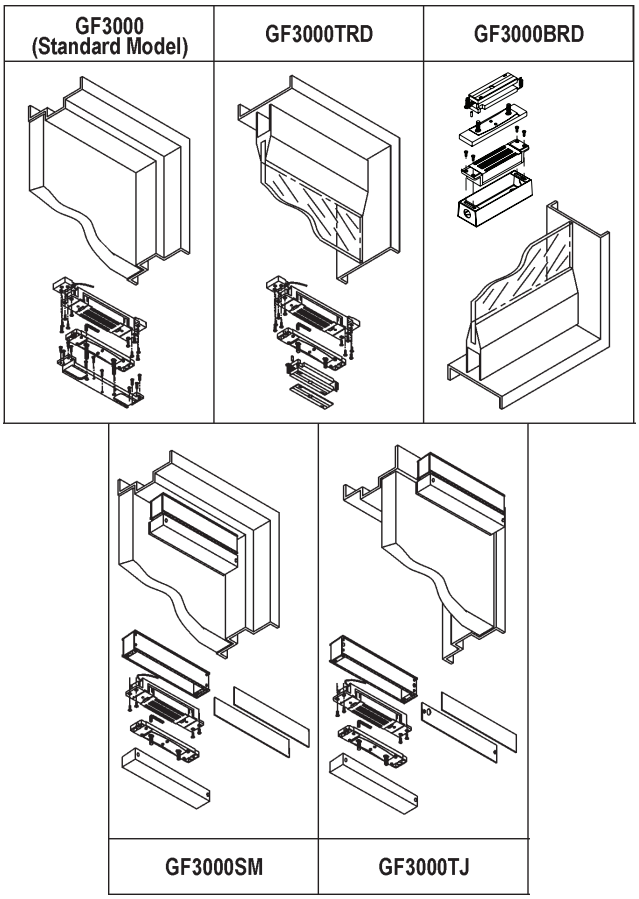
30500

GF3000

SCHLAGE

INSTALLATION MANUAL

Models Covered: Standard, TRD, BRD, SM, and TJ



Gravity Force Shear Locks: Mortise & Surface Mount

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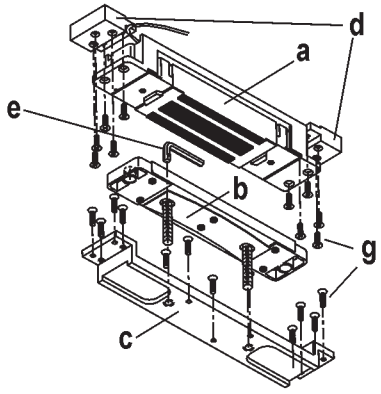
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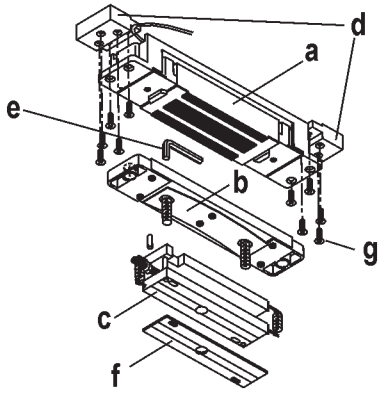
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Confirming the Box Contents

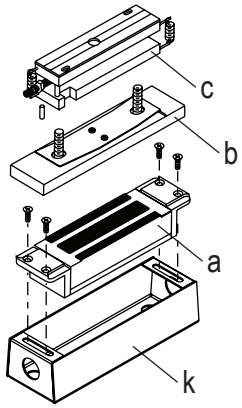
GF3000(STANDARD)



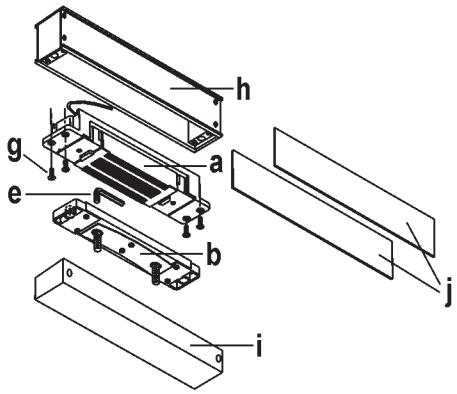
GF3000TRD



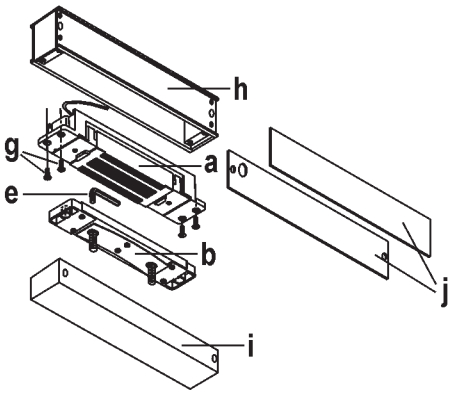
GF3000BRD



GF3000SM



GF3000TJ



a - MAGNETIC COIL ASSEMBLY
b - ARMATURE
c - ARMATURE MOUNTING ASSEMBLY
d - MOUNTING TABS
e - HEX WRENCH
f - SHIM PLATE
g - HARDWARE PACK
h - MAGNETIC COIL HOUSING
i - ARMATURE HOUSING
j - FACE PLATES
k - THRESHOLD BOX

Introduction

This manual covers the complete installation and wiring instructions for the following GF3000 Series models:

MORTISE:

- GF3000 (Standard model)
- GF3000TRD (Top Rail Door)
- GF3000BRD (Bottom Rail Door)

SURFACE MOUNT:

- GF3000SM (Surface Mount)
- GF3000TJ (Top Jamb)

Tools and Materials Needed Not Included in Box

Whichever model you are installing, you should have all of the following tools on hand:

- Pencil
- Tape Measure
- Hammer
- Center Punch
- Power Drill w/Set of Drill Bits
- Chisel
- Small Sawsall or other metal cutting saw
- Set of Hex (Allen) Wrenches
- Set of Philips Head Screwdrivers
- Electrical Tool Kit (containing: wire cutter/stripper, electrical tape, needle-nose pliers, etc.)

If you are installing a GF3000BRD, you might also need:

- Pavement Breaker or Demolition Hammer

Contact Information: 1-877-671-7011

Specifications:

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

Mechanical
- Mounting Position/Type . . . . . Horizontally. Mortise and Surface. Non-handed
- Shear Holding Force . . . . . 3000 pounds maximum
- Door Thickness . . . . . 1-3/4” minimum
- Plating . . . . . Magnetic face and armature; nickel plated to resist corrosion

Warranty . . . . . Magnetic coil: Lifetime Electronics: 1 year limited

Certifications/Compliance . . . . . UL# R12092; MEA# 222-96-E; CSFM# 3774-0544:107

Shipping Weight . . . . . GF3000 - 6 Pounds; GF3000TRD & BRD - 8 Pounds

Dimensions - Mortise Mount . . . . . Magnet - 9.5L x 1.5W x 1.5H
. . . . . Magnet w/Mounting Tabs - 11.56L x 1.5W x 1.5H
. . . . . Armature - 8.38L x 1.38W x 0.5D
. . . . . Armature Bracket - 10.63L x 1.38W x 1.0D

Dimensions - Surface Mount . . . . . Magnet Housing - 9.81L x 1.25H x 1.5D
. . . . . Armature Housing - 8.38L x 1.38W x 0.5D

