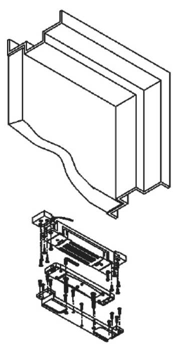
30500

GF3000 Gravity Force Shear Locks

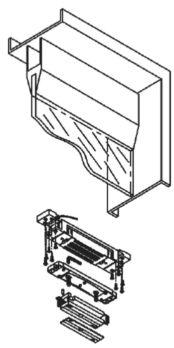
Mortise: Standard, TRD, BRD

Installation instructions

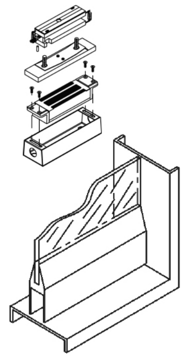
Surface Mount: SM, and TJ



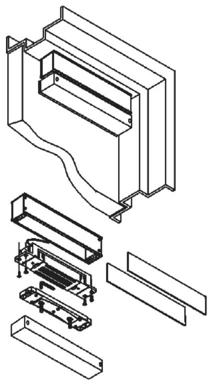
GF3000 Standard



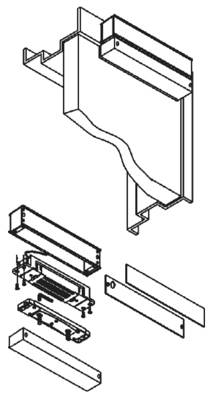
GF3000TRD



GF3000BRD



GF3000SM



GF3000TJ

Contents

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

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 or Surface, Non-handed
Shear Holding Force	3000 pounds maximum
Door Thickness	1¾" minimum
Plating.	Magnetic face and armature; nickel plated to resist corrosion
Shipping Weight	GF3000 - 6 Pounds GF3000TRD & BRD - 8 Pounds
Dimensions, Mortise Mount	
Magnet	9.5" L x 1.5" W x 1.5" H
Magnet w/ Mounting Tabs	11.56" L x 1.5" W x 1.5" H
Armature	8.38" L x 1.38" W x 0.5" D
Armature Bracket	10.63" L x 1.38" W x 1.0" D
Dimensions - Surface Mount	
Magnet Housing	9.81" L x 1.25" H x 1.5" D
Armature Housing	8.38" L x 1.38" W x 0.5" D

Installation

1 Establish centerlines.

1a Determine the mounting position.

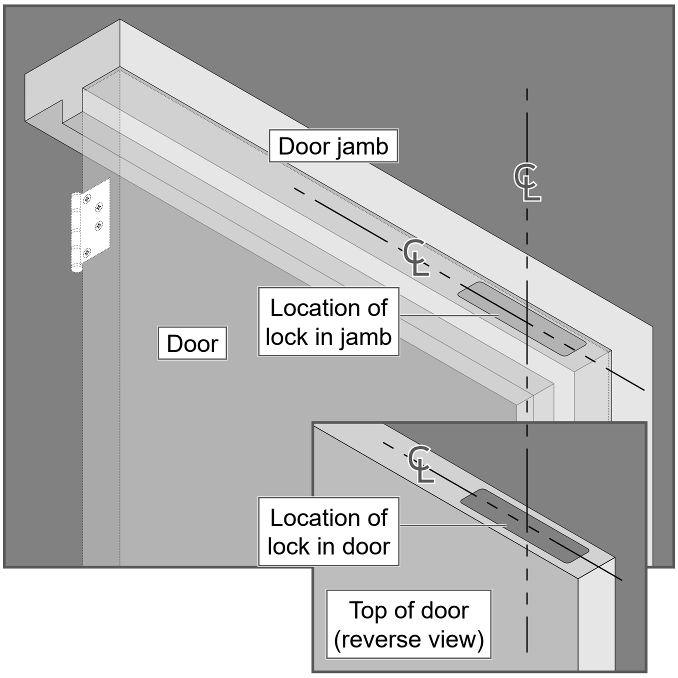
To achieve maximum resistance to forced entry, position unit closest to the latch side of door.

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

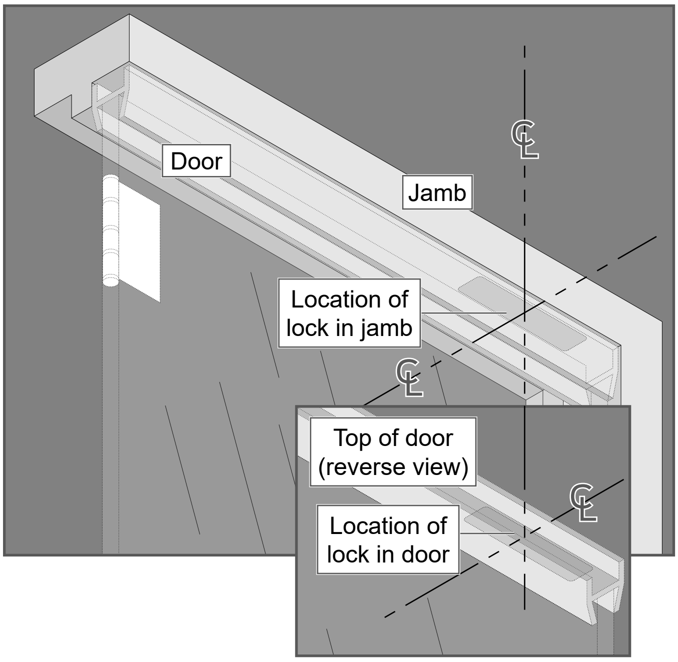
1b Mark centerlines on door and frame.

