GF3000 Gravity Force
Shear Locks

Mortise: Standard, TRD, BRD
Surface Mount: SM, and TJ

Contents

Warnings and Cautions .............................................................. 2
Tools Needed .............................................................................. 2
Certifications ............................................................................. 2
Operation ..................................................................................... 2
Specifications ............................................................................. 2
Installation .................................................................................. 3
  1 Establish centerlines ....................................................... 3
  2 Prepare the frame. (Standard and TRD) ......................... 4
     Prepare the frame. (TJ and SM) ................................. 4
     Prepare the floor. (BRD) ............................................ 5
  3 Prepare the door ............................................................... 6
  4 Install the lock ................................................................. 8

Auto Relock Time Delay ............................................................ 9
Wiring Diagrams ................................................................. 10
Door Status Monitor (DSM) (BRD) ........................................... 11
Air Gap Adjustment .............................................................. 11
Optional Monitoring Outputs ................................................. 12
Warnings and Cautions

**WARNING**
Warnings indicate potentially hazardous conditions, which if not avoided or corrected, may cause death or serious injury.

**CAUTION**
Cautions indicate potentially hazardous conditions, which if not avoided or corrected, may cause minor or moderate injury. Cautions may also warn against unsafe practices.

**NOTICE**
Notices indicate a condition that may cause equipment or property damage only.

Tools Needed
- Pencil
- Tape Measure
- Hammer
- Center Punch
- Power Drill w/Set of Drill Bits
- Chisel
- Saw for cutting metal
- Set of Hex (Allen) Wrenches
- Set of Philips Head Screwdrivers
- Electrical Tool Kit (containing: wire cutter/stripper, electrical tape, needle-nose pliers, etc.)
- Pavement Breaker or Demolition Hammer (GF3000BRD only)

Certifications
- UL# R12092
- MEA# 222-96-E
- CSFM# 3774-0544:107

Operation
A shear lock is designed to rely on the shear strength of steel for holding force. A strong magnet is energized that attracts an armature which overcomes an air gap to engage with the magnet. The magnet and the armature, besides being bonded by magnetic force, are also designed to mechanically interlock. This gives the system 3000 pounds of holding force. Because of this design, precise door and frame preparation is necessary. Also important is that the centerlines of the magnet and armature line up to form a vertical axis. It is also critical that the air gap be adjusted to be as close as possible without interfering with door operation. This ensures the best reliability possible.

Specifications

<table>
<thead>
<tr>
<th>Electrical</th>
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<tbody>
<tr>
<td>Input Voltage</td>
<td>Filtered, regulated 12 or 24 VDC (auto voltage selection)</td>
</tr>
<tr>
<td>Input Current</td>
<td>0.9 Amps at 12VDC, 0.45 Amps at 24VDC</td>
</tr>
<tr>
<td>Adjustable Time Delay (ATD)</td>
<td>Adjustable from 2 to 30 seconds</td>
</tr>
<tr>
<td></td>
<td>Factory default: expect approx. 3-5 seconds.</td>
</tr>
<tr>
<td>Automatic Relock Switch (ARS)</td>
<td>Integral magnetic reed switch</td>
</tr>
<tr>
<td>Optional Monitoring Outputs (Standard, TRD, SM, and TJ)</td>
<td></td>
</tr>
<tr>
<td>DSM</td>
<td>Contact rating - 0.1 Amps maximum at 28VDC</td>
</tr>
<tr>
<td>MBS</td>
<td>Contact rating - 0.2 Amps maximum at 30VDC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mechanical</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Mounting Position/ Type</td>
<td>Horizontally, Mortise or Surface, Non-handed</td>
</tr>
<tr>
<td>Shear Holding Force</td>
<td>3000 pounds maximum</td>
</tr>
<tr>
<td>Door Thickness</td>
<td>1¼” minimum</td>
</tr>
<tr>
<td>Plating.</td>
<td>Magnetic face and armature; nickel plated to resist corrosion</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>GF3000 - 6 Pounds</td>
</tr>
<tr>
<td></td>
<td>GF3000TRD &amp; BRD - 8 Pounds</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions, Mortise Mount</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnet</td>
<td>9.5” L x 1.5” W x 1.5” H</td>
</tr>
<tr>
<td>Magnet w/ Mounting Tabs</td>
<td>11.56” L x 1.5” W x 1.5” H</td>
</tr>
<tr>
<td>Armature</td>
<td>8.38” L x 1.38” W x 0.5” D</td>
</tr>
<tr>
<td>Armature Bracket</td>
<td>10.63” L x 1.38” W x 1.0” D</td>
</tr>
<tr>
<td>Dimensions - Surface Mount</td>
<td></td>
</tr>
<tr>
<td>Magnet Housing</td>
<td>9.81” L x 1.25” H x 1.5” D</td>
</tr>
<tr>
<td>Armature Housing</td>
<td>8.38” L x 1.38” W x 0.5” D</td>
</tr>
</tbody>
</table>
Installation

