

## **INSTALLATION AND OPERATING INSTRUCTIONS FOR Magnetic Cabinet Lock MCL-24**

### **1. INTRODUCTION**

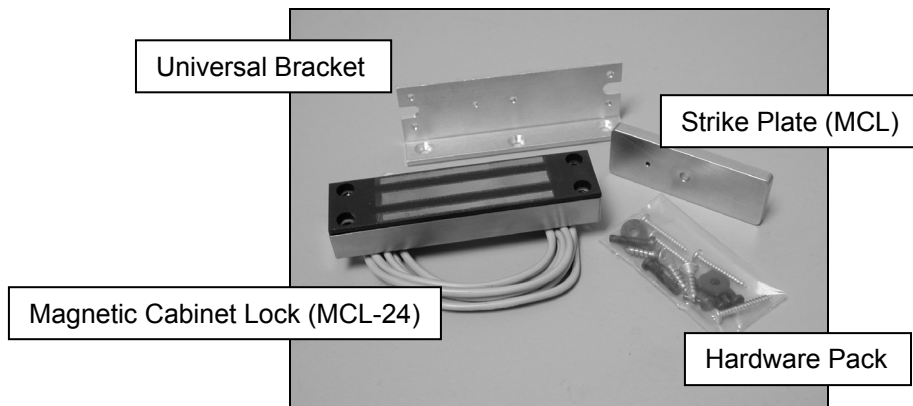
Securitron's model MCL-24 is a Magnetic Cabinet Lock designed to work with swing or sliding cabinets and drawers. The assembly consists of the Magnalock Body, Universal Mounting Bracket and Armature as well as the installation hardware. The MCL-24 Universal Mounting Bracket allows the Magnalock Body or the Armature to be mounted in a wide variety of configurations making it a snap to install just about anywhere.

### **2. SPECIFICATIONS**

Holding Force: 200Lbs  
(90 Kg)  
Dimensions: 4.6" X .75" X 1.14"  
(117 X 19 X 29mm)  
Voltage: 24 Volts DC Only  
Current Requirement: 62mA  
Power Consumption: 1.5 Watts

### **3. PRODUCT OVERVIEW**

Upon unpacking this product, an inventory should be made to ensure that all the required components and hardware have been included. Along with these Instructions and the Installation Template this product should include the following items:



(Note that a complete list of all included parts is provided in Section 5.2 of these instructions).

### **4. RECOMMENDED TOOLS**

Drill Motor  
Drill Bits:  
13/64", 1/8", 3/32" and 1/4" (Optional)  
Phillips and Standard Screw Driver  
Measuring Tool (ruler or tape measure)  
Wire Stripper  
Crimping Tool  
Digital or Analog Volt Ohm Meter (for diagnostics)  
5/64" Hex (Allen) Wrench

### **5. INSTALLATION INSTRUCTIONS**

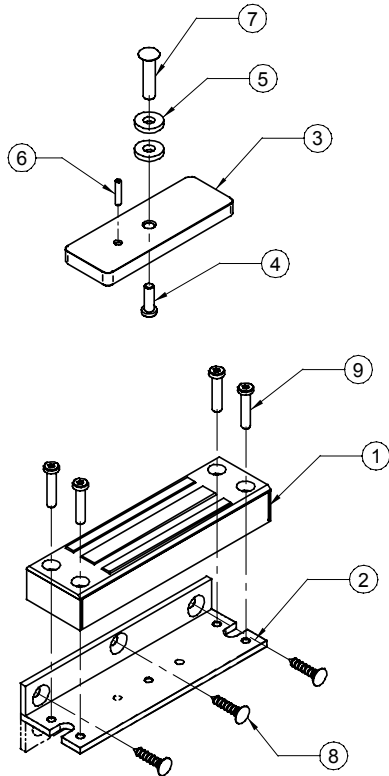
#### **5.1. Pre-Installation Survey/Assessment**

Due to the wide variety of mounting configurations available for this product, it is strongly recommended that an initial survey and assessment be made of the physical area to which the Magnalock will be installed. A determination of the optimal method of mounting should be made prior to installation with considerations made to the following:

