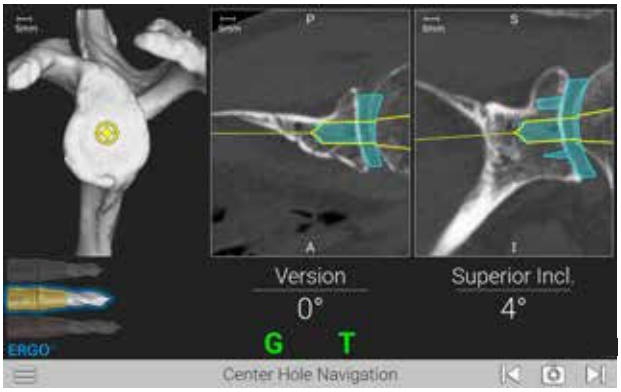


Figure 101

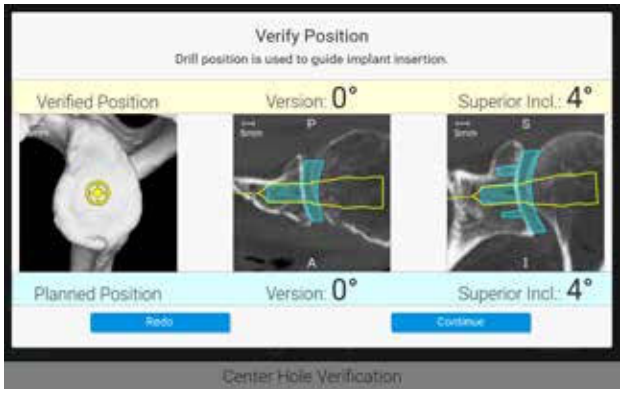


Figure 102

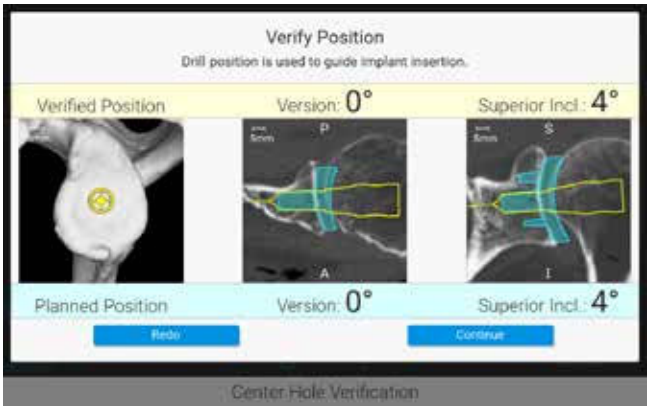


Figure 103

DRILLING

Drill the center cage hole for the Anatomic Glenoid Implant using the on-screen guidance with the cross-hairs, as used in the previous steps. Once the drill is fully seated, the surgeon may advance to the next screen **but do not take the drill out of the bone** *(Figure 101)*.

VERIFY POSITION

With the drill still fully seated in the bone, hold the Pilot-tip Driver in-place over the drilled axis to capture the position of the planned implant. The system will adjust the original plan to where the drill was actually placed. The system will advance to the next step automatically, accurately recording the drill axis location and orientation *(Figure 102)*.

A pop-up will appear showing the verified position of the drill vs. the planned position. If the surgeon would like to re-do the digitization, press Re-do. If the surgeon accepts the digitization, press Continue *(Figure 103)*.



Figure 104



Figure 105

STEP 4: PERIPHERAL PEG DRILL GUIDANCE

PERIPHERAL PEG DRILL

Remove the T-Tracker from the Pilot-tip Driver and attach it to the **Zimmer-Hudson Adapter (301-09-80)**. Ensure Tracker LEDs are facing the direction of the indicated shoulder with the laser marking on the post under the Tracker (i.e. left for left, right for right).

Attach the male end of the Zimmer-Hudson Adapter to the Zimmer-Hudson handle, and the female end of the Zimmer-Hudson adapter to the appropriate Peripheral Peg Drill Guide for the planned anatomic glenoid implant, with the drill guide size marking reading right side up in the direction of the Tracker *(Figure 104)*.

Ensure that the drill guide bottoms-out and fully engages with the Zimmer-Hudson adapter, and that the collar of the Zimmer-Hudson adapter fully deploys over the male end of the Zimmer-Hudson Drill Guide.

Next, from the **Standard Conventional Ergo Instrumentation**, attach the **Peripheral Peg Drill (315-52-62)** to the **Peripheral Peg Driver (315-52-01)** *(Figure 105)*.

Note: *It is helpful to utilize a "tug test" both rotationally and axially to ensure the tracker is properly fixated on the instrument and to ensure it does not move.*

Note: *If the plan includes an anterior augment, the Peripheral Drill Guide Peg Navigation step will NOT be included in the workflow.*

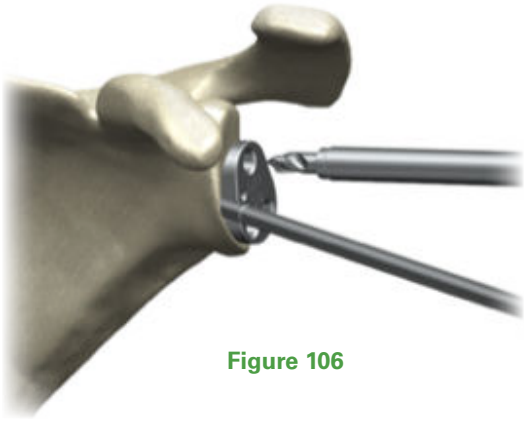


Figure 106

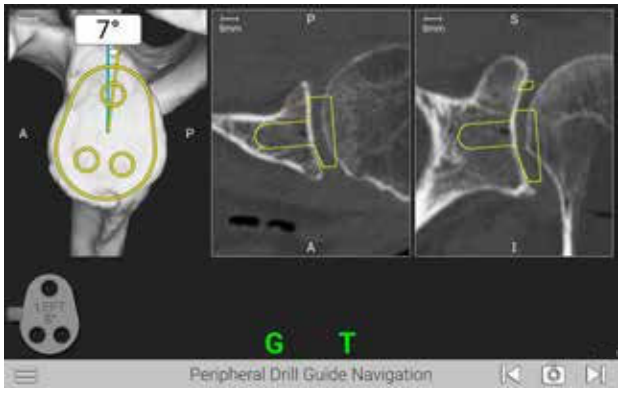


Figure 107

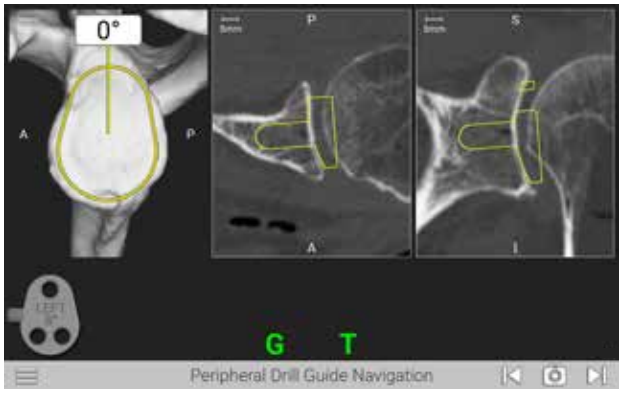


Figure 108

Attach the Peripheral Peg Driver to a powered drill.

With one hand, hold the Peripheral Drill Guide and Zimmer-Hudson Adapter assembly with the T-Tracker attached. With the other hand, insert the Peripheral Peg Drill into the Peripheral Peg Drill Guide *(Figure 106)*.

Use the angle measurement on the screen to adjust the Peripheral Peg Drill Guide to the plan. The surgeon will want to rotate the Peripheral Peg Drill Guide to match the yellow line with the blue line. The degrees shown on screen represent the variability of the angle to plan, **not the overall planned rotation of the implant** *(Figures 107 and 108)***.**

Drill each of the 3 peripheral peg holes, then remove all drills with guide. When finished drilling peripheral peg holes, remove the tools and advance the screen.



Figure 109

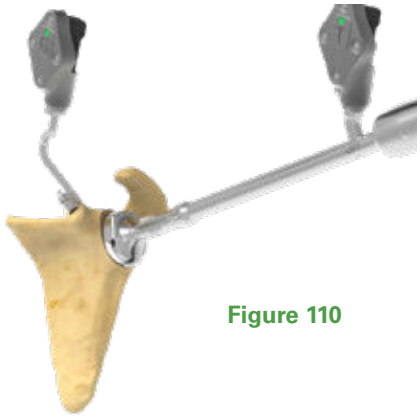


Figure 110

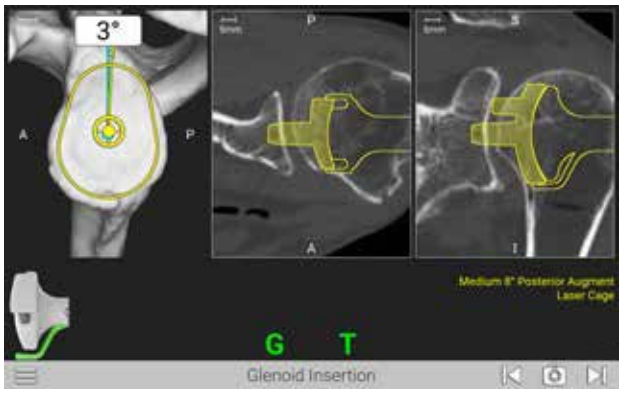


Figure 111

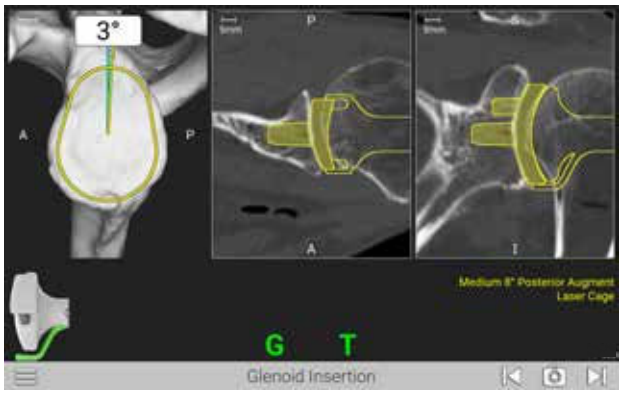


Figure 112

STEP 5: IMPLANT INSERTION

IMPLANT INSERTION

Attach the appropriate anatomic Glenoid Inserter Impactor Tip to the GPS Impactor Handle **(531-07-05)**. After removing the T-Tracker from the Zimmer-Hudson adapter from the prior step, place it onto the GPS Impactor Handle, again ensuring left for left, right for right *(Figures 111 and 112)*.

Only Equinoxe Ergo Impactor Tips are compatible (315-54-02/03/04/05 and 315-55-02/03/04/05).

Use the onscreen prompts to place and impact the implant according to the plan. The screen will indicate the implant being impacted and it will show the corresponding color inserter to use for that specific implant.