1 Establish centerlines.

1a Determine the mounting position.
To achieve maximum resistance to forced entry, position unit closest to the latch side of door.

① In some applications, the door and frame may require reinforcement.

1b Mark centerlines on door and frame.
① For proper operation, centerlines on door and jamb must be precisely aligned.

Standard

<table>
<thead>
<tr>
<th>BRD</th>
<th>TJ</th>
<th>TRD</th>
<th>SM</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="BRD Diagram" /></td>
<td><img src="image2.png" alt="TJ Diagram" /></td>
<td><img src="image3.png" alt="TRD Diagram" /></td>
<td><img src="image4.png" alt="SM Diagram" /></td>
</tr>
</tbody>
</table>

- Door jamb
- Location of lock in jamb
- Top of door (reverse view)
- Location of lock in door
- Bottom of door (reverse view)
- Location of lock in floor/threshold
- Door
- Jamb
- Location of lock in jamb
- Top of door (reverse view)
- Location of lock in door
2 Prepare the frame. (Standard and TRD)

2a Prepare the frame as shown for your frame type.

Hollow Metal or Aluminum

![Diagram of Hollow Metal or Aluminum frame]

- See included template.

Wood

![Diagram of Wood frame]

- See included template.

2b For metal frames ONLY, secure two mounting tabs to ends of cutout for lock in frame.

Install mounting tabs with correct side up as shown:

- 16 gauge hollow metal frames
- 1/8" thick aluminum frames

Use the included template to mark holes.

2 Prepare the frame. (TJ and SM)

TJ (inswing)

![Diagram of TJ (inswing) frame]

SM (outswing)

![Diagram of SM (outswing) frame]

Use the included template to mark holes.
2 Prepare the floor. (BRD)

2a Create a pocket for the threshold box.

End view

Side view

- 2.375” wide x 7.5” long
- centered directly below door’s bottom rail
- furthest away from hinges
- Installed magnet must not protrude above installed threshold.
- Use the box shim washers to raise and lower magnet to proper level.

NOTE: Retrofit Installations - Conditions may vary after the threshold plate is removed. If a cement, stone, or other hard material is encountered, use a pavement breaker or demolition hammer to chisel out the pocket and trench in the floor.

Box centerline must be the same as door centerline.
- The trench for the conduit should be at least 1/2” wide and deep enough so that the conduit can be easily inserted into the 7/8” hole in end of box. Direction and length of the trench away from the metal box may vary.

2b Install the threshold box.

- Feed 1/2” conduit into either 3/4” diameter hole in threshold box.
- Secure conduit with nut.
- Position box in pocket and conduit in trench.
- Pour concrete around threshold box and conduit and allow to cure.
Prepare the door.

Use these drawings as a reference. Use the included template to mark holes.

<table>
<thead>
<tr>
<th>Standard</th>
<th>Channel height</th>
<th>Reference drawing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hollow Metal or Aluminum</td>
<td>flush to 1/4”</td>
<td><img src="image1" alt="Diagram" /></td>
</tr>
<tr>
<td></td>
<td>1/4” to 1”</td>
<td><img src="image2" alt="Diagram" /></td>
</tr>
<tr>
<td></td>
<td>1” to 1 3/4”</td>
<td><img src="image3" alt="Diagram" /></td>
</tr>
<tr>
<td></td>
<td>1 3/4” to 2 1/2”</td>
<td><img src="image4" alt="Diagram" /></td>
</tr>
<tr>
<td>Wood</td>
<td>all</td>
<td><img src="image5" alt="Diagram" /></td>
</tr>
<tr>
<td>TRD</td>
<td>1 3/4”</td>
<td><img src="image6" alt="Diagram" /></td>
</tr>
<tr>
<td>Hollow Metal or Aluminum door where the top adjustment is not accessible.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glass</td>
<td>Adjustment screw</td>
<td><img src="image7" alt="Diagram" /></td>
</tr>
<tr>
<td>Glass</td>
<td>Adjustment screw</td>
<td><img src="image8" alt="Diagram" /></td>
</tr>
<tr>
<td>BRD</td>
<td>1 3/4” min</td>
<td><img src="image9" alt="Diagram" /></td>
</tr>
<tr>
<td>Model</td>
<td>Door type</td>
<td>Reference drawings</td>
</tr>
<tr>
<td>-------</td>
<td>---------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>TJ, SM</td>
<td>Hollow Metal</td>
<td><img src="image1" alt="Diagram" /></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
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<td></td>
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</tr>
<tr>
<td></td>
<td>Reinforced Metal</td>
<td><img src="image2" alt="Diagram" /></td>
</tr>
<tr>
<td></td>
<td>Wood</td>
<td><img src="image3" alt="Diagram" /></td>
</tr>
</tbody>
</table>

