



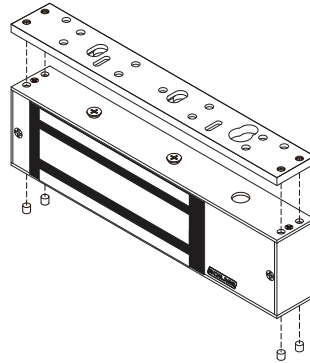
24200669



M390RFK



Electromagnetic Lock

Installation Instructions



Specifications		Listings													
Mechanical		<p>These products have been successfully tested and evaluated by UL in two separate categories for use in both the United States and Canada.</p> <p>Auxiliary Lock:</p> <p> The GWXT fire listing qualifies the M390RFK lock for use with UL Classified fire doors maximum 4' in width and 8' in height, rated up to and including 3 hours.</p> <p>Special Locking Arrangement Component:</p> <p> These products are qualified components for the purpose of locking outward-swinging exit doors against unauthorized egress. They are designed to release automatically in case of a power failure or upon activation of an automatic fire alarm system wired to the power supply fire panel relay.</p> <p>The Following Conditions of Acceptability Apply:</p> <p>This product is intended for use with Special Locking Arrangements which are installed in accordance with the manufacturer's installation and operation instructions, the Life Safety Code, NFPA 101 of the National Fire Protection Association and the local authority having jurisdiction.</p> <p>The power for this unit is to be provided by a Listed (ALVY, ALVY7, FULA, FULA7, FUPPC, UEHX7, APHV, or APHV7) Class 2 power supply when designated as a Special Locking Arrangement (FWAX or FWAX7).</p>													
Includes 1/4" (6.4 mm) mounting bracket															
Lock Dimensions	1 5/8" D x 2 7/8" W x 10 1/2" L (41 mm x 73 mm x 268 mm)	<p>The suitability of the lead wires is to be evaluated per the requirements for the end-use product.</p> <p>When this product is installed in conjunction with a fire alarm control panel, the wiring from the control unit to this product device shall be for fail-safe operation.</p> <p>For Canadian Installations, this product is to be installed in accordance with the manufacturer's installation and operation instructions, The Canadian Electrical Code C22.1-02, and the local authority having jurisdiction.</p> <p>To qualify for use in a delayed-egress locking system, the relock delay must be set to 0 seconds.</p> <p>These locks are not intended or tested for use as a UL Listed Burglar Alarm System Unit.</p> <p>ANSI/BHMA Testing:</p> <p>These models have also been independently tested to the ANSI/BHMA A156.23-2010 American National Standard for Electromechanical Locks.</p> <p>Holding Force: 1500lbf</p> <p>Cycle Test: Grade 1 = 1 million cycles</p> <p>Power Supply:</p> <table border="1"> <thead> <tr> <th>Voltage</th> <th>M390RFK</th> </tr> </thead> <tbody> <tr> <td>12VDC</td> <td>0.65A</td> </tr> <tr> <td>24VDC</td> <td>0.45A</td> </tr> </tbody> </table> <p>All Schlage electromagnetic locks must be powered with a Listed filtered and regulated DC power supply such as the Schlage PS900 Series of UL Listed power supplies.</p>		Voltage	M390RFK	12VDC	0.65A	24VDC	0.45A						
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Environmental		<p>* Effective for either resistive or inductive loads (power factor ≥ 0.6 with inductive loads). Specifications may change without notice.</p>													
<ul style="list-style-type: none"> Not for use in outdoor environments. Circuit board operating temperature: 14 to 140°F (-10 to 60°C) 															
Electrical:		<p>Special Locking Arrangement Component:</p>													
Contacts rated for 0.20A at 12VDC and 0.12A at 24VDC															
Voltage	Auto sensing 12VDC or 24VDC	<p>Wiring Requirements</p> <p>Wire gauges shown reference the load of a single lock.</p> <table border="1"> <thead> <tr> <th>VDC</th> <th>0-100'</th> <th>200' max</th> <th>300' max</th> </tr> </thead> <tbody> <tr> <td>12</td> <td>16 Gauge</td> <td>12 Gauge</td> <td>12 Gauge</td> </tr> <tr> <td>24</td> <td>18 Gauge</td> <td>18 Gauge</td> <td>16 Gauge</td> </tr> </tbody> </table>		VDC	0-100'	200' max	300' max	12	16 Gauge	12 Gauge	12 Gauge	24	18 Gauge	18 Gauge	16 Gauge
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Current	0.65A at 12VDC or 0.45A at 24VDC														
MBS Output Relay*	SPDT relay. Contacts rated at 1.25A at 24VDC														
DSM Reed Switch*	Magnetically actuated SPDT switch.														
Features		<p>Features</p> <table border="1"> <thead> <tr> <th>Lock Monitoring Features</th> <th>Remote indication features that provide indication as to the lock status.</th> </tr> </thead> <tbody> <tr> <td>Magnetic Bond Sensor (MBS)</td> <td>Detects proper bond between magnet and armature. It can be monitored remotely and locally with an LED.</td> </tr> <tr> <td>Door Status Monitor (DSM)</td> <td>Monitors the position of the door. An SPDT reed switch mounted within the lock cavity eliminates the need for extra sensors to be installed on the door for notification of security or access control systems.</td> </tr> <tr> <td>Relock Time Delay (RTD)</td> <td>Relock time can be changed. Range is 0 - 110 seconds.</td> </tr> </tbody> </table>		Lock Monitoring Features	Remote indication features that provide indication as to the lock status.	Magnetic Bond Sensor (MBS)	Detects proper bond between magnet and armature. It can be monitored remotely and locally with an LED.	Door Status Monitor (DSM)	Monitors the position of the door. An SPDT reed switch mounted within the lock cavity eliminates the need for extra sensors to be installed on the door for notification of security or access control systems.	Relock Time Delay (RTD)	Relock time can be changed. Range is 0 - 110 seconds.				
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Inspection and Maintenance