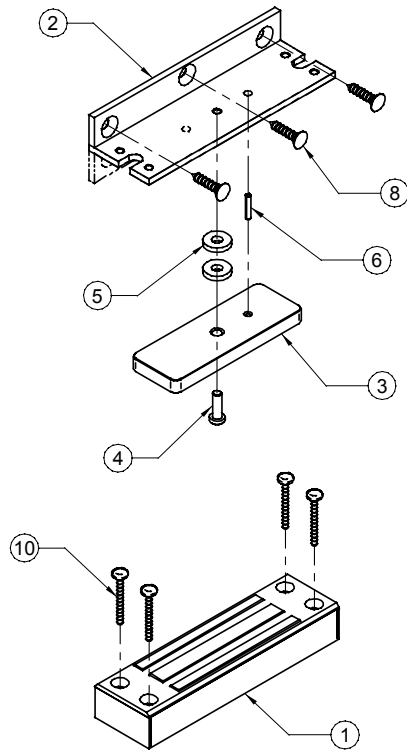
- A. Physical strength of mounting area. The structural integrity of mounting surfaces must be strong enough to meet or exceed the holding force of the Magnalock.
- B. Protection of the lock from external attack. The Magnalock and the wiring must be protected to a reasonable degree from potential damage due to intruders or vandals.
- C. Convenience and accessibility of area to be protected. The Magnalock assembly should be installed in a location that will not hinder or create a potential safety hazard to authorized personnel routinely accessing the protected area.

**5.2. Magnalock Body and Strike Plate Installation**

The exploded illustration below displays two mounting configurations available using the hardware provided:



Mounting LOCK BODY with BRACKET



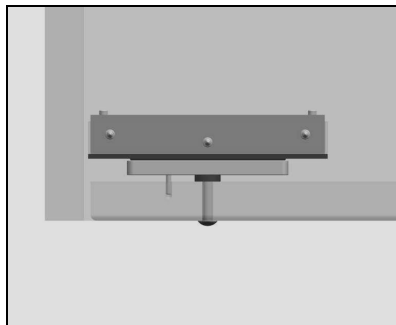
Mounting STRIKE PLATE with BRACKET

ITEM	QTY	PART NUMBER	NOMENCLATURE/DESCRIPTION
1	1	772-MCL-24	Magnalock Body
2	1	390-17110	Universal Bracket
3	1	380-20000	Strike Plate (MCL)
4	1	300-11620	#8-32 UNC X 1/2" Long Low Profile Socket Head Cap Screw
5	2	310-11210	1/2" O.D. X 3/16" I.D. X .093" Neoprene Rubber Washer
6	1	330-10670	3/32" O.D. X 1/2" Long Roll Pin
7	1	330-12170	Sex Bolt (#8-32 X 7/8" Binder Head)
8	3	300-11790	#10 X 3/4" Long (Phillips) Flat Head Screw
9	4	300-11645	#8-32 UNC X 3/4" Long Socket Head Cap Screw
10	4	300-11710	#6 X 1" Long (Phillips) Pan Head Screw

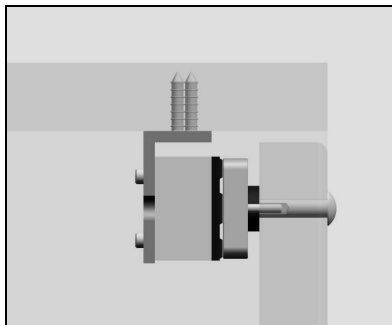
### 5.2.1. Magnalock Body to Universal Bracket Installation

This section will provide step-by-step installation instructions for the option of mounting the Magnalock Body using the Universal Bracket provided and the Strike Plate through a door/access panel.