Again, the degrees shown on screen represent the variability of the angle to plan, not the overall planned rotation of the implant. Once implant is fully seated, **do not remove the impactor and inserter.**

Note: *It is helpful to utilize a "tug test" both rotationally and vertically to ensure the tracker is properly fixated on the instrument and to ensure it does not move.*

Note: *Ensure the superior portion of the implant is always oriented in the same direction as the Tracker (Figures 109 and 110).*

WARNING: *Don't assemble or disassemble devices in the surgical field.*

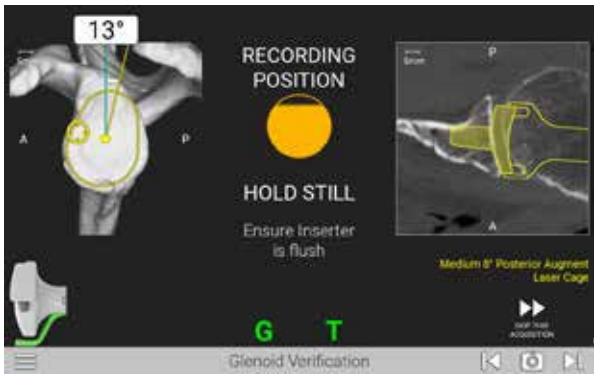


Figure 113

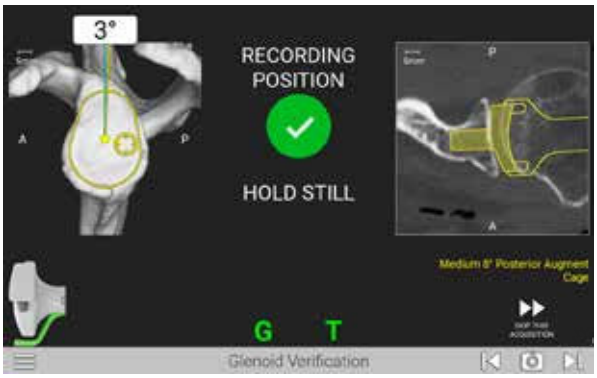


Figure 114

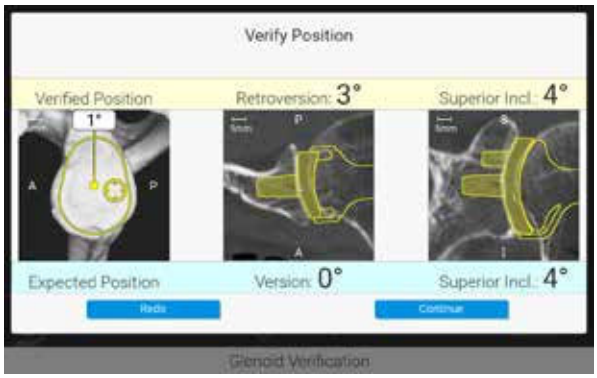


Figure 115

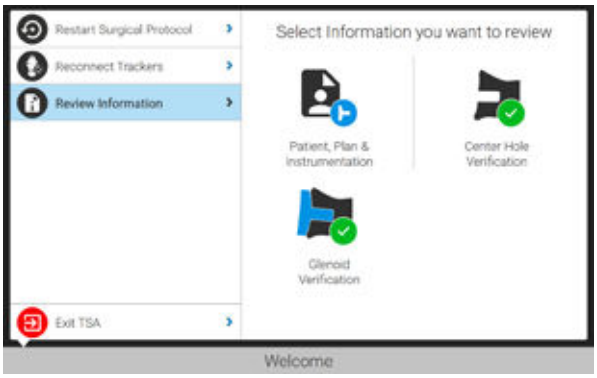


Figure 116

VERIFY POSITION

After implanting, hold the Impactor Handle and ensure the Inserter is still and flush against the implant face *(Figure 113)*. Press the Next button on the screen to capture the position of the implant placement *(Figure 114)*.

A pop-up will appear showing the verified position of the implant vs. the planned position. If the surgeon would like to redo the digitization, press Re-do *(Figure 115)*. If the surgeon accepts the digitization, press Continue to capture the verified implant placement. Once the navigated part of the procedure is complete, remove the G Tracker and Coracoid Block.

Complete remaining surgical steps per Equinoxe Ergo surgical technique. At the end of the case, the sales representative will run GetStationLog on the GPS system to upload the case. Make sure to upload all cases to AI One. Case reports showing the final verified implant placement are available on the surgeon's AI One account.

Note: *You can always review the plan by pressing the menu button and selecting "Review Information" from the pop-up menu on the left (Figure 116).*

ERGO REVERSE SHOULDER

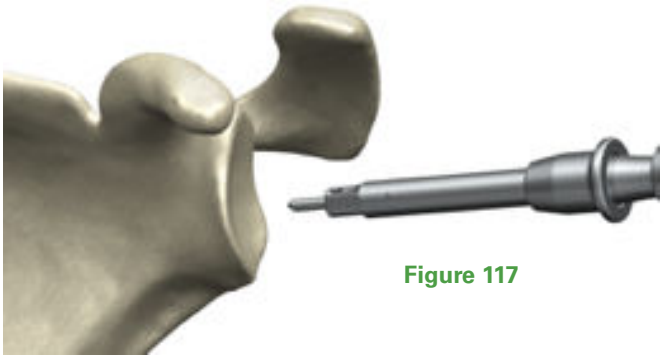


Figure 117

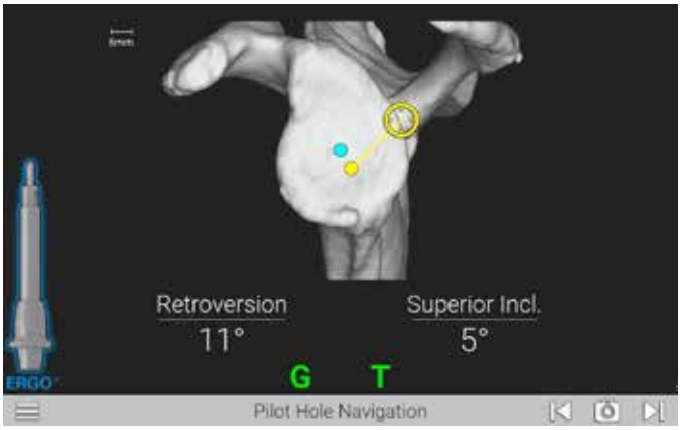


Figure 118



Figure 119

STEP 1: PILOT TIP DRILL

Attach the **T-Tracke**r to the **Pilot-tip Driver (531-55-00)**.

Use the Pilot-tip Driver to drill the glenoid pilot hole *(Figure 117)*.

Follow the on-screen guidance to place the components according to the plan *(Figure 118)*. Both the pilot hole and K-Wire insertion screens are guided in a similar fashion with real-time feedback on the position of the Driver and K-Wire Guide.

Press the Next arrow to proceed.

- For positioning of the Drill, the tip of the Drill is indicated by a yellow dot.
- The planned position is indicated by a blue dot.

The orientation is guided by the circular crosshair indicator. When the target is perfectly aligned, the screen will display the crosshair superimposed on the yellow dot *(Figure 119)*. Follow the on-screen guidance to drill the center.

Note: *Avoid applying a bending force to the GPS Driver or using the GPS Driver to retract the humeral head as this may cause fracture of the pilot tip feature.*

Note: *The numbers are displayed according to Friedman axis.*

WARNING: *Don't assemble or disassemble devices in the surgical field.*

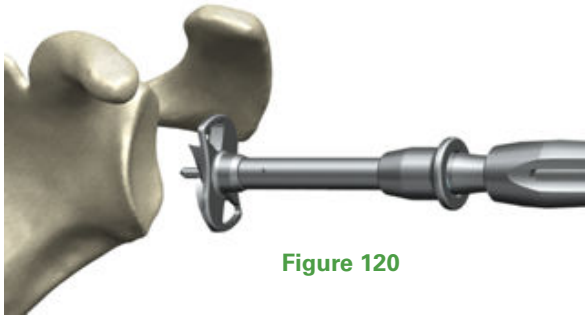


Figure 120

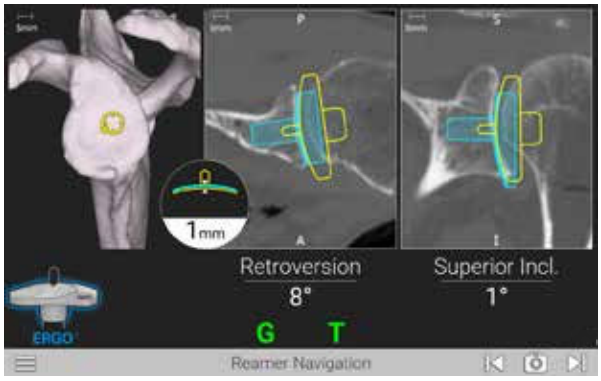


Figure 121

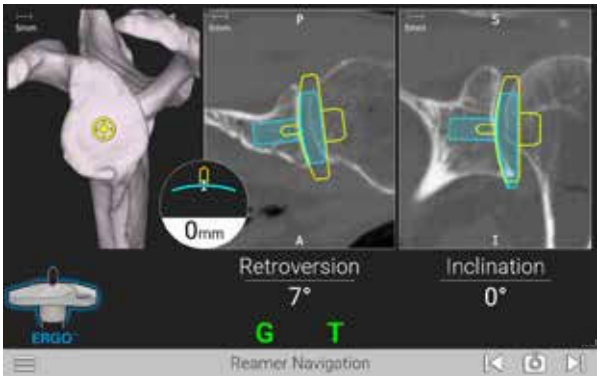


Figure 122

STEP 2: GLENOID REAMING

Select a **Reverse Reamer** per the Equinoxe Ergo surgical technique (OPTECH-000204) and attach it to the **Pilot-tip Driver** *(Figure 120)*.

Follow the on-screen guidance to ream according to the plan *(Figure 121)*. The reaming screen is guided in a similar fashion to the pilot-hole guidance, with real-time feedback on the position of the pilot-tip and reamer curvature relative to the planned depth *(Figure 122)*.

Press the Next arrow to proceed and detach the reamer.

Note: *When preparing for augmented glenoid components, be aware that the drilling axis is different from the reaming axis. The system accounts for this; the surgeon does not need to adjust for this mismatch.*

	Implant	Implant Length (mm)	Drill to Use	Drill Flute Length (mm)	Overdrill Amount (mm)
REVERSE	Glenoid Baseplate - Standard	16.8	STD	19.3	2.5
	Glenoid Baseplate - 10° Superior Augment	18.3	STD	19.3	1
	Glenoid Baseplate - 8° Posterior Augment	16.8	STD	19.3	2.5
	Glenoid Baseplate – 10mm Extended Cage	26.8	EXT	25.3	-1.5*
	Glenoid Baseplate - Superior Posterior Augment	23.3	EXT	25.3	2
SMALL REVERSE	Small Glenoid Baseplate - Standard	13.1	SHORT	15.6	2.5
	Small Glenoid Baseplate - 10° Superior Augment	14.3	SHORT	15.6	1.3
	Small Glenoid Baseplate - 8° Posterior Augment	13.9	SHORT	15.6	1.7
	Small Glenoid Baseplate - 10mm Extended Cage	23.1	EXT	25.3	2.2
	Small Glenoid Baseplate - Superior Posterior Augment	18	STD	19.3	1.3

Extended Drill
Standard Drill
Short Drill

Note: *Not all instruments and implants are available in every market.*

**Drill into the native glenoid bone first, and then add the graft and drill into the graft, as the drill is short.*

Note: *GPS Ergo Center Drills are coated to indicate size, reflected in the cell color. These color indications are also present on the relevant GPS screens. The short GPS Ergo drill is left uncoated (silver), the standard GPS Ergo drill is gold coated, and the extended GPS Ergo drill is rose-gold coated.*

Table 2

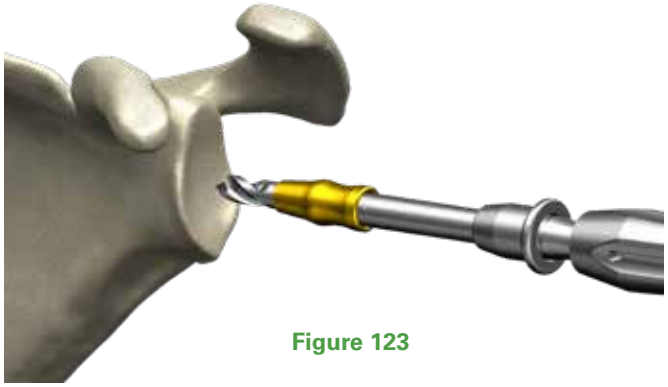


Figure 123

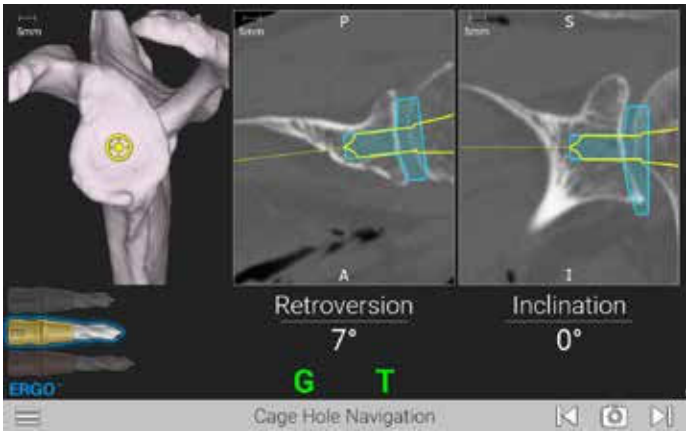


Figure 124

STEP 3: CAGE DRILL GUIDANCE

Attach the corresponding **GPS Ergo Center Drill** to the **Pilot-tip Driver**. Be sure to use the correct drill based on the implant being used, refer to *Table 2* above. Refer to the indicated size on screen *(Figures 123 and 124)*.