This product must be inspected and maintained on a quarterly basis. Contacting surfaces of the electromagnetic lock and armature plate must be kept free of contaminating materials.

Surfaces must be cleaned periodically with a non-abrasive cleaner.

All mounting fasteners must be inspected on a quarterly basis.

When properly installed, the ends of the armature plate allow a slight movement but the plate will feel secure when grasped at the bolt. There should be no movement to the mounting bracket or housing of the electromagnetic lock.

For added safety, thread locking compound has been provided for the armature plate bolt and the four captive electromagnetic lock mounting screws.

Warnings and Cautions

⚠ WARNING

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

⚠ CAUTION

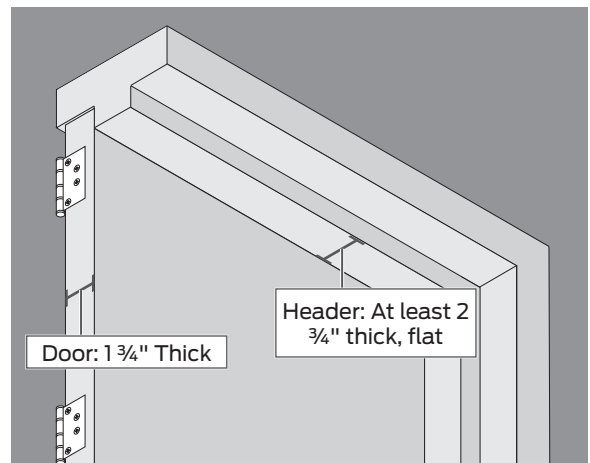
Cautions indicate potentially hazardous conditions, which if not avoided or corrected, may cause minor or moderate injury. Cautions may also warn against unsafe practices.

- ① **Notes indicate a condition that may cause equipment or property damage only.**

Pre-Installation Considerations

⚠ CAUTION

- Use **ONLY** the hardware provided for mounting this product.
- Non-standard Door thickness may require different barrel nut hardware - see specific instructions for required hardware.
- Follow the installation procedure as described in this manual.
- Check door thickness. If the door is not 1 3/4" thick, a different barrel nut will be required. Contact Product Support at 1-877-671-7011.
- Check door header. A minimum 2 3/4" thick, flat surface is needed to securely mount all screws for the magnet. If you do not have the required surface, you will need filler plates and/or angle brackets to properly mount the magnet. Contact Product Support at 1-877-671-7011.

