

**KM**

Automated Entrance Systems

**KM Systems, Inc.**

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PO Box 3099

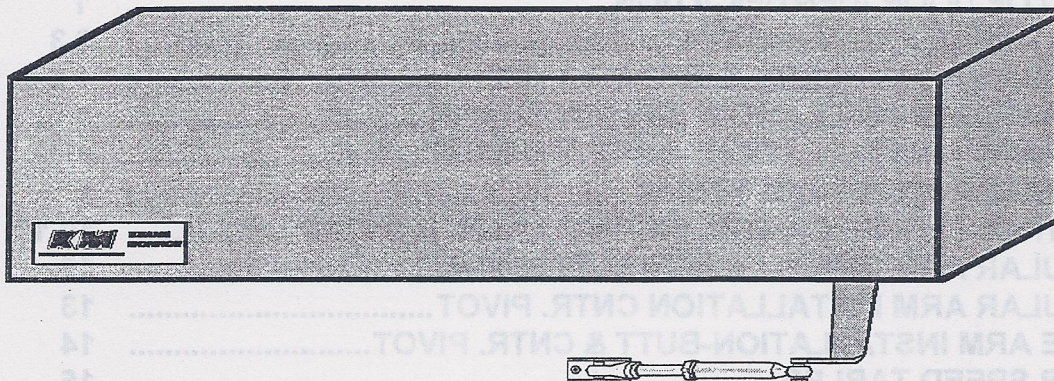
Monroe NC 28111

PH. 1-800-438-1937

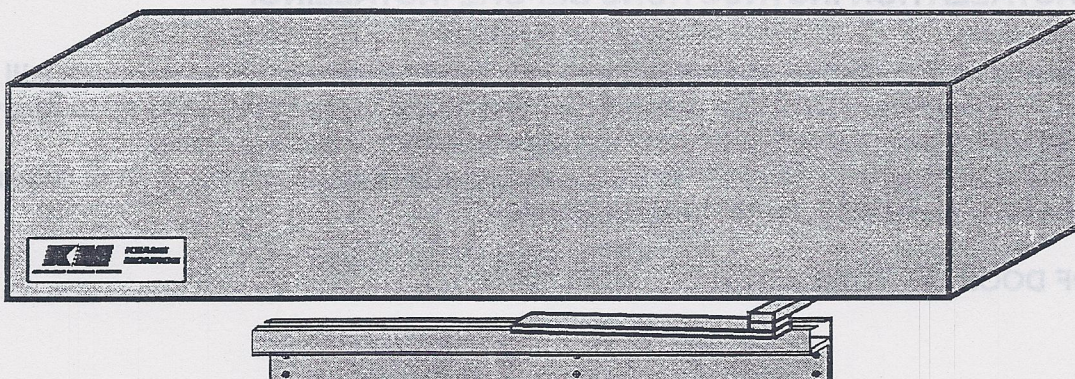
SERIES 3000,3100 -(MICROPROCESSOR CONTROL)

INSTALLATION INSTRUCTIONS  
MICROPROCESSOR CONTROL

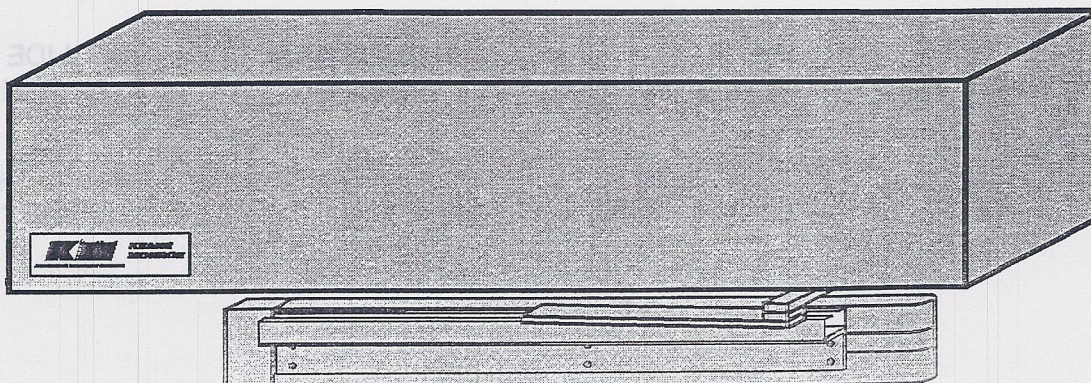
## REGULAR ARM



## SLIDE ARM



## SLIDE ARM / WITH PANIC BREAKAWAY





# INDEX

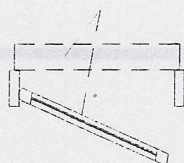
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## READ INSTALLATION INSTRUCTIONS BEFORE INSTALLING.

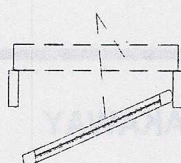
The sequence of installation and adjustment is in order, however some sections will not apply. Review this instruction manual and determine those sections that do apply. Be sure all doors swing freely and clear all objects before attaching arms. Special attention needs to be given to installations with parallel and slide arms when an adjacent wall is perpendicular to the door frame.