ⓘ **For proper operation, centerlines on door and jamb must be precisely aligned.**

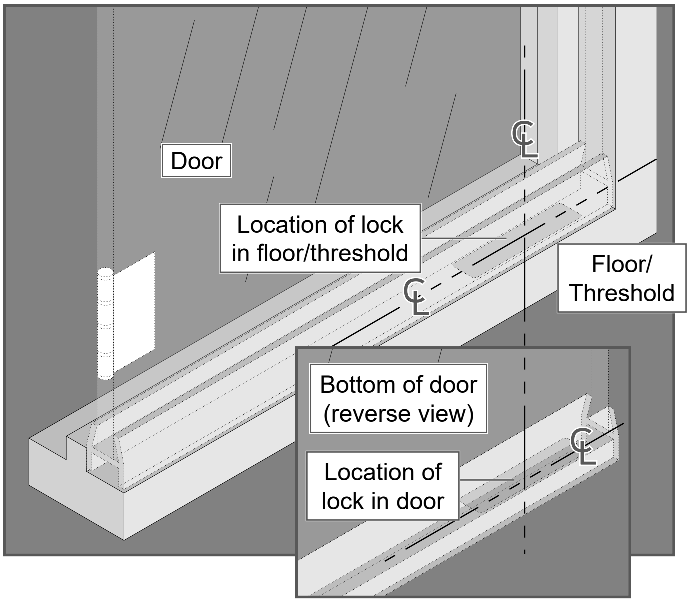
Standard



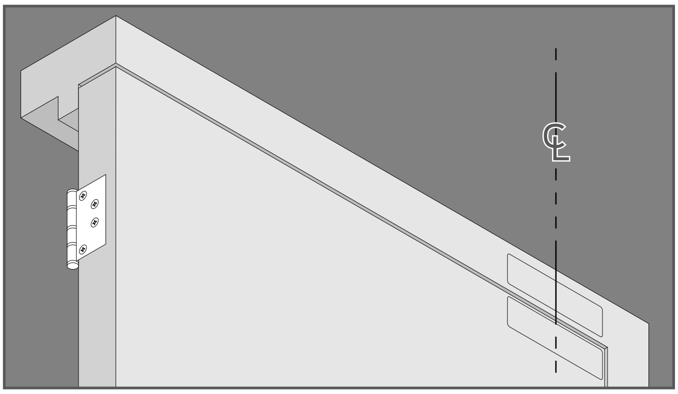
TRD



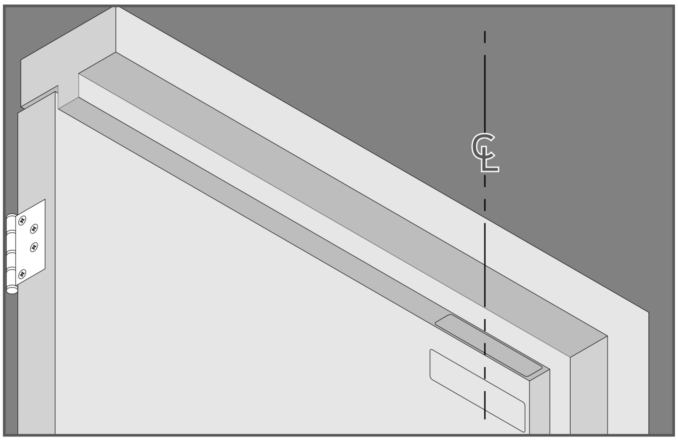
BRD



TJ



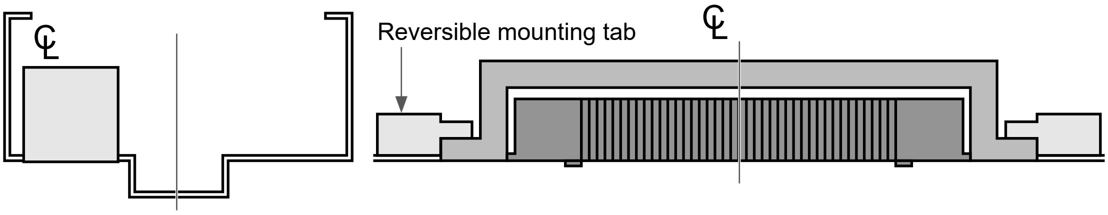
SM



2 Prepare the frame. (Standard and TRD)

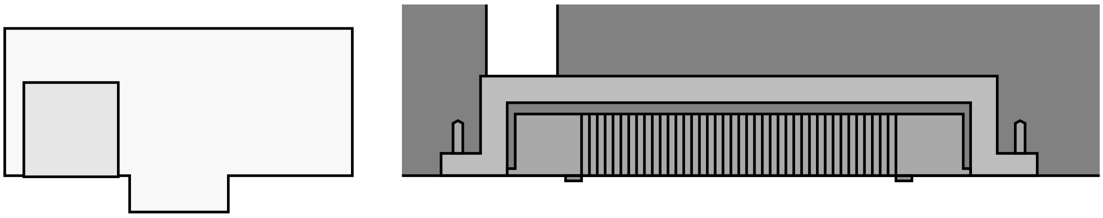
2a Prepare the frame as shown for your frame type.

