

MAGNALOCK MODELS 32, 62 AND 82 TABLE OF CONTENTS AND GUIDE TO THIS MANUAL

There are numerous Magnalock versions and numerous different applications exist for them. Accordingly, this manual provides a broad range of information only a portion of which is applicable to any individual use. This manual guide provides a brief summary of many of the Sections which allows you to consult only the portions of the manual that apply to your application.

SECTION 1. DESCRIPTION ----- Page 3

SECTION 2. PHYSICAL INSTALLATION ----- Page 3

This is the largest part of the manual with sections that explain the different types of physical installations which vary according to door or gate types as well as Magnalock versions.

SECTION 2.1 SURVEY ----- Page 3

This section concerns how to pre-plan the installation.

SECTION 2.2 INSTALLATION TOOL KIT ----- Page 3

This section explains the available IK installation kit.

SECTION 2.3 GENERAL INSTALLATION ON OUTSWINGING DOOR ----- Page 3

SECTION 2.3.1 STRIKE PLATE MOUNTING ----- Page 3

SECTION 2.3.2 MOUNTING THE MAGNET ----- Page 4

The above three sections explain the most common Magnalock installation on a door that swings away from the lock. They also include general mounting instructions and should therefore be read for all installations.

SECTION 2.4 GENERAL INSTALLATION ON INSWINGING DOOR ----- Page 6

This section explains installation of "F" type Magnalocks on inswinging doors.

SECTION 2.5 MOUNTING PROCEDURES FOR SPECIFIC DOOR TYPES ----- Page 7

The following seven sections provide specific advice depending on door type which includes recommended brackets.

SECTION 2.5.1 ALUMINUM FRAME GLASS DOOR MOUNTING ----- Page 7

SECTION 2.5.2 SOLID GLASS DOOR MOUNTING ----- Page 8

SECTION 2.5.3 DOUBLE DOOR MOUNTING ----- Page 8

SECTION 2.5.4 DM62 DOUBLE 62 LOCK ----- Page 9

SECTION 2.5.5 CONCRETE HEADER OR WOOD FRAME MOUNTING ----- Page 10

SECTION 2.6 MOUNTING THE MAGNALOCK ON EXTERIOR GATES ----- Page 11

This section, includes three drawings and covers outdoor use of the Magnalock on a variety of gate types.

SECTION 2.7 USE OF DRESS COVERS ----- Page 12

This section introduces the Dress Cover which is used after physical mounting to improve installation appearance and tamper resistance.

SECTION 2.8 TAMPER PROOFING THE MAGNALOCK----- Page 12

This section should be read for any installation in a high vandalism area.

SECTION 3. ELECTRICAL INSTALLATION----- Page 12

SECTION 3.1 GENERAL ELECTRICAL CHARACTERISTICS ----- Page 12

This section explains technically the Magnalock's electrical characteristics as a load and is for reference.

SECTION 3.2 STANDARD LOCK ----- Page 12

This section explains powering and switching the Magnalock.

SECTION 3.3 AVOIDING POOR RELEASE CHARACTERISTICS ----- Page 12

SECTION 3.4 WIRE GAUGE SIZING ----- Page 13

This reference section explains how to select wire size for applications where the lock is distant from the power supply.

SECTION 3.5 SENSTAT MAGNALOCKS: "SC"----- Page 13

Read this section if you have a Senstat Magnalock.

SECTION 3.6 DOUBLE DOOR PROCEDURE FOR STATUS REPORTING ----- Page 13

This section applies if you have Senstat locks on a double door and want them to report as a single lock.

SECTION 3.7 EMERGENCY RELEASE ----- Page 13

This section should be understood by all installers.

APPENDIX A TROUBLESHOOTING ----- Page 15

Refer to this section before calling the factory on any operating problem.

APPENDIX B CALCULATING WIRE GAUGE SIZING ----- Page 16

This detailed reference section explains how to select wire gauge in complicated multi-lock installations.

MAGNALOCK MODELS 32, 62 AND 82 INSTALLATION INSTRUCTIONS

1. DESCRIPTION

Securitron's Magnalock family represents the state of the art in electric locking. Three different size models are available: The **Model 32** series with a holding force of **600 lbs. (275 Kg.)**; The **Model 62** series with a holding force of **1,200 lbs. (550 Kg.)** and the **Model 82** series with a holding force of **1,800 lbs. (820 Kg.)**. Several mounting and electronic options are available which are described in this manual. Note that most points in this manual apply to the entire Magnalock series. When a point applies to a particular Magnalock version, this will be specifically noted.

2. PHYSICAL INSTALLATION

2.1 SURVEY

First review the physical area where the Magnalock will be installed. The two considerations when mounting the Magnalock are: is the area of installation strong enough for the full holding force of the Magnalock to be utilized and will the Magnalock wiring be protected from intruders or vandals. In many installations additional brackets that will be required to properly install the Magnalock these will be covered later in this manual.

2.2 INSTALLATION TOOL KIT

Securitron offers an installation tool kit (part # IK, IK2 or IKM, for metric use) which includes special drills, a drilling template, a blind nut collapsing tool and extra fasteners and hardware. If you are performing multiple installations this kit can improve job quality and reduce labor.

2.3 GENERAL INSTALLATION ON OUTSWINGING DOOR

The Magnalock mounts to the door frame header in the corner farthest from the hinges (see Figure 5) and can be mounted horizontally or vertically depending on the specific circumstances of the installations. In this installation the door swings away from the Magnalock, this is the most common configuration for facility **exit doors** with the Magnalock on the secure side of the opening. For doors that swing into the secure area refer to section 2.4 on inswinging door installation.

2.3.1 STRIKE PLATE MOUNTING

The strike should be mounted before the magnet on the upper corner of the door.

Step 1: Locate the mounting location for the strike. The top of the strike should be positioned about 1/10" (2.5mm) below the line where the door meets the door stop, or below the header if there is no door stop to permit free closing. If the strike is mounted vertically instead of horizontally, increase this stand-off distance to 2/10" (5mm). The strike must be centered on the magnet with the magnet being positioned about 1" (25mm) in or down from the corner of the door frame.

Step 2: Drill three holes in the door following the template.

Step 3: Mount the white plastic bushings for the roll pins into the 1/2" (12.7mm) holes.

Step 4: Gently insert the furnished roll pins into the strike with a hammer.

