

EXACTECH | SHOULDER

Operative Technique
Addendum



GPS | SHOULDER

GPS® Shoulder Application 2.2
Using Equinoxe® Ergo® Instruments
CANNULATED METHOD



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Note: Refer to OPTECH-000035, Ergo GPS Operative Technique (2.2), for the full surgical technique.



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Figure 1

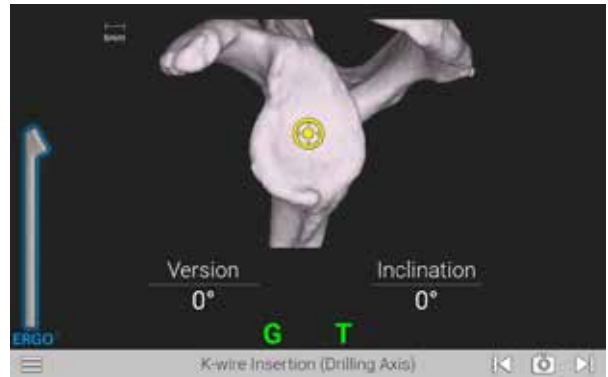


Figure 2

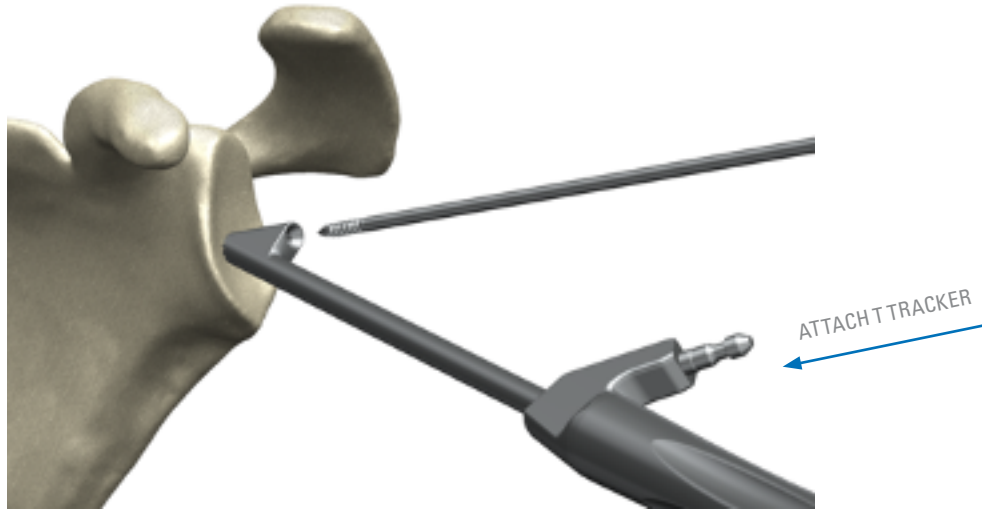


Figure 3

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 1).

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

For the cannulated workflow, attach the T Tracker to the **GPS K-wire Guide (531-55-26)** (Figure 3) and insert a **Ergo 3.2mm K-wire (321-52-08/09/10)** to guide the placement of the wire.

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.

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 (Figure 2).

● 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. The surgeon may deviate from this plan if desired.

Press the Next arrow to proceed.