Hollow Metal or Aluminum



ⓘ **See included template.**

Wood

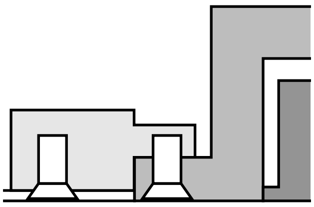


ⓘ **See included template.**

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

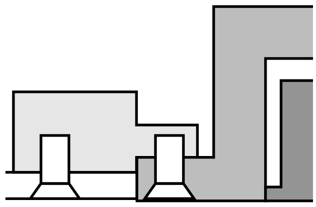
Install mounting tabs with correct side up as shown:

16 gauge hollow metal frames



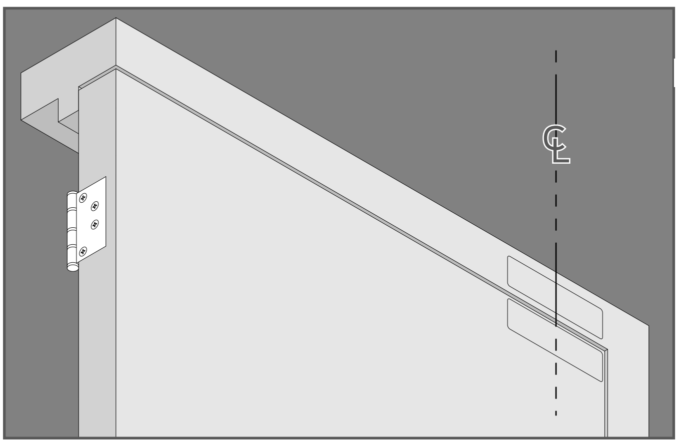
OR

⅛" thick aluminum frames



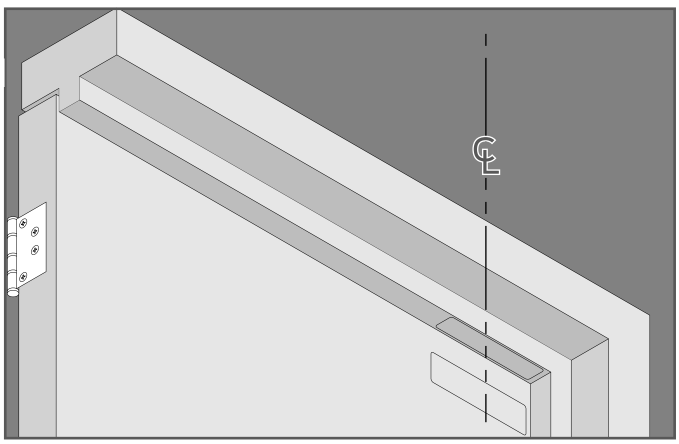
2 Prepare the frame. (TJ and SM)

TJ (inswing)



OR

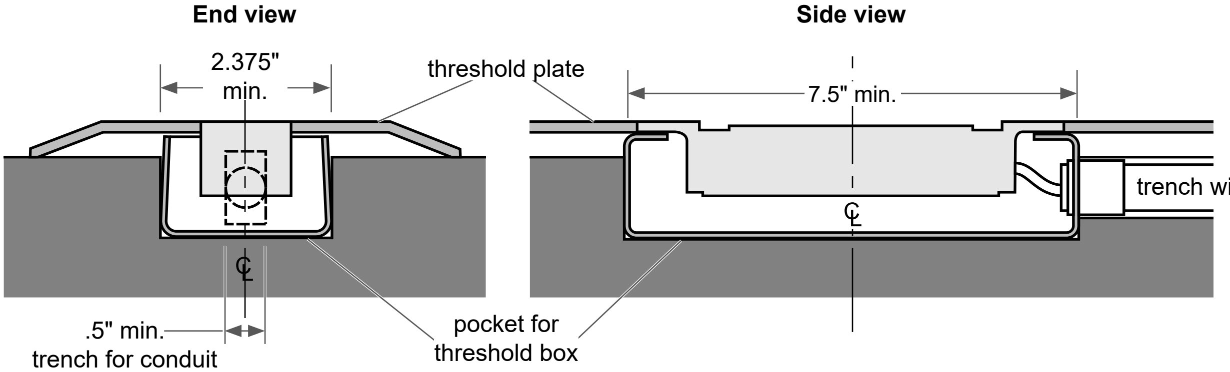
SM (outswing)



Use the included template to mark holes.