DRILLING

Drill the center cage hole for the planned **Baseplate Implant** *(Figure 124)*.

Once the drill is fully seated, the surgeon may advance to the next screen, **but do not take the drill out of the bone**.

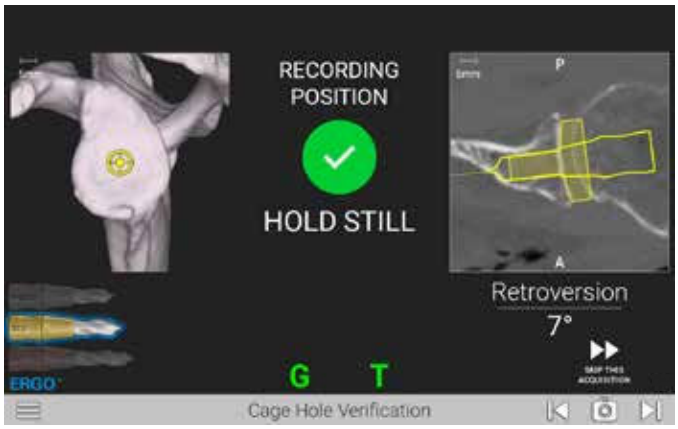


Figure 125

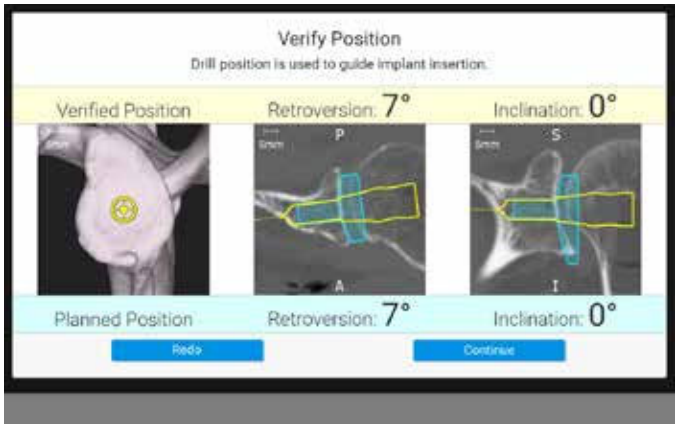


Figure 126

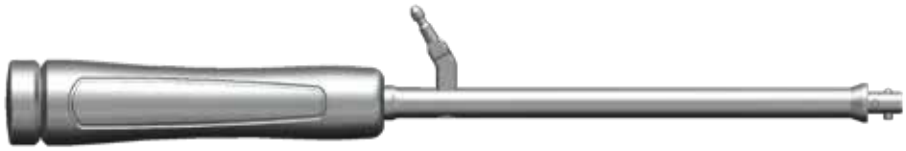
VERIFY POSITION

With the drill still fully seated in the bone, hold the Pilot-tip Driver in place over the drilled axis to capture the position of the planned implant *(Figure 125)*. The system will adjust the original plan to where the drill was actually placed. The system will advance to the next screen automatically, accurately recording the drill axis location and orientation.

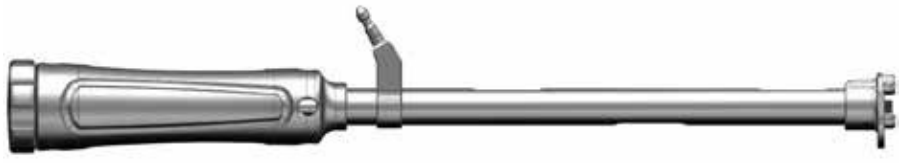
A pop-up will appear showing the verified position of the drill vs. the planned position *(Figure 126)*. If the surgeon would like to re-do the digitization, press Re-do. If the surgeon accepts the digitization, press Continue.

After removing the T-tracker from the GPS Ergo Driver, carefully place it on the GPS Impactor Handle or GPS Reverse Inserter Handle.

Baseplate Inserter Chart



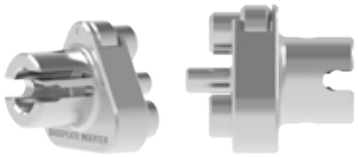
GPS Impactor Handle



GPS Reverse Inserter Handle

Figure 127

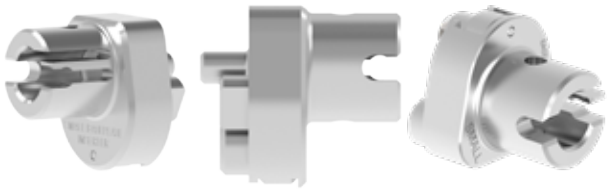
GPS Impactor Handle Compatible Baseplate Inserters



321-19-13 — Ergo Inserter (Pilot)



321-19-14 — Ergo Inserter



321-35-23 and 321-35-24 —
Ergo Small Reverse Baseplate Inserter

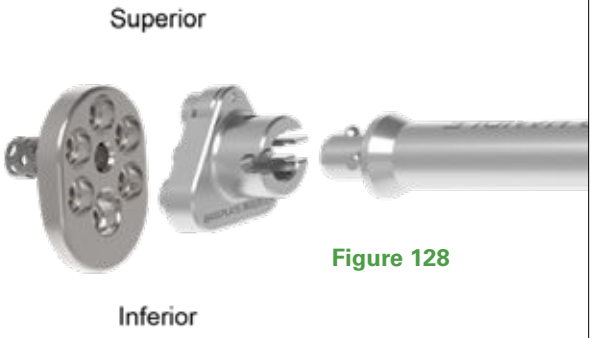


Figure 128



Figure 129

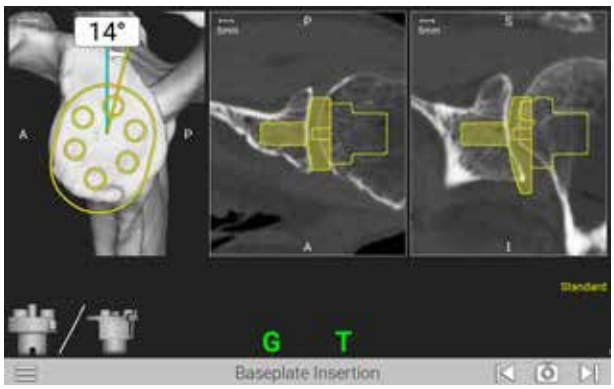


Figure 130



Figure 131

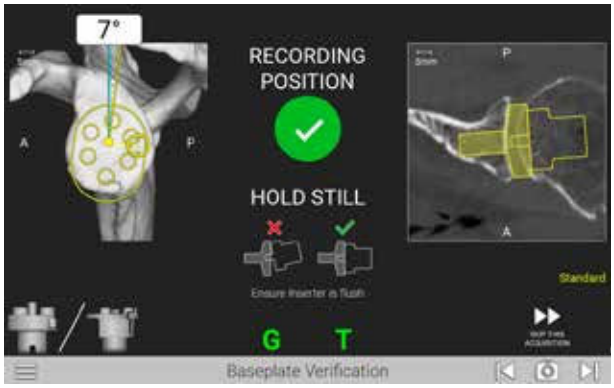


Figure 132

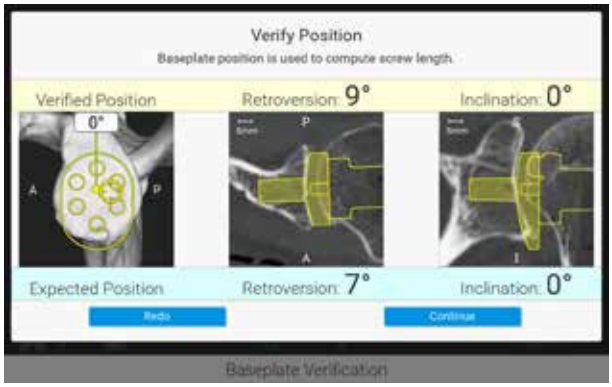


Figure 133

STEP 4A: IMPLANT INSERTION

GPS IMPACTOR HANDLE

Attach the appropriate corresponding reverse baseplate Impactor Tip to the **GPS Impactor Handle (531-07-05)** *(Figure 128)*. Attach the T-Tracker to the Handle (ensuring left for left, right for right) *(Figure 129)*.

Note: *Ensure the superior portion of the implant is always oriented in the same direction as the Tracker (Figures 127).*

Note: *It is helpful to utilize a "tug test" both rotationally and vertically to ensure the tracker is properly fixated on the instrument and to ensure it does not move.*

WARNING: *Don't assemble or disassemble devices in the surgical field.*

The blue line represents the planned angle of the implant's rotation and will always be facing vertically *(Figure 130)*. Because of this, the surgeon might notice that the scapula is rotated on this step. Align the blue and yellow dots as done previously, while referencing the angular measurements, to impact the implant based on the plan *(Figure 131)*.

VERIFY POSITION

After implanting, hold the Impactor Handle and Inserter still and flush against the implant face. Press the Next button on the screen to capture the position of the implant placement, which will adjust the original plan to where the surgeon placed the implant *(Figure 131)*. Ensure the impactor handle is seated flush to the face of the baseplate while verifying its position *(Figure 132)*.

A pop-up will appear showing the verified position of the drill vs. the planned position. If the surgeon would like to re-do the digitization, press Re-do. If the surgeon accepts the digitization, press Continue *(Figure 133)*.

After removing the T-tracker from the GPS Impactor Handle, carefully place it on the GPS Driver.

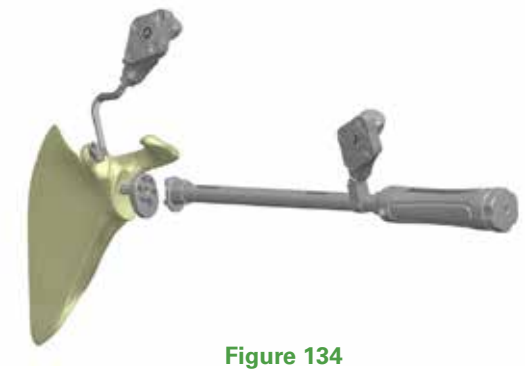


Figure 134

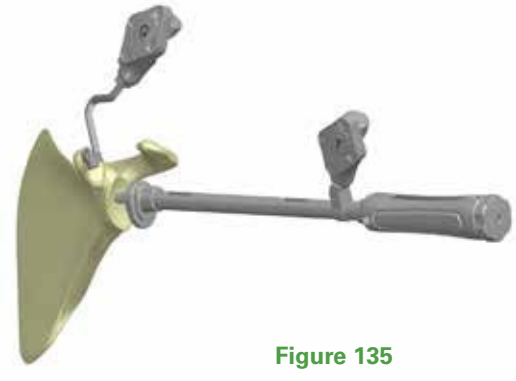


Figure 135

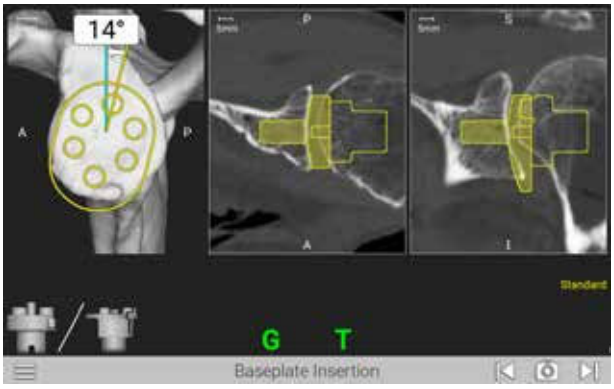


Figure 136

STEP 4B: IMPLANT INSERTION

GPS REVERSE INSERTER HANDLE

Attach the T-Tracker to the **GPS Reverse Inserter Handle (531-07-07)** (ensure left for left, right for right). Place the planned baseplate onto the tip of the Reverse Inserter Handle and use the knob at the top of the Reverse Inserter Handle to screw it in the planned baseplate *(Figures 134 and 135)*.