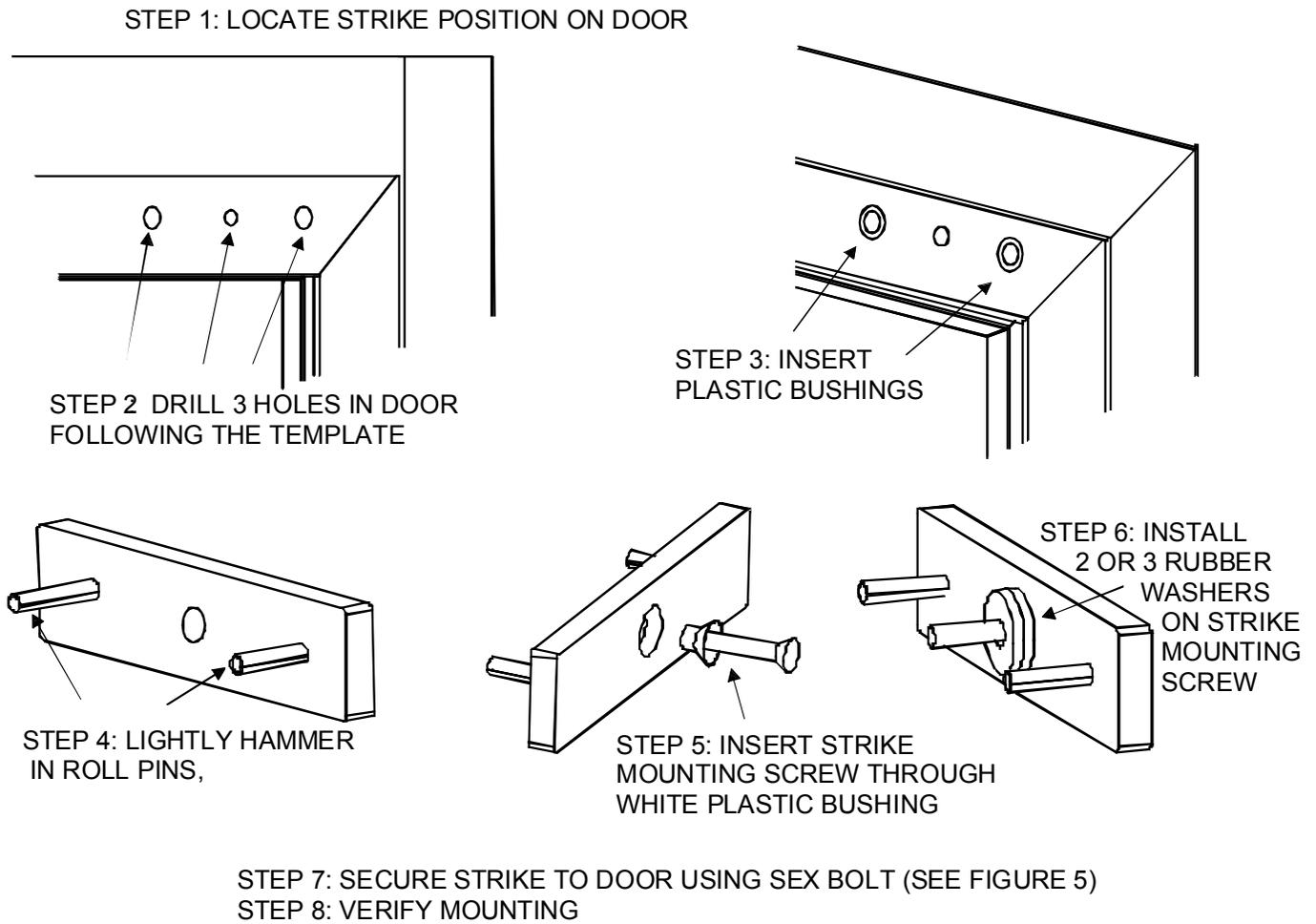
Step 5: Put the center mounting screw and bushing through the strike plate.

Step 6: Place two or three flexible washer on the center strike screw between the strike and the door. Do not place the washers around the roll pins.

Step 7: The strike is secured to the door via the supplied sex bolt. It can be difficult to align the strike mounting screw with the sex bolt. Start the sex bolt in its 1/2" (12.7 mm) hole but thread the strike mounting screw into it (with strike plate and washers) before hammering the sex bolt down. Next, hammer the sex bolt down tight against the door and then screw the strike mounting screw in the rest of the way (be sure to use the provided thread lock on the strike screw). This makes alignment much easier.

Step 8: Verify proper mounting. When the strike is mounted, make sure it flexes freely around the washer stack.

FIG. 1: STEPS IN MOUNTING THE STRIKE



2.3.2 MOUNTING THE MAGNET

Step 1: Locate the mounting for the magnet. To mount the Magnalock, six conditions must exist:

- The mounting area must have a flat surface 2-1/4" (57mm) for the model 32, and 2-1/2" (63.5mm) for the model 62 and 82 (as shown in Figure 5).
- The frame area selected must be structurally strong enough. Avoid mounting the magnet to a wobbly or weak support or the security of the lock will be diminished.
- The magnet face must be parallel to the strike plate.
- The magnetic poles (three metal bars on the Magnalock), must be centered on the strike.
- The magnet must make solid contact with the strike but still allow the door to close properly.
- The direction of door opening must pull the strike directly away from the magnet rather than sliding it away. Electromagnets hold only weakly in the shear direction of pull.

Step 2: Holes must be drilled for the mounting screws, and a 1/2" (12.7mm) diameter wire-way hole should be drilled.

Step 3: Install the blind nuts. A 3/8" (9.5 mm) hole is drilled following the template for each nut. The nut is pressed up into the hole and lightly seated with a hammer. The nut is then collapsed inside the header. A collapsing tool is included with each Magnalock see Figure 4.

Step 4: Connect the wires.

Step 5: Mount the magnet via the supplied machine screws and gold washers (see Figure 2). Tighten the screws to snug only and use the supplied thread-lock to keep screws from loosening

over time. Do not drill out the mounting holes to make for an easier fit this can damage the lock coil.

FIG. 2 & 3: STANDARD MAGNET AND STRIKE DIMENSIONS AND ASSEMBLY

If "G" option is furnished, (62 and 82 series only), the wire cable emerges from a 3/4" male; 1/2" female conduit fitting on the end of the magnet. The mounting holes are counterbored from both sides to make the magnet non-handed

	Length	Width	Depth
32	8"	1.88	1.5
(mm)	203	47.8	38.1
62	8"	2.9	1.75
(mm)	203	73.7	44.5
82	12"	2.9	1.75
(mm)	305	73.7	44.5

Blind Nut
PN# BN-250 or
PN# BN-6MM (Metric)
(Pack of 40 with tool)

Gold Washer
PN# FW-1
(Pack of 24)

1/4-20 x 3" Cap Screw
PN# SCS-35 (Pack of 4)
6mm-1mm x 75mm
PN# 300-12650

Tamper Cap
PN# FC-1
(Pack of 24)

1/4-20 x 2 1/4" Cap Screw
PN# 300-12750 or
6mm-1mm x 55mm
PN# 300-12925
(For Model 32 Magnalock)

Recommended Tools:
1/2" or 3/8" Drill Motor
1/8", 3/8", 1/2" Drill Bits
1/2" Open End or Crescent
Wrench
3/16" Hex Key (Allen Wrench)
Hammer, Center Punch
Masking Tape, Fish Tape or
Lead Wire
Wire Strippers/Cutters
Crimp Wire Connectors
Multi-Meter

Sex Bolt, Models 32, 62, 82, PN# SB-1, SB-1M (Metric)

Bushing (2), PN# 560-12050

Rubber Washer (1 or more)
PN# RW-1 (Pack of 24)

Roll Pin (2), PN# 330-10800
1/4" x 1 1/4"

Bushing,
Model 32,62,82
PN# 330-12000

	Length	Width	Depth
32	6.25"	1.62	.55
(mm)	158.8	41.1	14.0
62	6"	2.75	.52
(mm)	152.4	69.9	13.2
82	9.5"	2.75	.52
(mm)	241.3	69.9	13.2

Flathead Screw Models 32, 62, 82
5/16-18 x 1 3/4" P/N# 300-13600,
8mm-1.25mm x 40mm PN# 300-13750 (Metric)