2 Prepare the floor. (BRD)

2a Create a pocket for the threshold box.



- 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.
- 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.

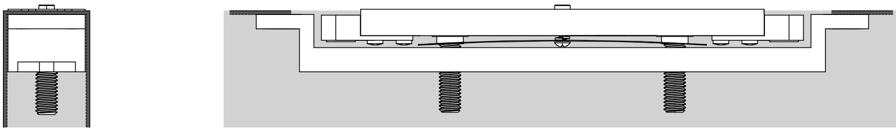
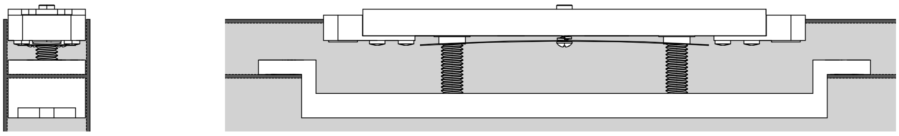
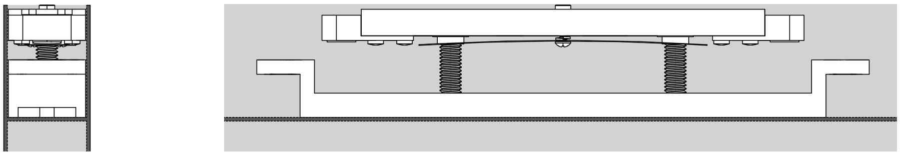
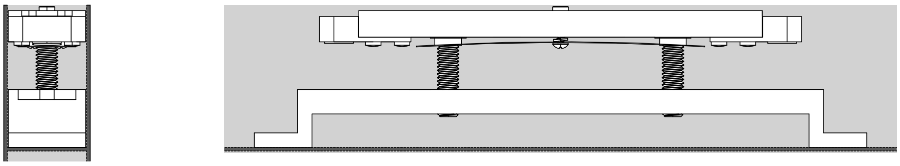
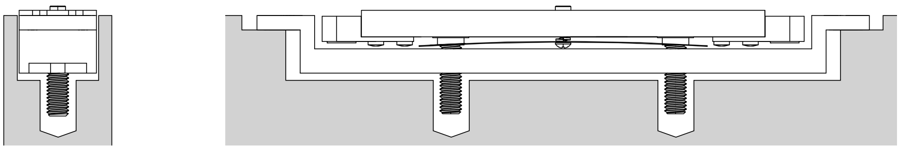
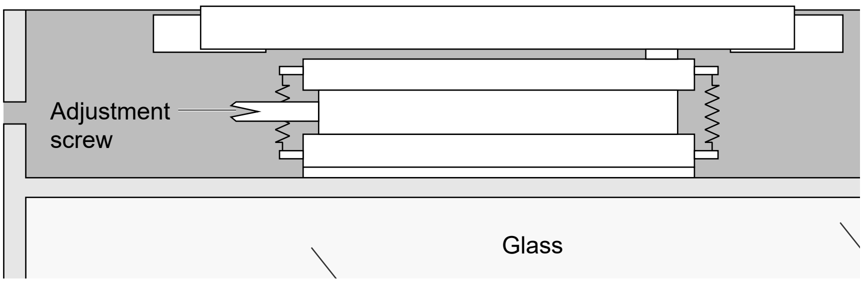
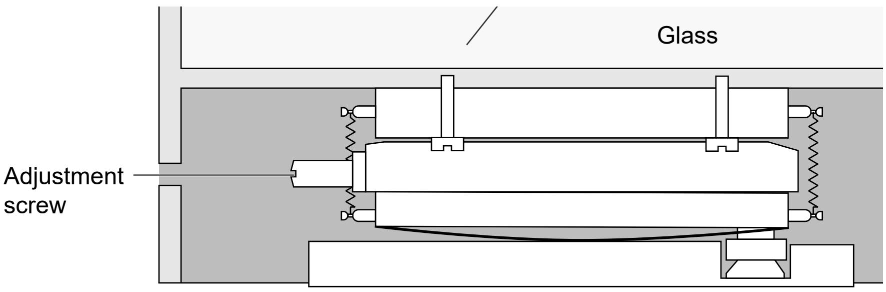
ⓘ **NOTE: Retrofit Installations - Conditions may vary after the threshold plate is removed. If a cement, stone, or other hard material is encountered, use a pavement breaker or demolition hammer to chisel out the pocket and trench in the floor.**