Align the blue and yellow dots as done previously, while referencing the angular measurements, to impact the implant based on the plan. The blue line represents the planned angle of the implant's rotation and will always be facing vertically. Because of this, the surgeon might notice that the scapula is rotated on this step. Once the planned Baseplate is fully seated on the Glenoid after impaction, you may advance to the next screen, but do not remove the GPS Reverse Inserter Handle from the baseplate *(Figure 136)*.

Note: *While detaching the baseplate with the knob feature, make sure to support the handle with other hand to maintain the inserter orientation.*

Note: *It is helpful to utilize a "tug test" both rotationally and vertically to ensure the tracker is properly fixated on the instrument and to ensure it does not move.*

Note: *The Reverse Inserter Handle is compatible with both Standard Baseplate and Small Baseplate.*

Note: *For small baseplates, slide implant over the rTSA Handle's peg features, then pre-load the top peg's flexure while rotating the handle's knob.*



Figure 137

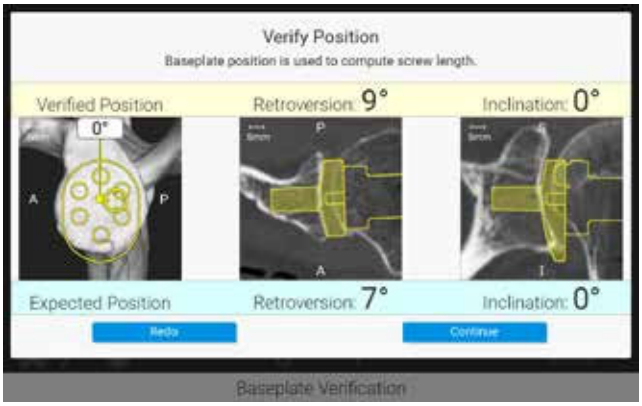


Figure 138

VERIFY POSITION

After implanting, hold the GPS Reverse Inserter Handle still and flush against the implant face. Press the Next button on the screen to capture the position of the implant placement, which will adjust the original plan to where the surgeon placed the implant *(Figure 137)*.

A pop-up will appear showing the verified position of the drill vs. the planned position. If the surgeon would like to re-do the digitization, press Re-do. If the surgeon accepts the digitization, press Continue *(Figure 138)*.

Using the knob at the top of the Reverse Inserter Handle, make sure to turn it counter-clockwise to unscrew it from the impacted.

Note: *Always ensure the Inserter Handle is adequately supported after baseplate insertion until it's disconnected from the baseplate.*



Figure 139



Figure 140

STEP 5: COMPRESSION SCREW NAVIGATION

Attach the sterile packed **Ergo GPS 3.2mm Drill (531-55-88)** to the **GPS Driver**. The Ergo GPS 3.2mm Drill is sterile packed specifically for use with GPS. Note that the sterile-packed GPS Ergo Reverse drill bit does not have the colors indicated on the drill. Re-attach the T-Tracker onto the GPS Driver *(Figure 139)*.

Next, clip the **GPS 3.2mm Drill Guide (531-55-09)** to the **Ergo GPS 3.2mm Drill** *(Figure 140)*. The surgeon can use the standard Ergo Drill Guide and confirm depth with **Ergo Depth Gauge (321-19-09)** or the new GPS 3.2mm Drill Guide when navigating the screw placement.

Note: *The surgeon should drill in reverse upon removal of the drill bit from the bone.*

Note: *The baseplate holes and guide tip should be cleared of debris before screwing holes, as this can affect the depth indication (on the screen and on the drills).*



Figure 141

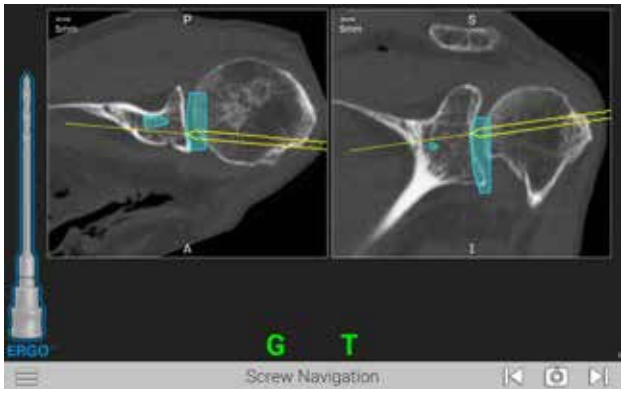


Figure 142

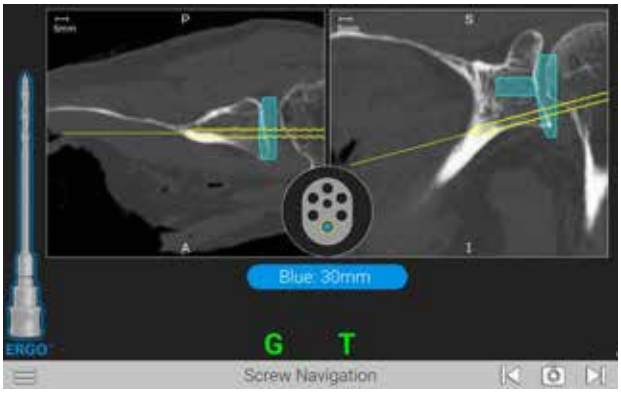


Figure 143

Place the **GPS 3.2mm Drill Guide** tip into the preferred hole of the Glenoid Baseplate and prepare to drill the **3.2mm Drill** hole *(Figure 141)*.

The screen will display the trajectory of the Drill to allow for aiming for bicortical fixation, for example *(Figures 142 and 143)*. If the implant placement has successfully digitized, information related to the screw length will appear on the screen, along with active screw hole location.

If not successfully digitized, information about screw length will NOT appear on the screen. Use the Ergo 3.2mm drill guide sleeve or a depth gauge to measure the screw length and location.

Drill the **Ergo GPS 3.2mm Drill** through the **3.2mm Guide** and Baseplate hole. Once finished drilling the holes, be sure to disconnect the 3.2mm Drill from the Driver and remove it from the Drill Guide.

Note: *Ensure the drill depth indicator reaches the base of the numeric engraving for the respective screw length.*

Once the GPS technique is complete, remove the G Tracker and Coracoid Block before Glenosphere insertion.

Complete remaining surgical steps per Equinoxe surgical technique (OPTECH-000204).

ERGO INSTRUMENT LISTING

CATALOG NUMBER	PART DESCRIPTION
	GPS Station V2+ or V2C
I00025 or I00020	Main GPS Unit
I00021	Power Supply
J00010	Lower Mounting Arm
J00012, J00020 or J00065	Upper Mounting Arm
J00011	GPS Bedrail Clamp
I00022	GPS Travel Case



	GPS Station V3
I00030	Main GPS Unit
I00031	Power Supply
J00010	Lower Mounting Arm
J00065	Upper Mounting Arm
J00011	GPS Bedrail Clamp
I00032	GPS Travel Case



	GPS Trackers
A10003	GPS Probe
A00203	GPS Probe V2



A10005	GPS T-Tracker
A00205	GPS T-Tracker V2



A10006	GPS G-Tracker
A00206	GPS G-Tracker V2



Note: F Tracker currently used for knee and ankle cases only

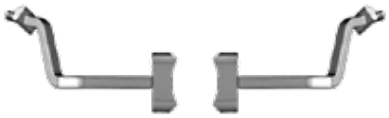
	GPS Shoulder Ergo Mechanical Instruments
531-07-05	Impactor Handle



531-07-07	GPS Inserter Handle



531-01-03	Coracoid Block Left
531-01-04	Coracoid Block Right



531-55-00	Ergo GPS Pilot-tip Driver



CATALOG NUMBER	PART DESCRIPTION	
531-55-09	Ergo GPS 3.2mm Drill Guide	
531-55-62	Ergo GPS Pilot-tip Center Drill Bits, Short (silver)	
531-55-64	Ergo GPS Pilot-tip Center Drill Bits, STD (gold)	
531-55-66	Ergo GPS Pilot-tip Center Drill Bits, EXT (rose gold)	
521-78-11	Pin Driver, Short Low Profile	
	GPS Shoulder Ergo Anatomic Instruments	
531-27-04	Peripheral Peg Drill Guide, Left	
531-27-05	Peripheral Peg Drill Guide, Right	
531-27-14	8 Degree Posterior Augment Peripheral Peg Drill Guide, Left	
531-27-15	8 Degree Posterior Augment Peripheral Peg Drill Guide, Right	
531-29-14	16 Degree Posterior Augment Peripheral Peg Drill Guide, Left	
531-29-15	16 Degree Posterior Augment Peripheral Peg Drill Guide, Right	
531-07-50	Shoulder GPS Hudson Adapter	

ERGO INSTRUMENT LISTING

CATALOG NUMBER	PART DESCRIPTION	
	GPS Shoulder Disposables	
531-78-20	GPS Shoulder Disposable Hex Pins	
531-55-88	Ergo GPS Disposable Reverse Drill	
A10012 A10032	GPS Implant Kit V2 GPS V3 Disposable *Includes sterile drape, batteries and cleaning wipe*	



Figure 144

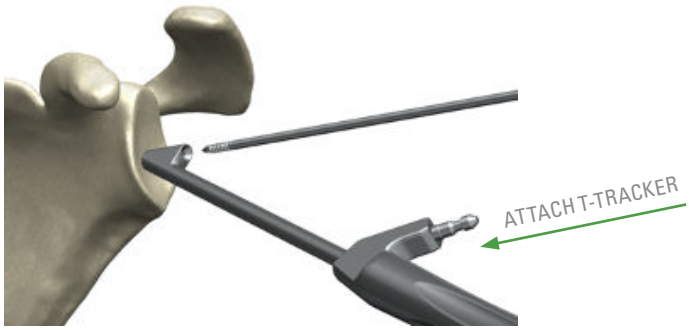


Figure 145

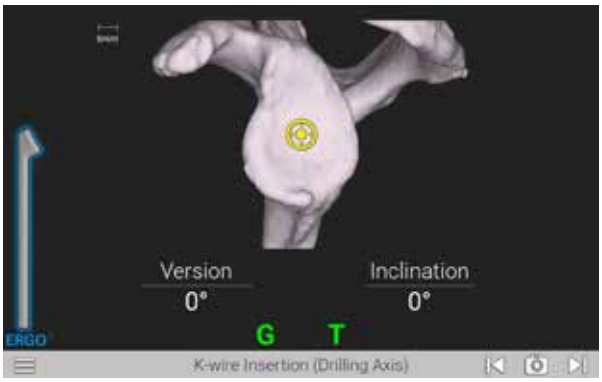


Figure 146

STEP 1: K-WIRE INSERTION FOR REAMING

At the beginning of the workflow, the surgeon can choose to do cannulated reaming only, or cannulated drilling and reaming *(Figure 144)*.

For the cannulated workflow, attach the T-Tracker to the **GPS K-Wire Guide (531-55-26)** *(Figure 145)* and insert a **Ergo 3.2mm K-Wire (321-52-08/09/10)** to guide the placement of the wire.

Follow the on-screen guidance to place the components according to the plan.

For positioning of the drill, the tip of the drill is indicated by a yellow dot.

The planned position is indicated by a blue dot.