## HAND OF DOOR IDENTIFICATION

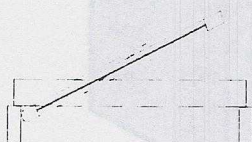
LHR (RH OUT)  
 REGULAR ARM



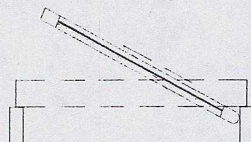
RHR (LH OUT)  
 REGULAR ARM



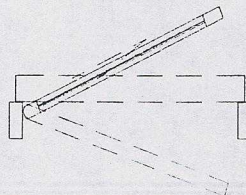
LH  
 SLIDE ARM



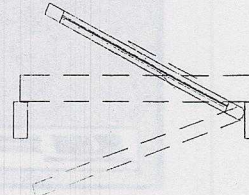
RH  
 SLIDE ARM



LH SLIDE ARM  
 W/ PANIC



RH SLIDE ARM  
 W/ PANIC





# INSTALLATION INSTRUCTIONS ELECTRICAL PREPARATION

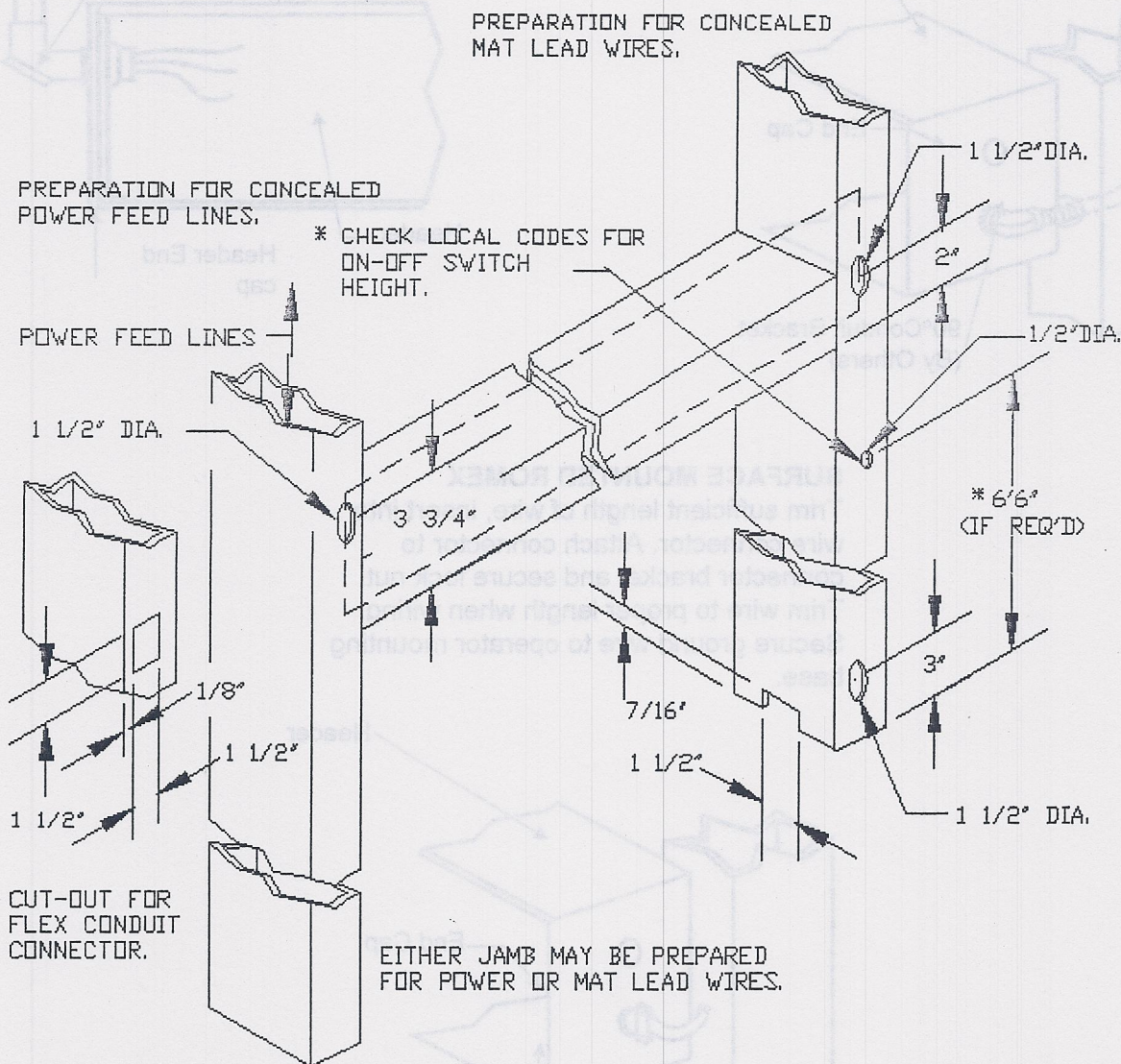
## ELECTRICAL PREPARATION

Before preparing jambs, determine the method and requirements for the electrical wiring involved and whether mats or other type of activation is used.

For mounting on-off switch proceed to Operator Installation section.

**CAUTION-** Some local codes require on-off switches to be not over 6'-6" above the floor. A suggested method of installation is to prepare a 1 1/2" dia. hole as shown. To install, place switch through top hole (1 1/2" dia.) while holding lead wires, lower switch to second hole (1/2" dia.) and fish out toggle end of switch.

Install tabbed legend washer with mounting nut and secure with self tap screw.



