

# EXACTECH | SHOULDER

Operative Technique  
Addendum



**ExactechGPS®**

ExactechGPS® Shoulder Application 1.9.2  
Using Equinox® Ergo® Instruments  
CANNULATED METHOD

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



ExactechGPS® computer-assisted surgical technology provides surgeons with real-time visual guidance and alignment data in shoulder arthroplasty. Customized for surgeon preferences, ExactechGPS is a powerful addition to the surgical team's goals of achieving efficacy, efficiency and economics for shoulder arthroplasty.

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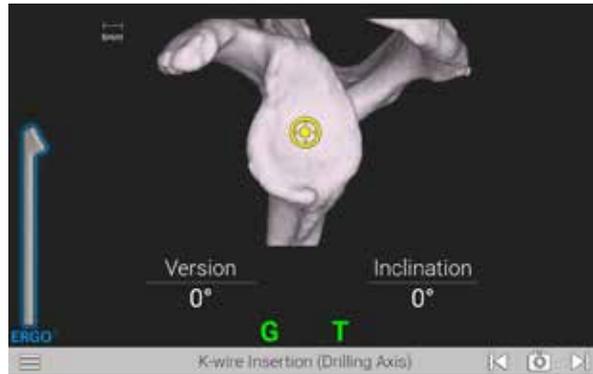


Figure 1



Figure 2

### 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.

For the cannulated workflow, attach the T Tracker to the **GPS K-wire Guide (531-55-26)** (Figure 2) 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 1).
- 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 3



Figure 4

**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 3) and attach to the GPS Ergo Cannulated Driver (Figure 4).

**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.

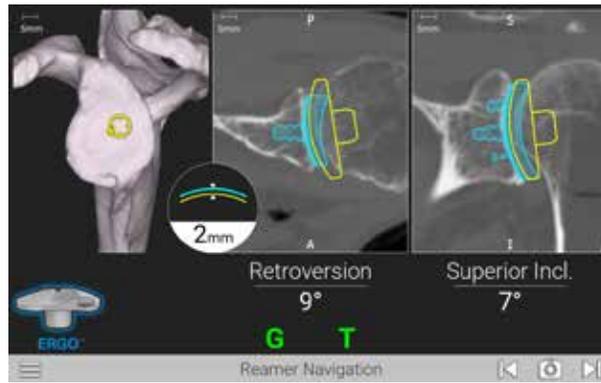


Figure 5

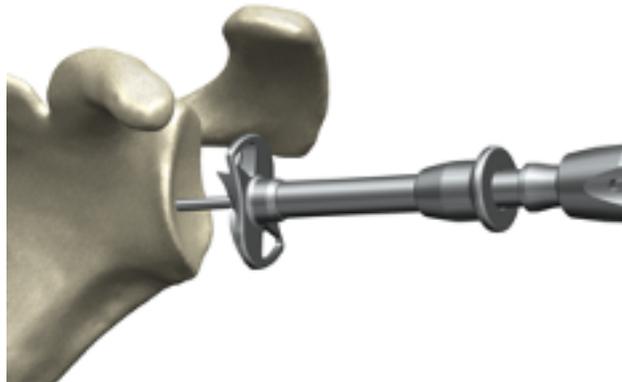


Figure 6

## STEP 2: GLENOID REAMING

Select an **Anatomic Reamer** per the Equinoxe Ergo surgical technique 718-01-30 and attach it to the **GPS Ergo Cannulated Driver** (Figure 6).

Follow the on-screen guidance to ream according to the plan (Figure 5). 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 7

