



INSTRUCTION MANUAL

Model CC-8946

7/17

**Magnetic Lock with
Display Panel**

MONITEQ, Inc.

INSTRUCTION MANUAL

Model CC-8946

Magnetic Lock with Display Panel

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1. INTRODUCTION

The Model CC-8946 is a magnetic door lock with an integrated display panel intended for use on doors that are monitored and controlled from a remote location. The unit includes a magnetic lock rated at 1200lbs and a display panel that is readily viewed by personnel on the secure side of the door. The display panel includes red, green and amber lamps that indicate the door status, and a key switch that can be used to manually release the door. Internal tamper, magnetic bond, and door contact switches are used to provide output status signals. All connections to the CC-8946 are made via an attached 20 ft. cable. The integration of the display panel with the magnetic lock simplifies the installation by eliminating the multiple cables required when installing separate magnetic locks, door contacts and a display panel. The CC-8946's cable is typically connected to a terminal block which in turn is connected to a door control module located within a security information center (SIC).

The CC-8946 can be used in new installations and to retrofit existing installations presently equipped with a separate magnetic lock and display panel.

2. SPECIFICATIONS

Operating Voltage: 24Vdc

Magnetic lock:

Holding force: 1200 lbs.
Operating Voltage: 24Vdc
Operating Current: 290 mA

Display Panel:

Indicator lamps: Replaceable LEDs
Key switch: Medico high security cylinder w/two keys

Internal Functions:

Tamper switch
Magnetic door contact switch
Dual Magnetic bond sensing switches
Piezo-electric audible alarm
Lamp/alarm test switch

Dimensions

Magnetic lock with display panel: 14.0" W x 2.0"H x 4.25"D
Magnet armature: 10.0" W x 1.74" H x 0.625"D

Supplied cable: 20 ft., 15-conductor., #22

3. SUPPLIED EQUIPMENT

The CC-8946 consists of the Magnetic Lock with Display Panel, Magnetic Armature and various accessories and mounting hardware to facilitate installation. The table below lists all of the items that comprise the Model CC-8946 along with a brief description of each to aid in identification and use.

QTY	ITEM	PURPOSE
1	Magnetic Lock with Display Panel	Mounts on the door header to secure the door and display the door status
1	Magnetic Armature	Mounts on the door so as to align with and bond to the magnetic lock when the door is secured.
1	Mounting Template	Used to accurately locate both the Magnetic Lock and Armature.
1	Sex bolt/nut and roll pin kit	Used to mount the Armature to the door
1	Mounting screw kit	Used to mount Magnetic Lock with Display Panel to the door frame
2	Key for key switch	Used to manually release the magnetic lock using the key switch on the Display Panel
1	Instruction Manual	Installation, operation and troubleshooting instructions

4. FUNCTIONS OF CONTROLS AND INDICATORS

The functions of the items on the display panel are described below:

Key switch - Used to release the magnetic lock by momentarily turning the key clockwise. The key cannot be removed in this released position.

Red Lamp - Indicates that the door is open. (controlled by the internal door contact switch.)

Green Lamp – Indicates that the door is secured (controlled by the internal magnetic bond sensor switch.)

Amber Lamp - Indicates that the door is not secure (controlled by the internal magnetic bond sensor switch and the control module in the SIC). When flashing, indicates that the push bar has been pressed and that the countdown timer (typically set to 15 seconds) has been activated.

Audible Alarm - When sounding continuously indicates that the tamper switch within the CC-8946 has opened. (controlled by the internal tamper switch and by the control module in the SIC.) When sounding on-and-off indicates that the push bar has been pressed and that the 15 second count down timer has been activated. When sounding continuously indicates that the unit's cover has been opened.