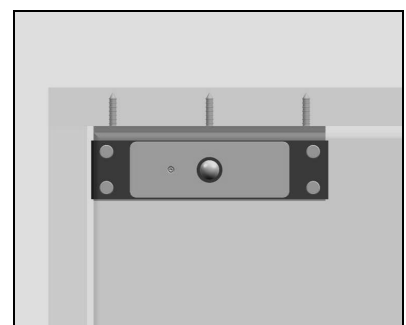
The following illustrations display installation of the Magnalock Body to Universal Bracket configuration and show examples of some typical Swinging Door and Pull Out Drawer applications:



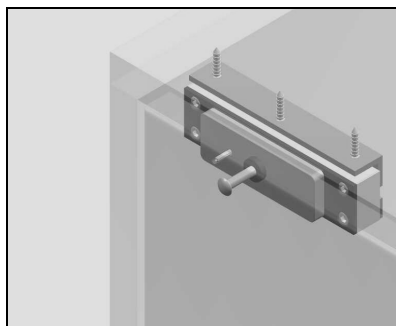
**Top View**



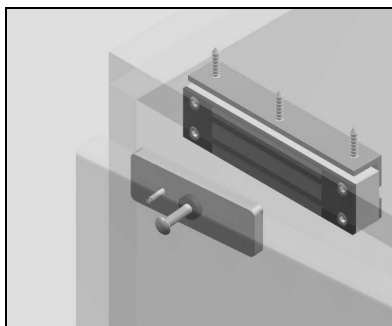
**Left View**



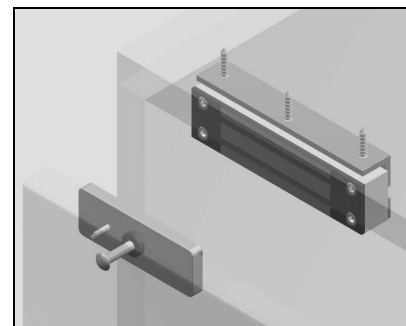
**Front View**



**Closed**



**Open (Swing Out)  
Cabinet Door**



**Open (Pull Out)  
Drawer**

Using Installation Template (Part #500-20250), layout and prepare mounting surfaces (See Option #1 of Template).

#### **Strike Plate:**

1. Drill 13/64" diameter hole through Door/Panel for Sex Bolt.
2. Drill 1/8" diameter hole x .300" deep for Strike Plate Guide Pin.
3. Insert Strike Plate Guide (Roll) Pin (Item #6) into hole in Strike Plate (Item #3) and gently tap Pin into hole until it is seated firmly in place.
4. Insert Sex Bolt (Item #7) through Door.
5. Install the two (2) Rubber Washers (Item #5) over the end of the Sex Bolt.
6. Set Strike Plate into place, aligning its center hole with the Sex Bolt and the Guide Pin into the 1/8" hole previously drilled in Step 2.
7. Insert #8-32 UNC x 1/2" Long Low Profile Socket Head Cap Screw (Item #4) through Strike Plate and into the end of the Sex Bolt. Tighten the assembly using a 5/64" Hex (Allen) Wrench.

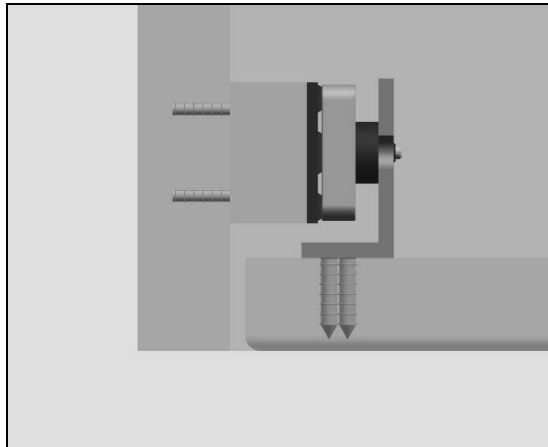
#### **Magnalock Body:**

1. Drill three (3) 1/8" diameter x 1/2" deep pilot holes into cabinet mounting surface.
2. Install Universal Bracket (Item #2) using three (3) #10 x 3/4" Long Flat Head Wood Screws (Item #8). Tighten the screws firmly using a Phillips Head Screwdriver.
3. Orient Magnalock Body onto Universal Bracket with Power Cable to the desired end and mount Lock to Bracket using the four (4) #8-32 UNC x 3/4" Long Socket Head Cap Screws (Item #9). Tighten the assembly using a 1/8" Hex (Allen) Wrench.
4. Run Power Cable to terminal connection as required.

