

INSTALLATION AND WIRING INSTRUCTIONS FOR ROFU 8011-004

Delayed Egress Method

The ROFU 8011-004 Delayed Egress Magnetic Lock Assembly is designed to comply with the NFPA 101 Life Safety Code. This delayed Egress locking system's principal application is for secure locking and delayed release of perimeter and emergency exit doors. Delayed egress hardware prevents a door from being opened from the egress side, for a pre-set period of 15 or 30 seconds. This system is designed to prevent theft while maintaining life safety.

The ROFU Model 8011-004 is a self-contained, stand-alone electromagnetic locking device. For compliance with NFPA 101, this locking unit requires four additional auxiliary components to include: 1) 12 VDC power supply, 2) a non-latching switch activated exit push bar assembly for attachment to the exit or perimeter door, 3) a manually operated switch device for system reset and 4) wiring into an approved automatic fire or sprinkler system for automatic release of the lock during a fire emergency condition. Also, signage must be provided on the door. Letters are to be a minimum of 1" high stating: "PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 SECONDS."

The delayed Egress System is activated by an attempt to exit a building by pushing on the door's exit push bar. This will activate an alarm sounder and initiate an irreversible 15-second delay cycle before the magnetic lock releases to allow free egress through the door. For compliance with NFPA 101, the exit attempt (pushing on the exit bar) must exceed a pre-set nuisance delay of 0, 1, 2 or 3 seconds to start the delayed egress cycle. Note: the 0 second nuisance includes a 200 millisecond de-bounce delay to eliminate false triggering.

When the nuisance time is exceeded after applying a continuous pressure of 15 pounds or greater to the exit bar, an irreversible egress cycle is initiated. During this egress cycle, the lock will emit an alarm beep for each second of the count-down. After 15 seconds (15 alarm beeps measured from detection of the initial exit attempt) the magnetic lock will de-energize to release the door for unobstructed egress; the lock now sounds a steady alarm signal. This alarm signal will continue and the door will remain unlocked until a manual re-set (re-arm) is initiated.

In some jurisdictions, the local authority may require a 30 second egress delay cycle, which can be accommodated by the ROFU 8011-004. This optional 30 second delayed egress cycle also complies with NFPA 101. In this case, signage on the door must reflect the 30 second egress delay.

This locking system also includes a bond-sensing feature. If the lock's holding power is reduced, a warning alarm will be sounded. A bonding violation could be caused by low DC voltage, a mis-alignment of the armature plate to the surface of the electromagnet, or a mechanical restriction or foreign object between the strike plate (armature plate) and the electromagnet.

To comply with the NFPA 101 Life Safety Code, this delayed egress system must be connected to an approved supervised automatic fire or sprinkler system through a Fire Alarm Control Panel or similar monitoring panel. In the event of a fire emergency, the lock will alarm and automatically release the door for immediate, unrestricted egress. For added life safety, this unit also contains a "watchdog"



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feature, which constantly checks the internal operation of the lock's controller circuit board and will automatically sound an alarm and release the magnet in the event a malfunction is detected.

OPERATIONAL FEATURES

12 VDC input: current draw is approximately 0.5 amps and requires a 12 Volt DC power supply rated at 1 amp or greater.

CAUTION: this locking system is designed for 12 VDC +/- 10%

Selectable nuisance delay: 0, 1, 2 or 3 seconds. Exit bar must be pushed for the full duration of the preset nuisance time delay to activate egress cycle.

Selectable egress delay time: 15 or 30 seconds

Code compliance: UL listed for NFPA 101 Life Safety Code

Reset method: Manually actuated electronic switch

Fire alarm connection: Accepts normally closed contacts from a supervised Fire Alarm Control Panel (FACP). The lock releases and sounds an on-off alarm pattern (2 per second) when fire contacts open.

LED status indicator: green LED blinks once per second during normal armed "door-secure" status. LED turns to solid green during the egress count down and turns red when the magnet releases for free egress. The LED also provides four repeating quick flashes in case of a low bond condition.