The orientation is guided by the circular cross-hair indicator. When the target is perfectly aligned, the screen will display the cross-hair superimposed on the yellow dot. Press the Next arrow to proceed *(Figure 146)*.



Figure 147



Figure 148

Note: *If using a standard (non-augmented) glenoid, no options will show as there is no difference in the reaming and drill axis.*

Note: *It is helpful to utilize a "tug test" both rotationally and vertically to ensure the tracker is properly fixated on the instrument and to ensure it does not move.*

Note: *Avoid applying a bending force to the GPS Driver or using the GPS Driver to retract the humeral head as this may cause fracture of the 3.2mm K-Wire or pilot tip feature.*

Note: *The numbers are displayed according to Friedman axis.*

Once the K-Wire is fixed in the bone, remove the T-Tracker from the GPS K-Wire Guide *(Figure 147)* and attach to the **GPS Ergo Cannulated Driver (531-55-01)** *(Figure 148)*.

Note: *At any point in the procedure, the surgeon may use the probe to advance to the next screen by pressing the forward button twice while facing the camera.*

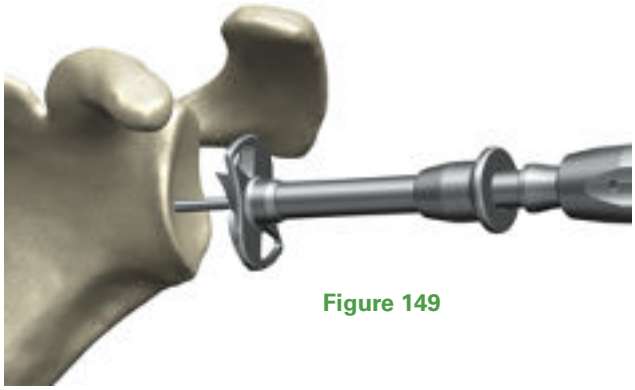


Figure 149

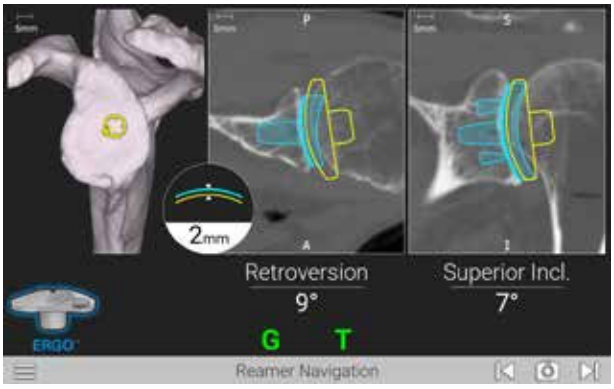


Figure 150

STEP 2: GLENOID REAMING

Select an **Anatomic Reamer** per the Equinoxe Ergo surgical technique (OPTECH-000204) and attach it to the **GPS Ergo Cannulated Driver** *(Figure 149)*.

Follow the on-screen guidance to ream according to the plan. The reaming screen is guided in a similar fashion as the K-Wire Guide, with real-time feedback on the position of the reamer curvature relative to the planned depth *(Figure 150)*.

If not using the K-Wire for the center hole, the K-Wire can be removed.

Press the Next arrow to proceed.

Note: *When preparing for augmented glenoid components, be aware that the drilling axis is different from the reaming axis. The system accounts for this; the surgeon does not need to adjust for this mismatch.*

	Implant	Implant Length (mm)	Drill to Use	Drill Flute Length (mm)	Overdrill Amount (mm)
ANATOMIC	Cage Glenoid	14.5	STD	19.3	4.8
	Cage Glenoid - 8° Augment	15.9	STD	19.3	3.4
	Laser Cage Glenoid	14.6	STD	19.3	4.7
	Laser Cage Glenoid - 8 degree Augment	15.9	STD	19.3	3.4
	Pegged Glenoid - Standard	11.7	STD	19.3	7.6
	Pegged Glenoid - 8° Posterior Augment	11.6	STD	19.3	7.7
	Pegged Glenoid - 16° Posterior Augment	12.2	STD	19.3	7.1
	Keeled	16	STD	19.3	3.3

Note: *Not all instruments and implants are available in every market.*

Note: *GPS Ergo Center Drills are coated to indicate size, reflected in the cell color. These color indications are also present on the relevant GPS screens. The standard GPS Ergo Drill is gold coated.*

Table 3

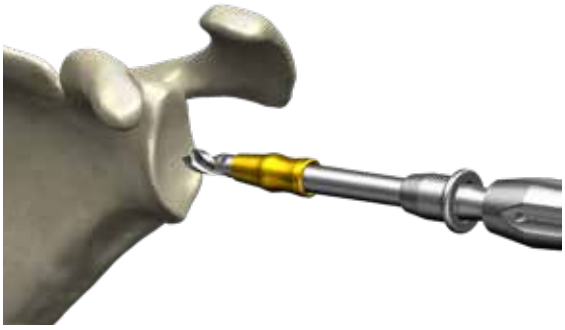


Figure 151

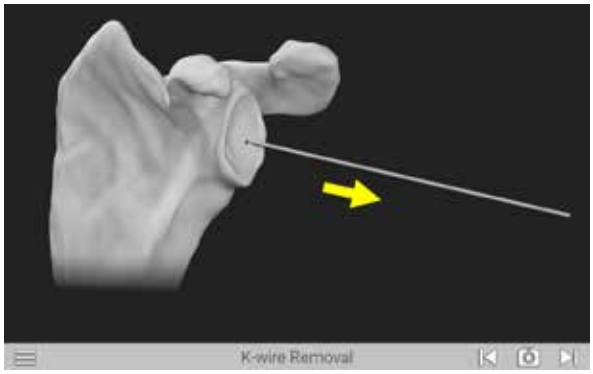


Figure 152

STEP 3: CENTER HOLE

CANNULATING BOTH REAMER AND CENTER DRILL:

In the case of a non-augment, when choosing to **cannulate both the center hole and reamer**, attach the **GPS Ergo Center Cage Drill** to the **Cannulated Driver** *(Figure 151)*. Be sure to use the correct drill based on the implant being used. Refer to the indicated size on screen or *Table 3* above. Once the K-Wire is placed, guide the Center Drill and Driver assembly over the 3.2mm K-Wire.

In the case of an augment, when choosing to cannulate both the center hole and reamer, remove the K-Wire and repeat the K-Wire insertion from Step 1 to prepare the 3.2mm K-Wire for the center drill axis (different from reamer axis) *(Figure 152)*. Then, use the cannulated GPS Ergo Center Cage Drill with the same color scheme.

CANNULATING REAMER AND PILOT TIP CENTER DRILL:

In the case of an augment, when choosing to cannulate the reamer but use the **Pilot Tip Center Drill**. Be sure to use the correct Pilot Tip Drill based on the implant being used.

Note: *Do not perform cannulated reaming and then use a pilot tip center drill for cases utilizing a non-augmented Glenoid component.*

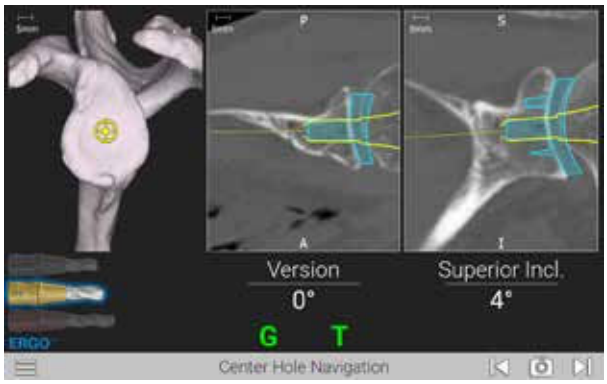


Figure 153

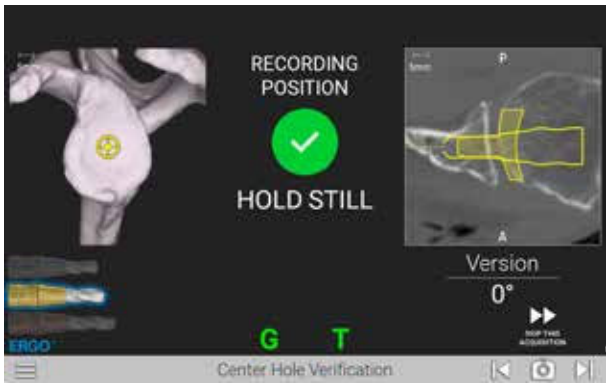


Figure 154

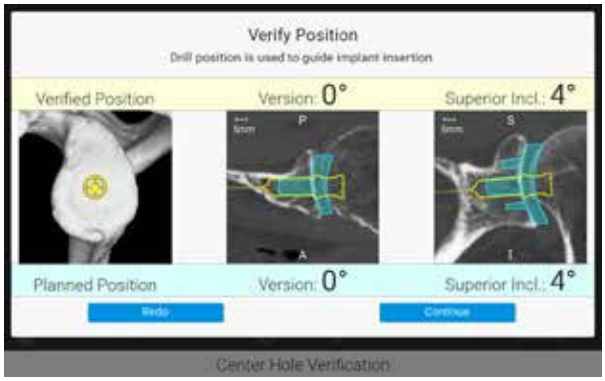


Figure 155

DRILLING

Drill the center cage hole for the Anatomic Glenoid using the on-screen guidance with the cross-hairs, as used in the previous steps. Once the drill is fully seated, the surgeon may advance to the next screen, **but do not take the drill out of the bone** *(Figure 153)*.

Note: *At any point in the procedure, the surgeon may use the probe to advance to the next screen by pressing the forward button twice while facing the camera.*

VERIFY POSITION

With the drill still fully seated in the bone, hold the Drill in place over the drilled axis to capture the position of the planned implant. The system will adjust the original plan to where the drill was actually placed. The system will advance to the next step automatically, accurately recording the drill axis location and orientation *(Figure 154)*.

A pop-up will appear showing the verified position of the drill vs. the planned position. If the surgeon would like to re-do the digitization, press Re-do. If the surgeon accepts the digitization, press Continue *(Figure 155)*.

Note: *Refer to the Ergo GPS Operative Technique for the full surgical technique.*

CANNULATED REVERSE SHOULDER



Figure 156

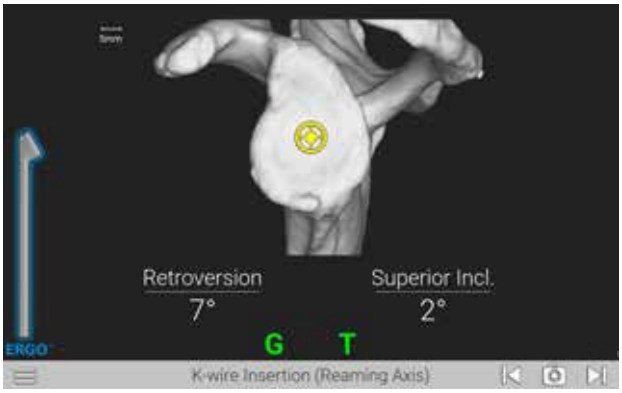


Figure 157

STEP 1: K-WIRE INSERTION FOR REAMING

For the cannulated workflow, attach the T-Tracker to the **GPS K-Wire Guide (531-55-26)** and insert a **Ergo 3.2mm K-Wire (321-52-08/09/10)** to guide the placement of the wire *(Figure 156)*.

Follow the on-screen guidance to place the components according to the plan. The orientation is guided by the circular cross-hair indicator. When the target is perfectly aligned, the screen will display the cross-hair superimposed on the yellow dot *(Figure 157)*.

- For positioning of the Drill, the tip of the Drill is indicated by a yellow dot.
- The planned position is indicated by a blue dot.

Follow the on-screen guidance to drill the center hole. Press the Next arrow to proceed.

Note: *Avoid applying a bending force to the K-Wire Guide or using the K-Wire Guide to retract the humeral head* as this may cause fracture of the 3.2mm K-Wire.