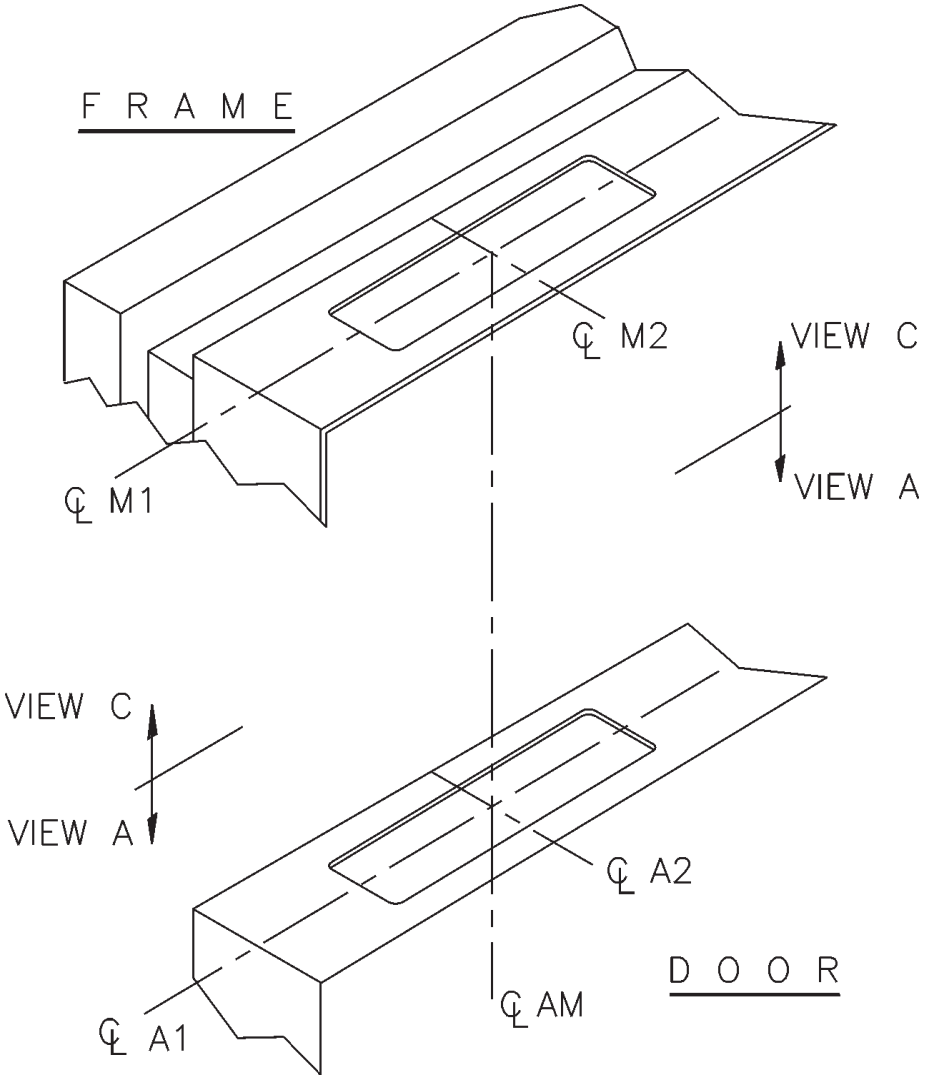
Operation:

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.

Preparing the Frame and Door

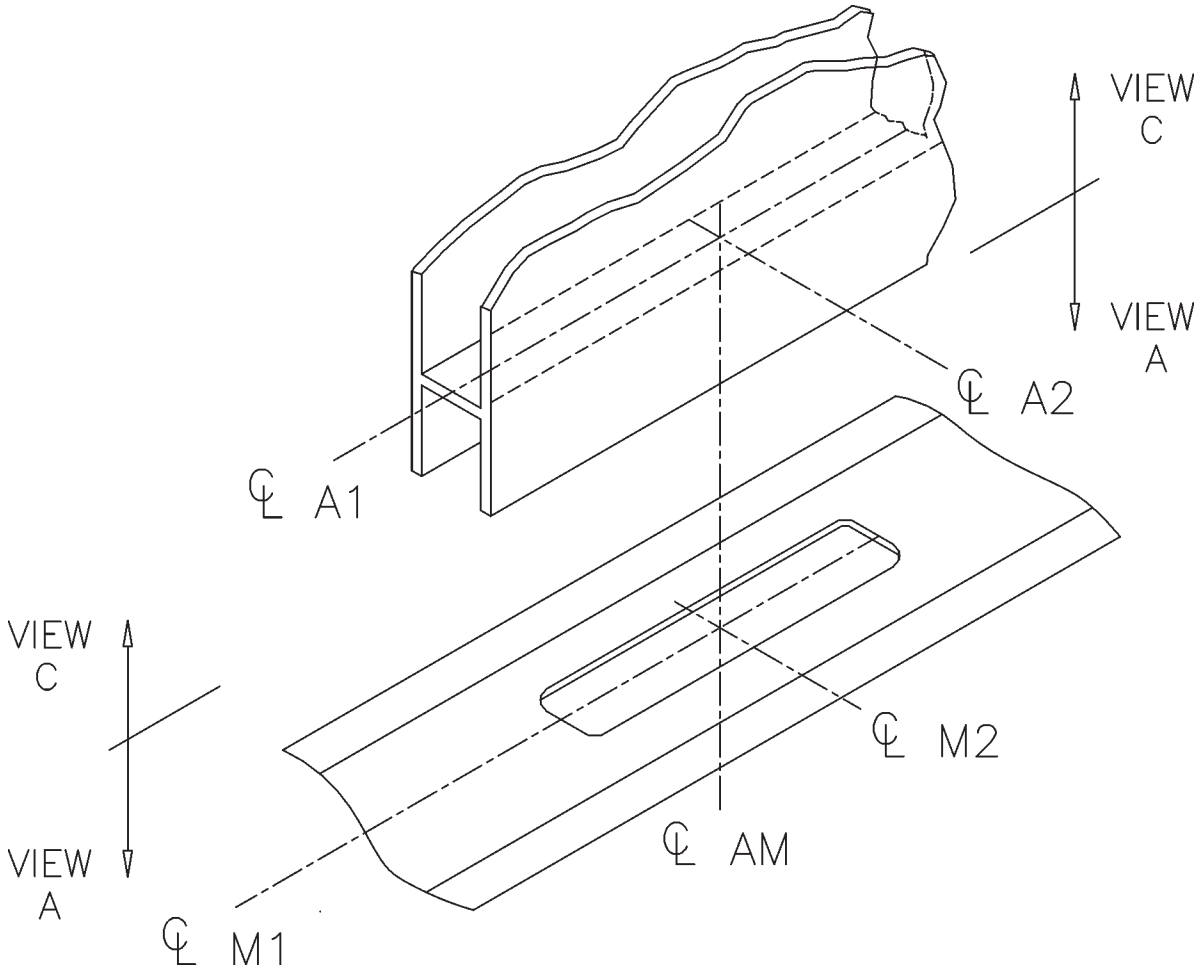
1) Establish Frame and Door Centerlines (Standard and TRD):

- For proper operation, it's critical to establish centerlines of magnet and armature assembly that line up to form a vertical axis. The figure below shows the centerline scheme for a standard GF3000 and a GF3000TRD. Note that centerlines for magnet (M1 and M2) are directly above centerlines for armature assembly (A1 and A2) thus forming a vertical axis (AM).
- Check door & frame for any structural member or hardware component that might interfere with magnet and armature mounting areas before selecting template location.
- Remove existing hung doors for template application and armature installation.
- The standard model GF3000 can be installed in a horizontal or vertical configuration.
- To achieve maximum resistance to forced entry, position as follows:
  > Horizontal configuration - position unit closest to the latch side of door.
  > Vertical configuration - positioning unit closest to the strike plate is recommended.
- In some applications, the door and frame may require reinforcement.



1) Establish Frame and Door Centerlines (BRD):

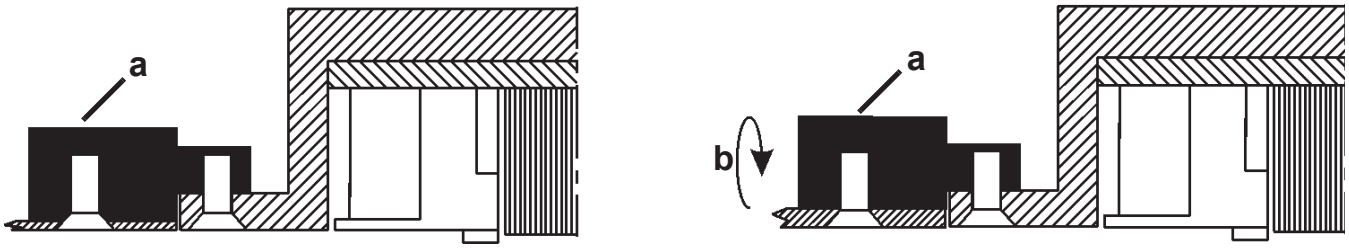
- For proper operation, it's critical to establish centerlines of the magnet and armature assembly that line up to form a vertical axis. The figure below shows the centerline scheme for a GF3000BRD. Note that centerlines for magnet (M1 and M2) are directly below centerlines for armature (A1 and A2) thus forming a vertical axis (AM).
- To achieve maximum resistance to forced entry, position unit closest to latch side of door.
- Adjusting screw must be accessible with a long bladed screwdriver when door is hung.
- Check both door & frame for any structural member or hardware component that might interfere with magnet and armature mounting areas before selecting template location.
- Existing hung doors will normally have to be removed for template application and armature installation.
- In some applications, the door and frame may require reinforcement.