Bond detection: Alarm warning is provided if holding power is low due to low bonding power between the armature plate and the surface of the magnet. A low bond condition produces four quick repeating beeper sounds synchronous with the LED flashes, and the output alarm relay will be energized. Note that the low bond alarm is only a warning signal and will not affect the normal operation of the locking system.

Egress Alarm sounder: Sounder beeps once per second during the egress cycle (15 or 30 beeps). Sounder changes to a continuous tone when the lock releases for egress.

Alarm output contacts: one 2 amp form –A relay output contact closes when: 1) an egress cycle is activated and remains closed until the lock is reset, 2) during fire alarm conditions, 3) during a low bond condition and 4) in case the watchdog safety monitor in the circuit board is activated due to a malfunction. In an alarm condition the "ALM" output relay contacts close to activate remote alarm signaling devices or alarm monitoring panels.

Watchdog Life Safety monitor: This safety circuit constantly checks the lock's circuit board operation. A detected circuit malfunction automatically releases the lock and sounds a continuous alarm.



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Optional bypass: the lock will be de-energized for the duration of a maintained bypass switch closure. Upon release of the bypass switch, the sounder will beep and the lock will return to the normal armed and locked condition.

Optional “slave” magnet: A 12 VDC output is provided to power a slave magnet for a two-door operation. This slave lock follows the energize/de-energize operation of the master magnet. A ROFU magnetic lock model 8011XLC is recommended. **CAUTION:** the use of a slave magnet will necessitate the use of a larger power supply for the system, capable of supplying 1.5 amps at 12 VDC.

ELECTRICAL RATINGS:

Power input: 12 Volt DC +/- 10%

Current draw in stand-alone operation: approx. 0.5 amps @ 12 VDC

Current draw with optional slave lock: approx. 1 amp @ 12 VDC

Alarm output contacts: 2.0 amps maximum current @ 12 VDC

INSTALLATION INSTRUCTIONS ROFU 8011-004

Handling caution:

The ROFU 8011-004 magnetic lock assembly contains sensitive electronic components and therefore must not be dropped or abused. The circuit components are also subject to damage from high static electricity discharges and must be handled with care, especially in dry climates and in winter months. As a normal procedure during installation and adjustments, installers should always discharge themselves through a good earth before touching the lock assembly or its wires. Failure to comply with recommended procedures may result in damage to the lock and could void system warranty.

Quick bench test:

This procedure allows the installer to perform a quick bench check of the ROFU 8011-004 lock and to become familiar with the lock’s basic operation prior to installation,

Remove the cover plate and locate the 4-position DIP-switch on the bottom circuit board. Set all 4 switches to OFF. The lock is now set for zero seconds nuisance delay time (which requires a 200 millisecond minimum exit bar press) and is set for 15 seconds delayed egress cycle. Proceed to wire the magnetic lock as follows:

1. In the lock’s wiring compartment, locate the input terminal block on the circuit board and **temporarily** place a jumper across “FIRE” and “COM”. Note: the two “COM” terminals are both common and either can be used for wiring convenience.
2. Ensure that the 12 VDC power supply is **off** and connect the positive (+) lead to terminal “+12” and negative to either “COM” terminal
3. Connect a normally **open** single pole momentary switch to the “BAR” and “COM” terminals in the lock’s wiring compartment. This simulated the exit bar’s micro switch.



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4. Two reset methods can be used: a) connect a normally **closed** switch in series with the power supply and the lock's "+12V" input terminal. Momentarily opening the switch will provide a reset. b) Place a normally **open** switch across "RST" and "COM" terminals. Momentarily closing the switch will provide a reset. NOTE: ROFU model 9200 keyswitch, 9300 push button or 4300 keypad is recommended for either method.
5. Make sure the power supply is still off; place the armature (strike) plate on the magnet face and ensure that the plate is aligned properly.
6. Turn on (or plug in) the power. The lock should beep once on power-up and the magnet will energize (pull in the armature plate). The green LED should blink once per second. If any alarm sounds, the lock may be defective or the wiring is incorrect.
7. Momentarily depress the exit bar switch (at least 200 msec and then release) to simulate an egress attempt. The sounder will start beeping once per second and the blinking LED will change to solid green to indicate an egress cycle has been initiated.
8. After 15 beeps the magnet will release the armature plate. The LED will change to solid red and the sounder will give a continuous alarm to indicate that the egress cycle is complete and that the lock will remain in the free egress alarm state until it is reset.
9. Momentarily activate the reset switch. The sounder will beep, the magnet will energize and the green LED will return to blinking once per second, indicating normal armed operation.
10. To simulate a fire emergency, remove the jumper you installed in step one between the "FIRE" and "COM" terminals. The lock will release immediately and will sound an on-off 2 per second pattern.
11. Remove DC power and **temporarily** reconnect the "FIRE" and "COM" jumper.
12. Place a business card at each end of the magnet between armature plate and magnet. (This represents a foreign object affecting holding force).
13. Apply DC power. After a 3 second delay, the bond alarm will sound a repeating pattern of 4 quick beeps, synchronous with the flashing LED.
14. Remove all wiring connections to the lock's terminals. Ensure that the jumper across "FIRE" and "COM" is removed.
15. Bench test complete.