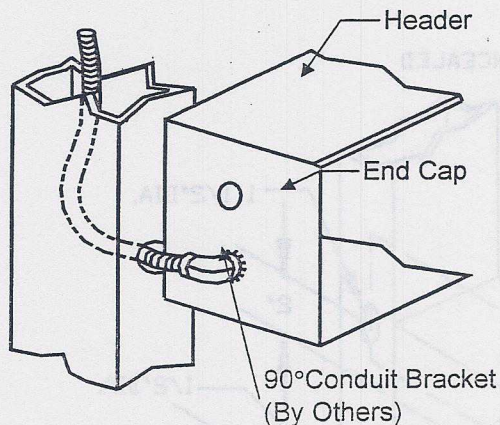


# INSTALLATION INSTRUCTIONS ELECTRICAL PREPARATION

## ELECTRICAL POWER

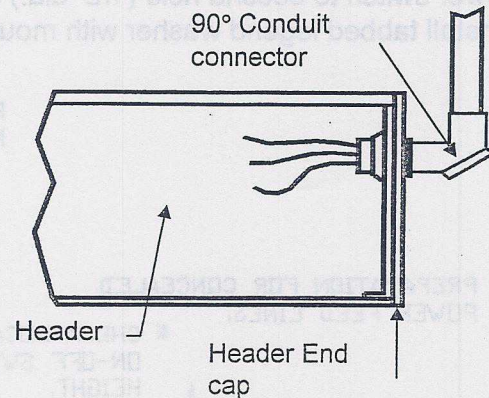
### CONCEALED

Run flexible conduit or 3-wire cable down side jamb, through cut-out. Trim sufficient length of wire and insert into 90 deg. connector. Attach connector to bracket and secure with lock nut. Trim wire to proper length when wiring unit. Secure wire to operator base or control.



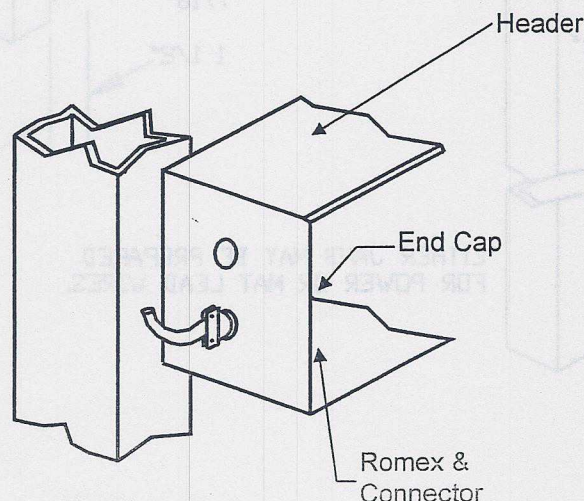
### SURFACE MOUNT

Connect 90 deg. elbow to bracket as shown, pull sufficient length of wire. Trim to proper length when wiring unit. Secure ground wire to base or control.



### SURFACE MOUNTED ROMEX

Trim sufficient length of wire, insert into wire connector. Attach connector to connector bracket and secure lock nut. Trim wire to proper length when wiring. Secure ground wire to operator mounting base.





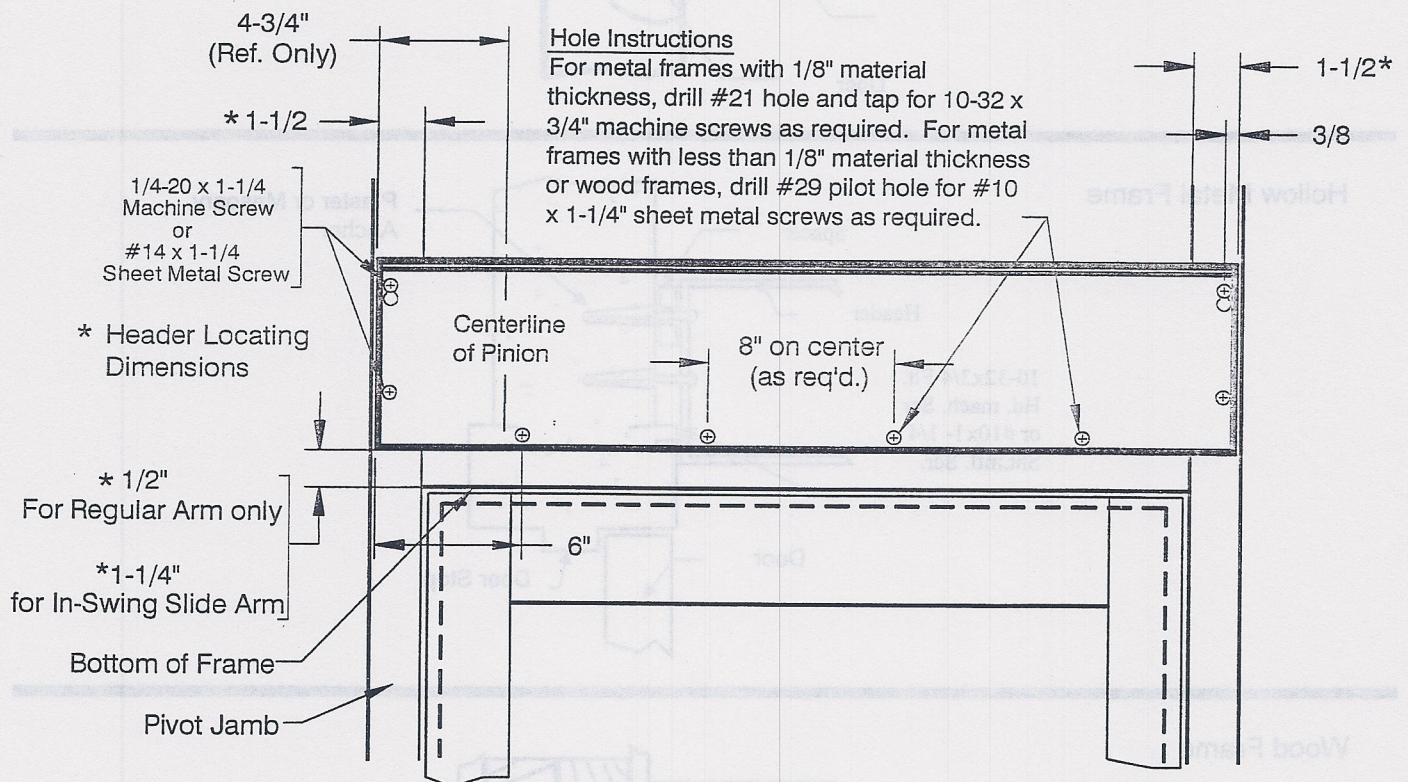
# INSTALLATION INSTRUCTIONS HEADER INSTALLATION