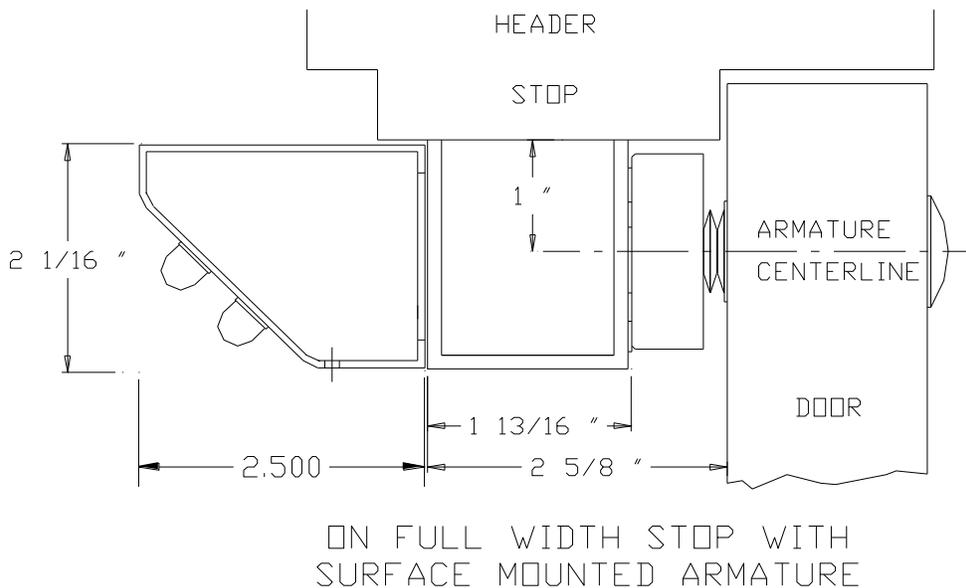
Test switch - When pressed illuminates all three indicator lamps and sounds the audible alarm and the corresponding items on the Control Module in the SIC. (Accessed using a paper clip or similar item through the small hole located near the center of the underside of the Display Panel.)

5. INSTALLATION

Installation of the CC-8946 consists of mounting the Magnetic Lock/Display Panel and the Armature, and then connecting the attached cable (via a terminal block) to the cable that runs to the associated Door Control Module.

5.1 Mechanical Installation

Figure 5-1, Elevation View



READ THOROUGHLY BEFORE INSTALLING

Handle electro-magnets and armatures carefully. Any damage to the mating surfaces may significantly reduce holding efficiency.

The Electro-magnet assembly mounts firmly and rigidly to the underside of the header on the stop side of the door. The armature mounts to the face of the door with special hardware for proper floating action to assure total mating with the face of the electro-magnet.

Note from the supplied template that a 2-1/2" minimum reveal is required to assure rigid mounting of the electro-magnet assembly. If this minimum is not met see Fig. 1 to determine the need for either a filler Plate or an angle bracket.

Mark the door and frame for drilling in accordance with the supplied template dimensions. All measurements are to be made with the door in the closed position.

Follow this 4-step mounting process:

STEP 1 - FRAME PREPARATION

Remove the housing cover prior to lock installation (see Figure 5-5 Exploded View). Prepare the frame for the electro-magnetic lock assembly by drilling for #14 sheet metal screws or drilling and tapping for 1/4-20 machine screws and external tooth lock washers, (use the large slotted holes only) tightening the screws just enough to hold unit in place. Route the attached 20 ft. cable through the frame to the location where it will be connected to the cable going to the SIC.

STEP 2 - ARMATURE PREPARATION (Figure 3)

Prepare armature for mounting: Note that the armature has two 3/16 dia. holes open from the back only. Press the two spring pins provided into these holes. Tap pins gently until they are firmly seated in the holes being extremely careful not to mar the face of the armature.

Insert one spring washer on the 5/16 #18 shoulder screw and then insert the screw thru the armature. Add three conical spring washers over shoulder and flat stop washer. (Per diagram enclosed in armature kit.)