Installing the Lock - Standard, TRD, TJ, SM

1) Mounting Tabs (Standard, TRD):

Secure two mounting tabs (**a**) to ends of lock cutout in frame. Mounting tabs can be installed upside-down (**b**) so that they may be used with 16 gauge hollow metal or 1/8" thick aluminum frames.



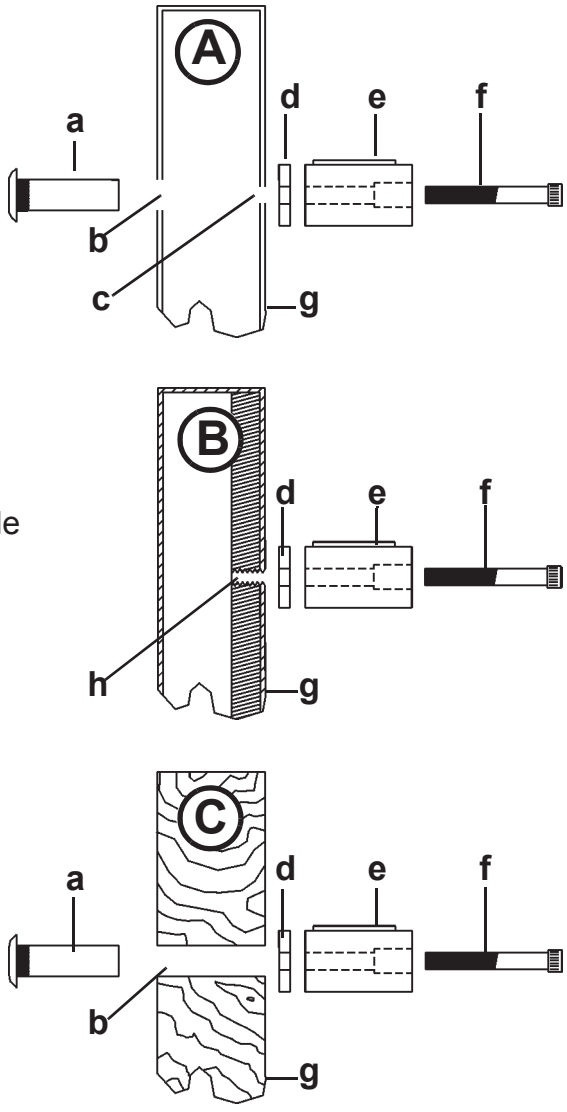
2) Surface Mount Armature Housing Sex Bolt Hole Sizes (TJ, SM):

Door Types:

- **A** = Hollow Metal
- **B** = Reinforced
- **C** = Solid Wood

Hole Sizes and Parts:

- **a** = sex bolt
- **b** = 1/2" hole
- **c** = 1/4" hole
- **d** = mounting spacer
- **e** = armature
- **f** = 1/4-20 x 2
- **g** = inside of door
- **h** = 1/4-20 threaded hole (thru reinforced side of door only)

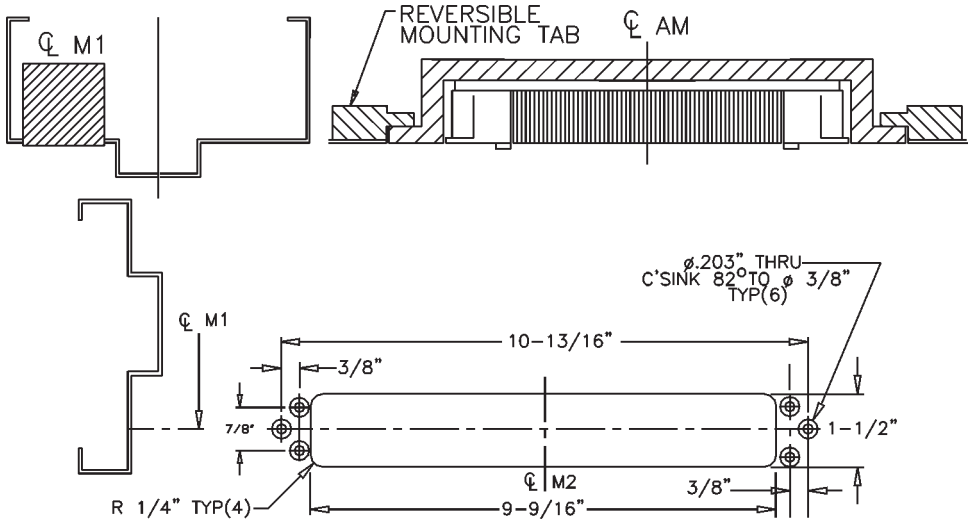


• FRAME AND DOOR PREP - Standard, TRD, TJ, SM

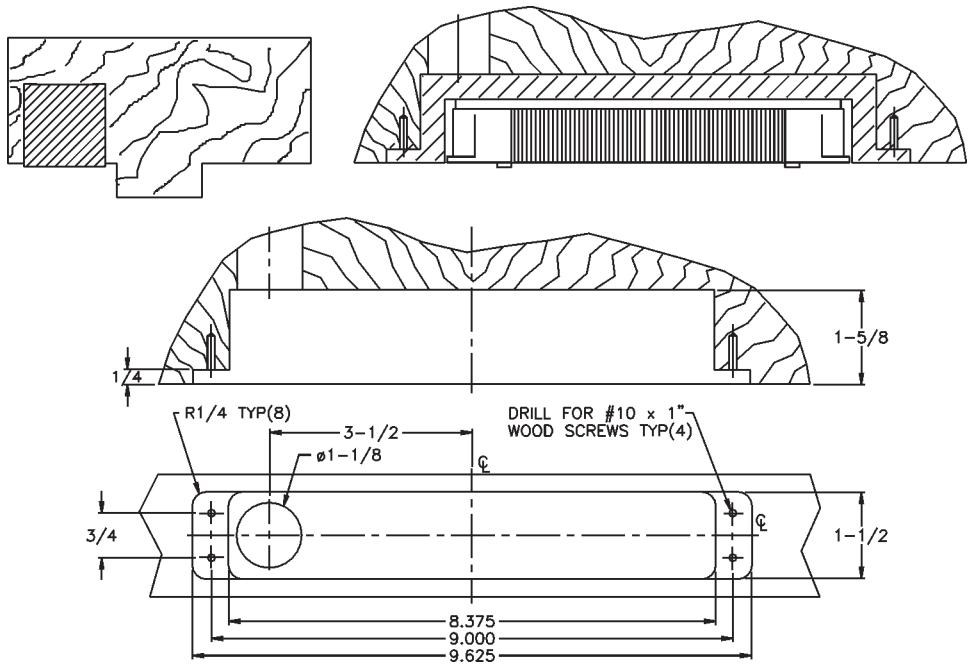
3) Frame Prep (Standard and TRD):

- The frame prep is the same for the Standard and the TRD models. The door prep for the standard model has many options (see -) depending on the depth of the channel (if any). The TRD model has a specific prep of its own (see -). The lock should be located as close tc the strike side as possible while still allowing room for the mounting tabs and screws.

Frame Prep - Hollow Metal or Aluminum



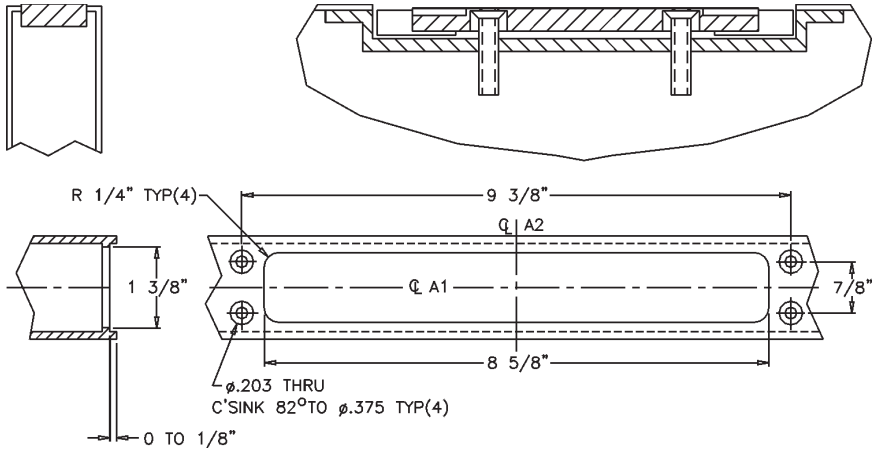
Frame Prep - Wood



4) Door Prep (Standard and TRD):