## Header Installation

Before preparing the frame for the header, determine if the equipment is the correct hand and arm type. To properly identify the hand of the door refer to the Hand of Door section on page 1. The header shown below is a left hand out ( RHR ) or right hand in. (shown with hidden door stop for RH IN)

## Mounting the header

Be sure there is proper support in the wall to secure the header at the vertical jambs, and behind the header at intervals between the vertical jambs. Secure to top of door frame with the appropriate fasteners as indicated in " Hole Instructions" below.



**Warning:** Do not permit the operator pinion to drop below the bottom of the door frame for inswing applications.

- Note:**
1. All door frames for regular and parallel arm operation must be provided with door stops.
  2. Door and frames for parallel operation with panic breakaway must be center pivoted or be capable of swinging in both directions with no stops.
  3. For exterior installations, mount the on / off switch on the bottom of the header, not on the end cap.



**INSTALLATION INSTRUCTIONS  
HEADER ANCHORAGE**

**Header Anchorage**

**Aluminum Frame**

1/4-20x1-1/4  
mach. screw or  
#14x1-1/4  
Sht. Mtl. screw

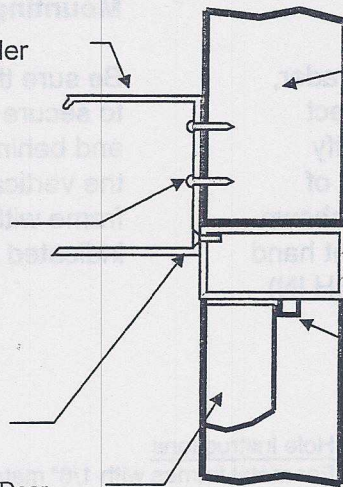
#10x1-1/4 sht.  
Mtl. or  
10-32x3/4  
Mach. Scr.

Header

Side Jamb

Door Stop

Door



**Hollow Metal Frame**

10-32x3/4 Flt.  
Hd. mach. Scr  
or #10x1- 1/4  
Sht.mtl. Scr.

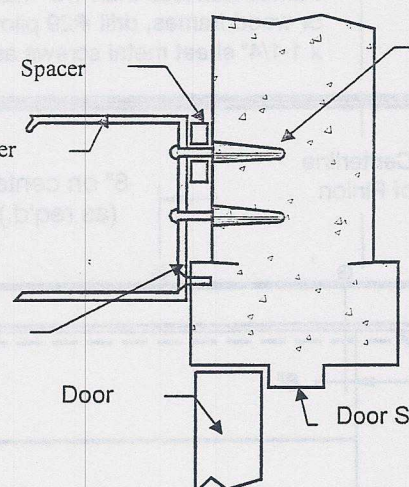
Spacer

Header

Plaster or Masonry  
Anchor

Door

Door Stop



**Wood Frame**

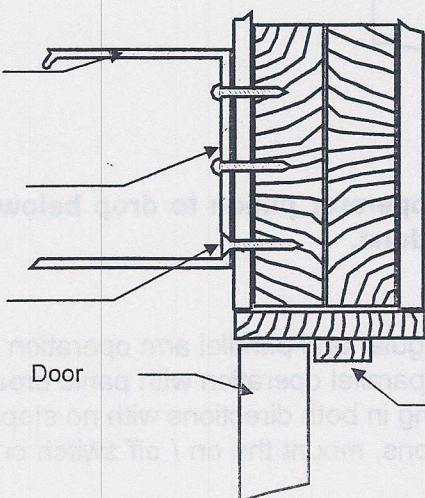
#14x1-1/4 Sht.  
Mtl. Scr.

#10x1-1/4 Sht.  
Mtl. Scr.