FIG. 4: COLLAPSING THE BLIND NUTS

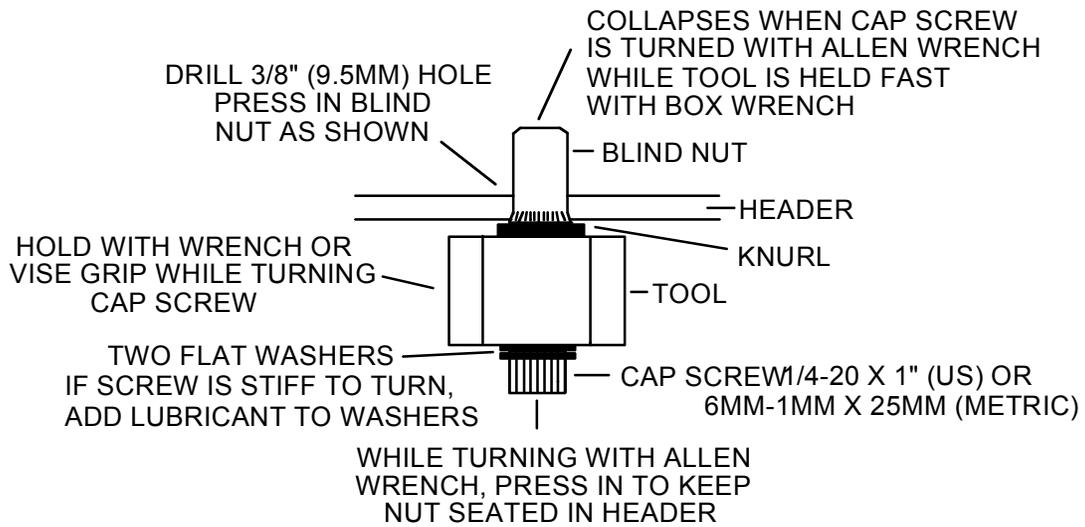
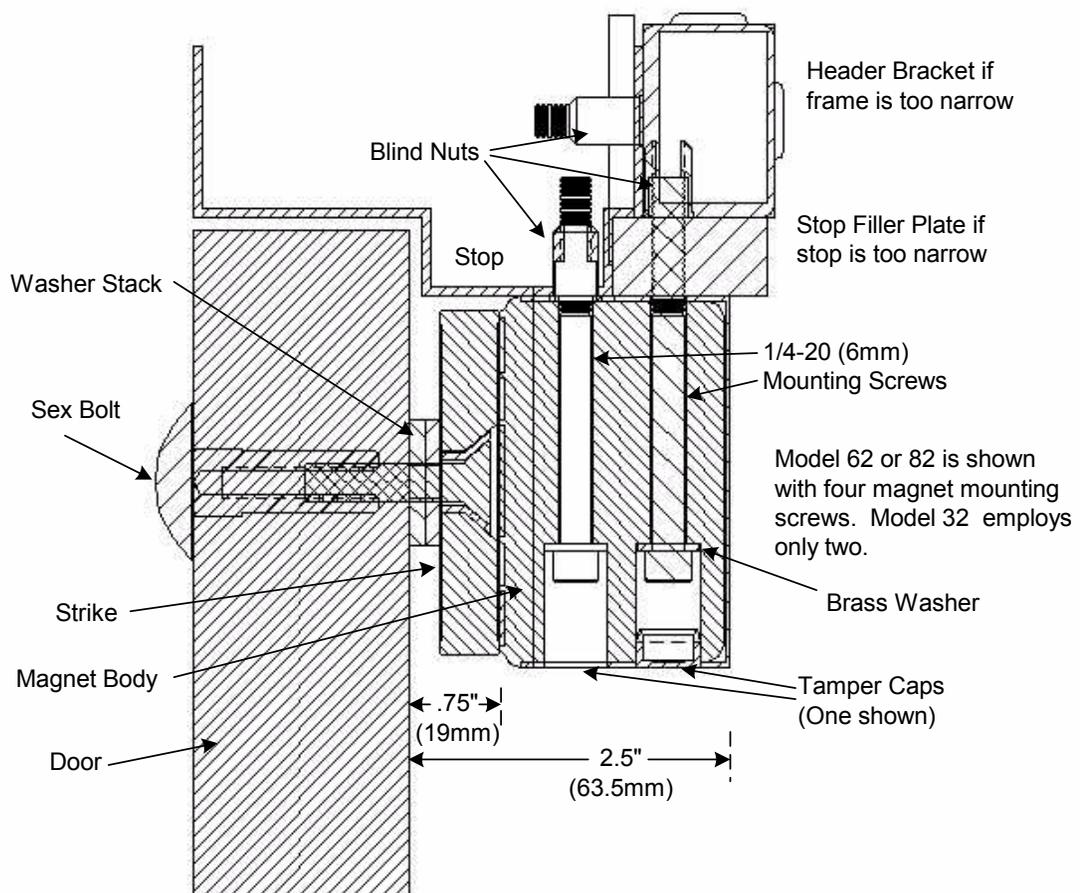


FIG. 5: TYPICAL MOUNTING ON OUTSWINGING DOOR



2.4 GENERAL INSTALLATION ON INSWINGING DOOR WITH Z BRACKET

In cases where the door swings into the secure area you must use a face drilled Magnalock (Part# M32F, M62F or M82SCF), and a "Z" bracket (part # Z-32, Z-62 or Z-82) this configuration is shown in figure 6.

Note: that the model M62F and M82SCF have five mounting holes through the face. The "extra" hole is to provide flexibility in mounting.

Note: If roll pin bushings are being used (needed for senstat locks) you must shorten them to 3/8" in length to allow installation of the Z-bracket Cover otherwise drill 3/8" holes for the roll pins see figure 7.