STEP 3 - ARMATURE MOUNTING

THRU BOLT MOUNTING IN HOLLOW METAL DOORS (Figure 5-2A)

(Dimensions shown are for standard 1-3/4" thick doors)

Drill an 11/32" hole through the door. Enlarge the hole in the outside face to 1/2" for the knurled sex nut. Be sure that the spring pins pocket and float freely in the 1/4" holes in the door. If not, remove the armature and enlarge the holes in the door. Insert the shoulder screw/armature assembly thru the face of the door, being sure that the spring washers remain over the shoulder, and hold firmly against the door by pushing directly on the head of screw. Insert the sex nut from the opposite face and assemble. When the armature is floating freely, tighten the 5/16 #18 shoulder screw fully and securely with a 5/32 Allen wrench.

THRU BOLT MOUNTING IN SOLID CORE WOODEN DOOR (Figure 5-2B)

Drill a 1/2" hole through the door. Insert the shoulder screw/armature assembly thru the face of the door, being sure that spring washers remain over the shoulder, and hold firmly against the door by pushing directly on the head of the screw. Insert the sex nut from the opposite face and assemble. When the armature is floating freely, tighten the 5/16 #18 shoulder screw fully and securely with a 5/32 Allen wrench.

MACHINE SCREW MOUNTING (Figure 5-2C)

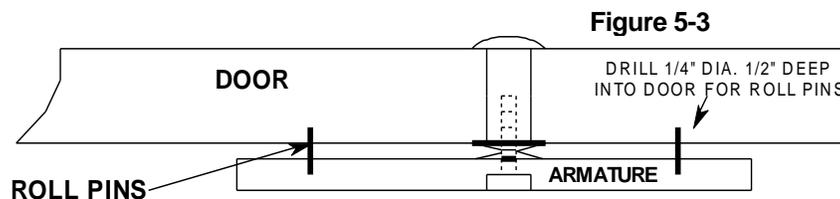
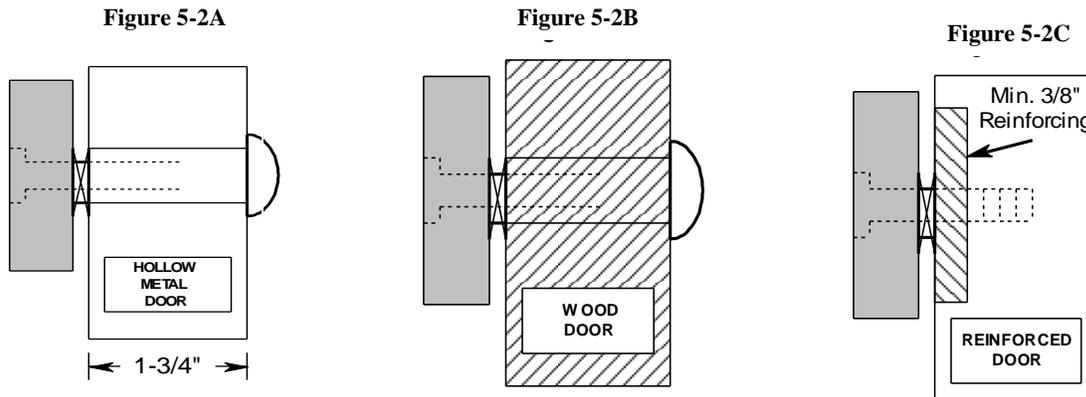
The door must be properly reinforced to a 3/8" minimum thickness and structured for a 1200 lb. load. Drill and tap thru the reinforcing for a 1/15 #18 machine screw. Insert the shoulder screw/armature assembly, being sure that the spring washers remain over the shoulder and the flat washer is between the shoulder and the face of door. When the armature is floating freely, tighten the 5/16 #18 shoulder screw fully and securely with a 5/32 Allen wrench.

STEP 4 - LOCK & ARMATURE ALIGNMENT

With the electro-magnet energized and the armature fully engaged, position the Lock so that the door is snug against stops and then tighten the #14 Sheet Metal Screws or the 1/4 #20 machine screws securely.

Using the 3/16" dia. holes in the mounting plate behind the electro-magnet as a physical template, drill two .159 dia. holes (# 21 drill) and tap the frame for # 10/32 machine screws, or drill two 11/64" dia. holes in the frame for # 190 sheet metal screws. Secure the mounting plate with the #10 screws and lock washers.