**WARNING**

The included sex nut is for 1 3/4" (45 mm) doors ONLY. For other door thicknesses, please contact customer service, 1-877-671-7011. Using the incorrect sex nut for your door thickness will lead to improper function and possible injury. Armature bolt must be tightened to at least 120 in.-lbs. for all doors except composite wood doors. For composite wood doors, tighten only to tight and flush. 120 in.-lbs. may damage composite wood doors. DO NOT back off bolt after tightening! Backing off the bolt after tightening will loosen the thread-locking patch, which may allow the bolt to loosen over time.
4 Install the lock.

### Mortise Mount: Standard, TRD

4a Install armature assembly into door.
See "Prepare the door." on page 6 to determine the installation method.

4b Install magnet into frame.
See "Prepare the frame. (Standard and TRD)" on page 4 to determine the installation method.

4c Adjust auto-relock time delay.

### Mortise Mount: BRD

4a Mount the armature in the door bottom rail. (BRD)
1. Mount **mounting bracket** to bottom rail using #10-24 x 3/4" Pan head **screws** supplied.
2. Mount **armature** to mounting bracket.
3. Remove end cap on door to expose adjustment. If door doesn’t have a removable end cap, an access hole will have to be drilled in edge of door according to the approximate dimensions as shown.

4b Mount magnet into the threshold box.
1. Place two **speed nuts** per slot, side by side in flanges of box.
2. Line up magnet over speed nuts. Insert **#10-24 x 1/2" flat head screws** into magnet brackets and through speed nuts. Align magnet, making sure centerlines of armature are on the centerlines of magnet. Tighten screws.
3. If needed, add shims under magnet to bring magnet flush with top of threshold.
   ☰ **NOTE**: **Top surface of magnet must not protrude above top surface of threshold**.
4. Replace door on hinges.
5. Adjust armature, using adjusting screw located in access hole so that the clearance gap of approx. 1/16" between magnet face and armature is achieved. It may be necessary to slightly re-adjust the gap to achieve proper locking action and spring return action when the magnet is de-energized.
6. If door’s bottom rail depth is greater than 1 3/4", spacers (e) may be needed (one, 1/8" thick spacer is supplied).
7. Install door status switch into frame and actuating magnet into door. See "Door Status Monitor (DSM) (BRD)" on page 11.
8. After all magnet adjustments have been completed, fill the threshold box with a spray urethane foam insulation to keep water out.
   ☰ **NOTE**: **Mount Control module in a remote and dry location, and no more than 15 feet away from lock**.

4c Adjust auto-relock time delay.
Surface Mount: TJ, SM

4a Install armature mounting spacer.
Secure mounting spacer and armature housing onto door.

4b Install Faceplate
Install faceplate (a) into magnet housing.
Tighten set screws (b).

4c Attach housing to frame.
Carefully feed wires through access hole (a) in magnet housing (b).
Using either two, #10 x 3/4 sheet metal screws or two, #10 x 1/2 machine screws (c), loosely attach magnet housing to frame.

NOTE: DO NOT COMPLETELY TIGHTEN AT THIS TIME.

4d Install Magnet
Make final wiring connections (see "Wiring Diagrams” on page 10).
Insert the magnet (a) into magnet housing.
Using four, 10-24 x 3/4 screws (b), secure mounting spacer and armature housing onto door.

4e Adjust auto-relock time delay.
See “Auto Relock Time Delay” on page 9.