INSTALLATION OF THE ROFU 8011-004

1. Note what type door frame header is in place and install filler plate or angle bracket as necessary. The lock must be installed on the interior, secure side of an outward swinging door, opposite the hinges and clear of any closing hardware. The door must be correctly aligned, free of mechanical binding and should close firmly against the door stop.
2. Fold the installation template of the lock along the dotted lines and place it against the closed door and header as indicated on the template.
3. Drill the 11/32" (8mm) and 1/4" (6mm) holes as indicated on the template into the door.
4. Open door and drill 1/2" (13mm) wire access hole into the header.
5. Drill 3/16" (5mm) holes only in the centers of the slotted holes of the mounting plate and attach plate to the header. Tighten the screws enough so that the mounting plate can still be moved. Attach magnet to mounting plate by sliding the 2 screws attached to the magnet into the slots.



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6. Attach armature plate to door using sex nut and rubber capped screw. Place rubber washer between two metal washers and place them over armature plate screw behind armature plate. Do not overly tighten the rubber capped screw.
7. Slide magnet flush against the armature plate. Remove magnet, tighten the two screws in the mounting plate and drive additional screws into the mounting plate/header. Permanently attach magnet to mounting plate and wire the magnet.

INSTALLING THE PUSH BAR

Use the ROFU Model 9500 push bar with door cord. All wiring must be protected or concealed in compliance with local codes. Install and wire the push bar per the manufacturer's instructions. Use the armored, flexible door cord for routing the wiring from the bar's micro-switches into the hollow door frame.

WIRING THE LOCK

1. Ensure that no wiring is exposed and conforms to local code requirements.
2. All wiring to the ROFU 8011-004 terminals in the lock's wiring compartment must be fed through the ½" access hole previously drilled into the header.
3. The magnet is a low voltage device (NEC class 2) and can be powered by a 12 Volt DC power supply rated at 1.0 amps or greater. Use 18 AWG gauge wire. The power wire run should not exceed 75 feet. Observe polarity and connect the DC power supply to the "+12" and "COM" terminals.
4. Directly connect two leads from the normally closed dry contacts in the supervised Fire Alarm Control Panel (FACP) or other fire emergency system to the "FIRE" and "COM" terminals. Wire runs should not exceed 1,500 feet. Use a minimum of 18 AWG gauge wire.
5. Directly connect the WHITE wire from the push bar to the "BAR" terminal and the BLACK wire from the push bar to the "COM" terminal.
6. Reset of the system can be done in two ways:
 - A. connect a normally closed Form A contact switching device in series with the plus 12 volt DC power connection to terminal "+12"
 - B. connect a normally open Form A contact switching device to terminals "RST" and "COM". Actuation of the momentary switch will result in a reset.

This completes the basic, single door installation of the ROFU 8011-004.

The ROFU 8011-004 is also designed to accommodate optional control and monitoring devices as shown below:

- a. Form A dry relay contacts are provided for remote monitoring of the status of the lock. Whenever an alarm signal occurs due to a bonding violation, egress cycle or fire emergency, the output relay contacts across "ALM" and "ALM" will close. A sounder or other device at a remote monitoring panel can be controlled through these contacts. Contacts are rated 2 amps at 30 VDC.