THE USE OF THESE #10 SCREWS IS IMPORTANT, as they provide resistance to shear rotation and assure maximum system holding efficiency of the system.



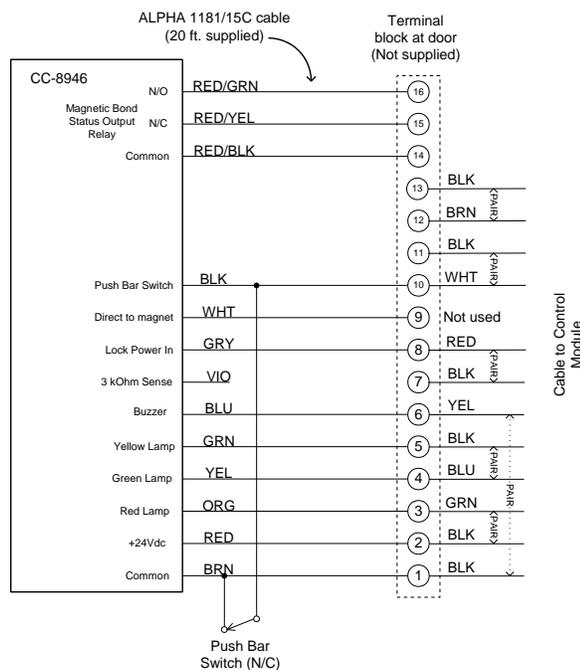
TAP 2 ROLL PINS INTO HOLES IN ARMATURE.
MAKING SURE PINS BOTTOM OUT IN HOLES

5.2 Electrical Installation

All external connections to the CC-8946 are made through the attached 15-conductor cable. The supplied cable is 20 ft. long and may be cut as necessary. A terminal block within or near the door frame is normally used to interconnect the CC-8946 with the cable that connects with the associated Door Control Module in the SIC.

The diagram below illustrates a typical interconnection using a 16-position terminal block. Note that the wire colors shown for the cable that connects to the Door Control Module are typical and may be different in any particular installation.

Figure 5-4, Interconnection Wiring Diagram



Check the installation and alignment of the armature and electro-magnet by opening and closing door while energizing and de-energizing the electromagnet. The armature mounting surface must be in full contact with the top and bottom rails of electro-magnet, with the center line of armature slightly above the center line of the magnet as shown on elevation profile drawings. When all checks out satisfactory, replace the housing cover.