DETAILED OPERATIVE TECHNIQUE

PRIMARY SHOULDER

PRIMARY SHOULDER



Figure 4

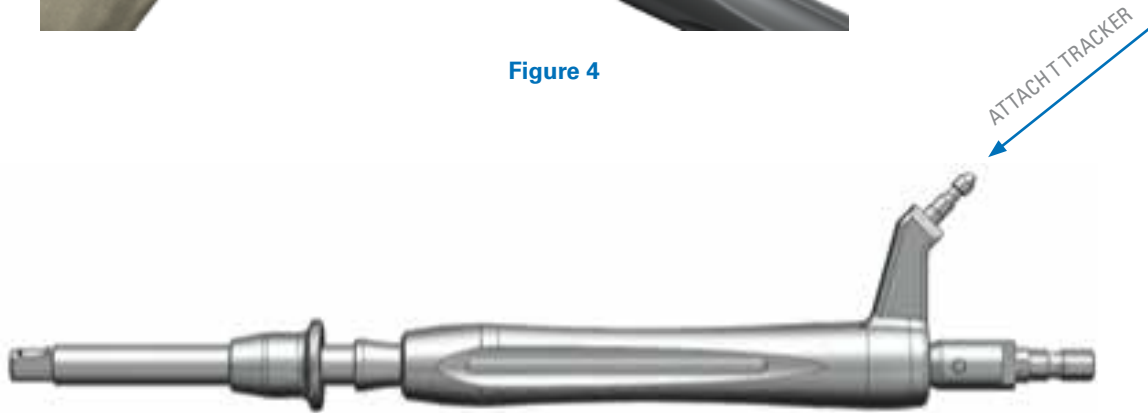


Figure 5

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

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

Once the k-wire is fixed in the bone, remove the T tracker from the GPS K-wire Guide (Figure 4) and attach to the GPS Ergo Cannulated Driver (Figure 5).

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.

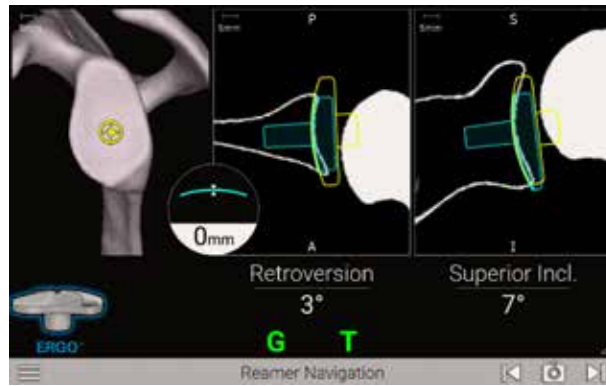


Figure 6

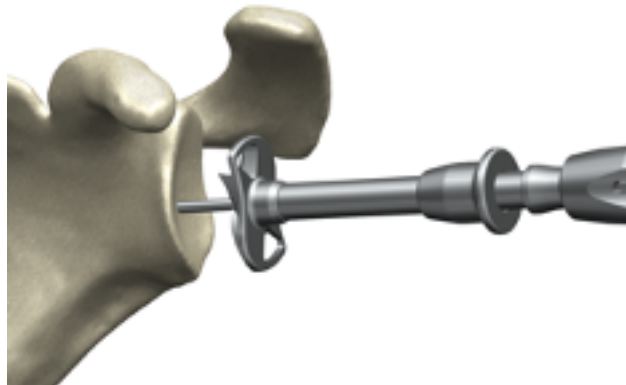


Figure 7

STEP 2: GLENOID REAMING

Select an **Anatomic Reamer** per the Equinox Ergo surgical technique 718-01-30 and attach it to the **GPS Ergo Cannulated Driver** (Figure 7).

Follow the on-screen guidance to ream according to the plan (Figure 6). 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.

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.