Header

Door

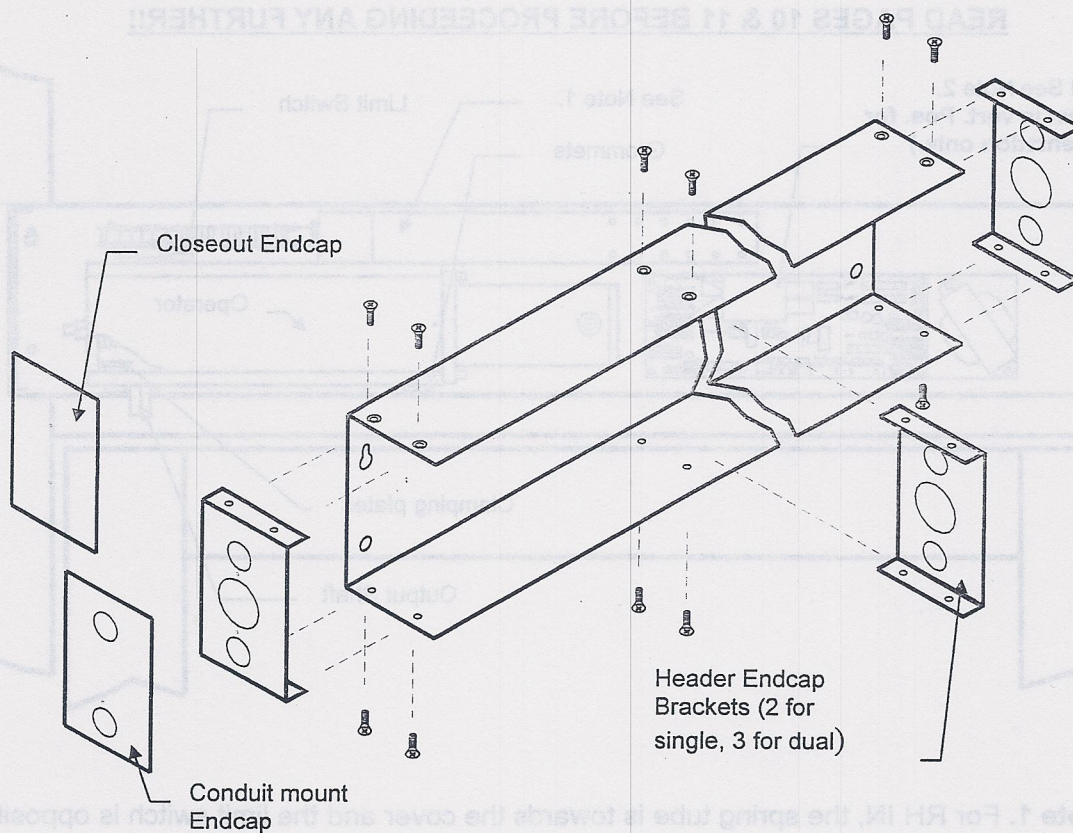
Door Stop





**INSTALLATION INSTRUCTIONS  
HEADER PREPERATION SINGLE AND DUAL****Header Endcap Installation**

1. Install header endcap brackets to header with 10-32 flat head screws. ( For dual units, center bracket is required.)
2. Install either the endcap for conduit connection or the endcap for closeout on desired end of header.
3. Locate header on door frame as shown on page 4 and secure.



**Note:** If the header being installed is a small dual, it may be necessary to omit the center support bracket in order to install the control.



# INSTALLATION INSTRUCTIONS OPERATOR INSTALLATION LHR & LH IN

## OPERATOR MOUNTING -REGULAR & SLIDE ARM

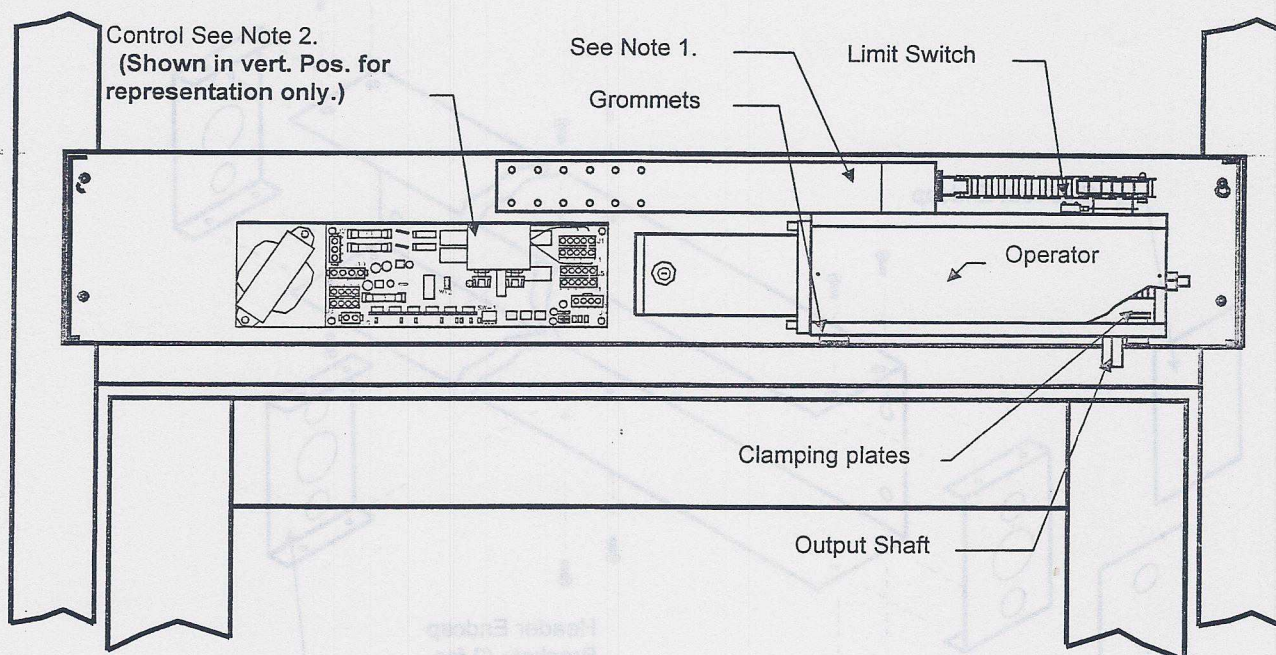
### READ PAGE 10 & 11 BEFORE CONNECTING CONTROL