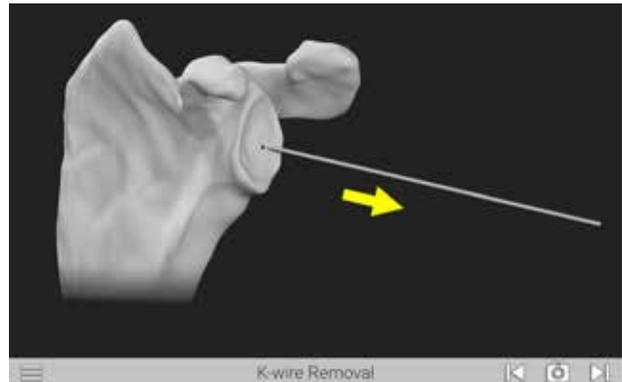


Figure 8

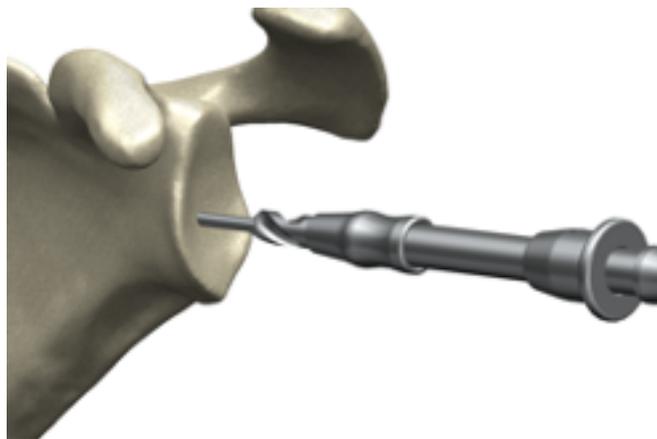


Figure 9

### STEP 3: CENTER HOLE

After reaming, attach the TTracker 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 (Figure 7). 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 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.

	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
	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

\*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.

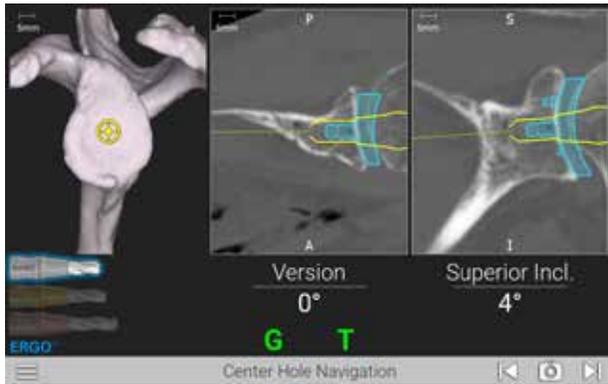


Figure 10



Figure 11

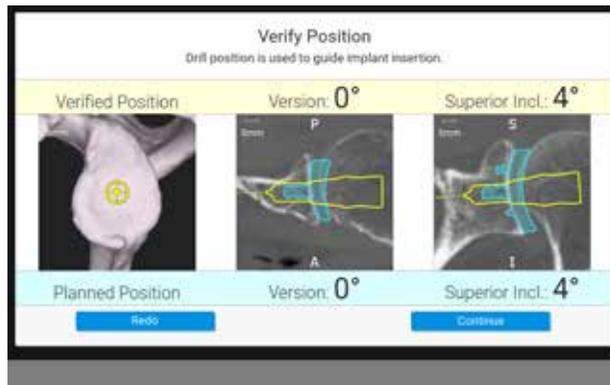


Figure 12

**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 00-0001753, Ergo GPS Operative Technique, for the full surgical technique.