DETAILED OPERATIVE TECHNIQUE

PRIMARY SHOULDER

PRIMARY SHOULDER

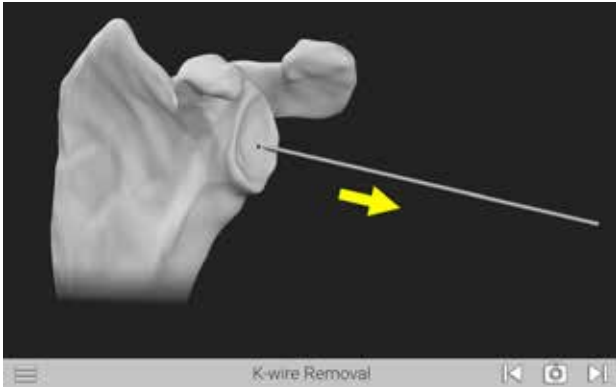


Figure 8

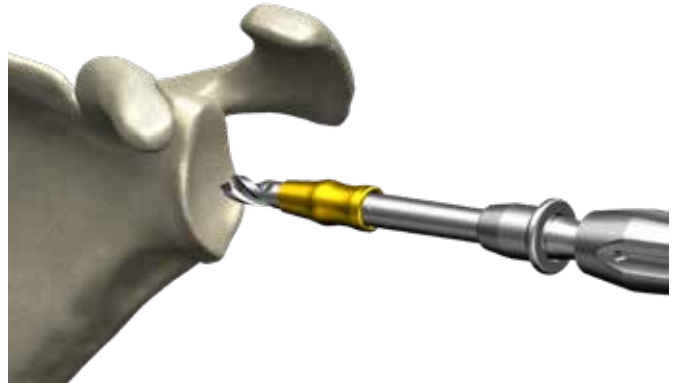


Figure 9

STEP 3: CENTER HOLE

After reaming, attach the T Tracker to the GPS Driver (531-55-01). Attach the **GPS Ergo Center Cage Drill** to the **Cannulated Driver** (Figure 9). Be sure to use the correct drill based on the implant being used. Refer to the indicated size on screen or the chart below. Once K-wire is placed, guide the Center Drill and Driver assembly over the 3.2mm K-wire.

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 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 9). Be sure to use the correct drill based on the implant being used (Figure 9). Refer to the indicated size on screen or the chart

below. 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 hold and reamer, 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 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**, repeat the K-wire insertion from Step 1. 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.

	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: 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.

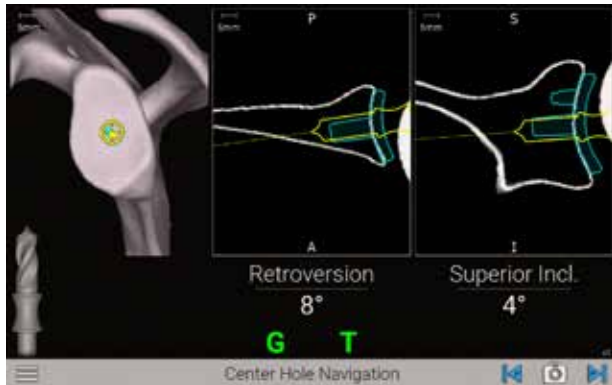


Figure 10

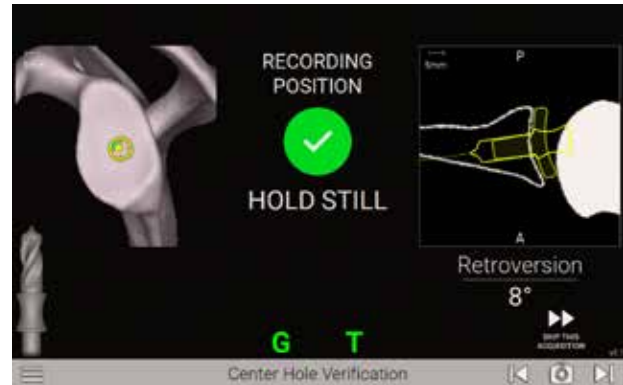


Figure 11

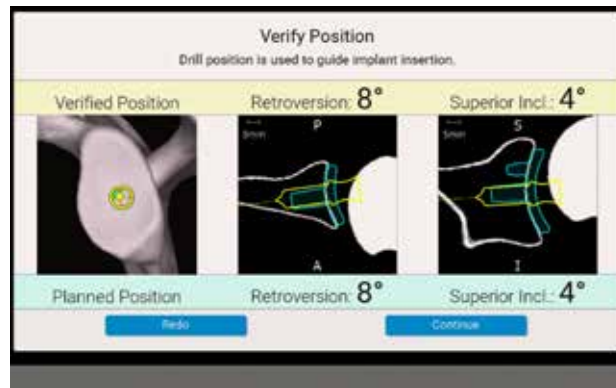


Figure 12

DRILLING

Drill the center cage hole for the Anatomic Glenoid (Figure 10) 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.**

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 11).

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 12).

Note: Refer to OPTECH-000035, Ergo GPS Operative Technique, for the full surgical technique.