Note: *The numbers shown for version and inclination are displayed according to the preoperative plan.*



Figure 158

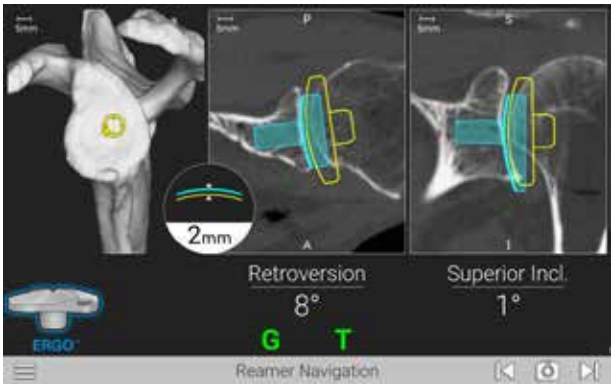


Figure 159

STEP 2: GLENOID REAMING

Select an **Ergo Reverse Reamer** per the Equinoxe Ergo surgical technique (OPTECH-000204) and attach it to the **GPS Ergo Cannulated Driver (531-55-01)** *(Figure 158)*.

Follow the on-screen guidance to ream according to the plan. The reaming screen is guided in a similar fashion as the K-Wire Guide, with real-time feedback on the position of the reamer curvature relative to the planned depth *(Figure 159)*.

Press the Next arrow to proceed.

Note: *When preparing for augmented glenoid components, be aware that the drilling axis is different from the reaming axis. The system accounts for this; the surgeon does not need to adjust for this mismatch.*

DETAILED OPERATIVE TECHNIQUE

CANNULATED REVERSE SHOULDER

	Implant	Implant Length (mm)	Drill to Use	Drill Flute Length (mm)	Overdrill Amount (mm)
REVERSE	Glenoid Baseplate - Standard	16.8	STD	19.3	2.5
	Glenoid Baseplate - 10° Superior Augment	18.3	STD	19.3	1
	Glenoid Baseplate - 8° Posterior Augment	16.8	STD	19.3	2.5
	Glenoid Baseplate – 10mm Extended Cage	26.8	EXT	25.3	-1.5*
	Glenoid Baseplate - Superior Posterior Augment	23.3	EXT	25.3	2
SMALL REVERSE	Small Glenoid Baseplate - Standard	13.1	SHORT	15.6	2.5
	Small Glenoid Baseplate - 10° Superior Augment	14.3	SHORT	15.6	1.3
	Small Glenoid Baseplate - 8° Posterior Augment	13.9	SHORT	15.6	1.7
	Small Glenoid Baseplate - 10mm Extended Cage	23.1	EXT	25.3	2.2
	Small Glenoid Baseplate - Superior Posterior Augment	18	STD	19.3	1.3

Extended Drill
Standard Drill
Short Drill

Note: *Not all instruments and implants are available in every market.*

**Drill into the native glenoid bone first, and then add the graft and drill into the graft, as the drill is short.*

Note: *GPS Ergo Center Drills are coated to indicate size, reflected in the cell color. These color indications are also present on the relevant GPS screens. The short GPS Ergo drill is left uncoated, the standard GPS Ergo drill is gold coated, and the extended GPS Ergo drill is rose-gold coated.*

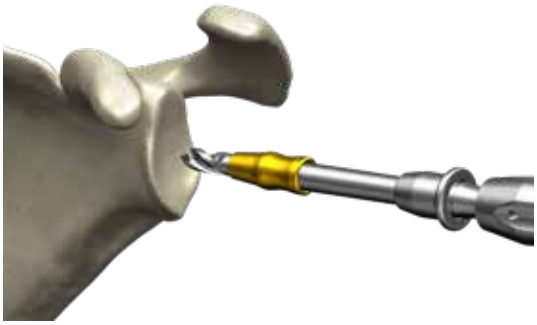


Figure 160

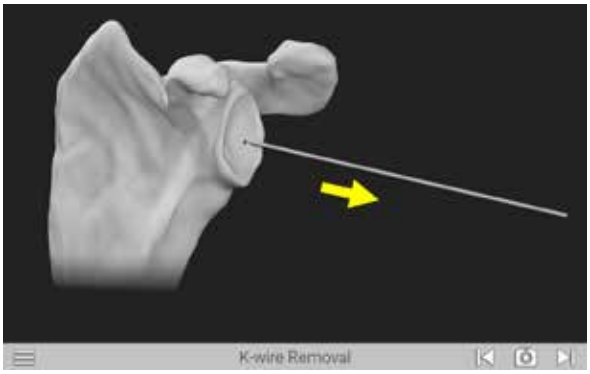


Figure 161

STEP 3: CENTER HOLE

After reaming, attach the T-Tracker to the GPS Driver.

Note: *It is helpful to utilize a "tug test" both rotationally and vertically to ensure the tracker is properly fixated on the instrument and to ensure it does not move.*

CANNULATING BOTH REAMER AND CENTER DRILL:

In the case of an non-augment, once K-Wire is placed, guide the Center Drill and Driver assembly over the 3.2mm K-Wire.

In the case of an augment, when choosing to **cannulate both the center hole and reamer**, remove the K-Wire *(Figure 160)* and repeat the **K-Wire Insertion** from **Step 1** to prepare the 3.2mm K-Wire for the center drill axis (different from reamer axis).

Then, use the cannulated GPS Ergo Center Cage Drills with the same color scheme.

CANNULATING REAMER AND PILOT TIP CENTER DRILL:

In the case of an augment, when choosing to cannulate the reamer but use the Pilot Tip Center Drill, remove the K-Wire *(Figure 161)*. Be sure to use the correct Pilot Tip Drill based on the implant being used, refer to table above.

Note: *Do not perform cannulated reaming and then use a pilot tip center drill for cases utilizing a non-augmented Glenoid component.*

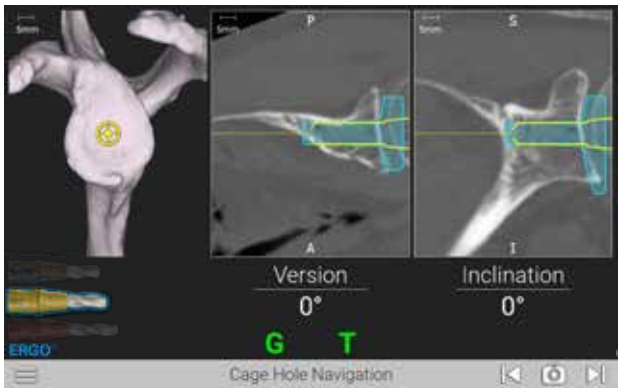


Figure 162

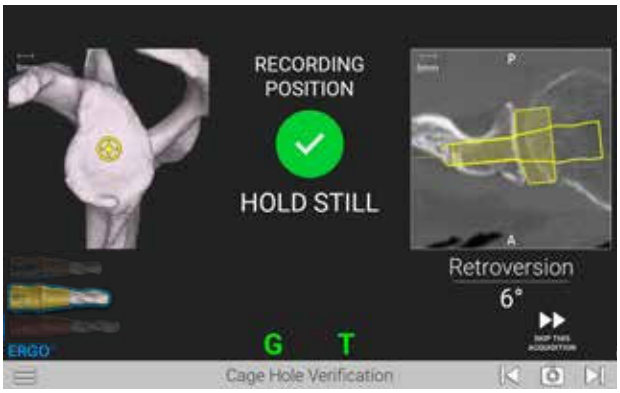


Figure 163

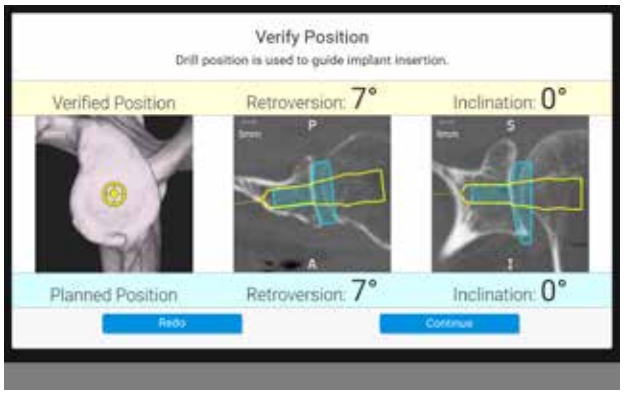


Figure 164

DRILLING

Drill the center cage hole for the Glenoid Implant. Once the drill is fully seated, the surgeon may advance to the next screen, but do not take the drill out of the bone *(Figure 162)*.

Note: *At any point in the procedure, the surgeon may use the probe to advance to the next screen by pressing the forward button twice while facing the camera.*

VERIFY POSITION

With the drill still fully seated in the bone, hold the Drill in place over the drilled axis to capture the position of the planned implant. The system will adjust the original plan to where the drill was actually placed. The system will advance to the next step automatically, accurately recording the drill axis location and orientation *(Figure 163)*.

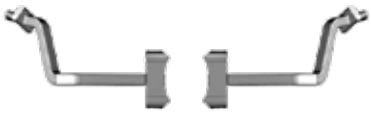
A pop-up will appear showing the verified position of the drill vs. the planned position *(Figure 164)*. If the surgeon would like to re-do the digitization, press Re-do. If the surgeon accepts the digitization, press Continue.

Note: *Refer to the GPS Ergo Operative Technique for the full surgical technique.*

CANNULATED INSTRUMENT LISTING

CATALOG NUMBER	PART DESCRIPTION	
	GPS Station V2+ or V2C	
I00025 or I00020	Main GPS Unit	
I00021	Power Supply	
J00010	Lower Mounting Arm	
J00012, J00020 or J00065	Upper Mounting Arm	
J00011	GPS Bedrail Clamp	
I00022	GPS Travel Case	
	GPS Station V3	
I00030	Main GPS Unit	
I00031	Power Supply	
J00010	Lower Mounting Arm	
J00065	Upper Mounting Arm	
J00011	GPS Bedrail Clamp	
I00032	GPS Travel Case	
	GPS Trackers	
A10003	GPS Probe	
A00203	GPS Probe V2	
A10005	GPS T-Tracker	
A00205	GPS T-Tracker V2	
A10006	GPS G-Tracker	
A00206	GPS G-Tracker V2	

Note: F Tracker currently used for knee and ankle cases only

	GPS Shoulder Ergo Cannulated Mechanical Instruments	
531-07-05	Impactor Handle	
531-07-07	GPS Inserter Handle	
531-01-03	Coracoid Block Left	
531-01-04	Coracoid Block Right	
531-55-01	Ergo GPS Cannulated Driver	
531-55-09	Ergo GPS 3.2mm Drill Guide	

CATALOG NUMBER	PART DESCRIPTION	
531-55-63	Ergo GPS Cannulated Center Drill Bits, Short (silver)	
531-55-65	Ergo GPS Cannulated Center Drill Bits, STD (gold)	
531-55-67	Ergo GPS Cannulated Center Drill Bits, EXT (rose gold)	
531-55-62	Ergo GPS Pilot-tip Center Drill Bits, Short (silver)	
531-55-64	Ergo GPS Pilot-tip Center Drill Bits, STD (gold)	
531-55-66	Ergo GPS Pilot-tip Center Drill Bits, EXT (rose gold)	
521-78-11	Pin Driver, Short Low Profile	
531-55-26	Ergo GPS K-Wire Guide	

GPS Shoulder Disposables

531-78-20	GPS Shoulder Disposable Hex Pins	
531-55-88	Ergo Disposable Reverse Drill	
A10012	GPS Implant Kit V2	
A10032	GPS V3 Disposable *Includes sterile drape, batteries and cleaning wipe*	