FIG. 6: F MAGNET DIMENSIONS

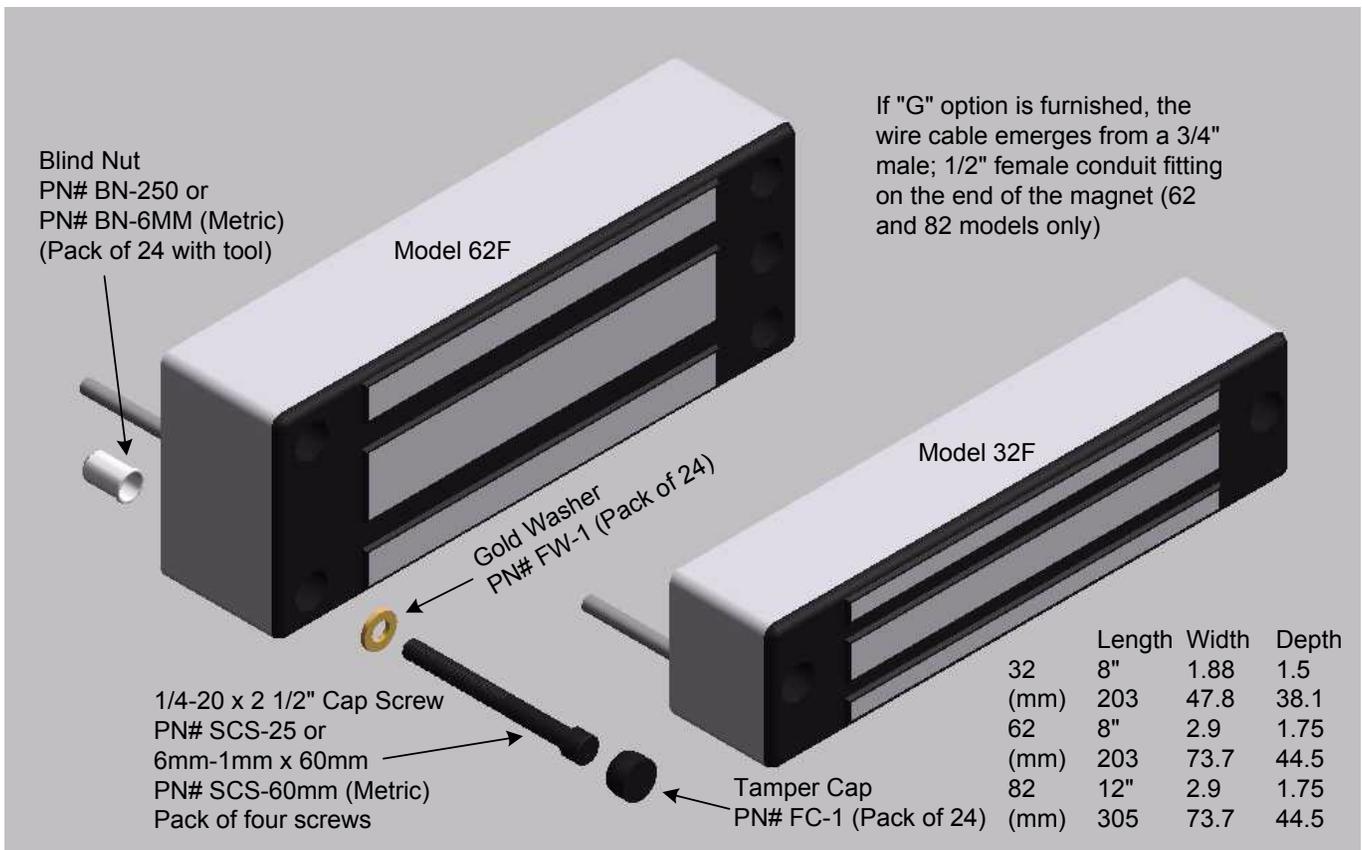
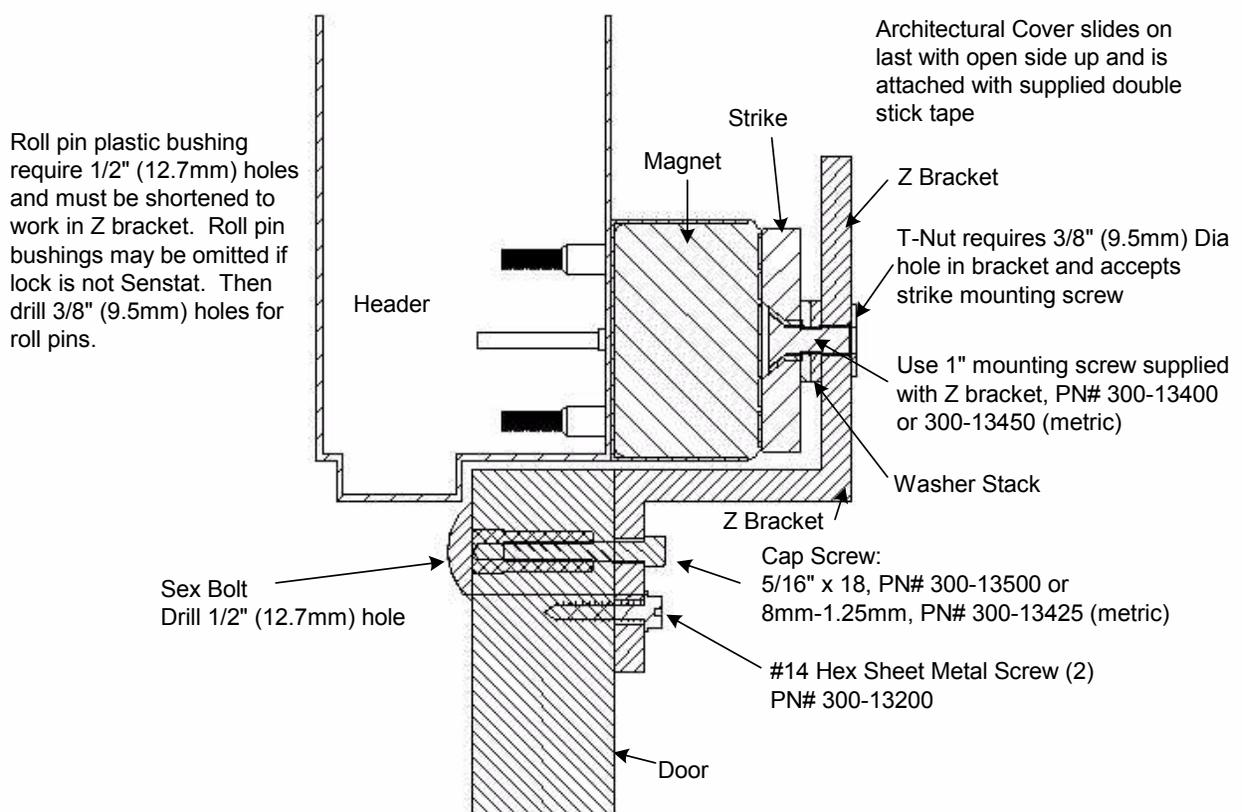


FIG. 7: F MAGNALOCK MOUNTING



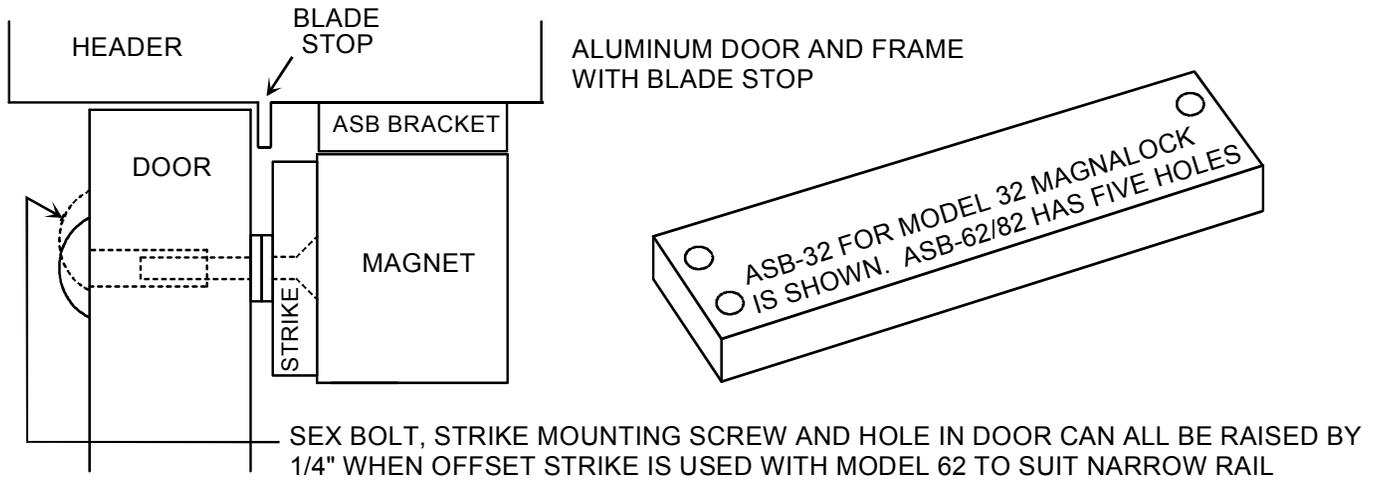
2.5 MOUNTING PROCEDURES FOR SPECIFIC DOOR TYPES

2.5.1 ALUMINUM FRAME GLASS DOOR MOUNTING

The **UHB-CL UHB-BK** are for use on headers that do not have enough width to mount the lock. This is common on Aluminum Frame Glass Doors where the Model 62 or Model 82 Magnalocks are used. They are available in lengths suitable for the 8" (203.2mm) M62 and 12" (304.8mm) M82SC long Magnalocks.