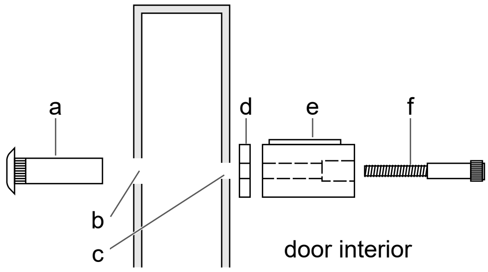
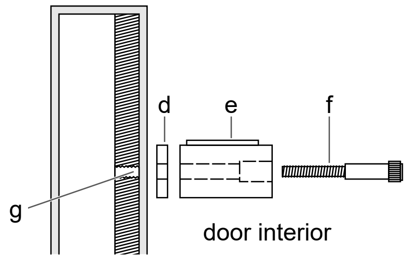
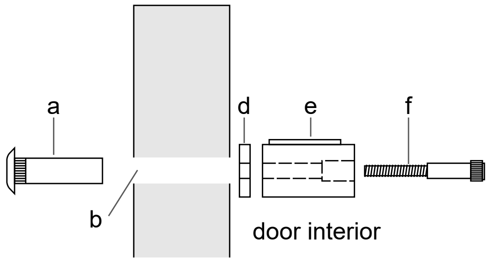
2b Install the threshold box.

- 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 Prepare the door.

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

		Channel height	**Reference drawing**
Standard	Hollow Metal or Aluminum	flush to 1/4"	
		1/4" to 1"	
		1" to 1 3/4"	
		1 3/4" to 2 1/2"	
	Wood	all	
TRD	Hollow Metal or Aluminum door where the top adjustment is not accessible.	1 3/4"	
BRD	Hollow metal with bottom rail (BRD)	1 3/4" min	

Model	Door type	Reference drawings
TJ, SM	Hollow Metal	
	Reinforced Metal	
	Wood	

Hole Sizes and Parts	
a	sex bolt
b	$\frac{1}{2}$" hole
c	$\frac{1}{4}$" hole
d	mounting spacer
e	armature
f	$\frac{1}{4}$-20 x 2
g	$\frac{1}{4}$-20 threaded hole (thru reinforced side of door only)

WARNING

The included sex nut is for 1 ¾" (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.

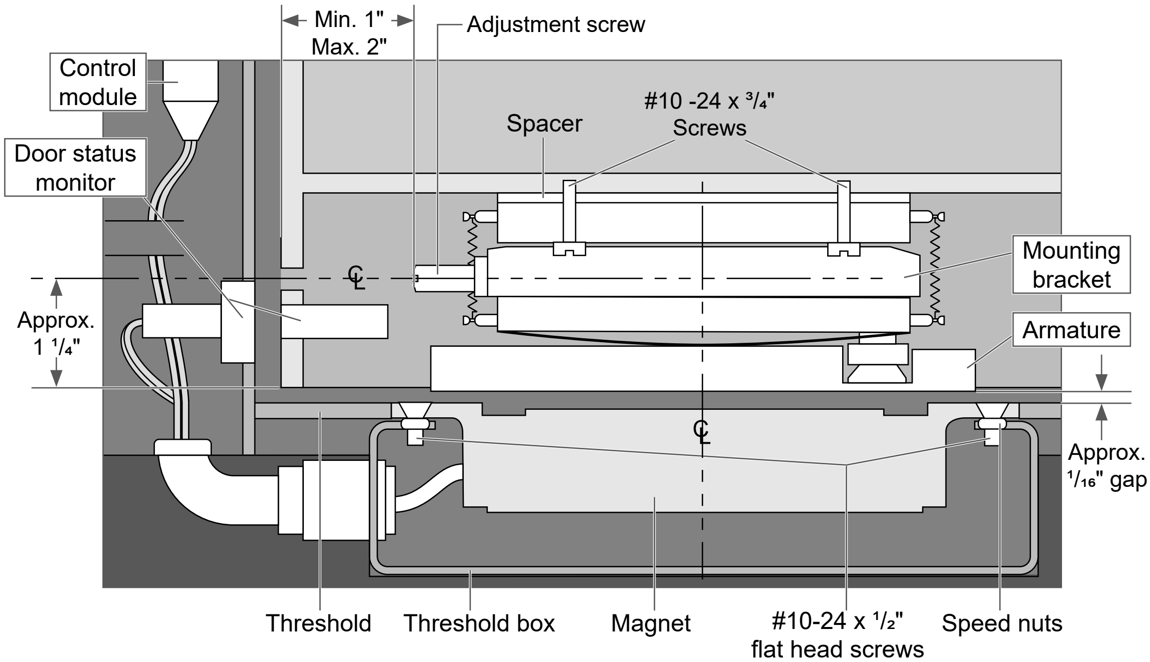
4c Adjust auto-relock time delay.

See "Auto Relock Time Delay" on page **9**.

Mortise Mount: BRD

4a Mount the armature in the door bottom rail. (BRD)

1. Mount **mounting bracket** to bottom rail using #10-24 x ¾" 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 ½" 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 ¾", spacers (e) may be needed (one, ⅛" 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.
9. Make final wiring connections. See "Wiring Diagrams" on page **10**.
   ⓘ **NOTE: Mount Control module in a remote and dry location, and no more than 15 feet away from lock.**

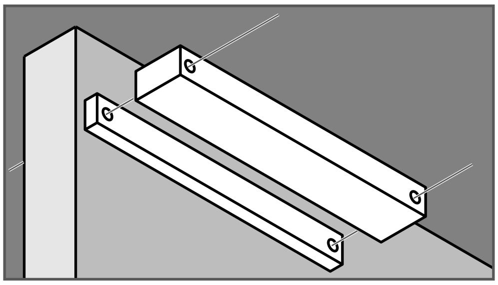
4c Adjust auto-relock time delay.