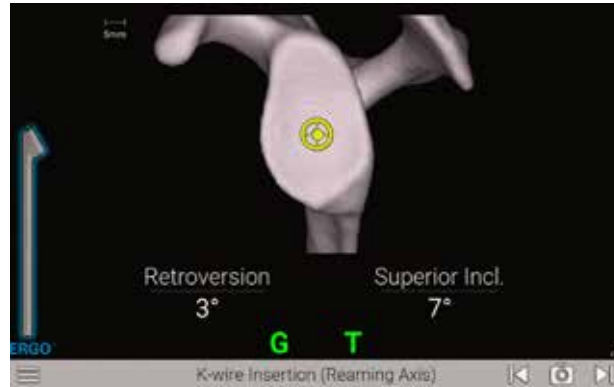


Figure 13



Figure 14

STEP 1: K-WIRE INSERTION FOR REAMING

For the cannulated workflow, attach the TTracker to the **GPS K-wire Guide (531-55-26)** (Figure 14) 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 (Figure 13). 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 13).

- 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.

Note: The plan may not necessarily read 0° version and 0° inclination. The surgeon may deviate from this plan if desired. This screen includes an image of the orientation that is synchronized with the CT scan slices to visualize the cortices.

DETAILED OPERATIVE TECHNIQUE

REVERSE SHOULDER

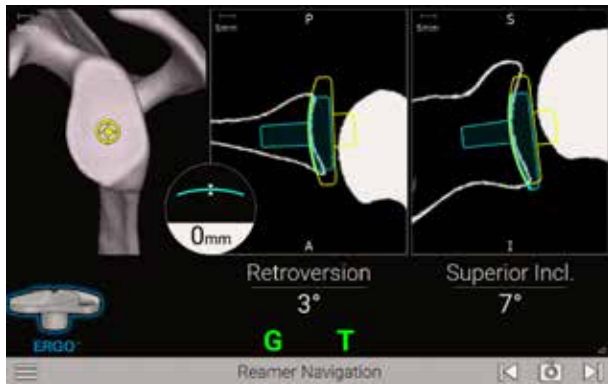


Figure 15

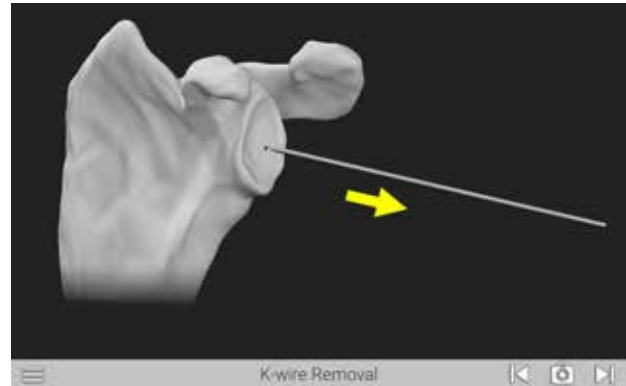


Figure 16

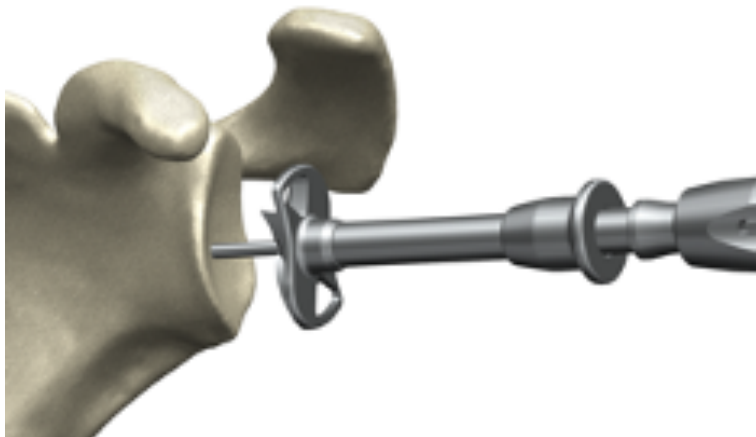


Figure 17

STEP 2: GLENOID REAMING

Select an **Ergo Reverse Reamer** per the Equinox Ergo surgical technique 718-01-30 and attach it to the **GPS Ergo Cannulated Driver** (Figure 17).