ERGO CENTRAL SCREW BASEPLATE



Figure 165

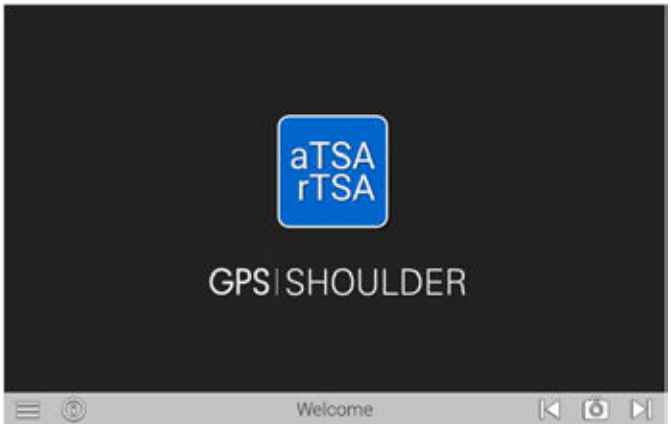


Figure 166



Figure 167

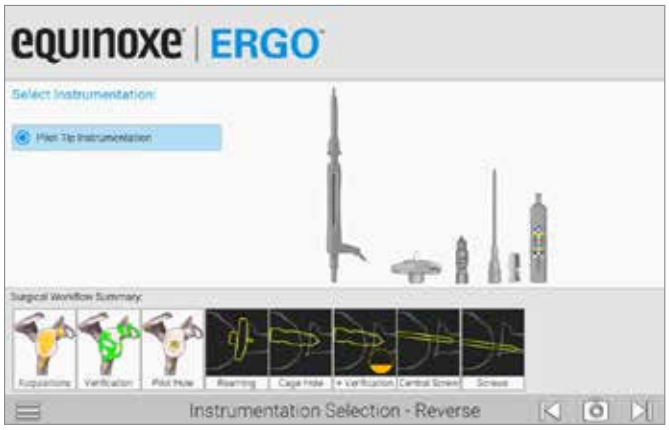


Figure 168

CASE AND PLAN SELECTION

Press the Shoulder Application icon on the GPS unit *(Figures 165 and 166)*. If using a USB to transfer a case, on the Case and Plan Selection screen, select Import Case to import a case. If the case is already on the unit, click the box with the drop down and be sure to select the correct Patient ID. If using the AUGI App to transfer a case, once it is transferred, then click on the drop down menu and be sure to select the correct patient ID. Select on the Central Screw Baseplate plan to navigate with GPS *(Figure 167)*. Ensure the patient information displayed matches the patient in the OR.

Note: *A plan can still be edited or created based on what was imported by pressing the Edit or Create button under the Anatomic or Reverse sections.*

INSTRUMENTATION SELECTION

Next, on the instrumentation selection screen, verify the instrument set being used. If using ERGO Central Screw Baseplate instruments, ensure that the correct Pilot Tip Instrumentation and workflow summary on the screen *(Figure 168)*.

Follow the instructions mentioned in the previous section to confirm the position of the GPS unit and connect trackers.

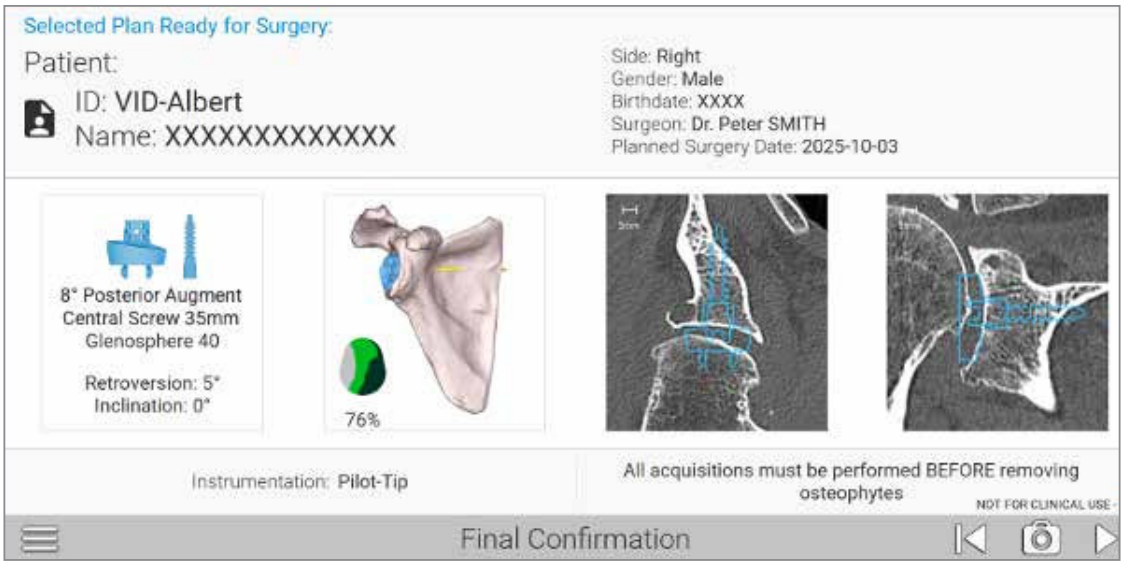


Figure 169

FINAL CONFIRMATION

Once a case and instrument type have been selected, the surgeon will be shown a final confirmation screen that confirms the patient and preoperative plan.

This now includes implant selection, planned version and inclination, implant location, and % backside coverage. Be sure that all acquisitions must be performed before removing osteophytes. reviewing the Station Setup screen after advancing *(Figure 169)*.



Figure 170



Figure 171

STEP 1: PILOT TIP DRILL

Carefully, attach the **T-Tracker** to the **Pilot-tip Driver (531-55-00)**. Ensure the tracker is fixated on the tracker post with the tracker face aiming in the direction of the pilot tip of the driver *(Figure 170)*.

Note: *It is helpful to utilize a "tug test" both rotationally and vertically to ensure the tracker is properly fixated on the instrument and to ensure it does not move.*

Use the Pilot-tip Driver to drill the glenoid pilot hole *(Figure 171)*. Follow the on-screen guidance to orient the GPS Ergo Driver according to the plan.

- For positioning of the drill, the tip of the drill is indicated by a yellow dot.
- The planned position is indicated by a blue dot.

Note: *At any point in the procedure, the surgeon may use the probe to advance to the next screen by pressing the forward button twice while facing the camera.*

Note: *Avoid applying a bending force to the GPS Driver or using the GPS Driver to retract the humeral head as this may cause fracture of the pilot tip feature.*



Figure 172



Figure 173

The orientation is guided by the circular cross-hair indicator. When the target is perfectly aligned, the screen will display the cross-hair superimposed on the yellow dot *(Figures 172 and 173)*.

Press the Next arrow to proceed.

WARNING: *Don't assemble or disassemble devices in the surgical field.*

Note: *The number are displayed according to Friedman axis.*

Note: *The surgeon may deviate from this plan if desired and must reflect the same deviation on the Ream and Central Cage Drill steps. This screen includes an image of the orientation that is synchronized with the CT scan slices to visualize the cortices.*



Figure 174

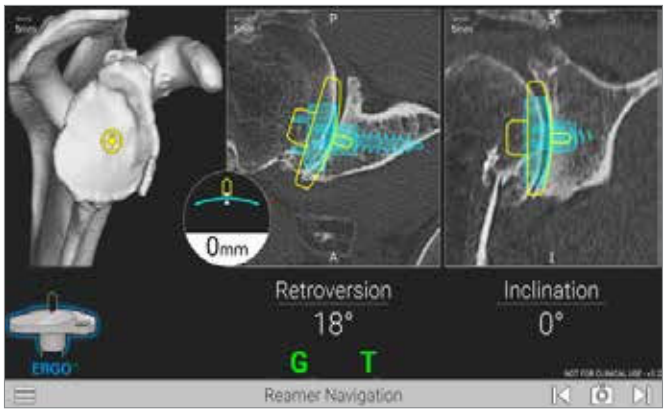


Figure 175

STEP 2: REAMER NAVIGATION

Select a **Reverse Reamer per the Equinoxe Ergo surgical technique (718-01-30)** and attach it to the Pilot-tip Driver *(Figure 174)*. Follow the on-screen guidance to ream according to the plan. The reaming screen is guided in a similar fashion to the pilot-hole guidance, with real-time feedback on the position of the pilot-tip and reamer curvature relative to the planned depth *(Figure 175)*.

Press the Next arrow to proceed and detach the reamer.

Note: *When preparing for augmented glenoid components, be aware that the drilling axis is different from the reaming axis. The system accounts for this; the surgeon does not need to adjust for this mismatch.*

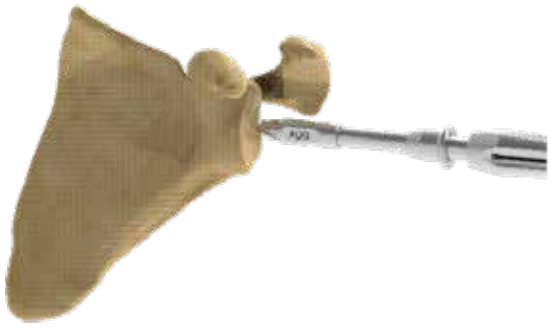


Figure 176

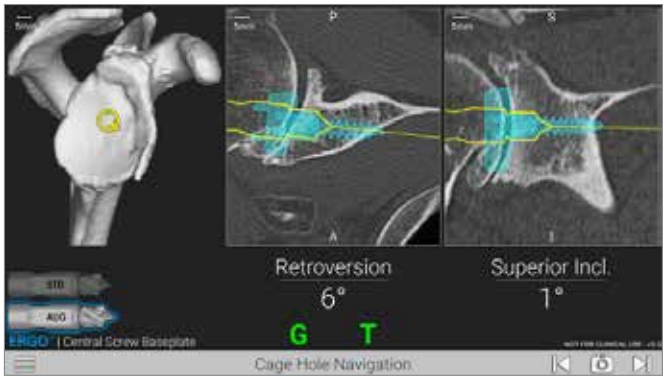


Figure 177

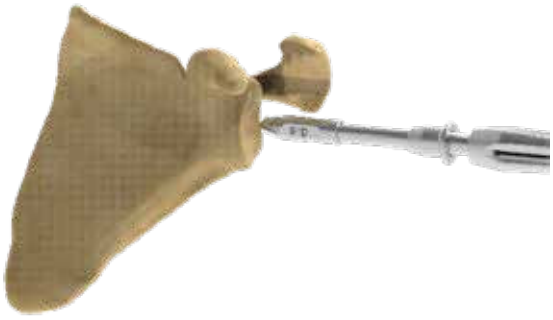


Figure 178

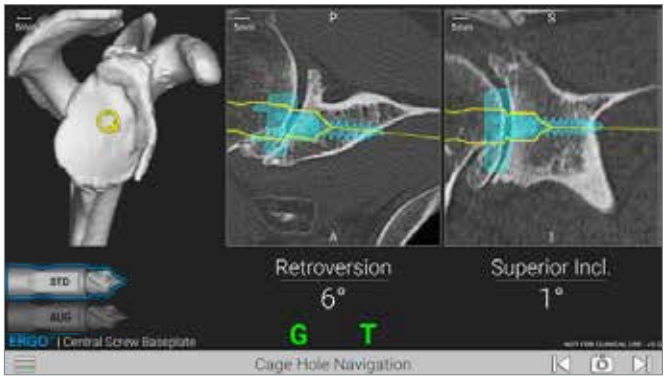


Figure 179

STEP 3: CAGE HOLE NAVIGATION

Attach the corresponding GPS Ergo Central Screw Baseplate Center Drill to the Pilot-tip Driver. Be sure to use the correct drill based on the implant highlighted on the bottom left corner of the screen.

AUGMENT DRILL

If using an augmented Central Screw Baseplate, make sure to drill the center cage hole using the augment **"AUG" center drill (321-52-68)** *(Figures 176 and 177)*.

STANDARD DRILL

If using a standard Central Screw Baseplate, make sure to drill the center cage hole using the standard **"STD" center drill (321-52-69)** *(Figures 178 and 179)*.

