

# GTO General Installation and Mounting Guide



## Step 1: Selecting a Mounting Location

To ensure ideal performance it is advised to consider the following:

- Select a mounting location that provides the **best view of the sky**.
- A flat horizontal mounting position (lying flat, facing skyward) is preferred.
- Vertical mounting orientations (printed face of device facing horizon) are acceptable but may impact performance and overall battery life.
- Mount on the flattest and hardest surface possible.
- Select a mounting location that isolates the GTO from damage.
- Recommended mounting area size is 5.0"L x 3.5"W (130mmL x 90mmW).
- Thoroughly clean the mounting area, especially if using VHB mounting.
- DO NOT PAINT OR COVER THE GTO.**

Doing so may negatively impact product performance and battery life.

## Step 2: Selecting a Mounting Method

### VHB Adhesive Mounting

For installations that **do not** require a protective bezel that are **isolated from** abuse, extreme weather and temperatures the GTO has a pre-installed pad of VHB adhesive tape that can be used to "peel and stick" to any **clean** surface above 50F (10C).

The Geoforce VHB Installation and Removal Guide **MUST** be followed to ensure proper adhesion to the asset. **VHB is not recommended if using a protective bezel mounting option.**

### Mechanical Mounting

**Reinforced plastic mounting bezel (ORDERING SKU: GTXK-BEZEL-RP)**

**Socket-Head Cap Screws (1/4" or 6mm bolt diameter)**

For installations that prefer a semi-special tool approach or that can be drilled and tapped and do not have access to the back side of the mounting surface.

**Hex-Head Cap Screws (1/4" or 6mm bolt diameter)**

For installations that have access to the back side of the mounting surface for securing a nut or bolt.

This mounting option is **not intended** for environments where the device may be exposed to high levels of vibration, shock, impact, or other types of physical abuse. Geoforce **highly** recommends using the stainless steel protective bezel for harsh environments.

### Ultra-Rugged Mounting

**Stainless Steel Bezel and Weld-Down/Adapter Plate Accessories**

This applies to installations where resistance to extreme environments is required or where a welded down and prepared 'Geoforce Ready' surface for the GTO is preferred. Refer to the GT1/GTO weld-down plate installation guide for information.

(ORDERING SKU: GTXK-BEZEL-SS and GTXK-BASEPLATE)

## Step 3: Record the Asset and GTO Serial Numbers

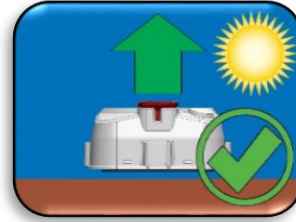
- Record the GTO serial number.
- Record the asset name and serial number (on which the GTO was installed).
- Enter the GTO serial number and asset name into the track and trace software application. Contact your Geoforce account service representative if you require assistance.

## Step 4: Initializing the GTO



To begin service (using the pull tab) remove the magnet while outdoors with a good sky view. Removing the magnet indoors may lead the GTO to enter Power Save Mode.

**WARNING: IF YOU DO NOT REMOVE THE MAGNET THE GTO WILL NOT WORK!!!**



**VHB Adhesive Pad**  
Refer to the  
**Geoforce VHB**  
**Installation and**  
**Removal Guide!**



**Hex Head**  
**Cap Screw**

The GTO bezel will capture and hold a Hex-Head Cap Screw or nut while being secured from the back side.  
**Be careful of over-torque!**



**Socket Head**  
**Cap Screw**

Geoforce can provide information on example mounting hardware upon request.  
**Be careful of over-torque!**

**Maximum recommended bolt torque**  
**for plastic bezels:**

**14.0 ftlbs or 19.0 Nm**

**Actual required bolt torques will be lower.**

It is advised to use the torque values suggested by your fastener manufacturer for the particular hardware being used.