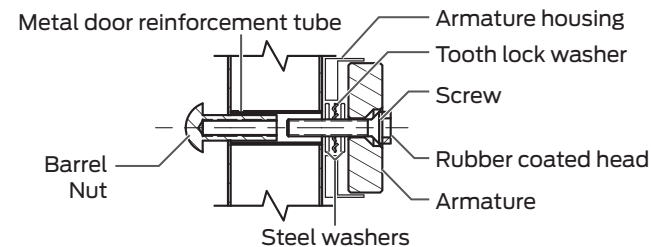


Lock Installation

1 Prepare door and frame (for new installs).

- 1a Place included template against closed door and header with allowance for Allen key clearance from the edge (1 1/4").
- 1b Drill the middle hole in the door and two (2) holes in the header as indicated. Center-mark the two holes to mount armature holder.
 - ① **Different hole sizes required for different materials, as referenced on the template.**

Figure 1: Armature Mounting



2 Mount armature plate.

- 2a Position screw with rubber head through the armature plate.
 - ① **Apply thread-locking compound to exposed threads.**
- 2b Secure armature plate to door and armature holder by threading into barrel nut. See **Figure 1: Armature Mounting**.
 - ① **Armature plate must be allowed to pivot on the center mounting bolt to allow proper alignment with the magnet surface. If the plate is not aligned with the magnet surface, the lock may lose holding force or not lock at all.**
 - ① **The head of the armature mounting bolt ships with a rubber washer affixed to it. This washer should project beyond the surface of the armature plate to allow the washer to expand when power is removed and break the air vacuum between the plate and magnet surface. If this washer is removed or trimmed, the lock will appear to have some holding force even when power is removed**

3 Mount lock.

3a Remove blocking screws from front of lock.

3b Remove lock from mounting bracket by loosening captive screws and sliding off keyholes.

New lock installation:

3c Attach bracket to header with the two (2) panhead machine screws or the self-drilling screws provided through the slots.

- ① **Do not over-tighten these screws as the bracket may need adjustment.**
- ① **Mounting Bracket should be installed such that the Panhead screwheads fit within the recessed area of the slot.**

3d Slide lock onto mounting bracket keyholes. Engage one captive screw at each end through bottom to fix lock position on bracket.

3e Adjust alignment to ensure full contact of magnet with armature plate.

3f Carefully remove lock without shifting mounting bracket and tighten panhead screws as needed to secure in place.

3g Secure mounting bracket in position with either nine (9) TEK™ screws or four (4) at counter-sunk machine screws.

3h Drill 3/4" (19 mm) wire access hole using mounting bracket as a guide.

3i Tip the lock to expose the four (4) captive mounting screws.

- ① **Apply thread-locking compound to exposed threads.**

3j Slide the lock onto mounting bracket keyholes.

3k Tighten the four (4) captive mounting screws.

3l Insert anti-tamper plugs.

Retrofit installation:

3c Attach bracket to header with 9 TEK™ screws or four (4) at counter-sunk machine screws utilizing holes from previous installation.

- ① **Additional TEK™ screws may be used for added strength.**

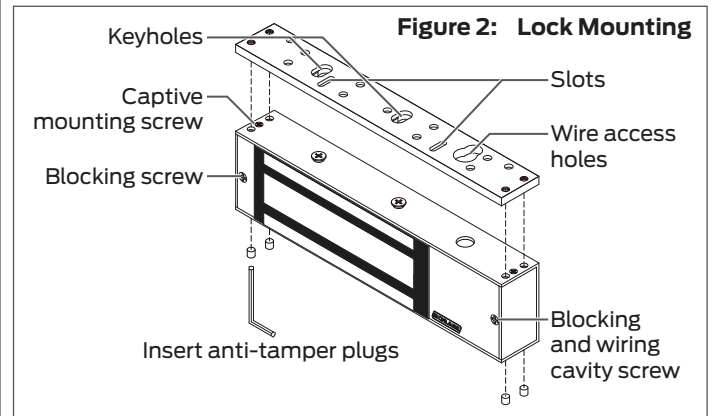
3d Tip the lock to expose the four (4) captive mounting screws.

- ① **Apply thread-locking compound to exposed threads.**

3e Slide the lock onto mounting bracket keyholes.

3f Tighten the four (4) captive mounting screws.

3g Insert anti-tamper plugs.



4 Route the power supply.

Connect wire through the door frame and into the wire access hole in the top of the magnet housing. See **Wiring Requirements on page 1** for current draw specifications and wiring gauge chart.