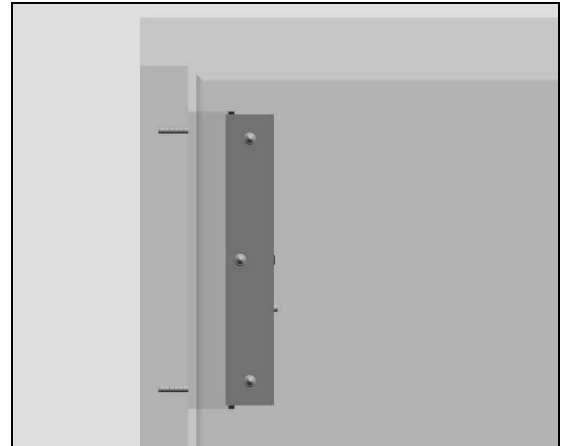
### 5.2.2. Strike Plate to Universal Bracket Installation

This section will provide step-by-step installation instructions for the option of mounting the Strike Plate using the Universal Bracket provided and the Magnalock Body directly to an opposing mounting surface.

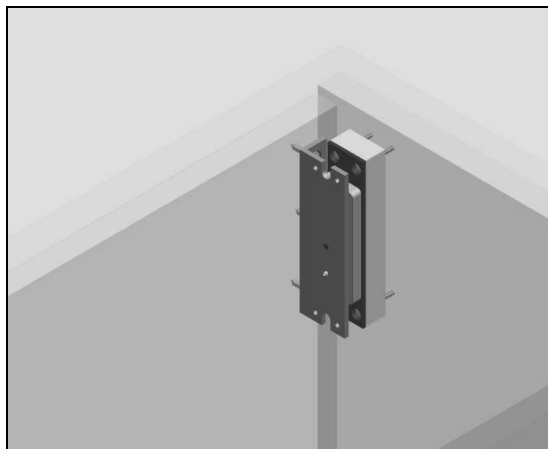
The following illustrations display installation of the Strike Plate to Universal Bracket configuration and show an example of a typical Sliding Door application:



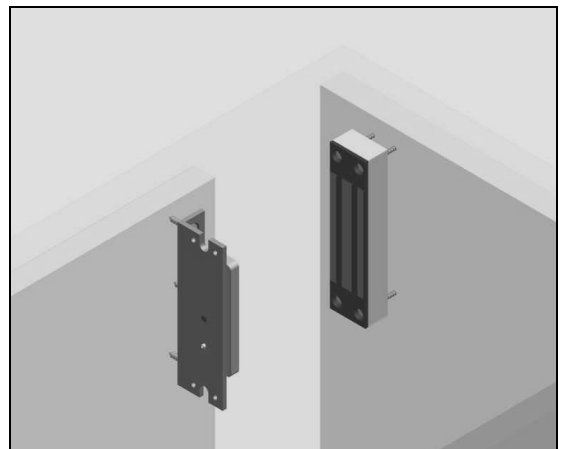
**Top View (Closed)**



**Front View (Closed)**



**View from Inside (Closed)**



**View from Inside (Open)**

Using Installation Template (Part #500-20250), layout and prepare mounting surfaces (See Option #2 of Template).

#### **Strike Plate:**

1. Drill three (3) 1/8" diameter x 1/2" deep pilot holes into mounting surface.
2. Install Universal Bracket (Item #2) using three (3) #10 x 3/4" Long Flat Head Wood Screws (Item #8). Tighten the screws firmly using a Phillips Head Screwdriver.
3. Insert Strike Plate Guide (Roll) Pin (Item #6) into hole in Strike Plate (Item #3) and gently tap Pin into hole until it is seated firmly in place.
4. Set Strike Plate into place, aligning its center hole with the center (threaded) hole of the Universal Bracket and the Guide Pin into the 1/8" hole in the Bracket.
5. Install the two (2) Rubber Washers (Item #5) between Strike Plate and Universal Bracket.
6. Insert #8-32 UNC x 1/2" Long Low Profile Socket Head Cap Screw (Item #4) through Strike Plate and into the threaded center hole of the Universal Bracket. Tighten the assembly using a 5/64" Hex (Allen) Wrench.