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- b. A remote timer or momentary switch with normally open contacts can be installed to provide a manually controlled bypass for free egress. A contact closure across “TIME” and “COM” will release the lock for the duration of the maintained closure. During bypass, the LED will switch to red and will return to green when bypass is complete. The lock will also beep when the bypass is completed.
- c. For 2-door (double door) operation, install a ROFU model 8011-LC lock on the adjacent door and connect it to terminals “MAG” and “COM”. This slave lock will follow the operation of the master lock.
- d. Delays are set using the 4 position dip switch in the wiring compartment:

	Nuisance delay		Egress delay	
	Pos 1	Pos 2	Pos 3	Pos 4
0 sec	OFF	OFF	OFF= 15 sec	OFF
1 sec	ON	OFF	ON = 30 sec	
2 sec	OFF	ON		
3 sec	ON	ON		

TROUBLESHOOTING

If the alarm sounds, note the sound pattern and troubleshoot as follows:

- a. One beep per second indicates that the push bar is activating the egress count down cycle. Check the bar’s wiring and make sure the switch is wired for normally open operation
- b. Steady on-off pattern (2 per second) indicates that the fire leads are not connected to the normally closed contacts in the FACP. Remove power and check wiring.
- c. Four quick beeps indicate a bond sensing violation. Causes can be low voltage to the lock or an improperly aligned armature plate or foreign matter between magnet and armature plate.

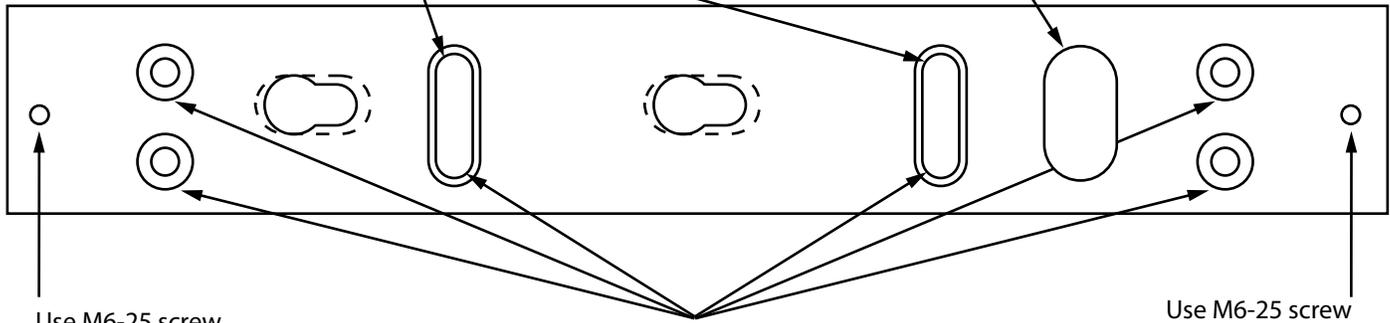


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VIEW OF MOUNTING PLATE UNDER THE HEADER

1 First, insert round head screws here. They will be removed after the plate has been adjusted and the other screws have been installed.

2 Second, adjust the plate so that it forms a right angle with the armature and drill a hole for the wires.



Use M6-25 screw to attach lock to the mounting plate

3 Third, drill and install the remaining screws. Remember to remove the two round head screws when finished.

Use M6-25 screw to attach lock to the mounting plate.

5. Adjust the mounting plate and make it parallel to the edge of the door frame.

6. Install the #10 flathead screws provided.

7. Fasten the lock to mounting plate with the M6-25 socket screws provided. Compensate for any misalignment by adding or subtracting washers at armature mounting screws.

8. Firmly tighten all screws. Install anti-tamper plugs into holes over each socket head Mounting screw. Use soft hammer to avoid damaging lock case.