See "Auto Relock Time Delay" on page **9**.

Surface Mount: TJ, SM

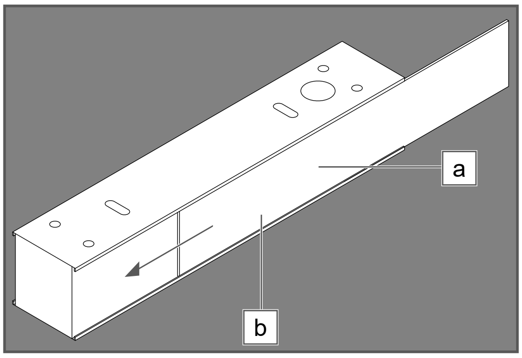
4a Install armature mounting spacer.

Secure mounting spacer and armature housing onto door.



4b Install Faceplate

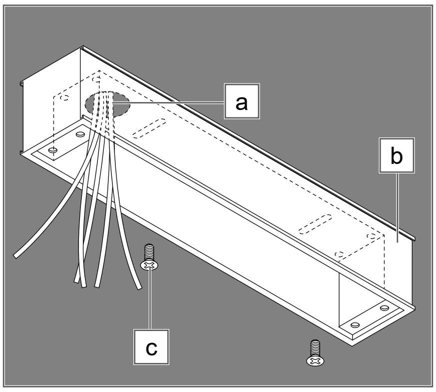
Install faceplate (a) into magnet housing. Tighten set screws (b).



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.

ⓘ **DO NOT COMPLETELY TIGHTEN AT THIS TIME.**

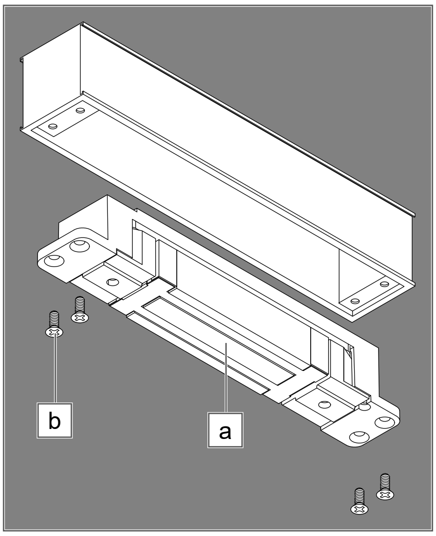


4d Install Magnet

Make final wiring connections (see "Wiring Diagrams" on page **10**).

Insert the magnet (a) into magnet housing.

Using four, 10-24 x 1/2 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

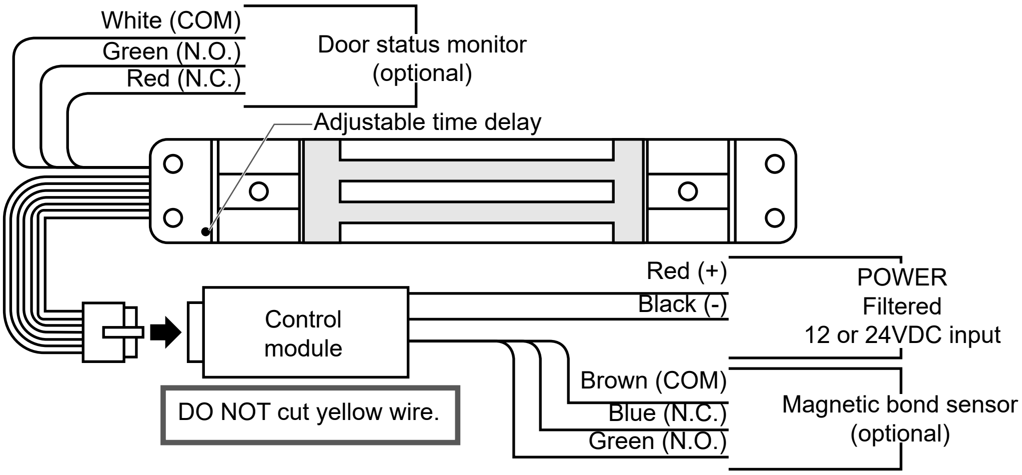
1. Refer to the wiring diagram (page **10**) and note location of ATD arrow.
2. With door open, apply power.
3. Remove 5/64" hex head screw to allow access to recessed momentary pushbutton switch.
4. Using the hex wrench provided, depress and release the recessed switch one time for each second of delay required (max. =30 seconds, min.=2 seconds). Example: To set ATD to 5 seconds, depress the recessed switch 5 times.
   ⓘ **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.
   ⓘ **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 3.**
   ⓘ **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.