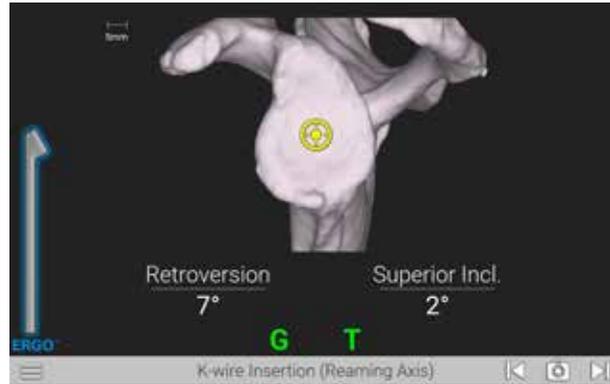


Figure 13



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

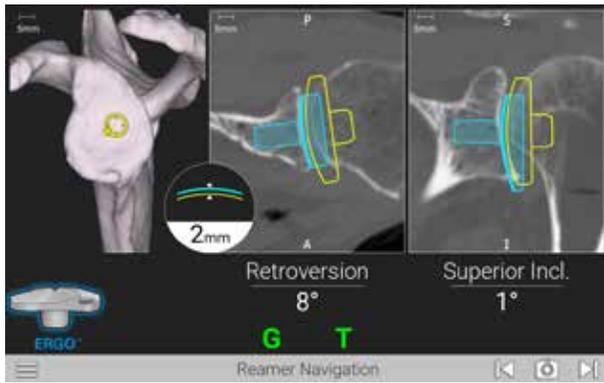


Figure 15

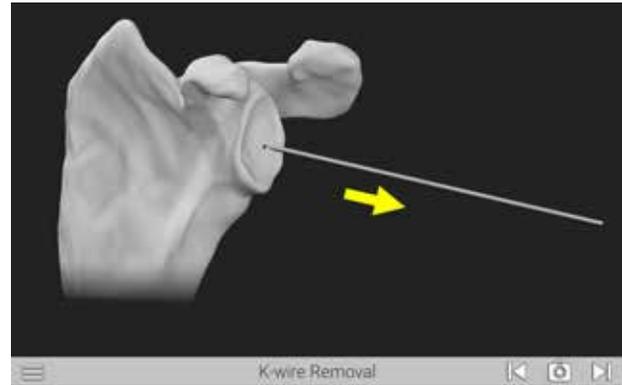


Figure 16

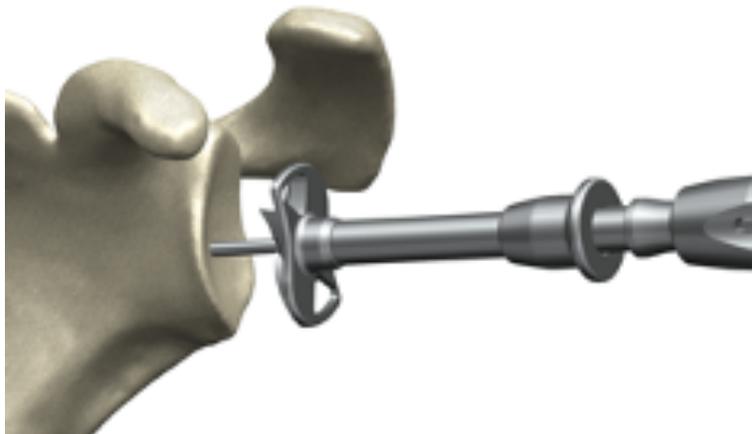


Figure 17

## 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.

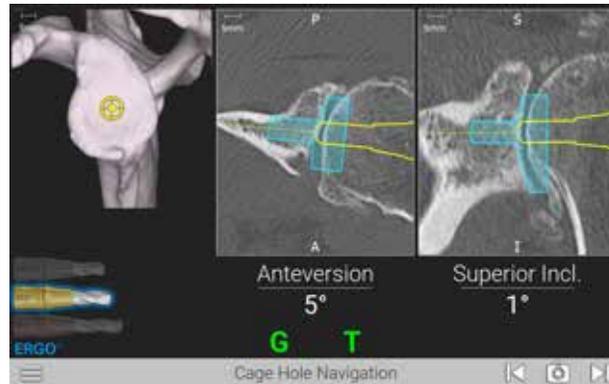


Figure 18

### 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.

	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

\*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 small 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