# GTO Installation Drawing

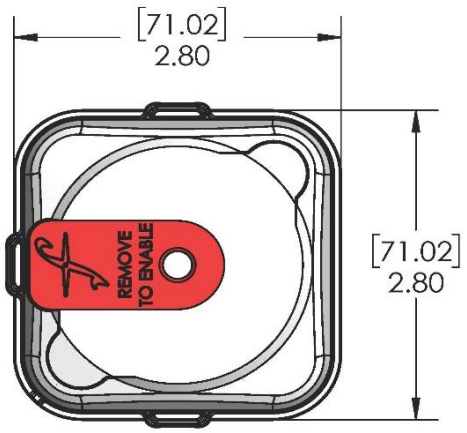
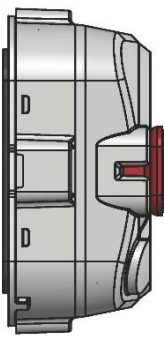
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| REV.    | DESCRIPTION     | DATE       | APPROVED |
|---------|-----------------|------------|----------|
| 151221a | Initial Release | 12/21/2015 | BCT      |

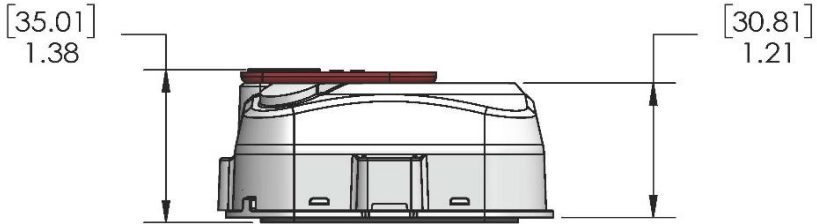
B

B



A

A



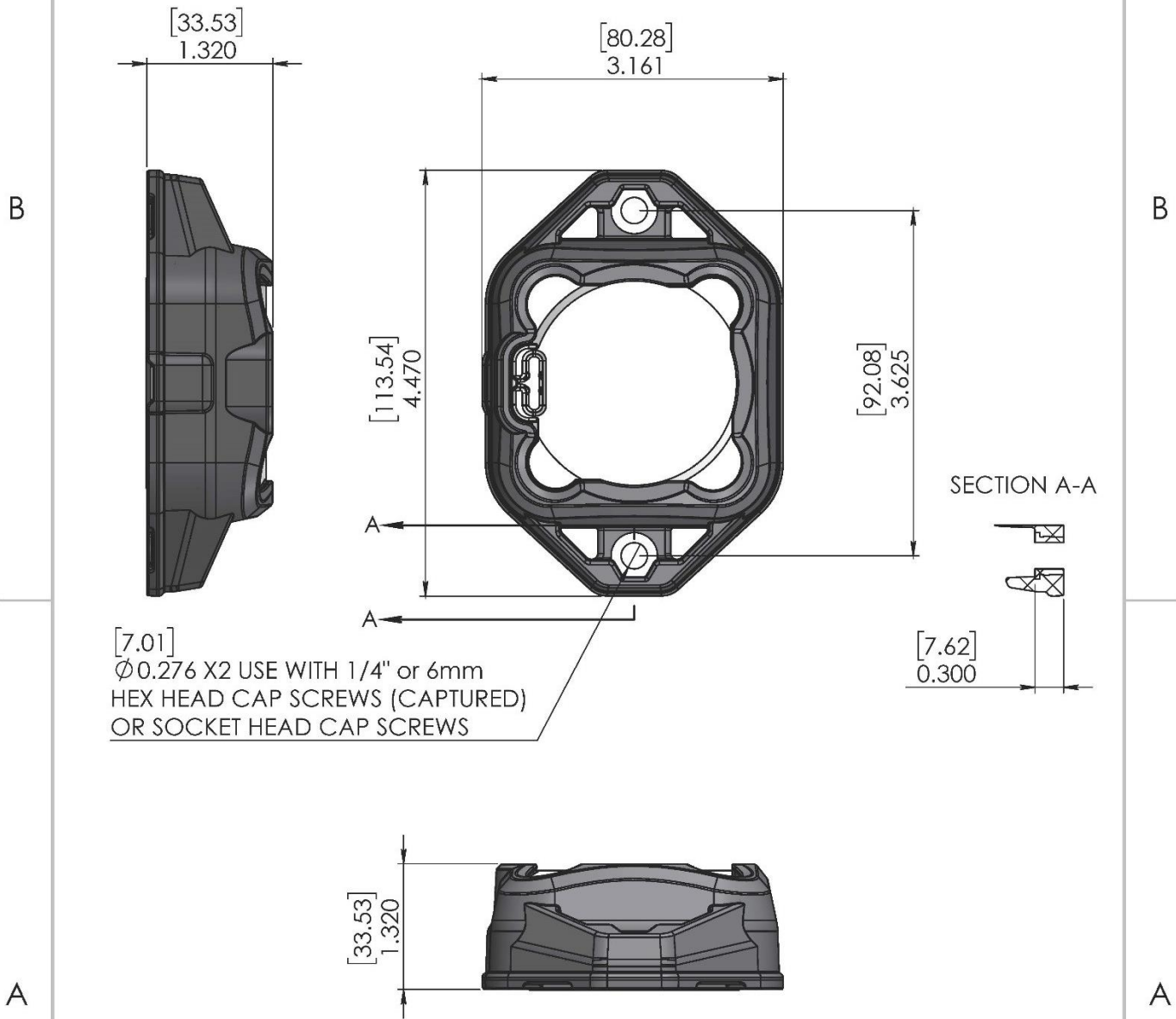
| APPLICABLE PRODUCT   | PRODUCT REVISION LEVEL | NAME      | DATE           | 750 Canyon Drive, Suite 140<br>Coppell, TX 75019, USA<br>972-546-3878   |  |
|--|------------------------|-----------|----------------|---|--|
| GTO  | K                      | DRAWN     | BCT 12/21/2015 | <br>TITLE:<br><b>GTO Installation Drawing</b>   |  |
|  |                        | CHECKED   | BCT 12/21/2015 |   |  |
|  |                        | ENG APPR. | BCT 12/21/2015 |   |  |
|  |                        | MFG APPR. | BCT 12/21/2015 |   |  |
|  |                        | Q.A.      | BCT 12/21/2015 |   |  |
| UNTOLERANCED DIMENSIONS ARE BASIC<br>0.010 A B C   |                        |           |                | DIMENSIONS ARE IN INCHES AND [MM]<br>TOLERANCES:<br>FRACTIONAL: ± 1/64<br>ANGULAR: MAXI ± 0.5deg B/LND ± 2.0deg<br>TWO PLACE DECIMAL: ± 0.010<br>THREE PLACE DECIMAL: ± 0.005 |  |