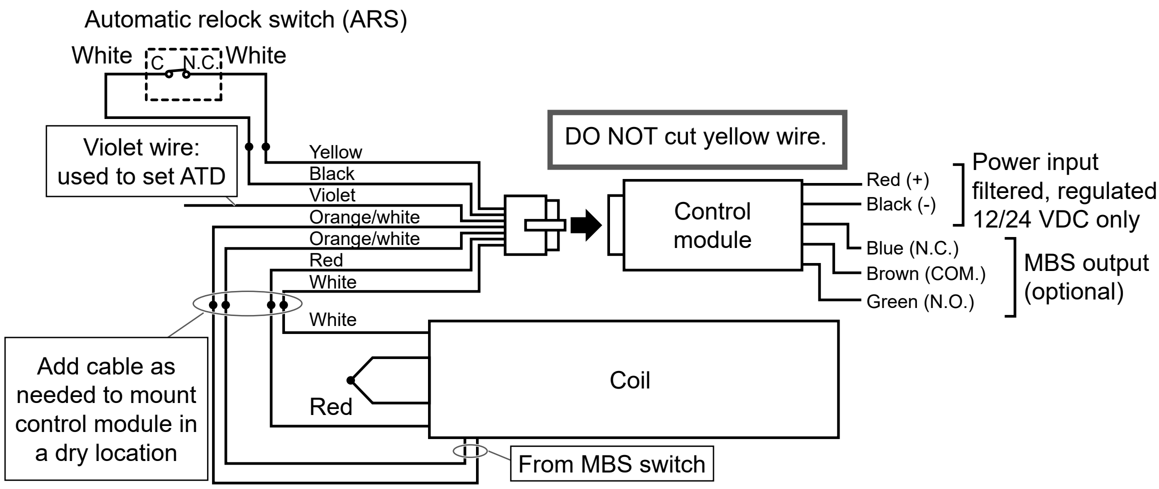
Standard, TRD, TJ, SM

Standard features	
Operating Voltage	Filtered and regulated 12 or 24 volts DC. Automatic voltage selection circuitry is standard.
Automatic Relock Switch (ARS)	ARS requires the door to be in the closed position before the magnet can be energized.
Adjustable Time Delay (ATD)	ATD provides a time delay to relock, adjustable from 2 to 30 seconds. Factory default is 3 seconds.



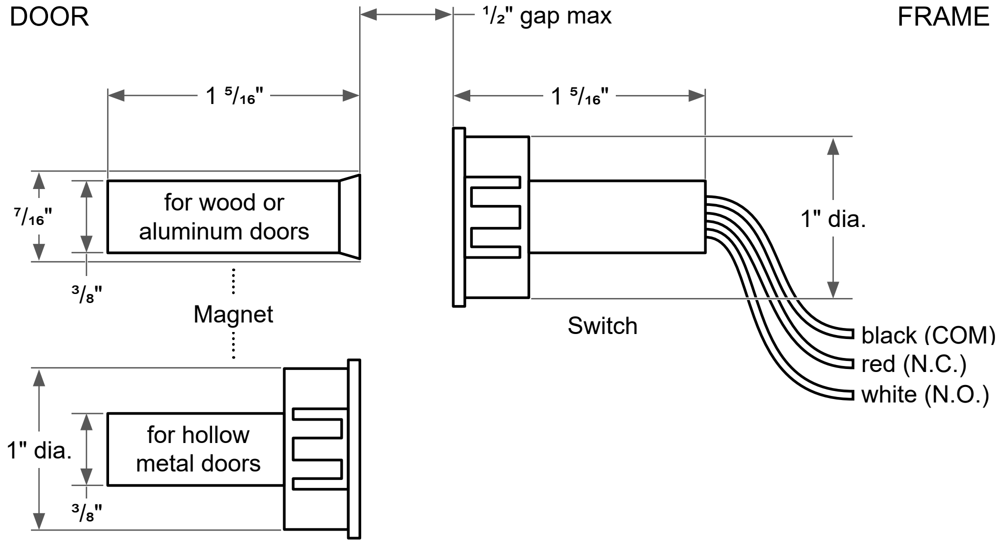
BRD

Standard features	
Operating Voltage	Filtered and regulated 12 or 24 volts DC. Automatic voltage selection circuitry is standard.
Automatic Relock Switch (ARS)	ARS requires the door to be in the closed position before the magnet can be energized.
Adjustable Time Delay (ATD)	ATD provides a time delay to relock, adjustable from 2 to 30 seconds. Factory default is 3 seconds.



Door Status Monitor (DSM) (BRD)

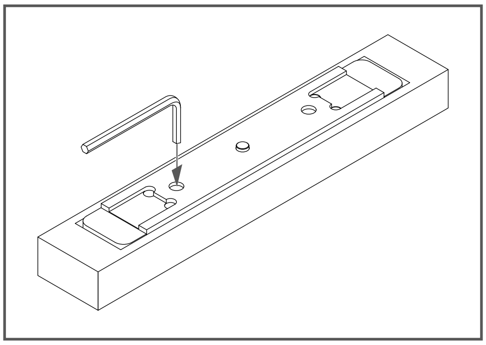
- Hole for switch: 1" diameter in frame.
- Hole for magnet:
  - Wood or Aluminum doors: ³/₈" diameter
  - Hollow metal doors: 1" diameter
- Installation of magnet and switch must be concentric (common centerline).
- Switch insertion: snap-in fit.
- Magnet insertion:
  - Wood or aluminum doors: press-in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

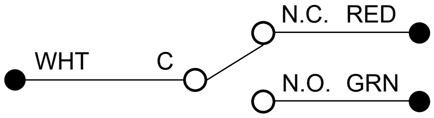
Locate the adjustment screw to raise or lower the armature as needed. Clearance between magnet and armature should be at least ¹/₈" and must be less than ¹/₄".