Follow the on-screen guidance to ream according to the plan (Figure 15). 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.

Remove the 3.2mm K-wire (Figure 16).

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.

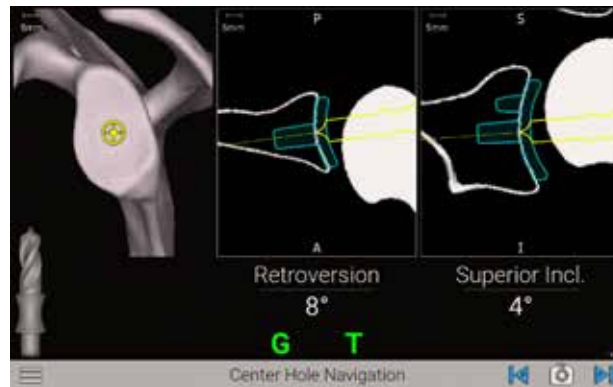


Figure 18

STEP 3: CENTER HOLE

After reaming, attach the TTracker to the GPS Driver (531-55-01).

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.

Attach the **GPS Ergo Center Cage Drill** to the **Cannulated Driver** (Figure 18). Be sure to use the correct drill based on the implant being used. Refer to the indicated size on screen or the chart below.

Once K-wire is placed, guide the Center Drill and Driver assembly over the 3.2mm K-wire.

CANNULATING BOTH REAMER AND CENTER DRILL:

In the case of an augment, when choosing to **cannulate both the center hole and reamer**, 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, repeat the K-wire insertion from Step 1. 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.

	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

*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.