Figure 5-4, Interconnection Wiring Diagram
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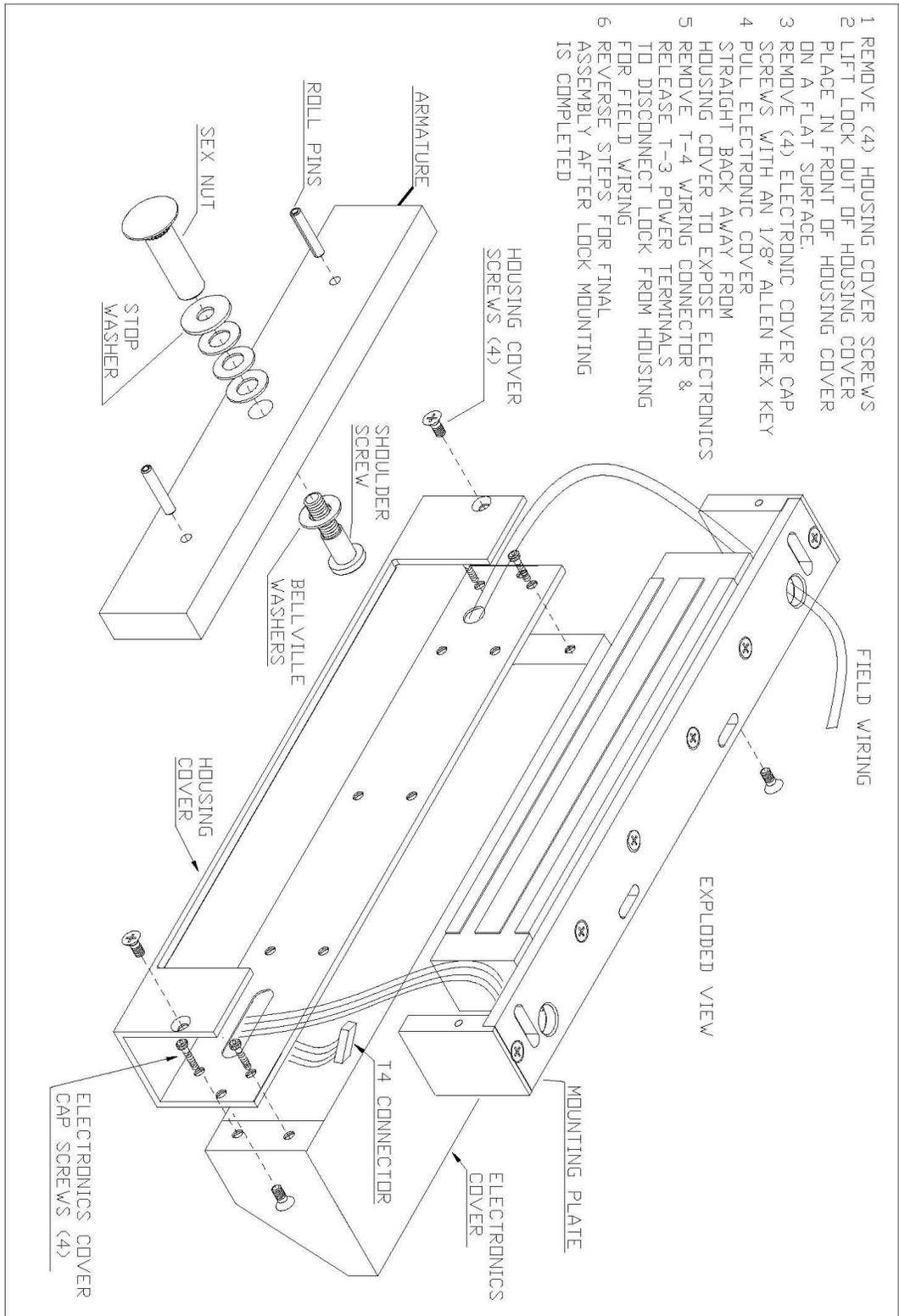


Figure 5-5, Exploded View of the CC-8946

6. OPERATION

General

During normal operation the CC-8946 remains in a Secure Mode until someone requests egress by pressing on the Push Bar. This causes a timing sequence to begin which when completed, releases the door. An operator stationed at the SIC may intervene at any time by using controls on the Control Module associated with that door.

Secure Mode

The CC-8946 is normally in the Secure Mode. In this mode the Green and Amber lamps are on, indicating that the door is closed and the magnet is bonded to the armature.

Egress Request Mode

When an individual presses the push bar a signal is sent from the CC-8946 to the control module in the SIC. The control module then begins a timing sequence, typically 15 seconds long. The amber lamp begins flashing and the audible alarm sounds an on-off pattern. The duration of the Egress Request Mode is set within the control module.

Released Mode

Upon completion of the Egress Request Mode the Control Module removes the power to the magnetic lock, releasing the door. The door may then be opened to provide egress. When the door re-closes the system returns to the Secure Mode.

Operator Intervention

The operator at the SIC may intervene at any time using controls on the Control Module to change the sequence of events. Refer to the documentation for the Control Module for details.

7. THEORY OF OPERATION AND TROUBLESHOOTING

General

The CC-8946 operates together with a Control Module located in a Security Information Center (SIC). Figure 7-1 is a schematic diagram of the Model CC-8946 showing the interconnections to the Control Module in the SIC. It is supplied as an aid to understanding both the operation of the CC-8946 itself and its connections to the Control Module.