| PROPRIETARY AND CONFIDENTIAL<br>ALL INFORMATION CONTAINED IN THIS DRAWING IS THE<br>SOLE PROPERTY OF GEOFORCE INC. ANY<br>REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE<br>WRITTEN PERMISSION OF GEOFORCE INC. IS PROHIBITED. |                        |           |                | COMMENTS:<br>DO NOT SCALE DRAWING   |  |
| NOTE: IF A FEATURE IS MARKED WITH THE 'EX'<br>NOTATION THEN NO MODIFICATIONS ARE<br>ALLOWED TO THAT FEATURE WITHOUT THIRD<br>PARTY (CERTIFYING AGENCY) APPROVAL.   |                        |           |                | INTERPRET GEOMETRIC<br>TOLERANCING PER: ASME Y14.5-2009   |  |
| MATERIAL:<br>FINISH:   |                        |           |                | SIZE DWG. NO. A HW-2P-2-0051<br>DWG. REV 151221a  |  |
| GEORFORCE<br>PART NO. GTOK   |                        |           |                | MANUF.<br>PART NO. UNASSIGNED   |  |
| SHEET FORMAT REVISION LEVEL: 1.0   |                        |           |                | SCALE: 1:1.5 WEIGHT:  |  |
| SHEET 1 OF 1   |                        |           |                |   |  |

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# GTO Installation Drawing with Bezel

| REVISIONS |                 |            |          |
|-----------|-----------------|------------|----------|
| REV.      | DESCRIPTION     | DATE       | APPROVED |
| 161018a   | Initial Release | 10/18/2016 | BCT      |