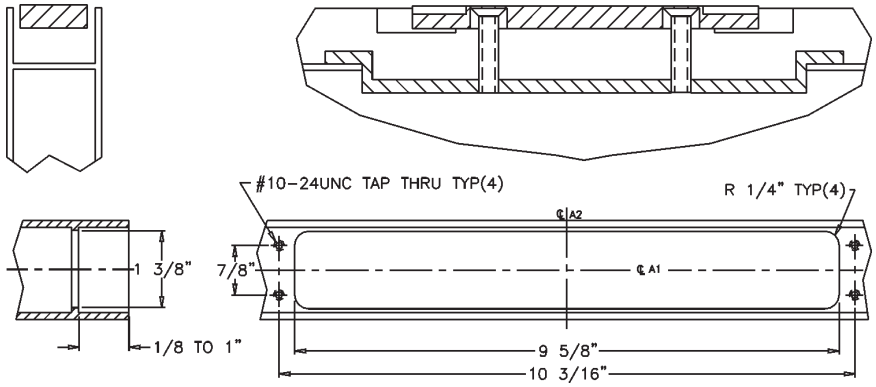
DOOR PREP

- Hollow Metal or Aluminum
- Depth: flush to 1/4”



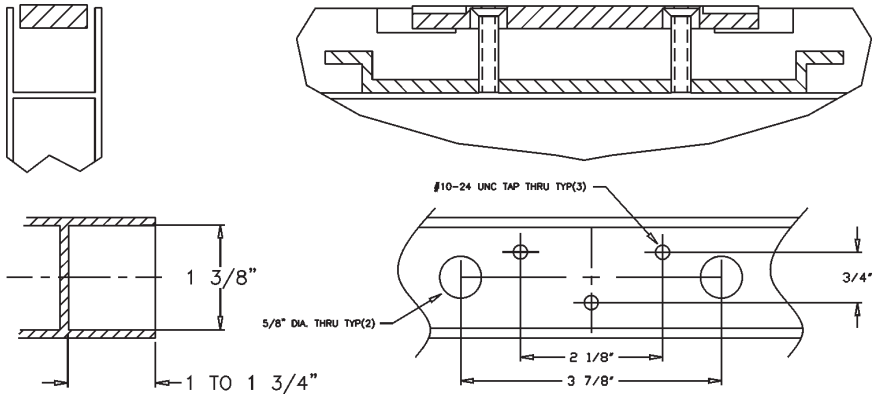
DOOR PREP

- Hollow Metal or Aluminum
- Depth: 1/4” to 1”



DOOR PREP

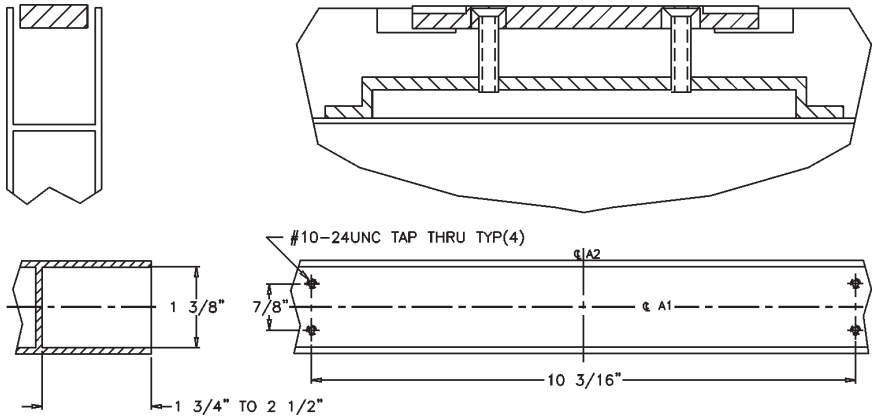
- Hollow Metal or Aluminum
- Depth: 1/4” to 1-3/4”



Standard and TRD Door Prep (continued):

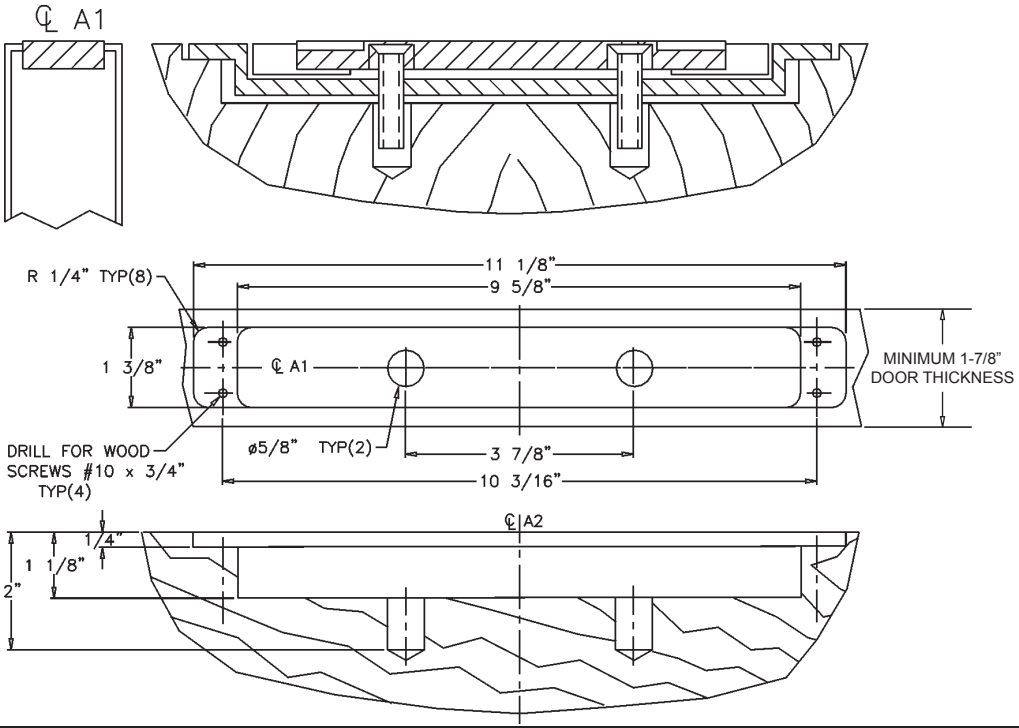
DOOR PREP

- Hollow Metal or Aluminum
- Depth: 1-3/4” to 2-1/2”