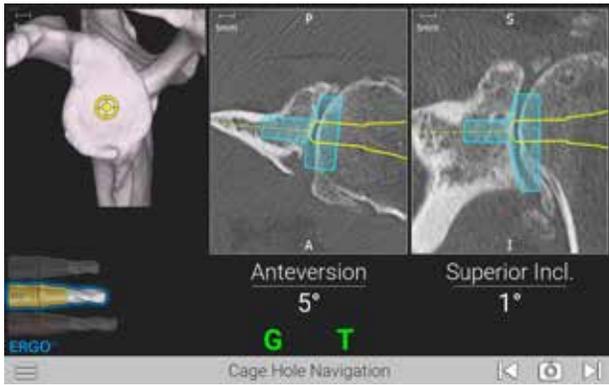


Figure 19



Figure 20

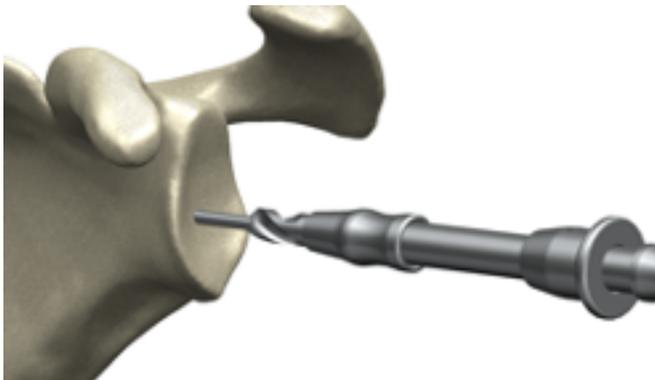


Figure 21

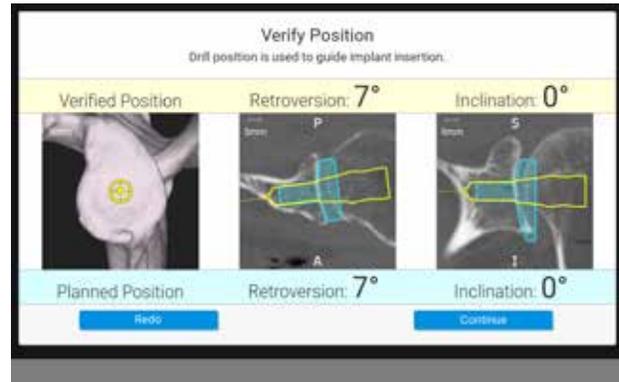


Figure 22

### 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+      ExactechGPS Station**

- Includes GPS station, clamp, lower mounting arm, upper mounting arm, power cord, power adapter



**KIT-501T      ExactechGPS Trackers**

- Includes F\*, G, T, P Trackers
- \*F Tracker currently used for knee cases only*



**531ERGO\_CAN      ExactechGPS Shoulder Mechanical Instruments**

531-07-05      Impactor Handle



321-19-13/14      Standard Inserter (Reverse)



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



531-55-01      Ergo GPS Cannulated Driver



## INSTRUMENT LISTING

### CATALOG NUMBER

### PART DESCRIPTION

531-55-09

Ergo GPS 3.2mm Drill Guide



531-55-08

Ergo GPS 3.2mm Drill Bit



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

Ergo GPS Cannulated Center Drill Bits



521-78-11

Pin Driver, Short Low Profile



531-55-26

Ergo GPS K-Wire Guide



### ExactechGPS Shoulder Disposables

531-78-20

Disposable Hex Pins Kit



531-55-88

Ergo Disposable Reverse Drill Kit



A10012

ExactechGPS Disposable Kit

- Includes sterile drape, batteries and cleaning wipe



### **Planning software minimum requirements:**

- Equinox Planning App software is qualified for MacOS, Windows 7, Windows 8.1 and Windows 10 environments.
- It is recommended to have 8GB or more of RAM, and a screen resolution of at least 1280x800 pixels.
- It is mandatory to have the Administrator rights during software installation.
- If network security measures are implemented (Web filtering, firewall, proxy...), it may be necessary to ask the surgeon's IT department to ensure communication is possible.
- Graphical hardware must support at least OpenGL v2.1. Graphics cards and chipsets made after 2010, with up-to-date drivers, should satisfy this condition.

## INDICATIONS FOR USE

The ExactechGPS is intended for use during preoperative planning and during stereotaxic surgery to aid the surgeon in locating anatomical structures and aligning the endoprosthesis with the anatomical structures provided that the required anatomical landmarks can be identified on the patient's preoperative CT scan.

The ExactechGPS Total Shoulder Application is specifically indicated for Total Shoulder Arthroplasty using the Equinox system to aid the surgeon in locating anatomical structures and aligning the glenoid component with the anatomical structures.

## CONTRAINDICATIONS

The ExactechGPS Total Shoulder Application is designed to function only with the Equinox Shoulder System implants. All indications and contraindications for those implants should be followed when using the ExactechGPS Total Shoulder Application.

The use of the ExactechGPS Total Shoulder Application is also contraindicated in patients who have inadequate coracoid bone for tracker fixation.

The surgeon has to determine whether the patient's conditions are appropriate for this kind of procedure or not. A pathological condition against the use of this system could be in some cases:

- Advanced osteoporosis,
- Crack or break of coracoid process.

The system requires a computed tomography (CT) scan of the patient's scapula for planning and registration purposes, and is contraindicated if the imported scan does not contain the required bony anatomy.

The ExactechGPS Total Shoulder Application as well as the Equinox Shoulder System are available for prescription use only.





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

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