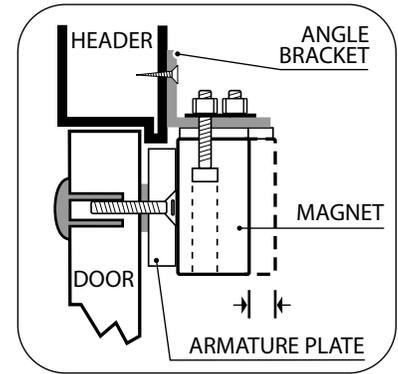
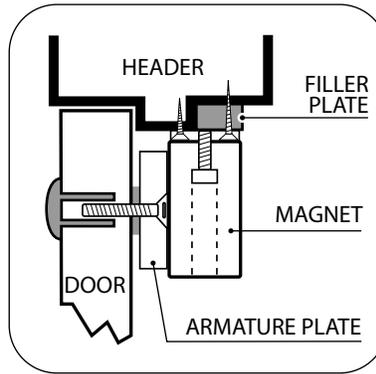
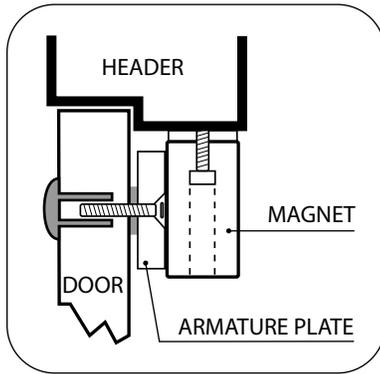
9. Rubber on armature screw head must not be trimmed or modified to the surface of the armature plate for correct operation.



8011-004 Delayed Egress Mag. Lock

MOUNTING INSTRUCTIONS

1. Note type of door frame header and install filler plate or angle bracket as required to provide a flat surface on the header the entire depth of the lock.

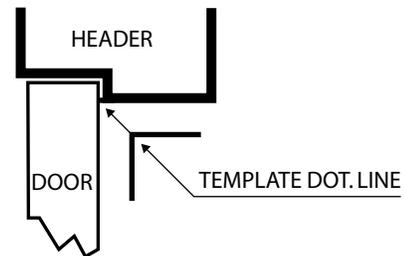


2. Fold template where indicated to from a 90° angle.

For a swinging door, place template against door header and door opposite hinge side of door jamb.

For a pair of swinging doors, place template against door and door header at center of door opening.

Transfer hole locations to door and door frame header.

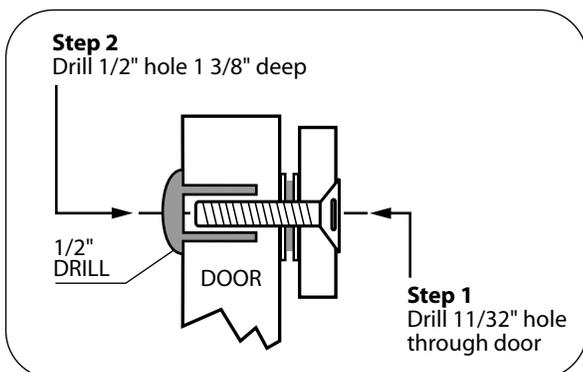


3. Follow template instructions for hole size. Use the illustrations below to determine proper armature hole preparation.

Solid Door

Step 1 drill 11/32" hole through door. From sexnut side of door.

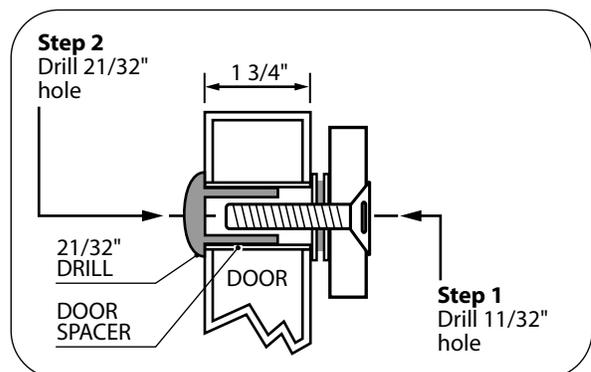
Step 2 drill 1/2" dia. hole 1 3/8" deep. Mount armature to door with hardware provided.