The ASB-32, ASB-62 and ASB-82 Aluminum Shim Brackets are used to drop the Magnalock body down 1/2" to clear the weather trim or blade stop on Aluminum Frame Glass Doors.

FIG. 8: USE OF THE ASB BRACKET ON ALUMINUM DOOR/FRAME WITH BLADE STOP



Note: When using the ASB on Aluminum Frame Glass Doors with the M82SC or M62 the strike mounting hardware may need to be installed too close to the glass for this reason it is recommend that the **Offset Strike** option be used M62-OS or M82SC-OS.

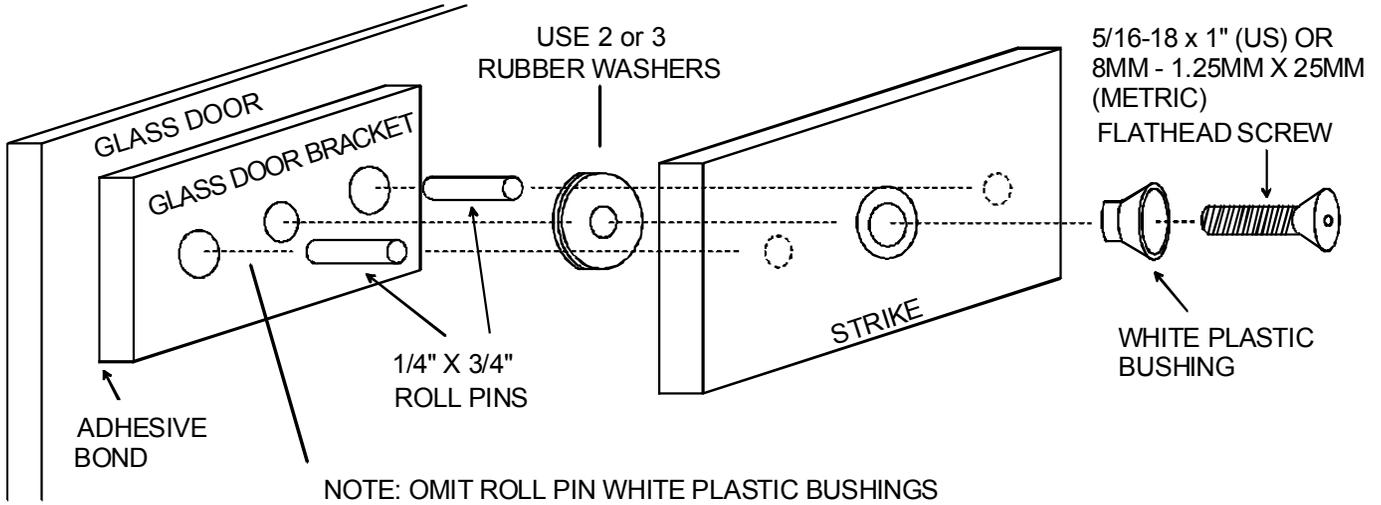
2.5.2 SOLID GLASS DOOR MOUNTING

To mount a Magnalock on a solid glass door the **GDB** Glass Door Bracket and **AKG** Adhesive kit are used. The GDB will accept both the Model 32 and Model 62 Strike Armature.

Note that we have said "100% glass door". Some doors that appear to be glass are actually laminated with plastic. If the Magnalock with glass door bracket is used on this type of door, it is possible that a failure will occur via delamination.

For mounting on solid glass headers the HEB-3G Header Bracket should be used in conjunction with the AKG Adhesive Kit. This will provide solid mounting point for the Magnalock Body. Note that one AKG is good for 8 to 10 bracket installations.

FIG. 9: STRIKE INSTALLATION ON 100% GLASS DOOR



2.5.3 DOUBLE DOOR MOUNTING

A single Magnalock can be used to secure double doors using a **split strike plate** (part# M62-SS or M82SC-SS). This reduces the holding force to about 550 lbs. (250 KG) for each leaf with the model 62 and about 850 lbs. (385 KG) for each leaf with the model 82

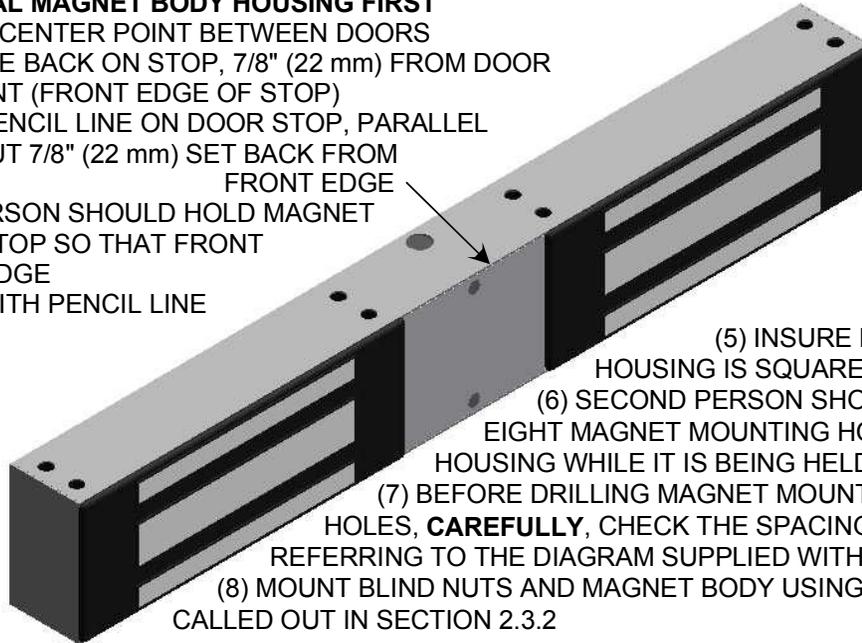
FIG. 10: MOUNTING THE DM62 MAGNET BODY HOUSING

MOUNT DUAL MAGNET BODY HOUSING FIRST

(1) LOCATE CENTER POINT BETWEEN DOORS
(2) MEASURE BACK ON STOP, 7/8" (22 mm) FROM DOOR
CLOSE POINT (FRONT EDGE OF STOP)

(3) DRAW PENCIL LINE ON DOOR STOP, PARALLEL
TO STOP BUT 7/8" (22 mm) SET BACK FROM
FRONT EDGE

(4) ONE PERSON SHOULD HOLD MAGNET
BODY ON STOP SO THAT FRONT
HOUSING EDGE
LINES UP WITH PENCIL LINE



(5) INSURE MAGNET BODY
HOUSING IS SQUARE TO PENCIL LINE

(6) SECOND PERSON SHOULD CENTER PUNCH
EIGHT MAGNET MOUNTING HOLES THROUGH THE
HOUSING WHILE IT IS BEING HELD BY FIRST PERSON