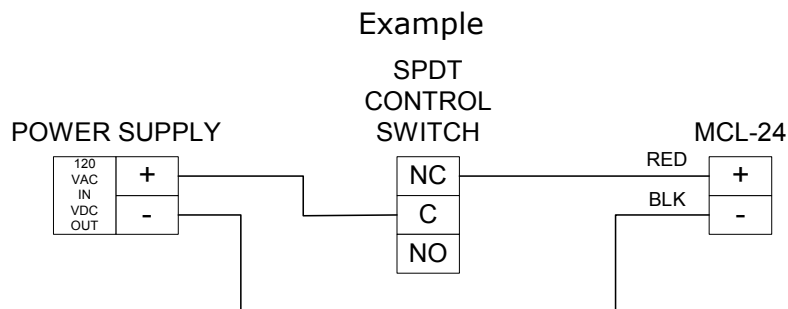
#### **Magnalock Body:**

1. Drill four (4) 3/32" diameter x 7/16" deep pilot holes into cabinet mounting surface.
2. Drill 1/4" diameter hole through - or rout a small channel in the mounting surface to provide clearance for Magnalock Body Power Cable.
3. Insert end of Power Cable through clearance hole and feed through until Magnalock Body sits flush against mounting surface.

4. Install Magnalock Body using four (4) #6 x 1" Long Pan Head Wood Screws (Item #10). Tighten the screws firmly using a Phillips Head Screwdriver.
5. Run Power Cable to terminal connection as required.

## 6. OPERATIONAL INSTRUCTIONS

The Securitron Model MCL-24 is a Fail Safe locking device (power to lock). To power the MCL-24 you simply apply positive voltage DC to the red wire of the Magnalock through a normally closed control switch. The black wire of the Magnalock should return directly to the negative DC.



### 6.1. WIRE GAUGE SIZING

If the power supply is distant from the lock, voltage will be lost (dropped) in the connecting wires so that the Magnalock will not receive full voltage. The following chart shows the minimum wire gauge that will hold voltage drop to an acceptable 5% for different lock to power supply distances. Proper use of the chart assumes a dedicated pair of wires to power each Magnalock (no common negative). Note that a Magnalock operating on 24 volts is a much better choice for long wire runs as it has 4 times the resistance of a 12 volt installation. Also note that the correct calculation of wire sizing is a very important issue as the installer is responsible to insure that adequate voltage is supplied to any load. In multiple device installations, the calculation can become quite complex so refer to Section 9 Appendix A for a more complete discussion.

Distance	Gauge 12V	Gauge 24V	Distance	Gauge 12V	Gauge 24V
80 FT	20 GA	24 GA	800 FT	10 GA	16 GA
200 FT	17 GA	22 GA	1500 FT	8 GA	14 GA
400 FT	14 GA	20 GA	3000 FT	N/A	12 GA

## 7. MAINTENANCE

Maintenance for MCL-24 is very simple. Once every six months we recommend taking a clean cloth and rubbing alcohol or a non-abrasive cleaner and wiping down the face of the Magnalock and the Armature. This prevents a build up of foreign materials from the air making the Magnalock stick.

## 8. TROUBLESHOOTING

### **PROBLEM: No magnetic attraction between magnet and strike plate.**

First be sure the Magnalock is being correctly powered with DC voltage. This includes connecting the power wires with correct polarity. Positive must go to red and negative to black. If the magnet body is wired in reverse polarity, it will not be damaged, but it will not operate. If the unit continues to appear dead, it must be electrically checked with an Ammeter. It must be powered with the correct input voltage and checked to see if it draws the specified current. If the unit meters correctly, it is putting out the correct magnetic field and the problem must lie in the mounting of the strike.

### **PROBLEM: The lock does not release.**

When power is removed from it, the Magnalock must release. Therefore the complaint of "lock will not release" is either mechanical bonding via vandalism or a failure to completely release power. By mechanical bonding, we simply mean that glue has been applied between the armature and magnet as a prank. Failure to completely release power is generally a wiring integrity problem. What happens is that an upstream switch removes power from the wires going to the Magnalock, but through an installation error, the wires have their insulation abraded between the switch and lock so that partial or full power can leak in from

another Magnalock or other DC device with similarly abraded wiring. This is most likely to occur at the point where the wire cable leaves the Magnalock case and enters the door frame. Another area is via an improper splice on wiring in conduit. Either a metal door frame or the metal conduit is capable of leaking power between multiple devices with abraded wires, thereby bypassing switches. A good way to check this electrically (as opposed to visually removing and inspecting the wires) is to use a meter and check for leakage between the power supply positive or negative and the door frame and conduit. Magnalocks should be powered by isolated DC voltage without any earth ground reference to positive or negative.