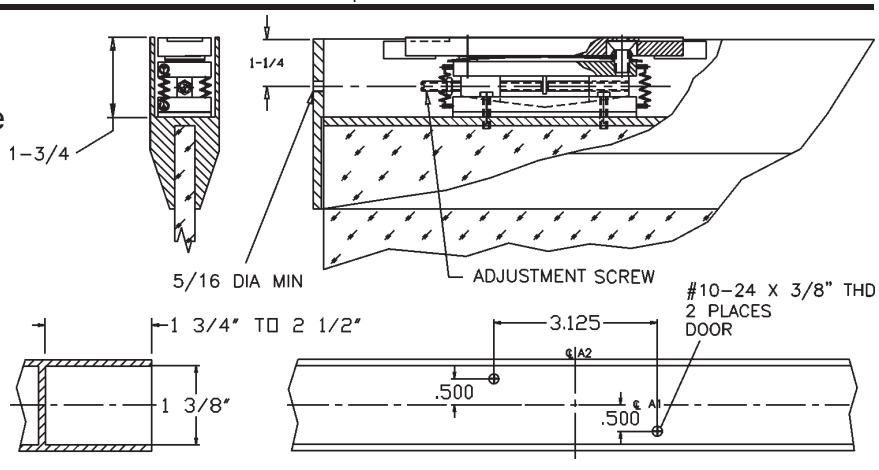
DOOR PREP

- Wood



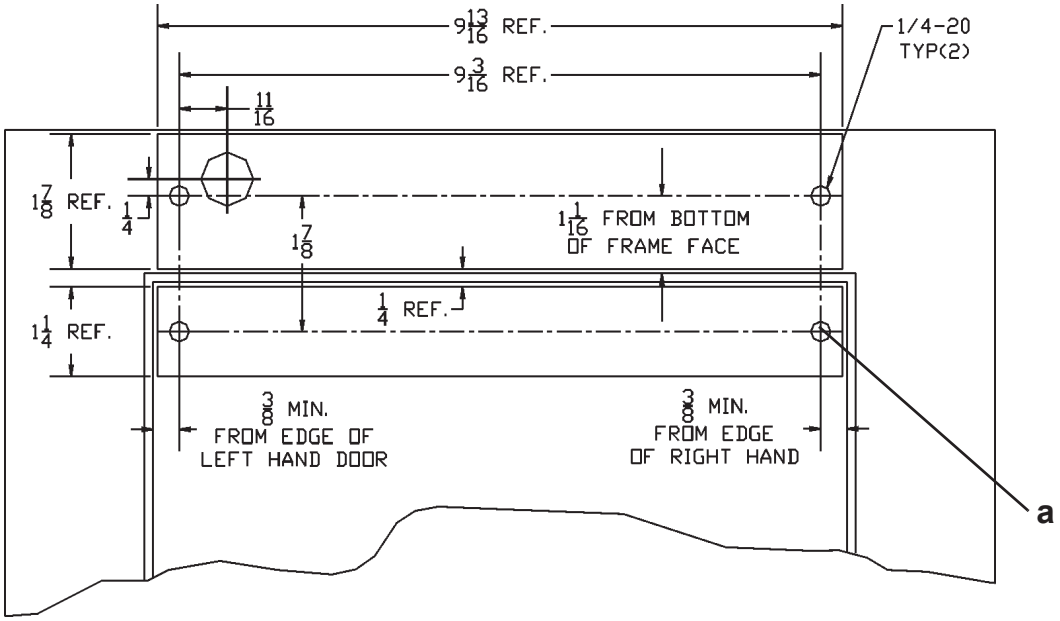
DOOR PREP - TRD

- Hollow Metal or Aluminum door where the top adjustment is not accessible.
- Depth: 1-3/4”



5) Template information (TJ):

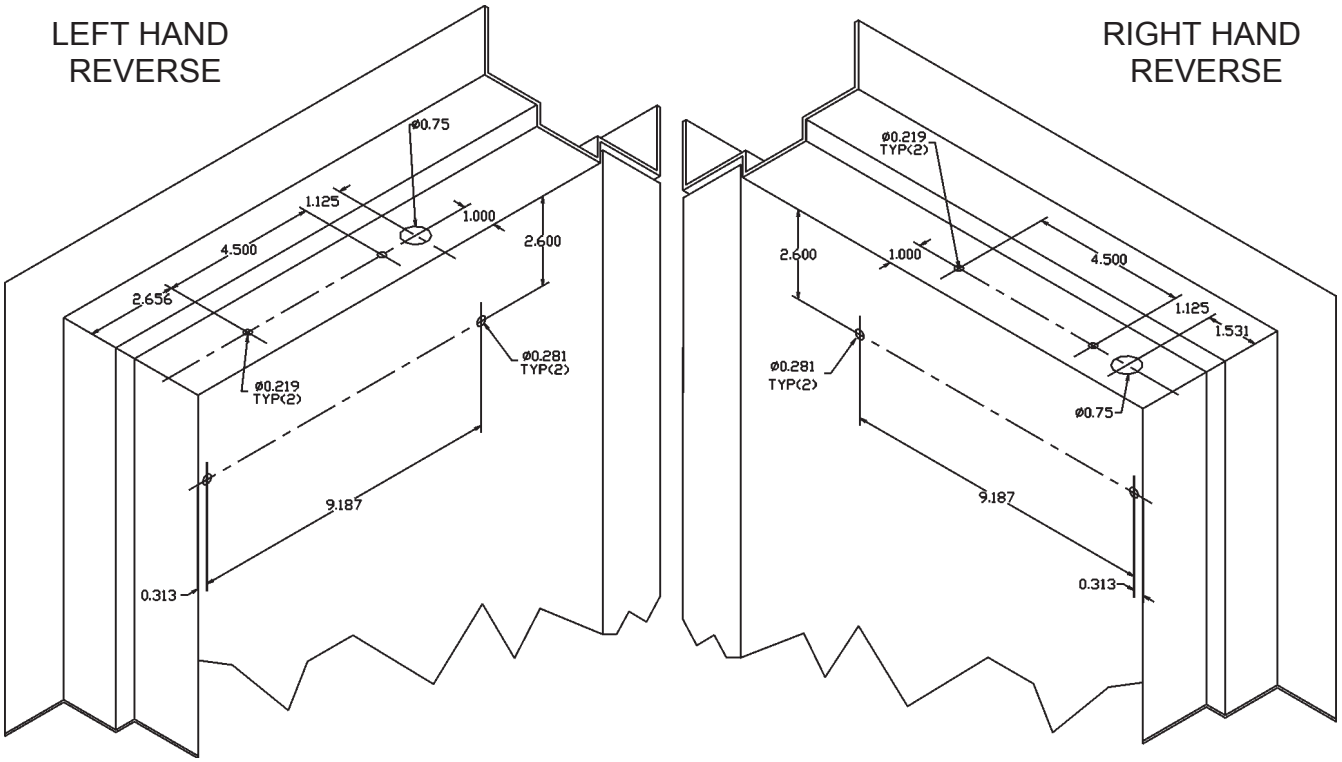
All dimensions in inches.



NOTE: Hole (a) - size and type depends on door type and mounting style.

6) Template information (SM):

All dimensions in inches.

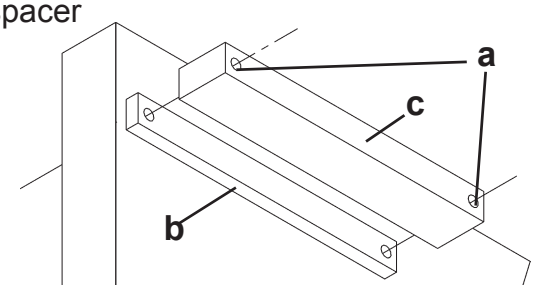


Mounting the Lock - Standard, TRD, TJ, SM

After the door and frame have been prepared, do the following:

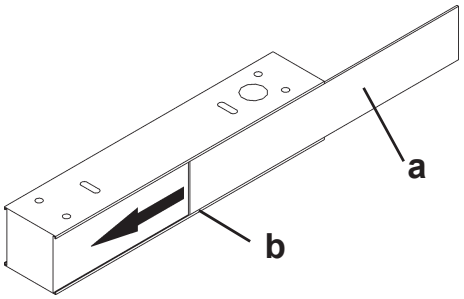
1) Install Armature Mounting Spacer:

- Using two, 1/4 x 20 screws, secure mounting spacer (**b**) and armature housing (**c**) onto door.
  > Use through-holes (**a**).



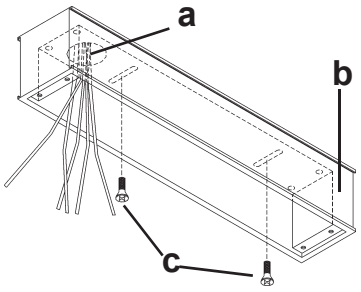
2) Install Faceplate:

- Install faceplate (**a**) into magnet housing.
- Tighten set screws (**b**).



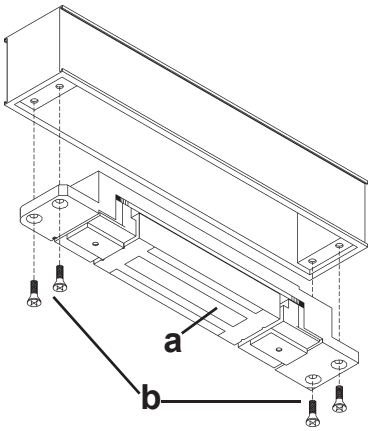
3) Attach Magnet Housing to Frame:

- 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.
  > DO NOT COMPLETELY TIGHTEN AT THIS TIME



4) Install Magnet:

- Make final wiring connections (see **Wiring Diagram: on page 21**.
- Insert GF3000 magnet (**a**) into magnet housing.
- Using four, 10-24 x 1/2 screws (**b**), secure mounting spacer and armature housing onto door.



Installing the Lock - BRD

• INSTALLING THE MAGNET AND ARMATURE

1) Preparing the Floor for the GF3000BRD Magnet:

Since the GF3000BRD magnet is installed in the floor directly below the bottom rail of the door, a threshold box (that will hold the magnet) that is inset into a pocket (**a**) in the floor, and a trench (**b**) for the electrical conduit is required.