(7) BEFORE DRILLING MAGNET MOUNTING AND WIRE WAY
HOLES, **CAREFULLY**, CHECK THE SPACING BETWEEN THEM BY
REFERRING TO THE DIAGRAM SUPPLIED WITH THE PRODUCT

(8) MOUNT BLIND NUTS AND MAGNET BODY USING PROCEDURES
CALLED OUT IN SECTION 2.3.2

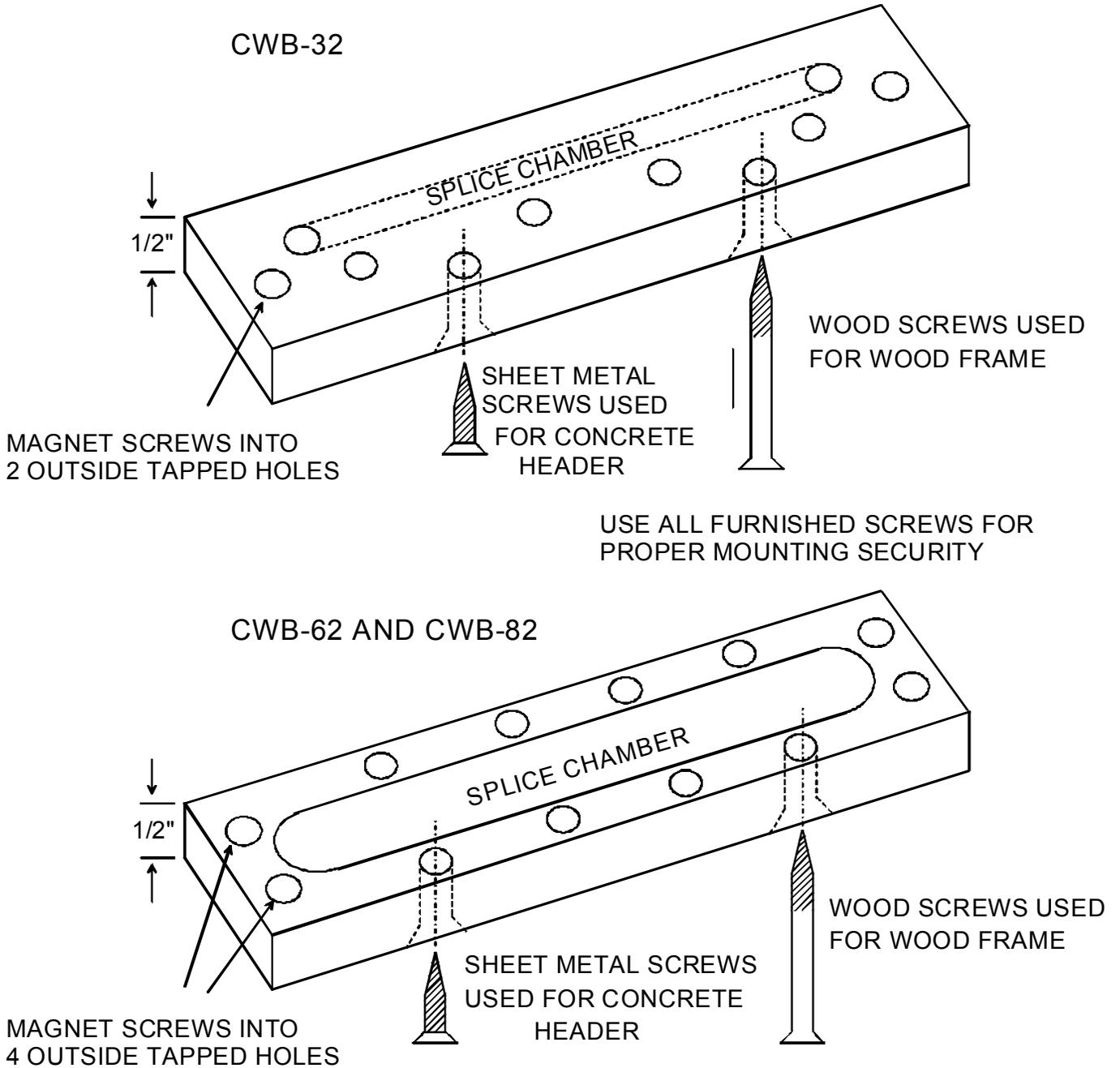
2.5.4 DM62 DOUBLE 62 LOCK

The DM62 consists of two model 62 locks in a single stainless steel housing, this allows for a single lock body to secure double doors with a full 1200Lbs. (550Kg) of holding force per leaf. For mounting instructions see figure 10.

2.5.5 STEEL HEADER FILLED WITH CONCRETE OR WOOD FRAME MOUNTING

Securitron offers a "Concrete/Wood Bracket" for installation of Magnalocks on concrete filled or wood headers. They have an integral splice chamber to make wiring in these applications easier and are provided with multiple fastener options to meet the needs of most installations. The part numbers for these brackets are **CWB-32**, **CWB-62** and **CWB-82**.

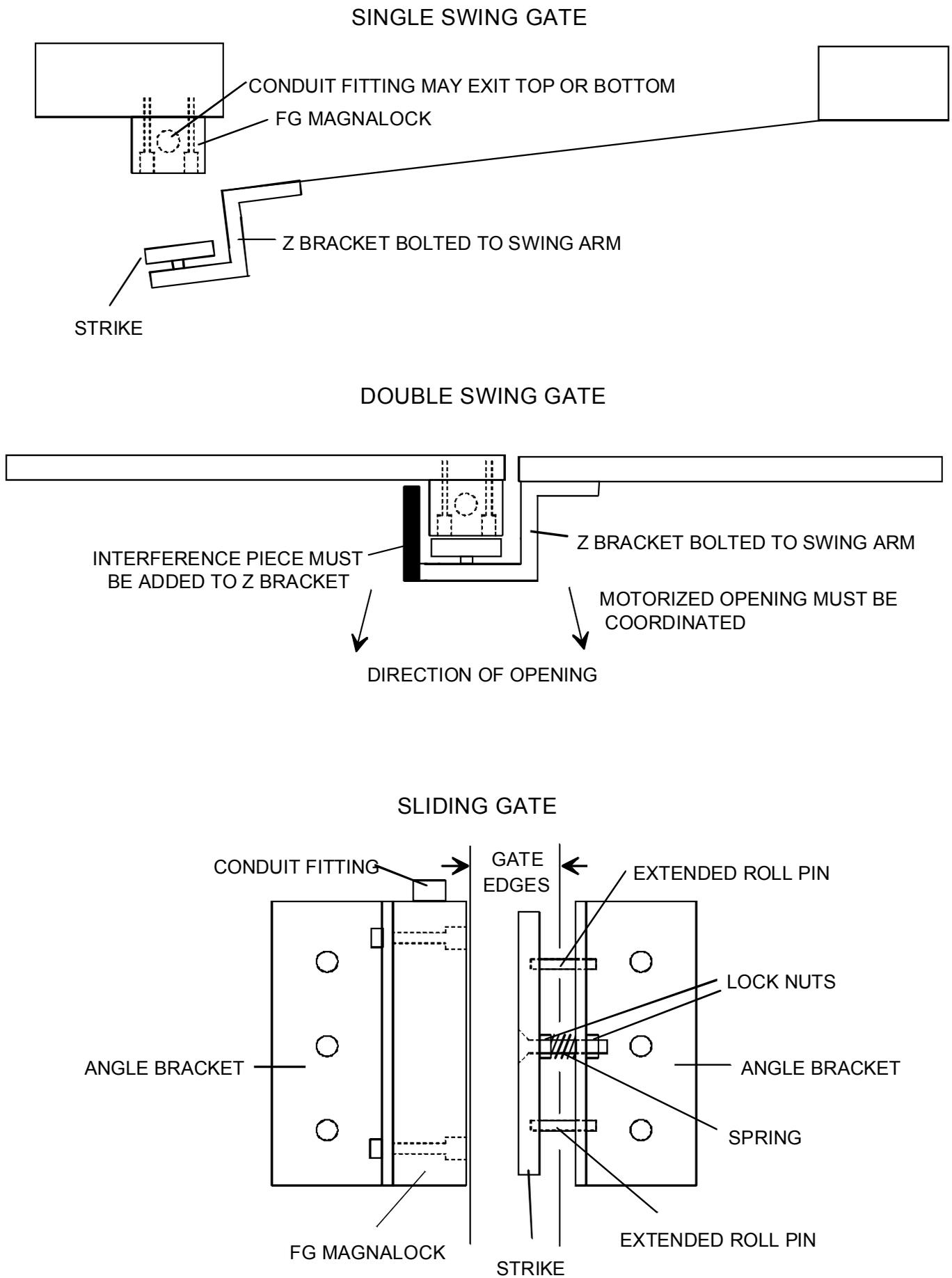
FIG. 11: WOOD FRAME AND CONCRETE HEADER BRACKET