**PROBLEM: The lock rusts.**

Both the magnet core and armature are plated and sealed following a military specification. If rusting appears, the most common cause is that improper cleaning (with steel wool for instance) has occurred and this has stripped off the relatively soft plating. Once the plating has been removed, it cannot be restored in the field, so the lock will have to be periodically cleaned and coated with oil or other rust inhibitor. A rusty Magnalock will still function but at reduced holding force. If the product is installed in a heavily corrosive atmosphere, such as near the ocean, it will eventually rust even with non-abrasive cleaning. The only answer then becomes continued periodic removal of the rust.

**9. APPENDICES**

**A. CALCULATING WIRE GAUGE SIZING**

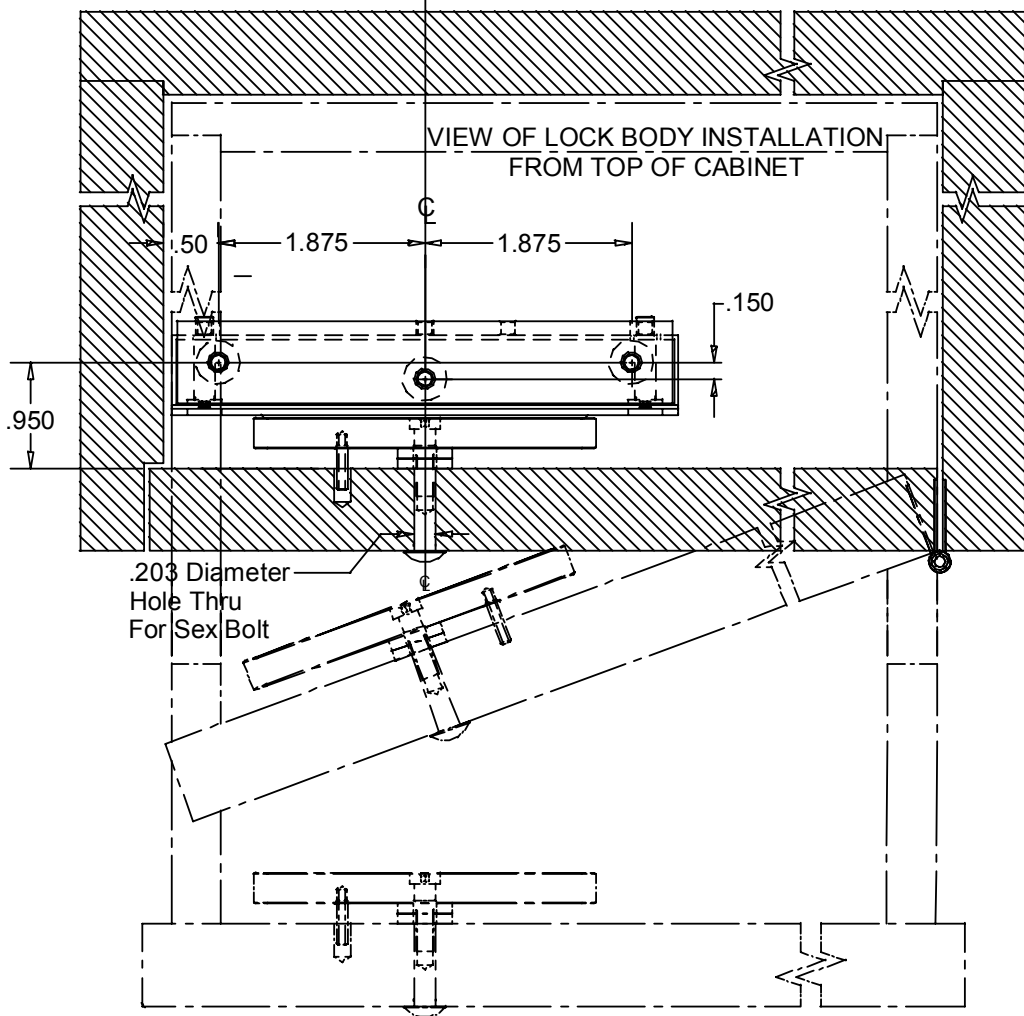
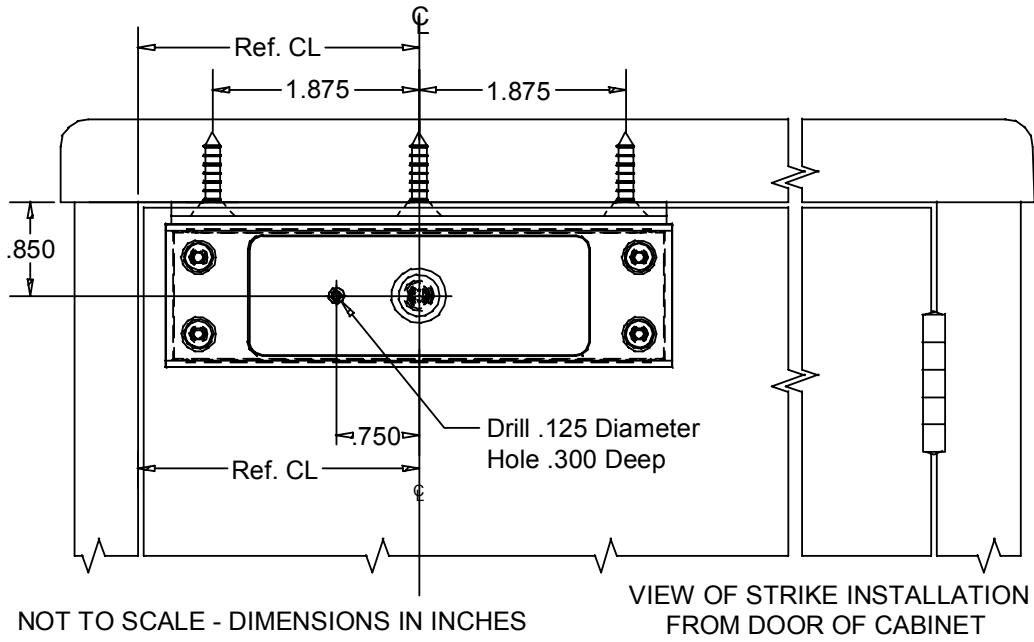
The general practice of wire sizing in a DC circuit is to avoid causing voltage drops in connecting wires that reduce the voltage available to operate the device. As Magnalocks are very low power devices, they can be operated long distances from their power source. For any job that includes long wire runs, the installer must be able to calculate the correct gauge of wire to avoid excessive voltage drops.