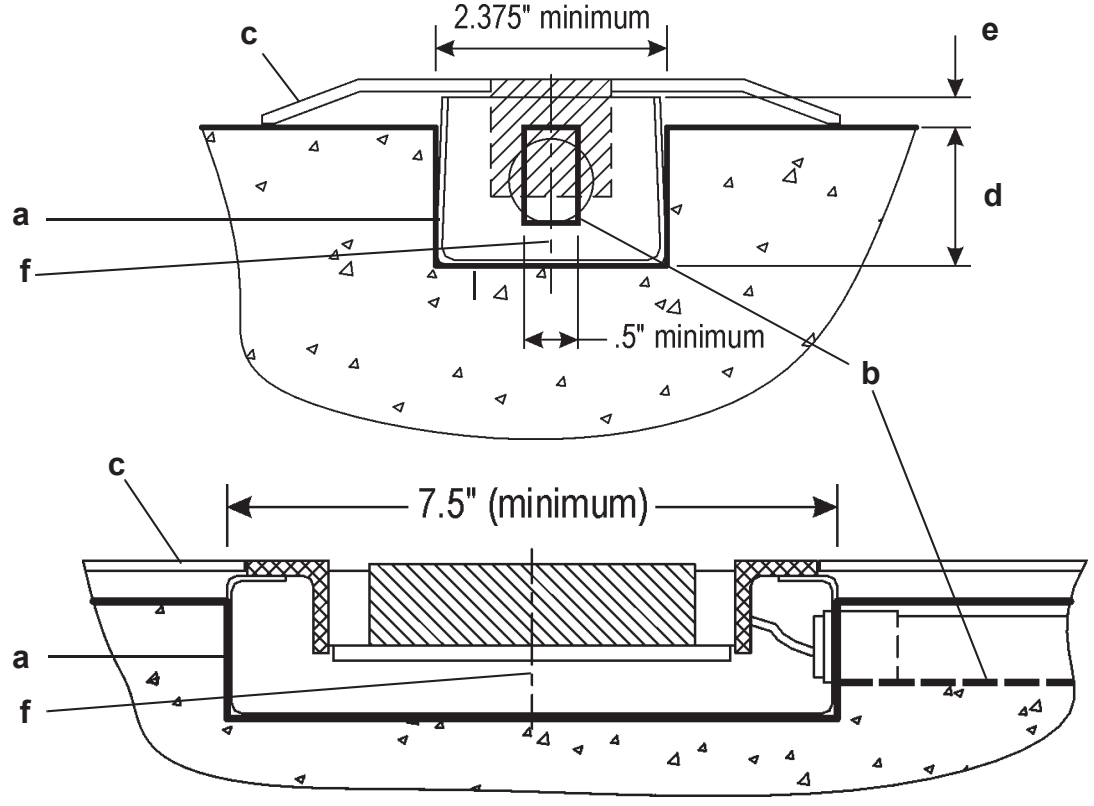
NOTE: Retrofit Installations - You may find that conditions vary from site to site after the threshold plate (c) is removed. If a cement, stone, or other hard material is encountered, usin a pavement breaker or demolition hammer might be useful for chiseling out the pocket and trench in the floor.

Using tools applicable for conditions found at the site, create a pocket that is at least 2.375” wide x 7.5” long within the threshold area, centered directly below door’s bottom rail and furthest away from hinges. Depth of this pocket (**d**) may vary from site to site. The guiding dimension for depth of the pocket is distance (**e**). Distance (**e**) is from top of the threshold box that is inset into the pocket to the underside of the threshold plate.

IMPORTANT: Considerations to keep in mind for position of metal box are:

> When magnet and threshold are installed, magnet must not protrude above threshold.
> You should be able to use box’s shim washers to raise and lower magnet to proper level.
> Box centerline (**f**) must be placed on centerline of door.

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 from site to site.

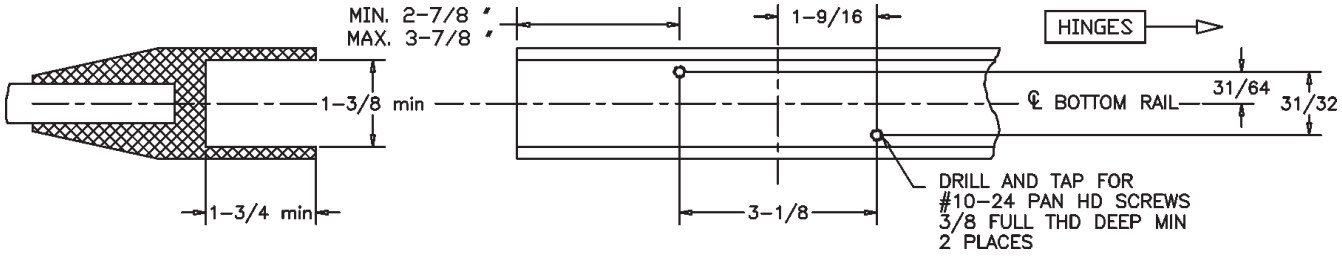


2) Installing the GF3000BRD Threshold Box:

After the pocket and trench are created, do the following:

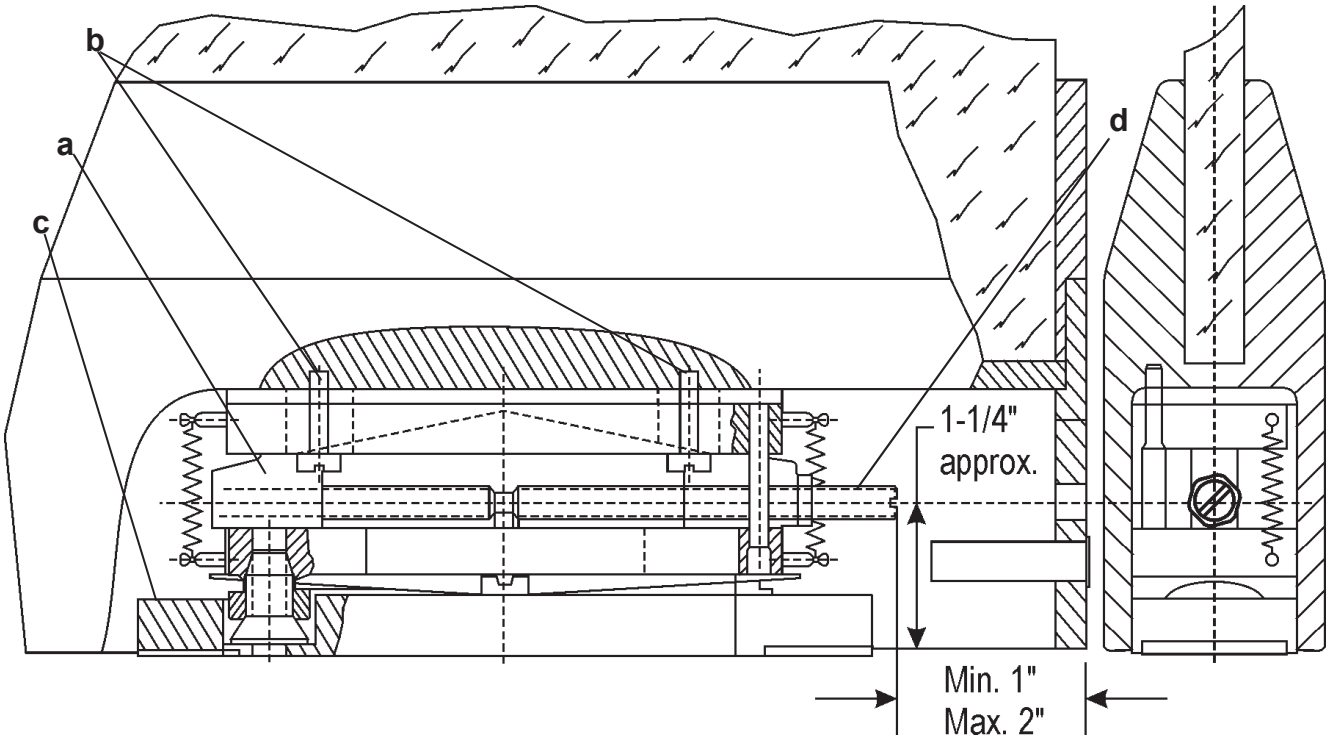
- Feed 1/2" conduit into either 7/8" diameter hole in threshold box.
- Secure conduit with nut.
- Position box in pocket and conduit in trench.
- Pour concrete around threshold box and conduit and allow to cure.

3) Preparing the Door for the Armature: in the Door's Bottom Rail:



4) Mounting the GF3000BRD Armature in the Door's Bottom Rail:

- Mount armature mounting bracket assembly (**a**) to bottom rail using #10-24 x 3/4" Pan head screws (**b**) supplied.
- Mount armature assembly (**c**) to armature mounting bracket assembly (**a**)
- Remove end cap on door to expose adjusting screw (**d**). 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.