2.6 MOUNTING THE MAGNALOCK ON EXTERIOR GATES

The Magnalock is well suited to gate applications. It is designed to self align and is very tolerant to inconsistencies in the closed position of the gate. They are also sealed and weatherproof making them ideal for outdoor gate applications.

FIG. 12: MOUNTING TECHNIQUES FOR GATES



The drawings in figure 12 describe three typical gate applications single swing gates, double swing gates and sliding gates. **The strike plate cannot be welded to the gate it must be**

mounted using the hardware and rubber washers provided or it will not be able to align properly and holding force will be reduced.

2.7 USE OF DRESS COVERS

Once the physical installation is complete, you may want to use a dress cover to change the finish of the installed lock. Dress covers are available in polished brass, polished stainless, satin aluminum and black, they slip over the locked and attach using permanent double sided adhesive.

Double dress covers are also available for installations on double doors. In this case, the cover fits over two locks so long as they are not separated by more than 2" (50mm). Double dress covers are available in satin aluminum and black and attach to the locks in the same fashion as the single dress cover.

2.8 TAMPER PROOFING THE MAGNALOCK

Securitron inventories special tamper proof screws for both magnet and strike mounting. These screws are identical allen head types except that it requires a special key to install and remove the screws.

3. ELECTRICAL INSTALLATION

3.1 GENERAL ELECTRICAL CHARACTERISTICS

The Magalock is a low current load. Because of specialized internal circuitry it doesn't exhibit the normal characteristics of an inductive load (i.e no inductive kick and a fast release without stickiness).The following chart shows the current draw for each version and the degree of internal capacitance.

	32 @ 12V	32 @ 24V	62 @ 12V	62 @ 24V	82 @ 12V	82 @ 24V
CURRENT	300 mA	150 mA	250 mA	150 mA	350 mA	175 mA
CAPACITANCE	4.7Mfd	4.7Mfd	30 Mfd	15 Mfd	30 Mfd	15 Mfd

3.2 STANDARD LOCK

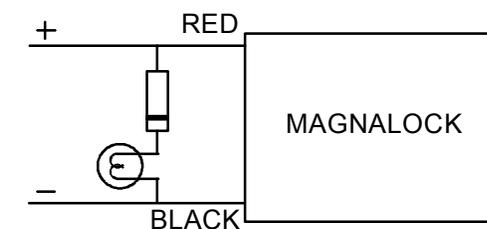
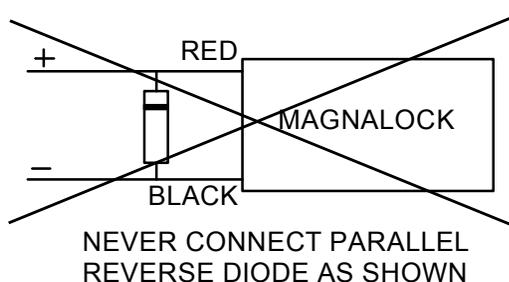
For operation, DC voltage must be provided to the lock. The red wire receives +12VDC or +24VDC, and the black wire, 0V (negative). **If the lock is connected with reverse polarity, it will not function at all.** The voltage source must be at minimum full wave rectified DC.

All model 32, 62 and 82 Magalocks are auto sensing dual voltage locks, simply apply 12 or 24VDC to the lock, observing polarity, and it will internally select the voltage setting and operate.

3.3 AVOIDING POOR RELEASE CHARACTERISTICS

The Magalocks instant release circuitry insures fast and clean releases every time, however there are wiring errors that can cause a slow release of the lock. One is the installation of a parallel reverse diode and the other is the parallel installation of a resistive load see figure 13.

FIG. 13: WIRING CONSIDERATIONS TO AVOID SLOW RELEASE



USE A FORWARD DIODE WITH ANY PARALLEL RESISTIVE LOAD SUCH AS A LAMP

3.4 WIRE GAUGE SIZING

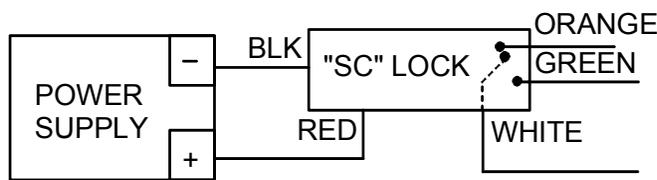
If the distance between the Magnalock and the power supply is substantial, voltage will be dropped or lost. The chart below assumes a single lock home run to the power source. For more complex load to wire gauge calculations refer to Appendix B.

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

3.5 SENSTAT MAGNALOCKS: "SC"

Securitron's optional patented Senstat feature provides true lock status sensing via a SPDT (1AMP @ 30VDC maximum) dry contact. For the Magnalock to report secure the lock must be energized and the strike armature must be in place (closure between white and green, lock is secure. Closure between white and orange lock not secure).

FIG. 14: "SC" SENSTAT WIRING

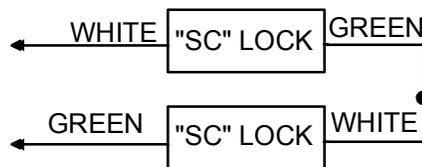


WHITE AND GREEN WIRES PROVIDE ISOLATED CLOSURE WHEN LOCK IS SECURE.
ORANGE AND WHITE ARE CLOSED WHEN LOCK IS NOT SECURE (AS SHOWN ABOVE).

3.6 DOUBLE DOOR PROCEDURE FOR STATUS REPORTING

When two Magnalocks are used for double door installation the senstat contacts should be wired in series for proper reporting. To do this simply tie the green wire of one lock to the white wire of the other as shown in figure 15.

FIG. 15: DOUBLE DOOR WIRING WITH "SC" LOCKS



"SC" LOCKS ARE INTERWIRED AS SHOWN TO PROVIDE STATUS MONITORING. AN ISOLATED CLOSURE WILL EXIST BETWEEN THE GREEN AND WHITE WIRES ONLY IF BOTH LOCKS ARE SECURE.