LHR (RH OUT) SHOWN & LH IN, RHR (LH OUT) & RH IN OPPOSITE

Install the operator in the header as shown below; align the four mounting holes in the header with the shock mount grommets on the operator.

Use the 1/4-20 flat head screws provided to secure the operator through the header and shock mount grommets and into the pre-attached clamping plates inside the operator.

### READ PAGES 10 & 11 BEFORE PROCEEDING ANY FURTHER!!



**Note 1.** For RH IN, the spring tube is towards the cover and the limit switch is opposite.

**Note 2.** Before installing the control see pages 10 & 11 for setup instructions.

### Shaft Timing:

The operator output shaft is in the full panic position when received from the factory. See pages 12 & 13 for proper setup of arm / operator timing.

### Limit Switch:

Once the door arm is installed, make sure the limit switch is set to provide proper latch check position to obtain safe door operation. (For door open settings see page 15.)



# INSTALLATION INSTRUCTIONS OPERATOR INSTALLATION RHR & RH IN

## OPERATOR MOUNTING - REGULAR & SLIDE ARM

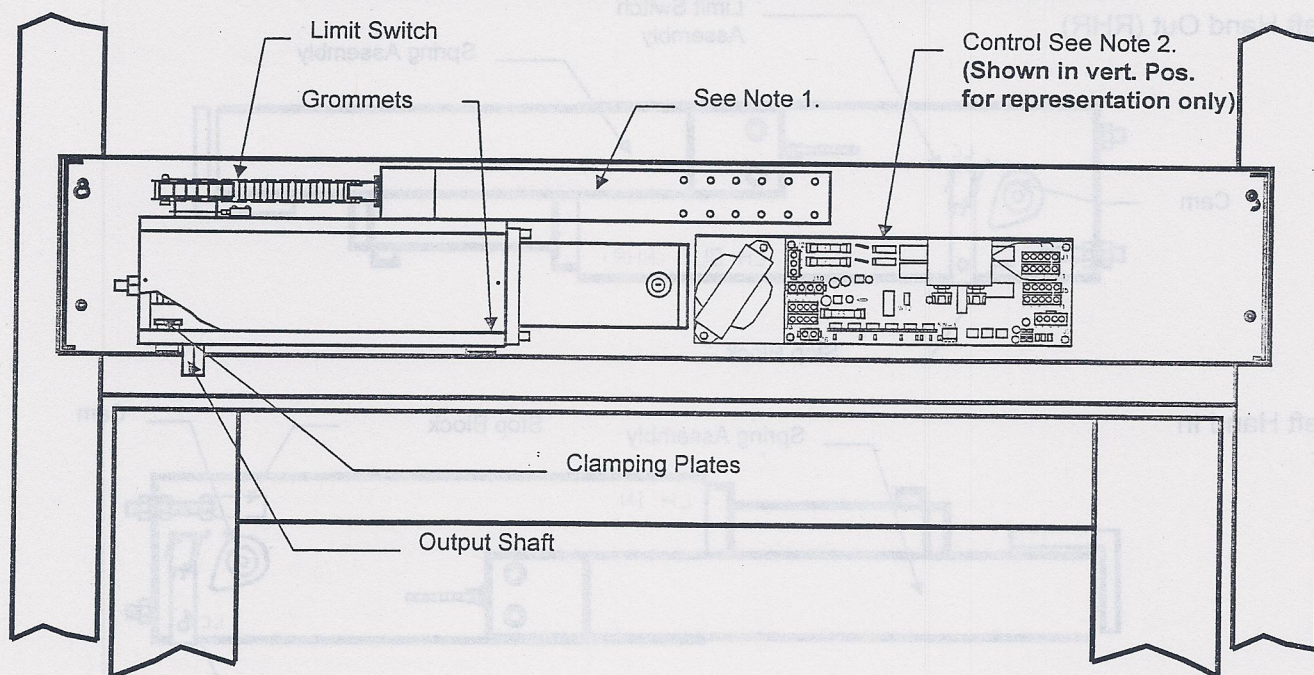
### READ PAGE 10&11 BEFORE CONNECTING CONTROL

RHR (LH OUT) SHOWN & RH IN, LHR (RH OUT) & LH IN OPPOSITE

Install the operator in the header as shown below; align the four mounting holes in the header with the shock mount grommets on the operator.

Use the 1/4-20 flat head screws provided to secure the operator through the header and shock mount grommets and into the pre-attached clamping plates inside the operator.