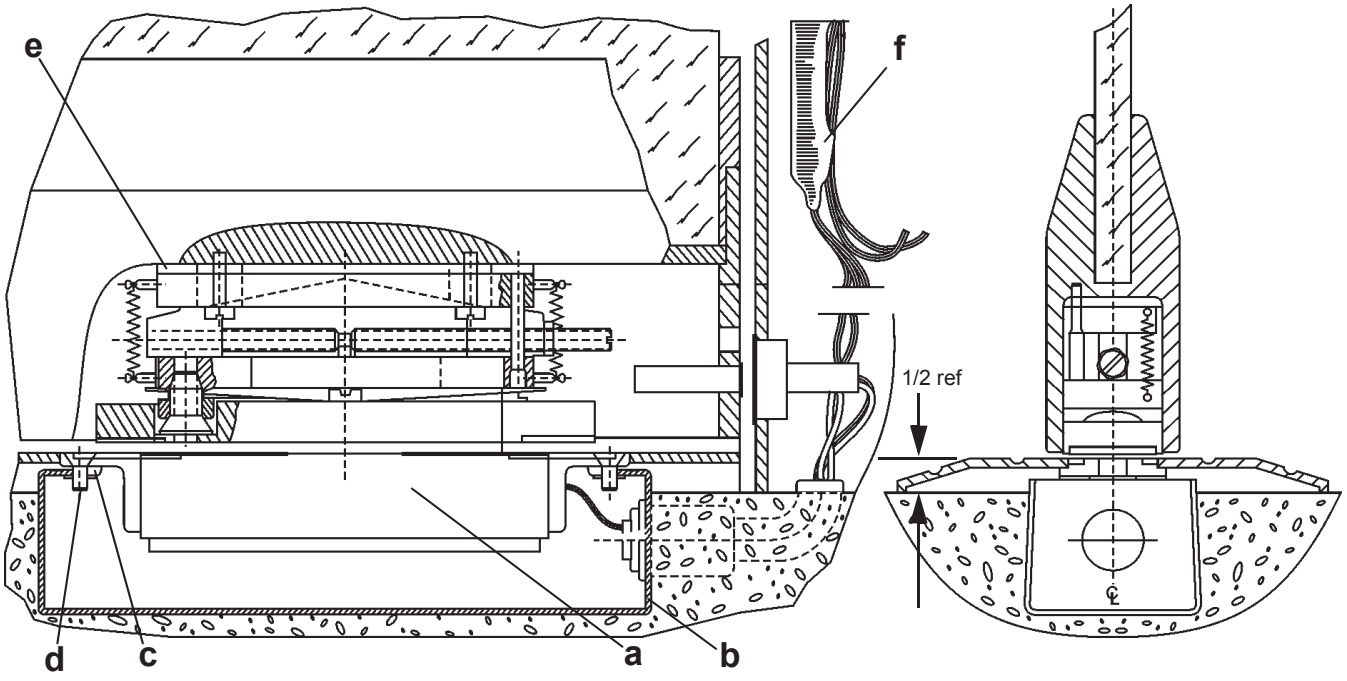
5) Mounting the GF3000BRD Magnet Into the Threshold Box:

- Mount magnet (**a**) to box (**b**) by placing two speed nuts (**c**) per slot, side by side in flanges of box.
- Line up magnet over speed nuts. Insert #10-24 x 1/2" flat head screws (**d**) into magnet brackets and through speed nuts. Align magnet, making sure centerlines of armature are on the centerlines of magnet. Tighten screws.
- 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.

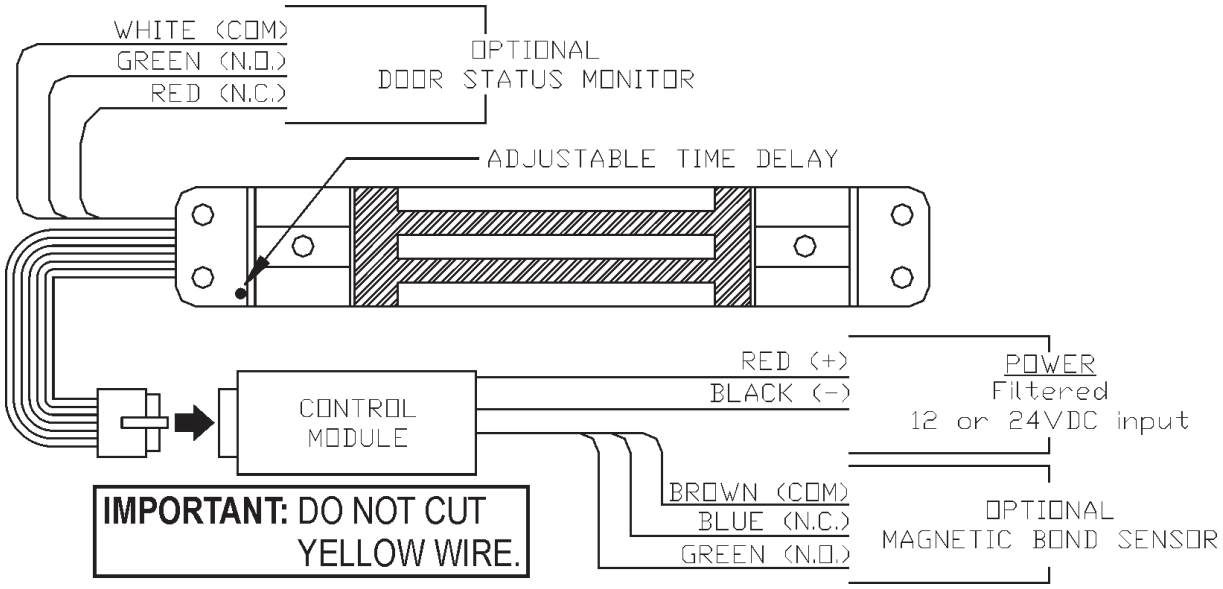
- Replace door on hinges.
- Adjust armature, using adjusting screw located in access hole so that the clearance gap of approx. 1/16" between magnet face and armature is achieved. It may be necessary to slightly re-adjust the gap to achieve proper locking action and spring return action when the magnet is de-energized.
- If door's bottom rail depth is greater than 1-3/4", spacers (**e**) may be needed (one, 1/8" thick spacer is supplied).
- Install door status switch into frame and actuating magnet into door (see **Door Status Monitor (DSM) - GF3000BRD on page 23.**).
- After all magnet adjustments have been completed, it is strongly recommended to fill the magnet box with a spray urethane foam insulation (available from most building supply companies) to keep water out.
- Make final wiring connections (see **Wiring Diagram: on page 22**

NOTE: Mount Control Module (f) in a remote and dry location, and no more than 15 feet away from lock.



Wiring the Lock-Standard, TRD, TJ, SM

1) Wiring Diagram:



2) Standard Features:

Operating Voltage

The GF3000 will operate only on filtered and regulated 12 or 24 volts DC. Automatic voltage selection circuitry is standard, eliminating the need for a voltage selection switch.

Automatic Relock Switch (ARS)

A built-in relock switch requires the door to be in the closed position before the magnet can be energized.

Adjustable Time Delay (ATD)

The ATD provides a time delay to relock that is adjustable from 2 to 30 seconds. The unit has been preset at the factory for a 3 second relock delay.

3) To Adjust Relock Time Delay:

1) Refer to the wiring diagram above 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.