This is done by taking the current draw of the lock and multiplying by the resistance of the wire  $I \times R = \text{Voltage drop}$  (i.e.  $0.100A \times 10.1 \text{ Ohms} = 1.01 \text{ Volts}$  dropped across the wire). For all intents and purposes it can be said that a 5% drop in voltage is acceptable so if this were a 24 Volt system ( $24 \text{ Volts} \times .05 = 1.2 \text{ Volts}$ ) a 1.01 Volt drop would be within tolerance.

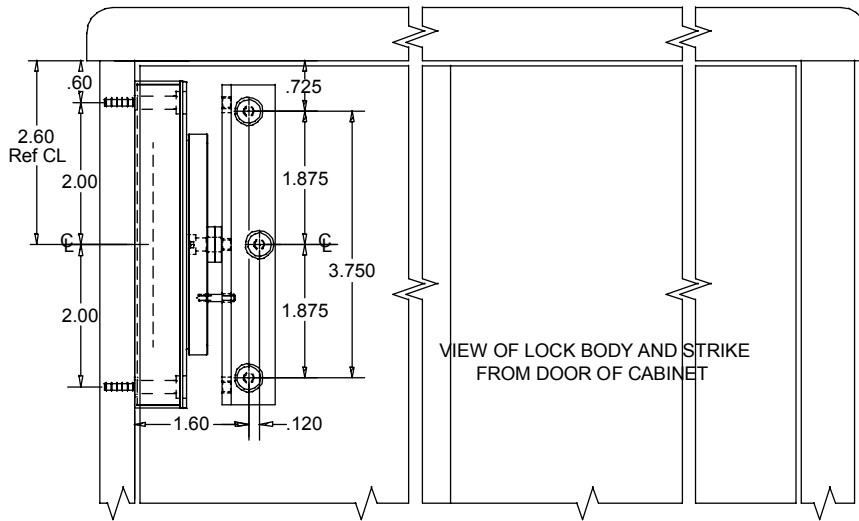
To calculate the wire resistance, you need to know the distance from the power supply to the Magnalock and the gauge (thickness) of the wire. The following chart shows wire resistance per 1000 ft (305 meters):