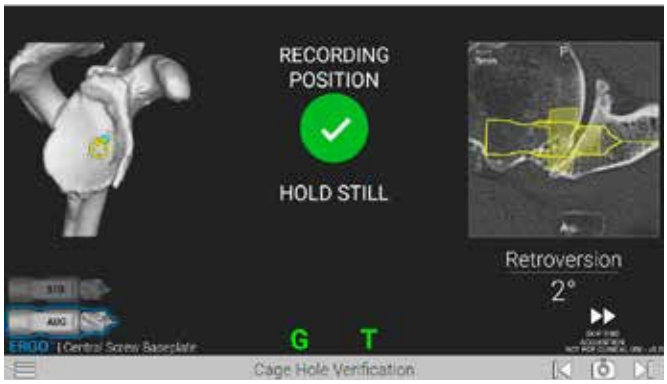


Figure 180

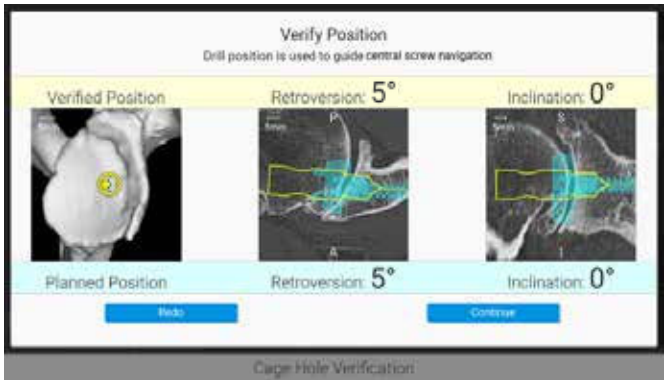


Figure 181

STEP 4: CAGE HOLE VERIFICATION

With the drill still fully seated in the bone, hold the Pilot-tip Driver in place over the drilled axis to capture the position of the cage hole. The system will adjust the original plan to where the drill was actually placed. The system will advance to the next screen automatically, accurately recording the drill axis location and orientation *(Figure 180)*.

CAGE HOLE VERIFICATION

A pop-up will appear showing the verified position of the drill vs. the planned position. If the surgeon would like to re-do the digitization, press Re-do. If the surgeon accepts the digitization, press Continue *(Figure 181)*.



Figure 182



Figure 183

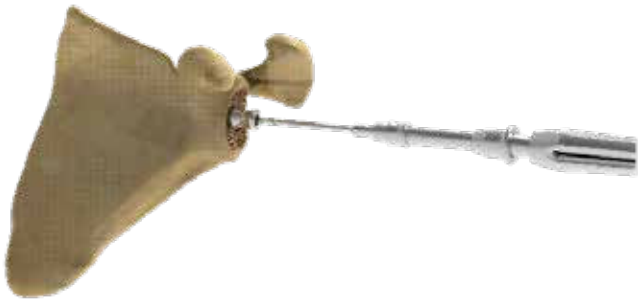


Figure 184

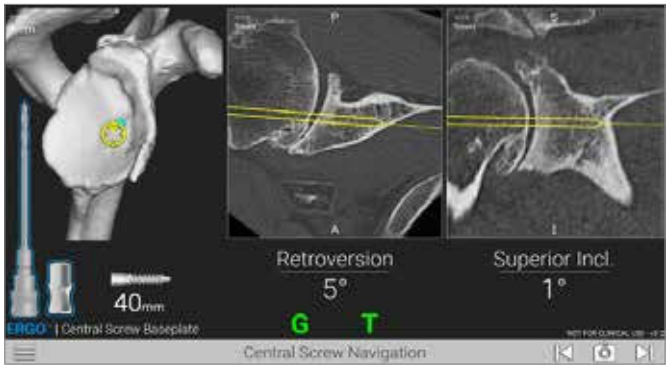


Figure 185

STEP 5: CENTRAL SCREW NAVIGATION

Attach the sterile packed **Ergo GPS 3.2mm Drill (531-55-88)** to the GPS Driver *(Figure 182)*. The Ergo GPS 3.2mm Drill is sterile packed specifically for use with GPS.

Note: *The sterile-packed GPS Ergo Reverse drill bit does not have the colors indicated on the drill.*

Place the **GPS Drill Bushing (321-19-16)** in the drilled hole *(Figures 183 and 184)*. Drill the central screw hole until contact is made with cortical bone based on the plan. The planned length of the Central Compression Screw is indicated on the screen *(Figure 185)*.

Refer to the Equinoxe Central Screw Baseplate operative technique to measure the central screw hole using the Central Screw Baseplate Depth Gauge and for implant insertion.



Figure 186



Figure 187

STEP 6: COMPRESSION SCREW NAVIGATION

The sterile packed **Ergo GPS 3.2mm Drill (531-55-88)** is attached to the **GPS Pilot Tip Driver**. The Ergo GPS 3.2mm Drill is sterile packed specifically for use with GPS.

Note: *The sterile-packed GPS Ergo Reverse drill bit does not have the colors indicated on the drill. Re-attach the T-Tracker onto the GPS Driver.*

Next, clip the **GPS 3.2mm Drill Guide (531-55-09)** to the **Ergo GPS 3.2mm Drill** *(Figures 186 and 187).*

Note: *The surgeon should drill in reverse upon removal of the drill bit from the bone.*

Note: *The baseplate holes and guide tip should be cleared of debris before screwing holes, as this can affect the depth indication (on the drills).*

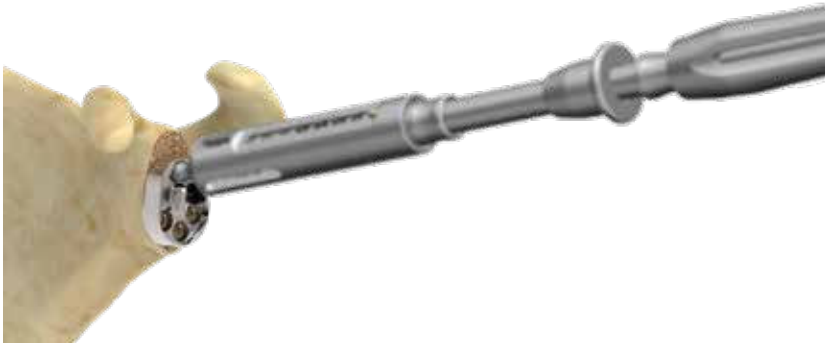


Figure 188

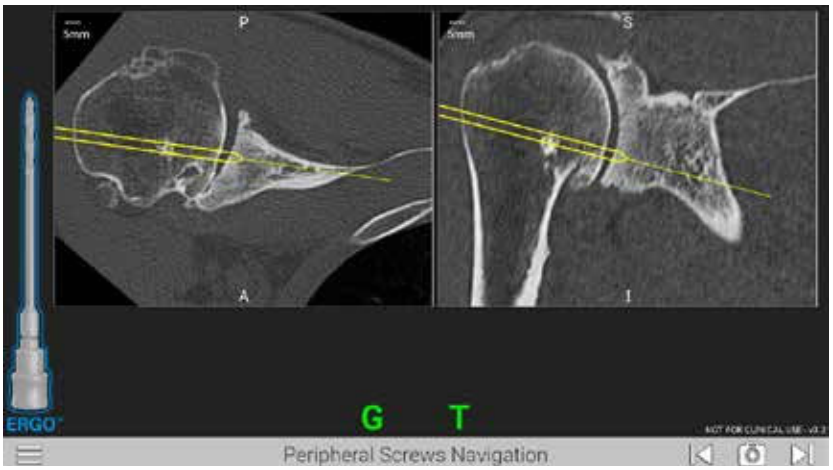


Figure 189

Place the GPS 3.2mm Drill Guide tip into the preferred hole of the Glenoid Baseplate and prepare to drill the 3.2mm Drill hole *(Figure 188)*.

The screen will display the trajectory of the Drill to allow for aiming for bicortical fixation, for example *(Figure 189)*.

Drill the Ergo GPS 3.2mm Drill through the 3.2mm Guide and Baseplate hole. The length of the peripheral screw is indicated on the 3.2mm Drill Guide. Once finished drilling the holes, be sure to disconnect the 3.2mm Drill from the Driver and remove it from the Drill Guide.

Note: *The color of the screws will not be displayed on the screen because the implant insertion step was not navigated and digitized in this version of the software.*

Note: *Ensure the drill depth indicator reaches the base of the numeric engraving for the respective screw length.*

Once the GPS technique is complete, remove the G Tracker and Coracoid Block before Glenosphere insertion.

Complete remaining surgical steps per Equinoxe Central Screw Baseplate technique.

CATALOG NUMBER	PART DESCRIPTION
	GPS Station V2+ or V2C
I00025 or I00020	Main GPS Unit
I00021	Power Supply
J00010	Lower Mounting Arm
J00012, J00020 or J00065	Upper Mounting Arm
J00011	GPS Bedrail Clamp
I00022	GPS Travel Case



	GPS Station V3
I00030	Main GPS Unit
I00031	Power Supply
J00010	Lower Mounting Arm
J00065	Upper Mounting Arm
J00011	GPS Bedrail Clamp
I00032	GPS Travel Case



	GPS Trackers
A10003	GPS Probe
A00203	GPS Probe V2



A10005	GPS T-Tracker
A00205	GPS T-Tracker V2

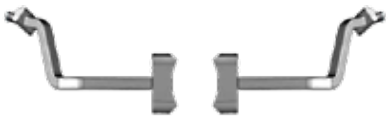


A10006	GPS G-Tracker
A00206	GPS G-Tracker V2



Note: F Tracker currently used for knee and ankle cases only

	GPS Shoulder Ergo Mechanical Instruments
531-01-03	Coracoid Block Left
531-01-04	Coracoid Block Right



531-55-00	Ergo GPS Pilot-tip Driver



531-55-09	Ergo GPS 3.2mm Drill Guide



ERGO CENTRAL SCREW BASEPLATE INSTRUMENT LISTING

CATALOG NUMBER	PART DESCRIPTION	
321-52-68	GPS CSB Cage Drill Pilot Tip, 0 Degree	
321-52-69	GPS CSB Cage Drill Pilot Tip, 8, 10, 8/10 Degree	
321-19-16	GPS CSB Drill Bushing	
521-78-11	Pin Driver, Short Low Profile	
	GPS Shoulder Disposables	
531-78-20	GPS Shoulder Disposable Hex Pins Kit	
531-55-88	Ergo GPS Disposable Reverse Drill	
A10012 A10032	GPS Implant Kit V2 GPS Implant Kit V3 *Includes sterile drape, batteries and cleaning wipe*	

NOTES

The Shoulder Planning App and GPS are manufactured by Blue Ortho SAS, an Advita Ortho subsidiary, and distributed by Advita Ortho, LLC. Not all products are available in every market. Please contact Advita representation for questions about availability.

For additional device information, refer to the manufacturer's Instructions for Use for information including, but not limited to, a device description, indications, contraindications, precautions and warnings. For further product information, please contact Customer Service, Advita Ortho, LLC. 2320 NW 66th Court, Gainesville, Florida 32653-1630, USA. (833) 4-ADVITA.

Blue Ortho, as the manufacturer of this device, and Advita Ortho, as the distributor of this device, do not practice medicine and are not responsible for recommending the appropriate surgical technique for use on a particular patient. Because this information does not purport to constitute any diagnostic or therapeutic statement with regard to any individual medical case, each patient must be examined and advised individually, and this document does not replace the need for such examination and/or advice in whole or in part. These guidelines are intended to be solely informational, and each surgeon must evaluate the appropriateness of these guidelines based on his or her personal medical training and experience. Prior to use of this system, the surgeon should refer to the product package insert for information including, but not limited to, comprehensive warnings, precautions, indications for use, contraindications and adverse effects.

The products discussed herein may be available under different trademarks in different countries. All copyrights, and pending and registered trademarks, are property of Advita Ortho, LLC. **This material is intended for the sole use and benefit of the Advita Ortho sales force and physicians; it is not intended for laypersons.** It should not be redistributed, duplicated or disclosed without the express written consent of Advita Ortho, LLC.® 2026 Advita Ortho, LLC. OPTECH-000151/C 091026

CE 2797 CE Mark is not valid unless there is a CE Mark on the product label.

advita ORTHO

GLOBAL HEADQUARTERS
2320 NW 66TH COURT
GAINESVILLE, FL 32653-1630 USA

(833) 4-ADVITA
advita.com