|  |  |  |                            |   |
|--|--|--|----------------------------|---|
| APPLICABLE PRODUCT   | PRODUCT REVISION LEVEL                               | NAME   | DATE                       | <br>750 Canyon Drive, Suite 140<br>Coppell, TX 75019, USA<br>972-546-3878<br><b>TITLE:</b><br>Reinforced Plastic Bezel Installation Drawing |
| GT1  | K  | DRAWN  | BCT 10/18/2016             |   |
| GTO  | K  | CHECKED  | BCT 10/18/2016             |   |
|  |  | ENG APPR.  | BCT 10/18/2016             |   |
|  |  | MFG APPR.  | BCT 10/18/2016             |   |
| UNTOLERANCED DIMENSIONS ARE BASIC<br>0.010 A   B   C   |  | Q.A.   | BCT 10/18/2016             | COMMENTS:<br><br>DO NOT SCALE DRAWING   |
| <b>PROPRIETARY AND CONFIDENTIAL</b><br>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF GEOFORCE INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF GEOFORCE INC. IS PROHIBITED. |  | DIMENSIONS ARE IN INCHES<br>TOLERANCES:<br>FRACTIONAL ± 1/64<br>ANGULAR: MACH ± 0.5deg BEND ± 2.0deg<br>TWO PLACE DECIMAL: ± 0.010<br>THREE PLACE DECIMAL: ± 0.005 |                            | SIZE DWG. NO. <b>A</b> HW-2P-2-0084 DWG. RLV 161018a  |
| NOTE: IF A FEATURE IS MARKED WITH THE 'EX' NOTATION THEN NO MODIFICATIONS ARE ALLOWED TO THIS DRAWING WITHOUT THIRD PARTY (CERTIFYING AGENCY) APPROVAL.  | INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5-2009 | GEOFORCE PART NO. G1KME00028   | MANUF. PART NO. UNASSIGNED | SHEET 1 OF 1  |

HW-IS-0-0006 - GTO User, Safety and Regulatory Guide - Revision 180525a - helpdesk@geoforce.com - http://help.geoforce.com | Geoforce Inc.

# GTO Mounting Hardware Guidelines and Examples

- Geoforce **highly** recommends using mounting hardware made from a higher grade series stainless steel. Other mounting hardware material types may be subject to shortened life and/or galvanic or other types of corrosion.
- Ensure **all** mounting hardware is compatible with the asset.
- Ensure **all** regulatory compliance and asset owner policies and procedures are adhered to during installation.
- When using stainless steel mounting hardware it is **highly** recommended to use a marine grade anti-seize material on the bolt threads as galling and seizing of stainless nuts and stainless bolts may occur.

## Structural Mounting Hardware Examples

### Socket Head Cap Screws (Bolt length may vary depending on mounting surface)

Compatible with the optional reinforced plastic mounting bezel

#### Option 1 (Imperial):

Vendor: McMaster Carr ([www.mcmaster.com](http://www.mcmaster.com))

Part Number: 92196A329

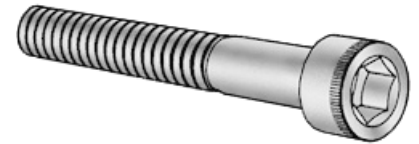
Description: 18-8 Stainless Steel Socket Head Cap Screw, 1/4"-28 Thread, 1-1/2" Length

#### Option 2 (Metric):

Vendor: McMaster Carr ([www.mcmaster.com](http://www.mcmaster.com))

Part Number: 91292A142

Description: Type Type 18-8 Stainless Steel Socket Head Cap Screw, M6 Thread, 40mm Length, 1mm Pitch



### Hex Head Cap Screws (Bolt length may vary depending on mounting surface)

Compatible with the optional reinforced plastic mounting bezel

#### Option 1 (Imperial):

Vendor: McMaster Carr ([www.mcmaster.com](http://www.mcmaster.com))

Part Number: 92198A111

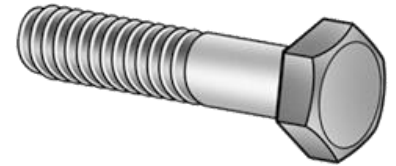
Description: 18-8 Stainless Steel Hex Head Cap Screw, 1/4"-28 Thread, 1-1/2" Long

#### Option 2 (Metric):

Vendor: McMaster Carr ([www.mcmaster.com](http://www.mcmaster.com))

Part Number: 91287A142

Description: 18-8 Stainless Steel Hex Head Cap Screw, M6 Thread, 1mm Pitch, 40mm Long



## Non-structural Mounting Hardware Examples

### Metal Banding (Length may vary depending on mounting surface, requires a crimp tool)

Tip: This is good for securing the mounting bezel when bolts or screws cannot be used.