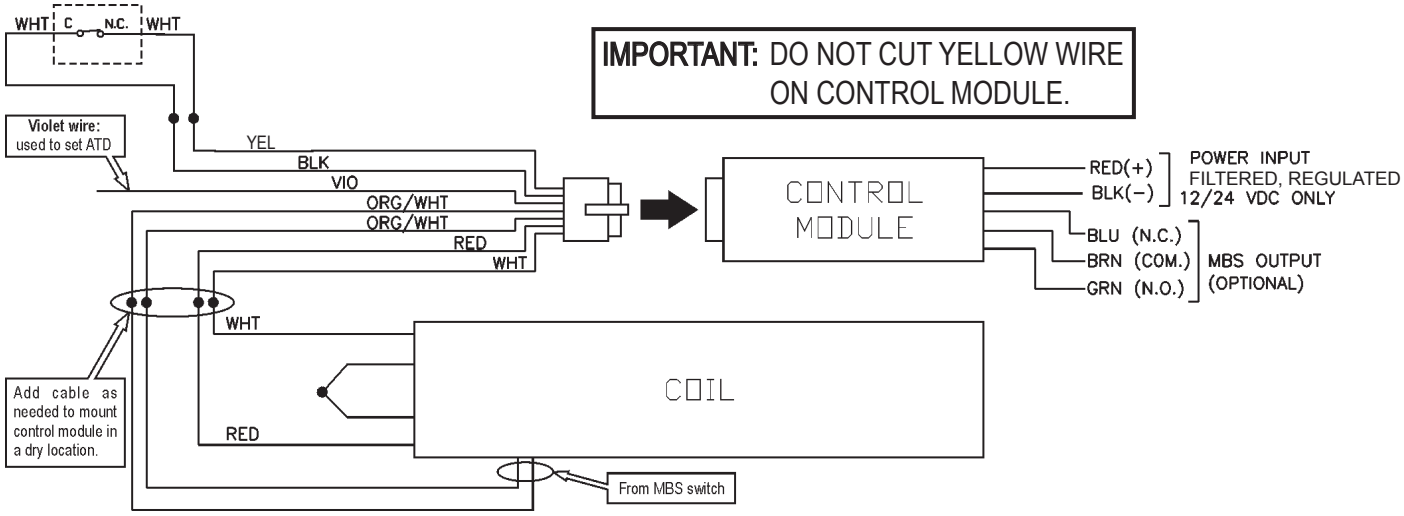
NOTE: If a mistake is made, wait 10 seconds, then repeat Step #4.

5) Reinstall hex head screw, after setting desired relock time delay.
6) Close door and verify delay.

Wiring the Lock - BRD

1) Wiring Diagram:

Automatic Relock Switch (ARS)



2) Standard Features:

Operating Voltage

The GF3000BRD will operate only on filtered and regulated 12 or 24 volts DC. Automatic voltage selection circuitry is standard, eliminating the need for a voltage selection switch.

Automatic Relock Switch (ARS)

A built-in relock switch requires the door to be in the closed position before the magnet can be energized.

Adjustable Time Delay (ATD)

The ATD provides a time delay to relock that is adjustable from 2 to 30 seconds. The unit has been preset at the factory for a 3 second relock delay.

3) To Adjust Relock Time Delay:

1) Verify that the exposed yellow wire on the ARS is not shorting against anything.

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).

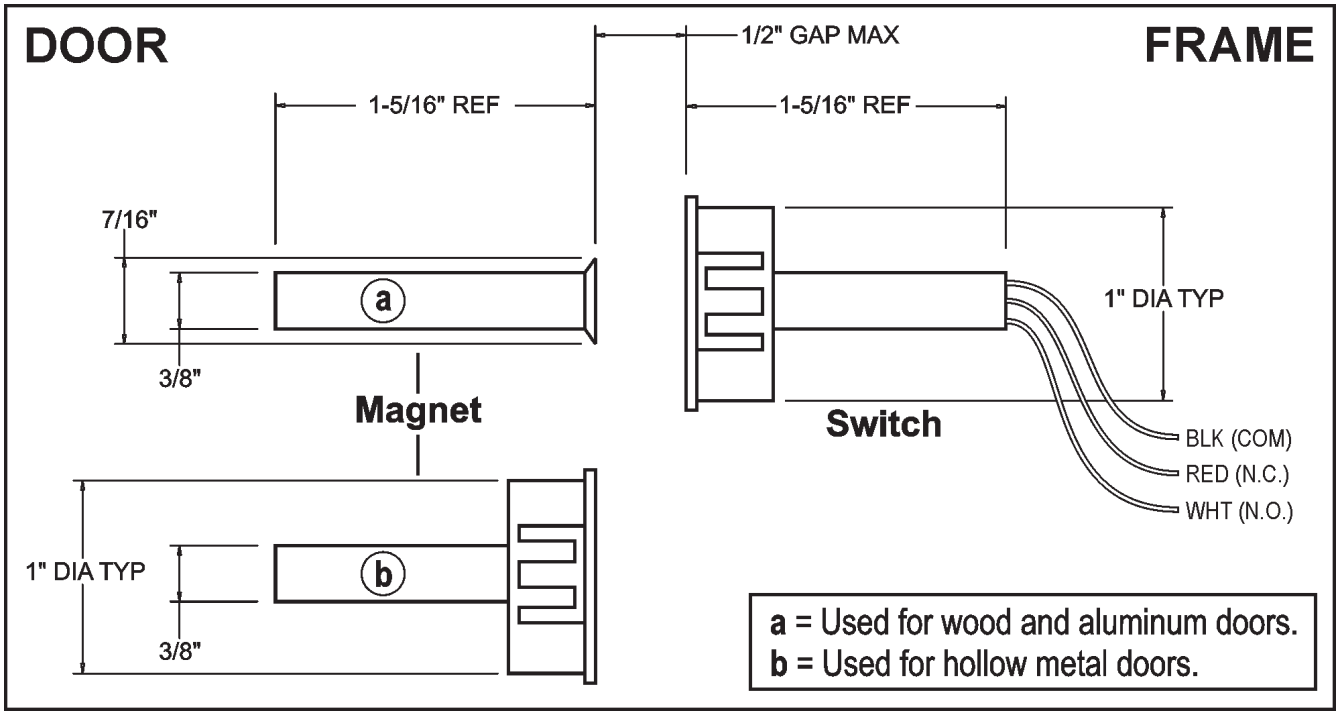
Example To set ATD to 5 seconds, touch the violet wire to the black ARS wire 5 times.

NOTE: If a mistake is made, wait 10 seconds, then repeat Step #4.

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.

Door Status Monitor (DSM) - GF3000BRD

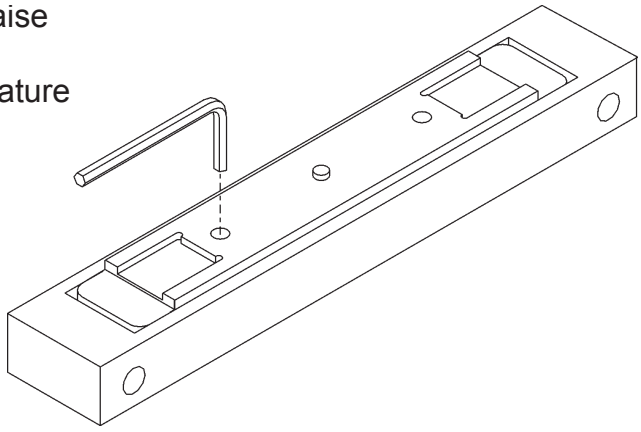


- Hole for switch: 1” diameter in frame.
- Hole for magnet:
  > (**a**) Wood or Aluminum doors - 3/8” diameter
  > (**b**) Hollow metal doors - 1” diameter
- Installation of magnet and switch must be concentric (common centerline).
- Switch insertion: snap-in fit.
- Magnet insertion:
  > Wood or aluminum 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 an magnet.

Air Gap Adjustment

1) Set Armature Height:

- Using the provided 7/32 hex wrench, raise or lower the armature as needed.
  > Clearance between magnet and armature is recommended to be 1/8”, and must be less than 1/4”.

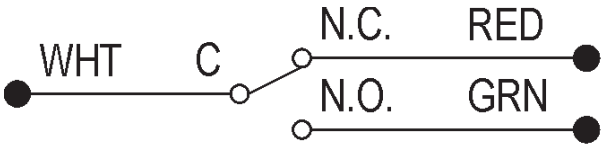


Options

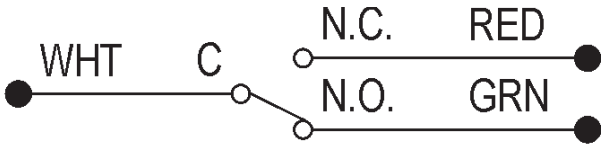
1) Optional Monitoring Outputs:

Door Status Monitor (DSM)

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



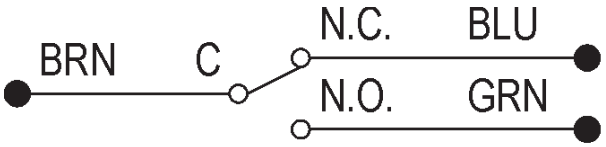
Door Open



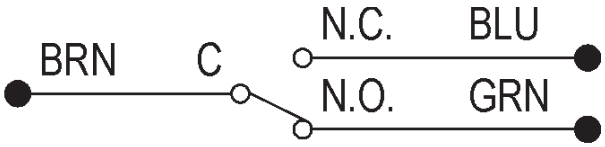
Door Closed

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.



Poor Magnetic Bond



Good Magnetic Bond