Power to the magnetic lock is routed from the Control Module through T1, Pin 8, then through the Key Switch S5 to the magnet.

Sensors within the CC-8946 monitor the status of the door, magnetic lock and push bar and route this information to the control unit through T1 and the interconnecting cable. The Control Module uses this information to control the magnetic lock and the status of the indicator lamps and audible alarm on the CC-8946's display panel.

Indicators and Audible Alarm

The three indicator lamps and the audible alarm all have one side connected to +24 Vdc from Pin 2 of T1. The other side of each device is controlled by both external connections to the Control Module and by sensing switches within the CC-8946.

The Red lamp is controlled by the internal Door Switch (S4). When the door is open this switch is closed, connecting the common return path to the red lamp.

The Green and Amber lamps are connected to the Magnetic Bond Switch S3. When the magnet is energized and bonded to the armature, S3 connects the common return path to the Green lamp L2. When the magnet and armature are not bonded, S3 connects the common return path to the Amber lamp L3. The Control Module may also activate the Amber Lamp L3 by applying the common return path through T1, Pin 5. This occurs during the Egress Request Mode.

Fuse F1 protects the magnetic bond reed switches against currents in excess of 200mA. These reed switches are susceptible to damage if a voltage source is inadvertently applied during installation. F1 automatically resets itself after the voltage causing the excess current to be removed.

The Audible Alarm B1 is controlled by the Tamper Switch S2 and by the Control Module through T1, Pin 6. The Tamper Switch S2 connects the common return path to B1 when the cover of the CC-8946 is removed.

Test Switch - Applies the common return path to all three lamps and B1 (through diodes D3, D4, D5 and D6). This provides a means of testing the lamps and audible alarm. Note that this test also activates the lamps and audible alarm on the Control Module.

Relay K1 - is controlled by the power to the magnet and its contacts shunt the external push bar switch when the magnet is energized.

Relay K2 - is controlled by the Magnetic Bond Switch S3. The output contacts of K2 are connected to the red/green, red/yellow and red/black wires in the interconnecting cable. These outputs are intended for use with an external device such as an automatic door opener.

Electromagnet – The electromagnet operates on a nominal 24Vdc and draws approximately 300 mA when energized. Diode D8 is across the magnet terminals to suppress voltage spikes that can be generated when the magnet de-energizes.

Table 2, Status of the Signals on the interconnecting cable in the Secure Mode.

Wire Color	Function	Signal status in Secure Mode
Brown	Common reference for all signals	0 Vdc
Red	Fixed +24 Vdc supply voltage from control module	+24 Vdc
Orange	Red lamp, controlled by internal door switch	0 Vdc
Yellow	Green lamp, controlled by internal magnetic bond switch	0 Vdc
Green	Yellow lamp, controlled by internal magnetic bond switch and control module	+24 Vdc
Blue	Audible alarm, controlled by internal tamper switch and control module	+24Vdc
Violet	3kohn supervised door switch output	3kohm
Gray	Switched +24 Vdc magnet power from the control module	+24 Vdc
White	Direct input to magnet, Not used	n/a
Black	Push bar switch output, controlled by push bar and relay K1	0 Vdc
Red/Black	MBS Status Output - Common relay contact	Connected to Red/Green wire
Red/Yellow	MBS Status Output - N/C relay contact	Open
Red/Green	MBS Status Output - N/O relay contact	Connected to Red/Black wire
Pink	Spare	
Gray	Spare	

One Year Limited Warranty

MONITEQ products are warranted to be free from factory defects for a period of one year from the date of shipment. The repair or replacement of a defective part shall be at the option of the factory when the product is shipped prepaid and insured by the owner. This warranty is void in cases of abuse, misuse, mishandling, or repair by unauthorized persons. This warranty is given in lieu of all other warranties expressed or implied. MONITEQ is not liable for incidental or consequential damages resulting from the operation or failure of this product. The warranty recognizes any and all rights you may have under appropriate state law.

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