Tip: Be mindful of damage to the plastic bezel mounting ears with higher amounts of banding tension.

Vendor: McMaster Carr ([www.mcmaster.com](http://www.mcmaster.com))

Banding Part Number: 5422K42

Description: Low-Profile Hose Banding Type 201 Stainless Steel, 1/4" Wide, 0.020" Thick

Buckle Part Number: 5422K43

Description: Type 201 Stainless Steel Ear Style Buckle for 1/4" Wide Low-Profile Hose Banding



### Zip Ties (Length may vary depending on mounting surface)

Compatible with the GTO plastic assembly when a mounting bezel is not used.

Tip: For strapping over a GTO or to provide a quick mechanical backup to a VHB mounted GTO without a mounting bezel.

Vendor: McMaster Carr ([www.mcmaster.com](http://www.mcmaster.com))

Part Number: 70215K93

Description: Harsh-Environment Cable Tie Chemical-Resistant/Fire-Retardant Tefzel, 14-1/2" Length



# GTO Maintenance and Replacement

## General Maintenance

The GTO is maintenance free other than general upkeep for cleanliness to maintain normal device operation. To maintain a long product life and optimal performance the GTO should be kept as clean as possible of dirt, grease, and chemical buildups.

Light amounts of red rust may occur on the optional GTO metal bezel and/or weld plate. This red rust generally originates from free iron, surface deposits, and general contamination from weathering and dirt. The presence of light amounts of red rust does not affect the integrity or function of the product and does not originate from the metal part structure.

## GTO Maintenance and Replacement

### Step 1: Verify the old GTO mounting area prior to removal

To ensure ideal performance it is advised to VERIFY the following:

- Select a mounting location that provides the **best view of the sky**.
- A flat horizontal mounting position (lying flat, facing skyward) is preferred.
- Vertical mounting orientations (printed face of device facing horizon) are acceptable but may impact performance and battery life.
- Mount on the flattest and hardest surface possible.
- Select a mounting location that isolates the GTO from damage.
- Recommended mounting area size is 5"L x 3.5"W (130mmL x 90mmW).
- Thoroughly clean the mounting area, especially if using VHB mounting.



### Step 2: Remove the old GTO assembly

- Record the old GTO serial number for deactivation.
- Record the asset name and serial number (on which the GTO was installed).
- Remove the old GTO assembly from its mounting position by loosening and removing its mounting bolts. Be mindful of dropped object hazards.
- If installed in a mounting bezel:**  
Separate the GTO electronics assembly from the protective bezel by hand pressing the two apart.
- If installed with VHB:**  
Remove the GTO electronics assembly from the mounting surface with an approved VHB removal tool, such as a 3M removal tool. Take care not to damage the mounting surface during prying or removal. Reference the Geoforce VHB Installation and Removal Guide.



### Step 3: Replace with a new GTO assembly

- Ensure the mounting bezel and its mounting surface are clean and free of dirt, grease and chemicals.
- Install the new GTO electronics assembly by firmly hand pressing it into its protective bezel or by following the Geoforce VHB Installation Guide. The GTO electronics assembly is keyed to ensure it can only be inserted into the metal bezel in one orientation. Do not use excessive force or clamping actions as the bezel may crack.

### Step 4: Reinstall the GTO assembly

- Record the new GTO serial number for activation.
- Record the asset serial name and number (on which the GTO was installed).
- Reinstall the GTO assembly back onto its mounting location and secure. It is advised to use new mounting hardware to ensure long service life.
- DO NOT PAINT OR COVER THE GTO.**  
Doing so may negatively impact product performance and battery life.



### Step 5: Initializing the new GTO



To begin service (using the pull tab) remove the magnet while outdoors with a good sky view. Removing the magnet indoors may lead the GTO to enter Power Save Mode.

**WARNING: IF YOU DO NOT REMOVE THE MAGNET THE GTO WILL NOT WORK!!!**



## Disposal Notices

**WARNING: DO NOT DISPOSE OF PRODUCT OR BATTERIES IN MUNICIPAL WASTE AREAS**

IT IS ADVISED TO DISPOSE OF OLD RETIRED GTO DEVICES IN ACCEPTABLE LOCAL E-WASTE RECYCLING LOCATIONS.