### READ PAGES 10&11 BEFORE PROCEEDING ANY FURTHER!!



**Note 1.** For RH IN, the spring tube is towards the cover and the limit switch is opposite.

**Note 2.** Before installing the control see pages 10 & 11 for setup instructions.

### Shaft Timing:

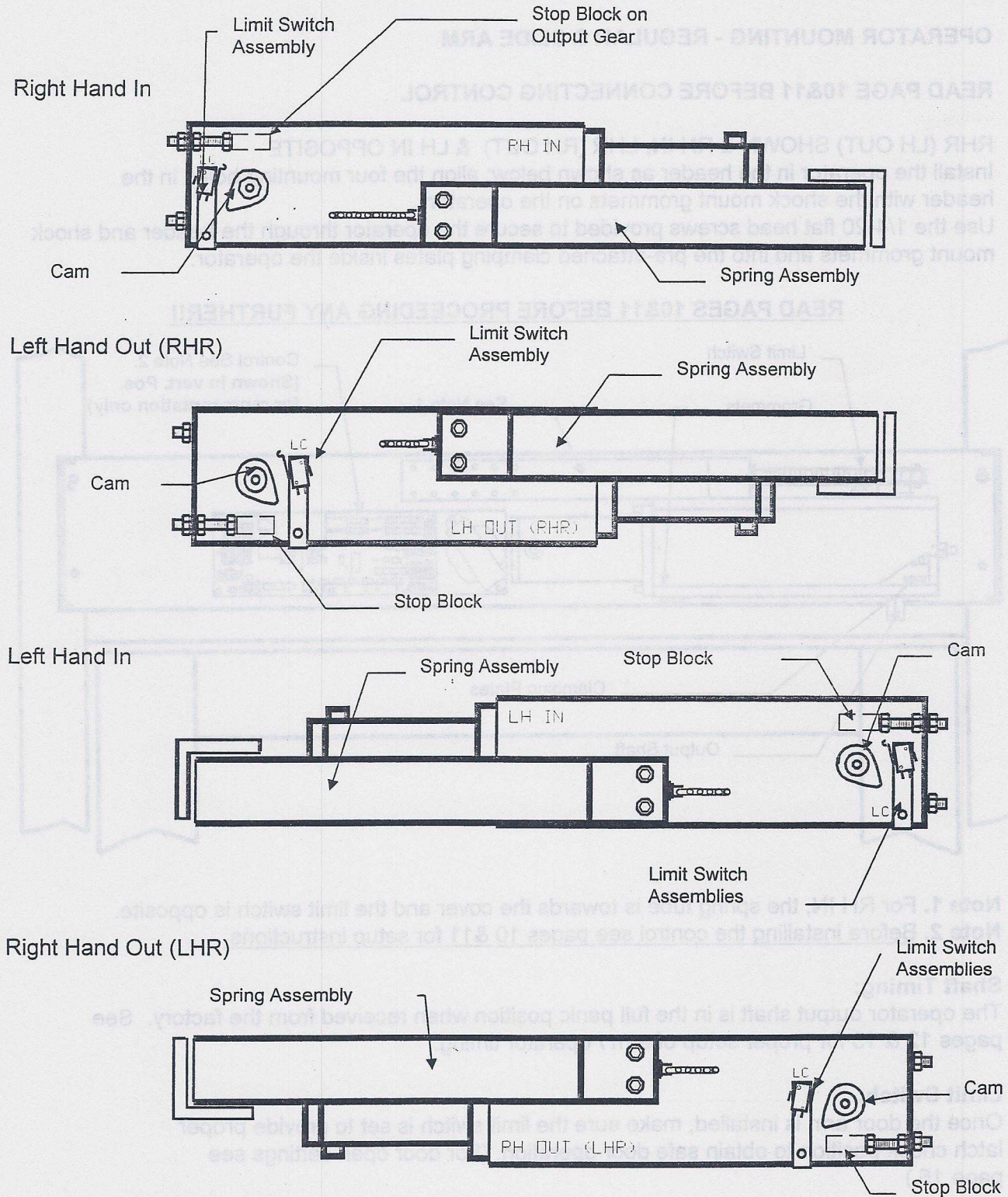
The operator output shaft is in the full panic position when received from the factory. See pages 12 & 13 for proper setup of arm / operator timing.

### Limit Switch:

Once the door arm is installed, make sure the limit switch is set to provide proper latch check position to obtain safe door operation. (For door open settings see page 15.)



# INSTALLATION INSTRUCTIONS OPERATOR HANDING AND TIMING



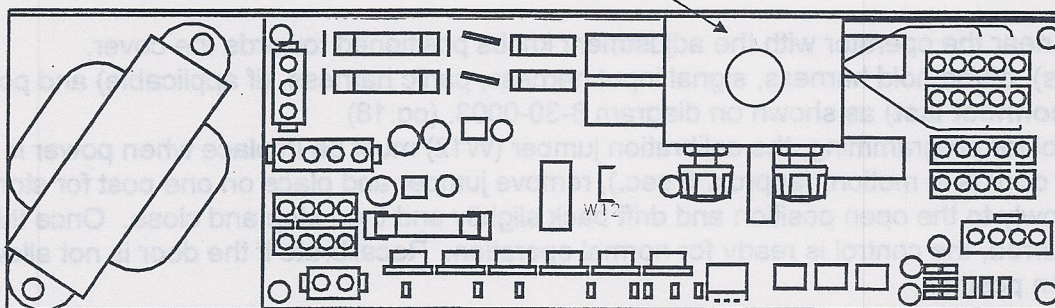
- Note:
1. The limit switch is labeled "LC" for latch check.
  2. The stop block is located on the final stage gear and is shown in the door panicked position.
  3. The door open and panic stop adjustment screws are shown, but the 90° door open position has to be calibrated as described on page 11.