CAUTION

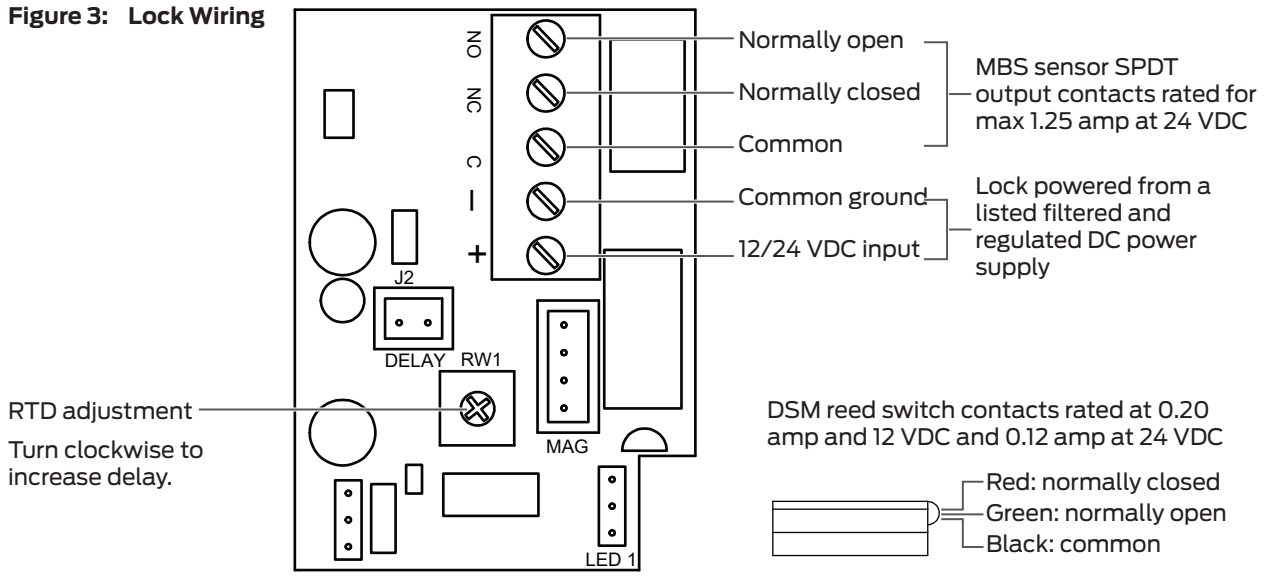
This electromagnetic locking device is cULus listed and must be used with UL approved power supply.

5 Connect wire to terminal blocks.

5a Route wire into lock cavity. Connect wire to terminal blocks. See **Figure 3: Lock Wiring**.

5b Wire Door Status Monitor (DSM) and/or Magnetic Bond Sensor (MBS) if used. See **Figure 3: Lock Wiring**.

Figure 3: Lock Wiring

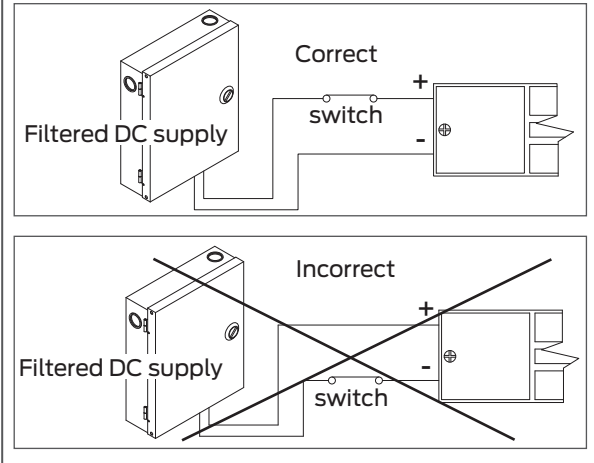


6 Ensure instant release.

All switching devices must be wired between the DC power source and the positive terminal of the lock as shown in **Figure 4: Power Connections**. Switching the negative power supply line will not allow the lock to release immediately.