3.7 EMERGENCY RELEASE

Magnalocks are often wired into a system such that they can be released in an emergency -- either manually from one switch or automatically, often from the fire alarm system. It is the user's responsibility to accomplish this hookup correctly according to these instructions and good electrical practices. In general, we recommend that a switch or relay (capable of handling the full DC load) be used to perform a series break of all DC power which is the simple and sure way to make sure the doors do release. Securitron power supplies have terminals for interconnection of such emergency release switches. Finally please note that **it is the responsibility of the end user and dealer/installer to insure that the Magnalock installations comply with any applicable fire or building codes.**

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.

PATENTS

Securitron's Magnalock is covered under U.S. patents #4,516,114 and 4,682,801.

APPENDIX A

TROUBLESHOOTING

PROBLEM-- No magnetic attraction between magnet and strike plate.

First be sure the lock is being correctly powered with DC voltage. If the unit continues to appear dead, it must be electrically checked with an Amp meter. 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 (see next paragraph). Section 3.1 includes a chart showing current draw for all Magnalock versions.

PROBLEM-- Reduced holding force.

Check the strike and magnet face to see if some small obstruction is interfering with a flat fit. Another possibility is if the strike plate has a dent on it from being dropped for example. Remove the strike from the door and try to rock it on the magnet face to insure it is flat. If it is, the strike is probably mounted too rigidly. The strike **must** be allowed to float around the rubber washer stack which must be on the strike center mounting screw. To correct the problem, try loosening the strike mounting screw to see if the lock then holds properly. Another possibility is if you are operating the lock on AC instead of DC or on half wave rectified DC (transformer + single diode). Half wave rectified DC is unacceptable; you must, at a minimum employ full wave rectified DC (transformer + bridge).

PROBLEM-- The Senstat output does not report secure.

Because of the simplicity of Securitron's patented Senstat design, this is almost always a case of the lock status sensor doing its job. It is not reporting secure because a small obstruction or too stiffly mounted strike is causing the Magnalock to hold at reduced force. The problem is corrected by cleaning the surfaces of the magnet and strike or establishing proper play in the strike mounting.

PROBLEM-- The lock does not release.

When power is removed from it, the Magnalock **must** release. If internal circuitry, which eliminates residual magnetism, were to fail completely, the lock would only exhibit "stickiness" at a rough level of 5 pounds. Therefore the complaint of "lock will not release" is either mechanical bonding via vandalism or a failure to completely release power to the Magnalock.

PROBLEM-- The lock rusts

Both the Magnalock core and strike plate are plated and sealed following a military specification. Because of this plating and the sealed nature of the magnet, the Magnalock is weatherproof and may be used outdoors. 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.

PROBLEM-- Apparent electronic noise interference with the access control system.

Magnalocks include internal electronics which suppress both inductive kickback and radiation. They have been extensively tested and accepted by numerous access control manufacturers and have been used in thousands of installations without incident. An apparent noise problem is therefore usually not caused by the Magnalock. The access control equipment may be itself faulty or have been installed improperly. One problem can arise with the Magnalock. If the Senstat version is being used, the strike plate must be isolated from a metal door and frame. Securitron supplies insulating hardware to accomplish this but the hardware might not have been used or the strike may be scraping against the header. Check for full isolation between the strike and the door frame (when the door is secure) with an Ohmmeter. The presence of lock voltage potential in the door frame can interfere with the ground reference of access control system data communication and therefore cause a problem.

**IF YOUR PROBLEM PERSISTS
CALL SECURITRON TOLL FREE
1-800-MAG-LOCK**

APPENDIX B

CALCULATING WIRE GAUGE SIZING

The general practice of wire sizing in a DC circuit is to avoid causing voltage drops in connecting wires which 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 adding the resistance of the Magnalock to the resistance in the power wires and then dividing the wire resistance by the total resistance. This yields the fraction of voltage drop in the wires. For example, a single model 62 Magnalock has a resistance of 192 ohms when being operated on 24 volts. If the wires completing the circuit between the Magnalock and its power source have a resistance of 10 ohms, the total resistance is 202 Ohms. Dividing 10 Ohms (the wire resistance) by 202 (the total resistance) yields roughly 1/20 or 5%. If the input voltage is 24 volts, 5% of this voltage will be dropped in the wires (1.2 volts) leaving 22.8 volts to operate the Magnalock. This will cause a small reduction in holding force but in general, will be acceptable.

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

Model 32 resistances are 160 Ohms for 24 VDC operation and 40 Ohms for 12 VDC operation.

Model 62 resistances are 192 Ohms for 24 VDC operation and 48 Ohms for 12 VDC operation.

Model 82 resistances are 136 Ohms for 24 VDC operation and 34 Ohms for 12 VDC operation.

Let's look at some other sample calculations. Suppose a single 62 Magnalock operating on 24 volts is 1200 ft from its power supply and we're using 20 gauge wire. First, the total length of the power wires is 2400 ft. **Remember that you combine the wire lengths from the power supply to the lock and back to the power supply to get the total circuit wire length.** The wire resistance then becomes 2.4×10.1 Ohms which is 24.2 Ohms. Adding this to the Model 62 Magnalock resistance of 192 Ohms (at 24 volts) yields a total resistance of 216.2 Ohms. 24.2 divided by 216.2 yields the percent drop in the wires which is over 11% which we would consider excessive. The problem can be dealt with in 2 ways. You can utilize 16 gauge wire which would reduce the drop to a more acceptable 5% range or you can provide extra voltage at the power supply. For instance, Securitron 24 V power supplies are adjustable from 24 to 28 volts. You can therefore easily set the power supply to output 11% over voltage which will then deliver 24 volts at the lock. The Magnalock will accept up to 30% over voltage without ill effects.

Note that a Magnalock operating on 12 volts has 1/4th the resistance of a unit operating on 24 VDC. This means that wire voltage drops are 4 times more significant in a 12 volt system than in a 24 volt system. **In any job that has wire runs long enough to be of concern, you should always use 24 volts.** Note also that it's common to mount 2 Magnalocks on a double door and operate them as one lock (only 2 power wires). In this case, the resistance of the pair of locks is half the resistance of a single lock.

In multiple lock jobs with a single power supply, the calculation of wiring voltage drops is more difficult. So long as you run a separate pair of power wires to each lock, the calculation is as simple as has been described above, but if a common power wire is used in a loop structure, the locks powered by the single loop will have an increasingly low combined resistance so that the loop wire resistance will become more significant to the point where the locks don't receive enough voltage. To find the combined resistance of multiple locks powered by a common wire, divide the resistance of one lock by the number of locks. For example, eight 62 Magnalocks operating on 24 volts would have a combined resistance of 192 divided by 8 which is only 24 Ohms. Another method is to calculate the current in Amps in the wire and divide that into the circuit voltage. Since each 62- Magnalock operating on 24 volts draws 1/8th of an Amp, eight would draw 1 Amp. Dividing this into the same 24 volt input voltage yields a 24 Ohm combined resistance.

In general, you have to be cautious about using common wires for loads in long distance situations unless you're very confident about your ability to calculate the correct configuration. Bear in mind, however, that anytime you're uncertain about the voltage drop in wiring, you can meter the voltage at the lock **while it's connected** and you will be able to see if it's receiving adequate voltage. If the lock is not connected when you make this measurement, the result will be false as the circuit will not see any lock resistance to compare to the wire resistance. You will read the full input voltage.