- BRD: see page **6**
- TRD: see page **6**

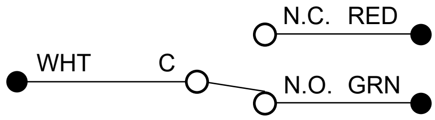
Optional Monitoring Outputs

Door Status Monitor (DSM)

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



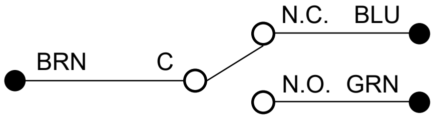
Door open



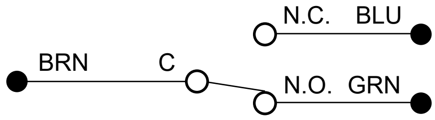
Door closed

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.

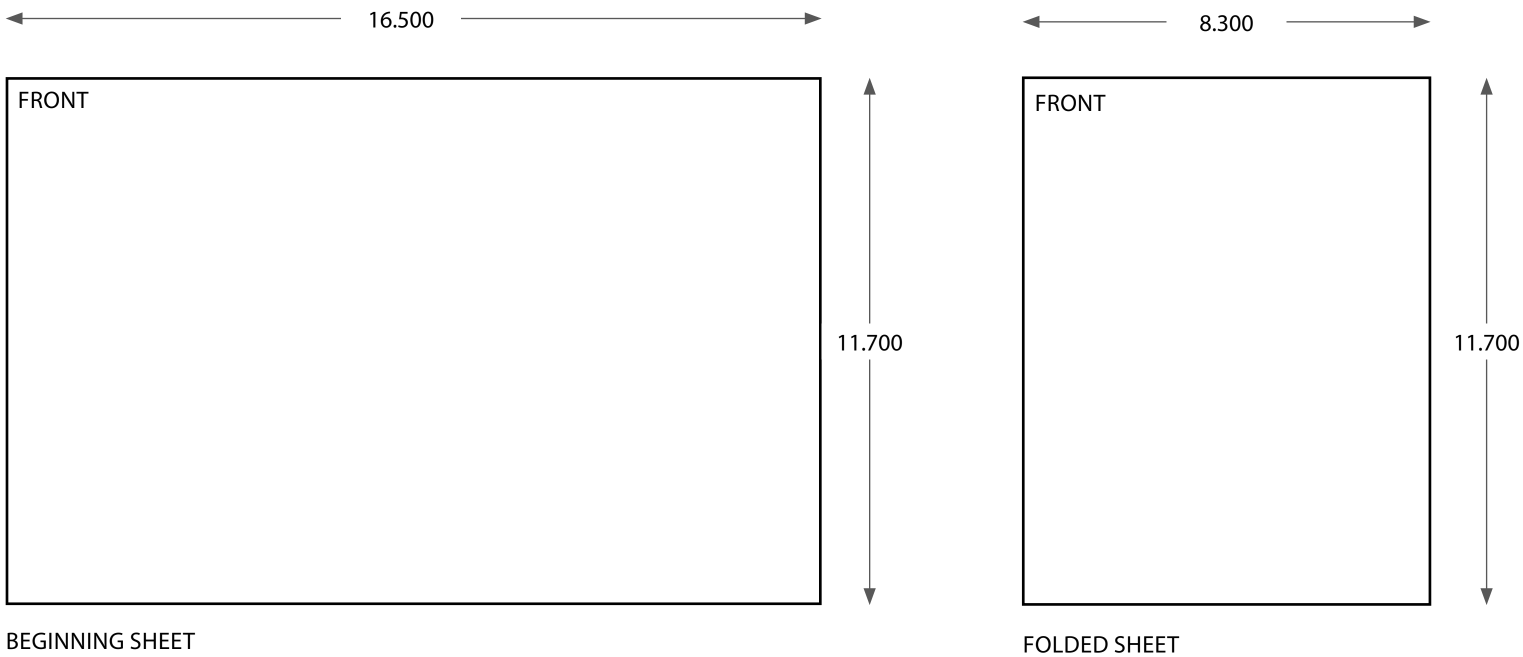


Poor magnetic bond



Good magnetic bond

Printed in China
30500 Rev. 11/18-g



Revision History						
B	C	D	E	F	G	
060183	061063	021384	062530	065782	077349	

Additional Notes:

1. Fold booklet style

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	Approved By	EC Number	Release Date
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