Hollow Metal Door

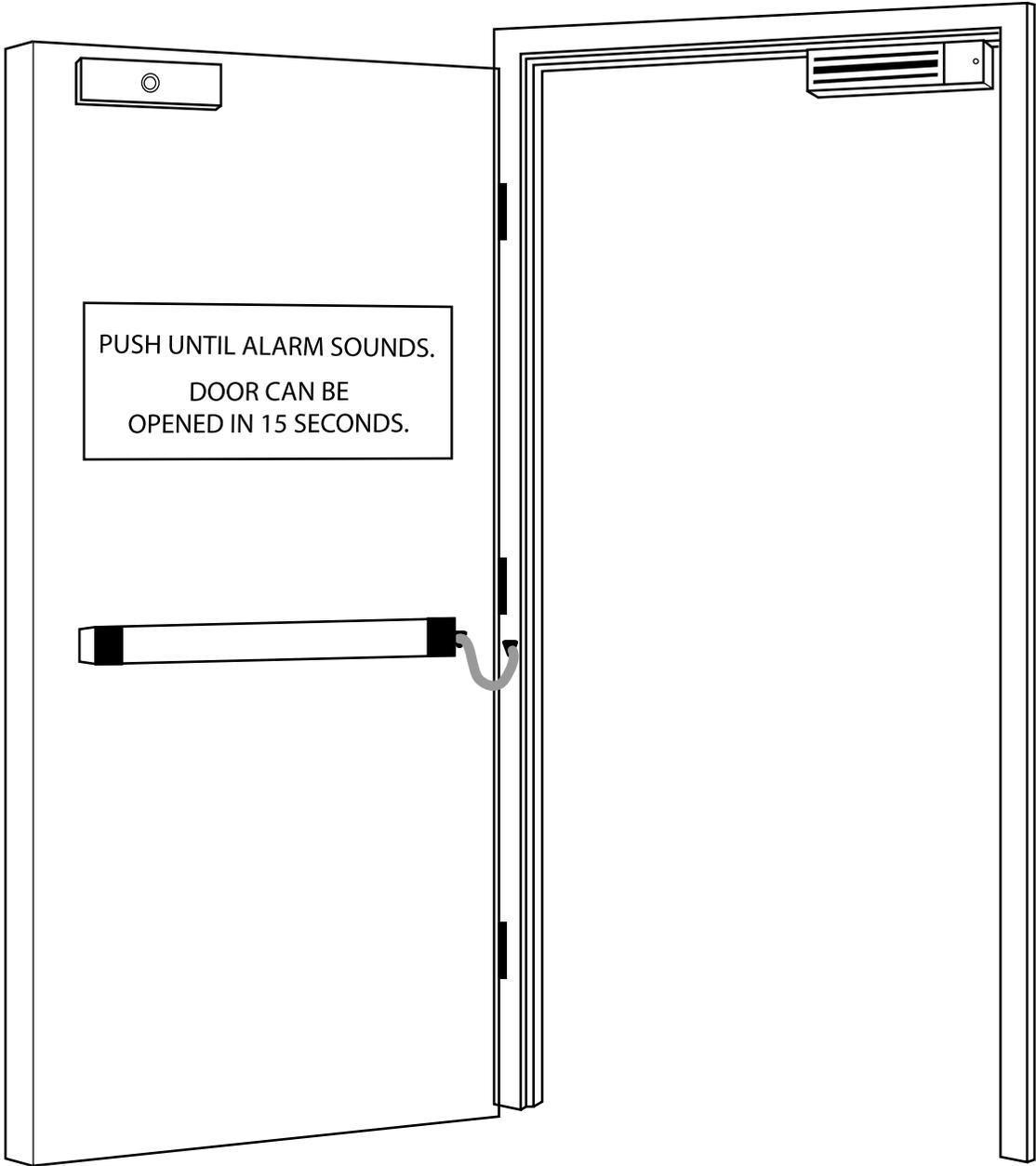
Step 1 drill 11/32" hole from sexnut side of door.

Step 2 drill 21/32" dia. hole trough one metal thickness only. Mount armature to door with hardware provided.