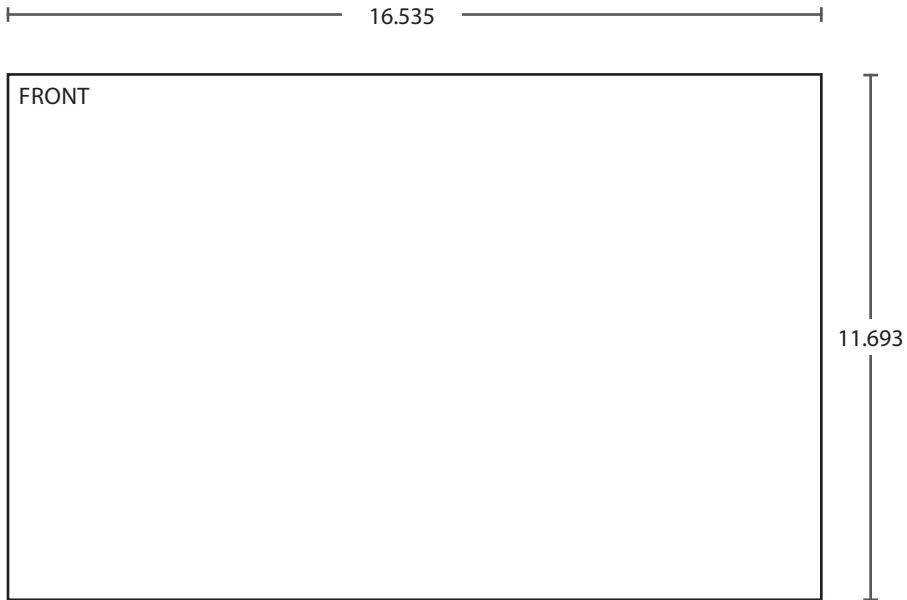
- ① **This lock contains TVS for surge suppression and does not require any additional suppression.**
- ① **Note: Some warming of the device under routine operation is normal.**

Figure 4: Power Connections

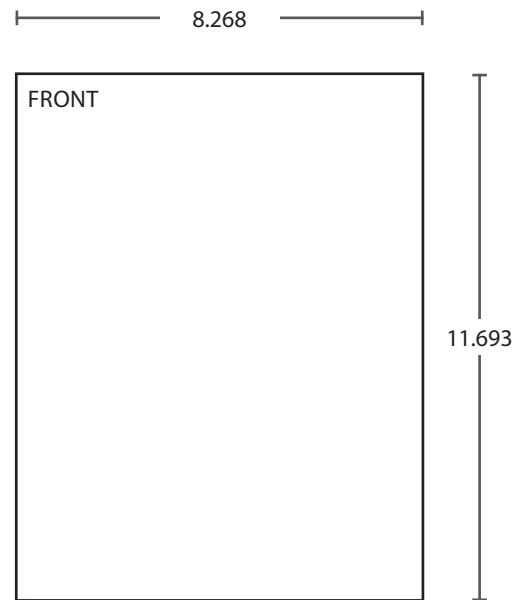


Troubleshooting

Problem	Solution
Cannot remove the lock mounting bracket from top of magnet for installation.	Remove blocking screw. Insert supplied Allen wrench into mounting bolt holes in the bottom of the lock housing and turn. See Figure 2: Lock Mounting on page 3.
Lock is installed but has no holding force at all.	Check connections at power supply, connected releasing devices, lock terminals, and lock circuit board to magnet core.
Lock has enough holding force to lightly hold a screwdriver or set of pliers but door will not lock.	Check to see that armature plate is correctly aligned with the electromagnetic lock. If there is improper alignment, make a 1/4" turn of the armature plate mounting bolt and check for alignment. Make sure to follow the armature plate mounting instructions on the template and page 1 of these installation instructions.
Lock is operating and locking but the armature plate is "humming" against the surface of the lock.	This generally indicates that the lock is either operating on AC voltage or there is some AC voltage present in the DC supply. A properly filtered and regulated DC power supply is required to achieve optimal operation from the lock.
Lock is not releasing immediately upon removal of power.	Ensure that switching devices are interrupting the DC power and not the AC power supply voltage. Ensure rubber washer on armature plate mounting bolt has not been removed or damaged. Check that switching device interrupts the positive wire and not the negative wire. See Figure 4: Power Connections on page 4. Remove any Diodes or other suppression devices that may be installed.



BEGINNING SHEET



FOLDED SHEET

Additional Notes:
1. Fold booklet style

Revision History						Revision Description:					
A	B	C	D	E	F	D > Revised artwork					
030274	061317	n/a	091925								
Material						Edited By		Approved By		EC Number	Release Date
White Paper						M. Sasso		D. Toppins		091925	09-27-21
Notes						Title					
1. printed two sides						INSTRUCTION SHEET, INSTALLATION, M390RFK					
2. printed black						Creation Date		Number		Revision	
3. tolerance ± .13						11-06-12		24200669		D	
4. printed in country may vary						Created By		Activity		© Allegion 2021	
5. drawings not to scale						D. Spence		3899 Hancock Expwy Security, CO 80911			
						Software: InDesign CS6					