Auto Relock Time Delay

Standard, TRD, TJ, SM
1. Refer to the wiring diagram (page 10) and note location of ATD arrow.
2. With door open, apply power.
3. Remove 5/64” hex head screw to allow access to recessed momentary pushbutton switch.
4. Using the hex wrench provided, depress and release the recessed switch one time for each second of delay required (max. =30 seconds, min.=2 seconds). Example: To set ATD to 5 seconds, depress the recessed switch 5 times.
   ⑦ NOTE: If a mistake is made, wait 10 seconds, then repeat Step 4.
5. Reinstall hex head screw, after setting desired relock time delay.
6. Close door and verify delay.

BRD
1. Verify that the exposed yellow wire on the ARS is not shorting against anything.
   ⑦ IMPORTANT: Do not cut yellow wire.
2. With door open, apply power.
3. Touch the violet wire to the black ARS wire one time for each second of delay required (maximum = 30 seconds, minimum = 2 seconds). Example: To set ATD to 5 seconds, touch the violet wire to the black ARS wire 5 times.
   ⑦ NOTE: If a mistake is made, wait 10 seconds, then repeat Step 3.
⑦ NOTE: A pushbutton switch may be used if desired.
4. Properly insulate the violet wire after setting desired relock time delay.
5. Close door and verify delay.
6. If OK, permanently connect and insulate the yellow wire on the ARS.
### Standard features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating Voltage</strong></td>
<td>Filtered and regulated 12 or 24 volts DC. Automatic voltage selection circuitry is standard.</td>
</tr>
<tr>
<td><strong>Automatic Relock Switch (ARS)</strong></td>
<td>ARS requires the door to be in the closed position before the magnet can be energized.</td>
</tr>
<tr>
<td><strong>Adjustable Time Delay (ATD)</strong></td>
<td>ATD provides a time delay to relock, adjustable from 2 to 30 seconds. Factory default is 3 seconds.</td>
</tr>
</tbody>
</table>

### Wiring Diagrams

**Standard, TRD, TJ, SM**

![Wiring Diagram](image-url)

**BRD**

![Wiring Diagram](image-url)
Door Status Monitor (DSM) (BRD)

- Hole for switch: 1" diameter in frame.
- Hole for magnet:
  - Wood or Aluminum doors: 3/8" diameter
  - Hollow metal doors: 1" diameter
- Installation of magnet and switch must be concentric (common centerline).
- Switch insertion: snap-in fit.
- Magnet insertion:
  - Wood or aluminum doors: press-in fit
  - Hollow metal doors: snap-in fit
- If necessary, use epoxy.
- Contact Type: Single Pole/Double Throw (SPDT)
- Contact Rating: 28VDC @ 300 mA (max)
- With door closed, no more than 1/2" air gap is allowed between switch and magnet.

Air Gap Adjustment

**Standard, TJ and SM**

Using the provided hex wrench, raise or lower the armature as needed. Clearance between magnet and armature should be at least 1/8" and must be less than 1/4".

**BRD and TRD**

Locate the adjustment screw to raise or lower the armature as needed. Clearance between magnet and armature should be at least 1/8" and must be less than 1/4".

- BRD: see page 6
- TRD: see page 6
Optional Monitoring Outputs

Door Status Monitor (DSM)

The optional DSM provides a dry set of contacts for monitoring “door open” or “door closed” conditions.

Magnetic Bond Sensor (MBS)

The optional MBS provides a dry set of contacts for monitoring “door locked” or “door unlocked” conditions. The MBS measures the magnetic holding force between the armature and the magnetic coil. Poor magnetic bond is the result of low voltage, foreign material between the surfaces of the magnetic coil and armature, or improper alignment of magnet and armature.
1. Fold booklet style

<table>
<thead>
<tr>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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<td>021384</td>
<td>062530</td>
<td>065782</td>
<td>077349</td>
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</table>

Material: White Paper

Notes:
1. printed two sides
2. printed black
3. tolerance ± .13
4. printed in country may vary
5. drawings not to scale

Revision Description:
G > Revised artwork

Edited By: M. Sasso
Approved By: P. Bockelman
EC Number: 077349
Release Date: 11-02-18

Title:
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Number: 30500
Revision: G

Created By: M. Coleman
Activity: 3899 Hancock Expwy Security, CO 80911
Software: InDesign CS6

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