Wire Gauge	Resistance/1,000 ft	Wire Gauge	Resistance/1,000 ft
8 Gauge	.6 Ohms	16 Gauge	4.1 Ohms
10 Gauge	1.0 Ohms	18 Gauge	6.4 Ohms
12 Gauge	1.6 Ohms	20 Gauge	10.1 Ohms
14 Gauge	2.5 Ohms	22 Gauge	16.0 Ohms

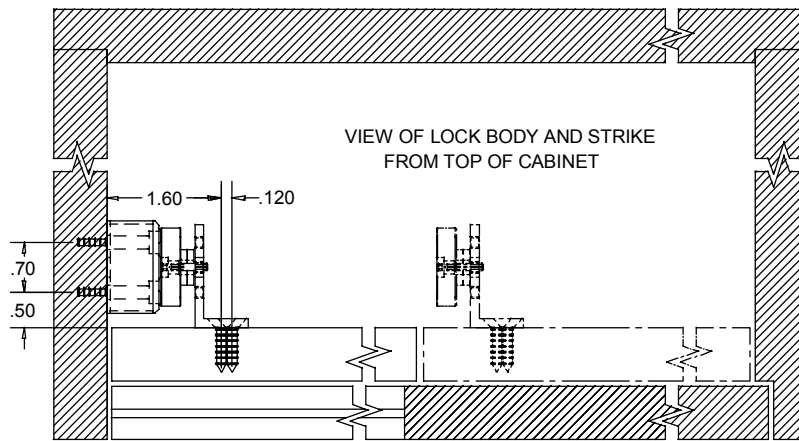
**B. Preparation for Swinging Door and Pull Out Drawer Installations:**



### C. Preparation for Sliding Door Installation



NOT TO SCALE - DIMENSIONS IN INCHES



## 10. WARRANTY

### MAGNACARE® LIMITED LIFETIME WARRANTY

SECURITRON MAGNALOCK CORPORATION warrants that it will replace at customer's request, at any time for any reason, products manufactured and branded by SECURITRON.

SECURITRON will use its best efforts to ship a replacement product by next day air freight at no cost to the customer within 24 hours of SECURITRON's receipt of the product from customer. If the customer has an account with SECURITRON or a valid credit card, the customer may order an advance replacement product, whereby SECURITRON will charge the customer's account for the price of the product plus next day air freight, and will credit back to the customer the full amount of the charge, including outbound freight, upon SECURITRON's receipt of the original product from the customer.

SECURITRON's sole and exclusive liability, and customer's sole remedy, is limited to the replacement of the SECURITRON product when delivered to SECURITRON's facility (freight and insurance charges prepaid by customer). The replacement, at SECURITRON's sole option, may be the identical item or a newer unit which serves as a functional replacement. In the event that the product type has become obsolete in SECURITRON's product line, this MAGNACARE warranty will not apply. This MAGNACARE warranty also does not apply to custom, built to order, or non-catalog items, items made by others (such as batteries), returns for payment, distributor stock reductions, returns seeking replacement with anything other than the identical product, or products installed outside of the United States or Canada. This MAGNACARE warranty also does not apply to removal or installation costs.

SECURITRON will not be liable to the purchaser, the customer or anyone else for incidental or consequential damages arising from any defect in, or malfunction of, its products. SECURITRON does not assume any responsibility for damage or injury to person or property due to improper care, storage, handling, abuse, misuse, or an act of God.

EXCEPT AS STATED ABOVE, SECURITRON MAKES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, AS TO ANY MATTER WHATSOEVER, INCLUDING WITHOUT LIMITATION THE CONDITION OF ITS PRODUCTS, THEIR MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.