DETAILED OPERATIVE TECHNIQUE

REVERSE SHOULDER

REVERSE SHOULDER

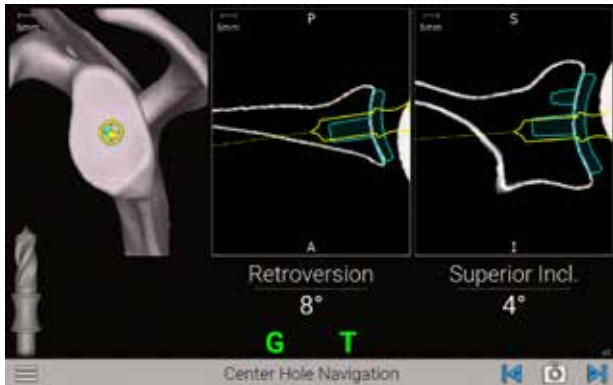


Figure 19

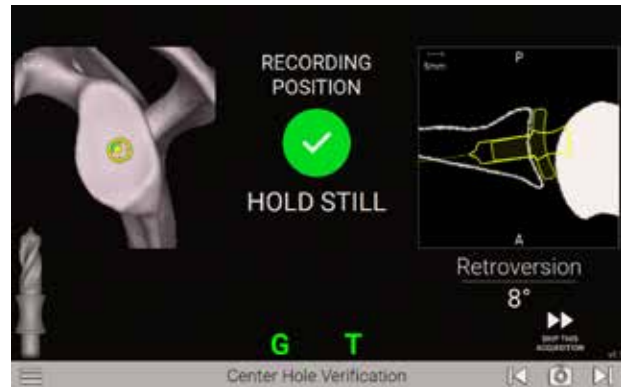


Figure 20

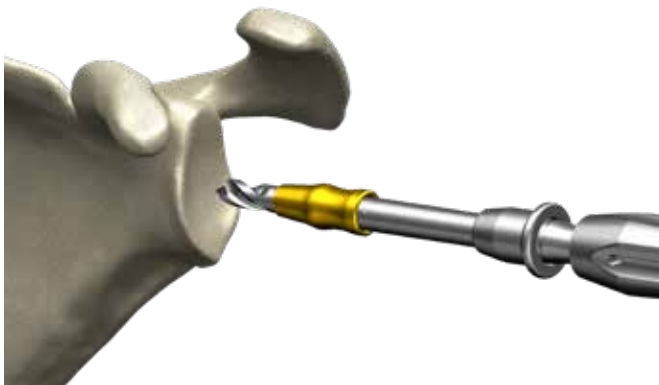


Figure 21

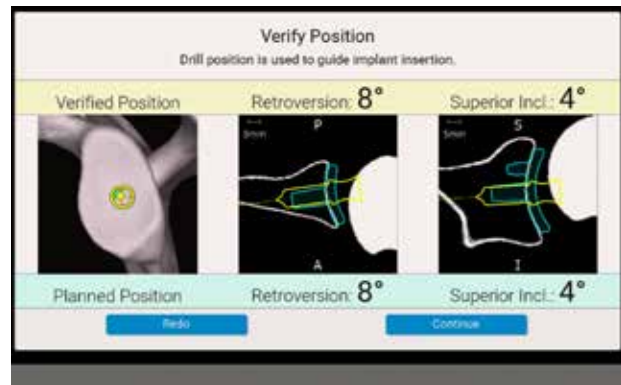


Figure 22

DRILLING

Drill the center cage hole for the Glenoid Implant (Figures 19 and 21). Once the drill is fully seated, the surgeon may advance to the next screen, but do not take the drill out of the bone.

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 20).

A pop-up will appear showing the verified position of the drill vs. the planned position (Figure 22). If the surgeon would like to re-do the digitization, press Re-do. If the surgeon accepts the digitization, press Continue.

Note: Refer to 00-0001753, Ergo GPS Operative Technique, for the full surgical technique.

CATALOG NUMBER PART DESCRIPTION

KIT-501, KIT501C or KIT-501+ GPS Station

KIT-501, KIT501C or KIT-501+	GPS Station
100025	Main GPS Unit
100021	Power Supply
J00010	Lower Mounting Arm
J00012, J00020 or J00065	Upper Mounting Arm
J00011	GPS Bedrail Clamp
I00022	GPS Travel Case



KIT-501T 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 cases only

531ERGO_CAN GPS Shoulder Mechanical Instruments

531-07-05	Impactor Handle
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531-01-03	Coracoid Block Left
531-01-04	Coracoid Block Right



531-55-01	Ergo GPS Cannulated Driver
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531-55-09	Ergo GPS 3.2mm Drill Guide
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INSTRUMENT LISTING

CATALOG NUMBER

PART DESCRIPTION

531-55-63: Short (silver)
 531-55-65: STD (gold)
 531-55-67: EXT (rose gold)

Ergo GPS Cannulated Center Drill Bits



531-55-62: Short (silver)
 531-55-64: STD (gold)
 531-55-66: EXT (rose gold)

Ergo GPS Pilot-tip Center Drill Bits



521-78-11

Pin Driver, Short Low Profile



531-55-26

Ergo GPS K-Wire Guide



GPS Shoulder Disposables

531-78-20

Disposable Hex Pins Kit



531-55-88

Ergo Disposable Reverse Drill Kit



A10012

GPS Disposable Kit

- Includes sterile drape, batteries and cleaning wipe



THE EQUINOXE® PLANNING APP IS AVAILABLE FOR MAC AND PC.

Planning software minimum requirements:

- Equinox Planning App is qualified for Windows 10 environment as well as Mac OS 12 (Monterey) and Mac OS 13 (Ventura).
- It is recommended to have 8GB or more of RAM, and a screen resolution of a least 1280x800 pixels.
- It is recommended to have at least 10Gb free space on disk.
- It is mandatory to have Administrator rights during software installation.
- If network security measures are implemented (Web filtering, firewall, proxy) it may be necessary to ask the IT department to ensure communication (https, port 443) is possible.
- Graphical hardware must support at least OpenGL v3.3. Graphics cards and chipsets made after 2010, with up-to-date drivers, should satisfy this condition.

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For additional device information, refer to the Exactech Shoulder System—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, Exactech, Inc., 2320 NW 66th Court, Gainesville, Florida 32653-1630, USA. (352) 377-1140, (800) 392-2832 or FAX (352) 378-2617.

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