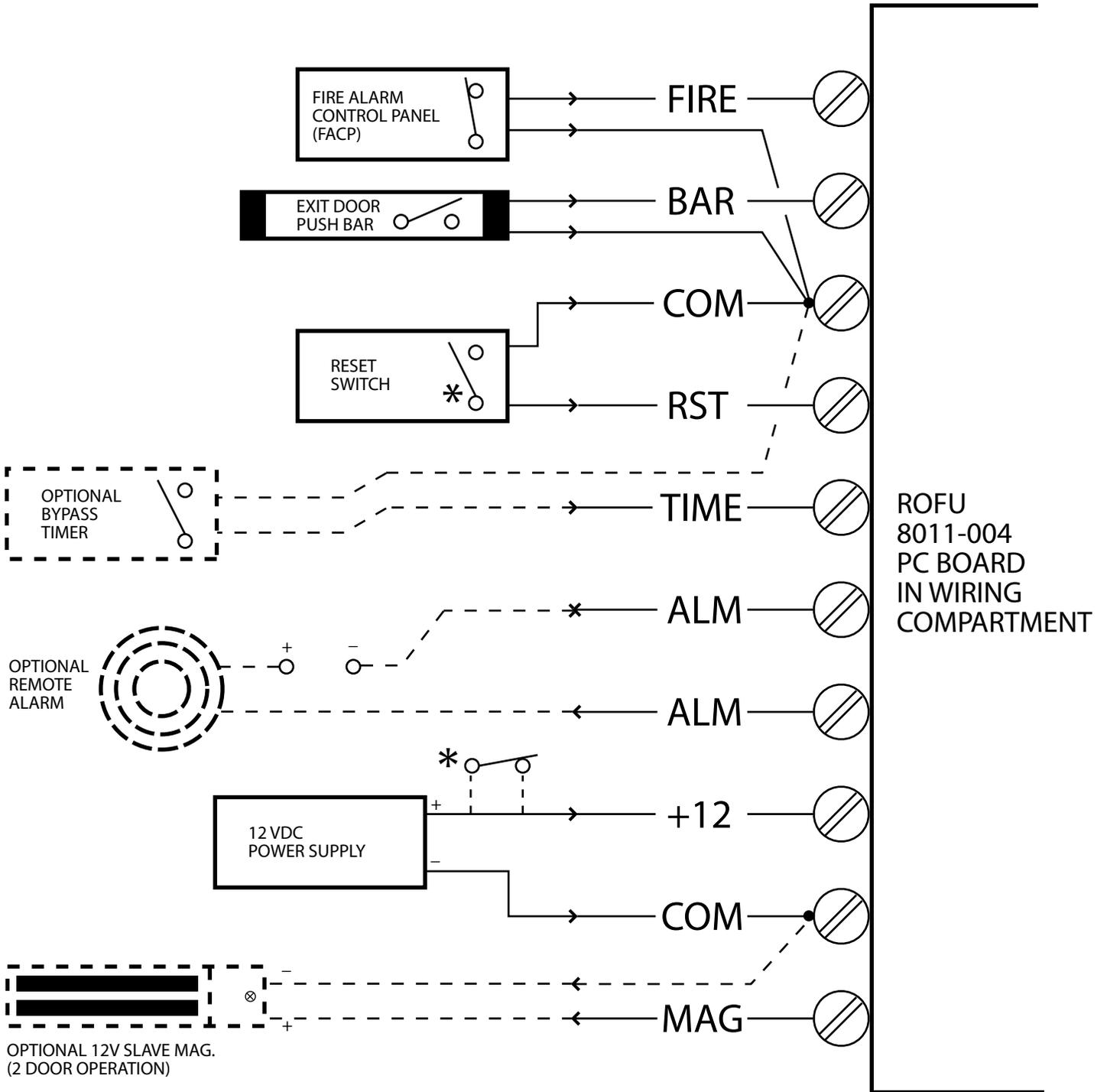
4. Mount armature to door with hardware provided per illustrations. Remember to insert guide pins on each side of the armature plate.

TYPICAL DELAYED EGRESS INSTALLATION





8011-004 Delayed Egress Magnet Wiring Diagram



ROFU
8011-004
PC BOARD
IN WIRING
COMPARTMENT

*** NOTE**
RESET IS PROVIDED BY MOMENTARY CONTACT
CLOSURE ACROSS "RST" & "COM"
OR
BY BREAKING DC POWER TO THE LOCK