The 3000 series control will be setup as either a **full power** (3000) control or a **low energy** (3100) control. To accomplish this the software is changed in the microprocessor. For ease of identification, the control will be marked with either an orange sticker or a green sticker. The orange sticker is full power; the green sticker is low energy.

### FULL POWER CONTROL

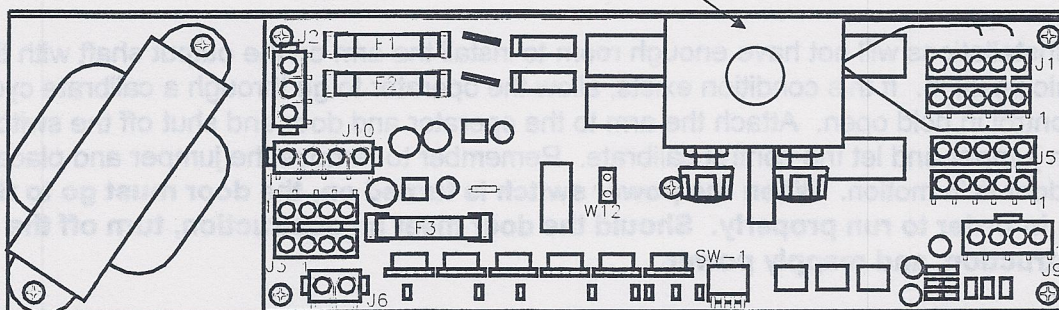
Orange sticker for full power.  
 Adjust to ANSI A156.10



- The calibration jumper will be in the jumpered position from the factory, see setup instructions proper sequence of programming.
- The Obstruction Shut Down feature is recommended on full power applications. See adjustment diagram 8-30-0001 (pg.18) for location of adjustments.

### LOW ENERGY CONTROL

Green sticker for low energy.  
 Adjust to ANSI A156.19



- The calibration jumper will be in the jumpered position from the factory, see setup instructions for proper sequence of programming. (Page 11)
- The Obstruction Shut Down feature is recommended on low energy applications. See adjustment diagram 8-30-0002 (pg.18) for location of adjustments.



**INSTALLATION INSTRUCTIONS  
CONTROL INSTALLATION & SETUP****Control Installation & Setup:****DO NOT APPLY POWER TO THE CONTROL**

Completely clean the header area to make sure there are not any metal particles on the circuit board or under the control that could cause a short circuit.

**CAUTION SHOCK HAZARD** Use caution when making any adjustments or connections to the control. As with all electronic controls, there are live voltages present on the board or components when power is applied.

**Single**

Locate the control near the operator with the adjustment knobs positioned towards the cover.

Connect operator(s), off/on/hold harness, signal input harness, panic harness, (if applicable) and power harness (**always connect last**) as shown on diagram 8-30-0003. (pg.18)

To setup the control for programming, the calibration jumper (W12) must be in place when power is applied. Once the door is in motion, (approx. 5 sec.), remove jumper and place on one post for storage. The door will go slowly to the open position and drift back slightly and then stop and close. Once this sequence has occurred, the control is ready for normal operation. Recalibrate if the door is not allowed to get to the door open position.

**Dual**

Locate control near the RH operator as described above. Use operator extension harness provided for the other operator and make all applicable connections as above.

Connect operator(s), off/on/hold harness, signal input harness, panic harness, (if applicable) and power harness (**always connect last**) as shown on diagram 8-30-0003. (pg.18)

To setup the control for programming, the calibration jumper (W12) must be in place when power is applied. Once the doors are in motion, (approx. 5 sec.), remove jumper and place on one post for storage. The doors will go slowly to the open position and drift back slightly and then stop and close. Once this sequence has occurred, the control is ready for normal operation. Recalibrate if the door is not allowed to get to the door open position.

**Attention:** Some installations will not have enough room to install the arm on the output shaft with the operator in the panic position. If this condition exists, allow the operator to go through a calibrate cycle and then put the control in hold open. Attach the arm to the operator and door and shut off the switch. Reinstall calibration jumper and let the control calibrate. Remember to remove the jumper and place on one post after the door is in motion. **When the power switch is turned on, the door must go to the full open position in order to run properly. Should the door meet an obstruction, turn off the door, remove obstruction, and reapply power.**

Once the operator is attached to the door and the control has gone through a calibration, adjust the door speeds and check positions according to type of installation. (Full Power or Low Energy)

The control can provide several features for different types of applications; See Pg. 15 for ANSI adjustment and Pg. 18 for location of control adjustment.

The four (4) position dip switch allows "Push-to-Start", "Latch Assist", "Ratchet", and "Stack Pressure" to be selected by putting the switch lever in the down position.

**Accessory 24vac Power (Connector J6)** is controlled by fuse F3 and is limited to 1 amp total. Use UL listed cable type CL2, CL2P, CL2R, or CL2X or equal for accessory connection.

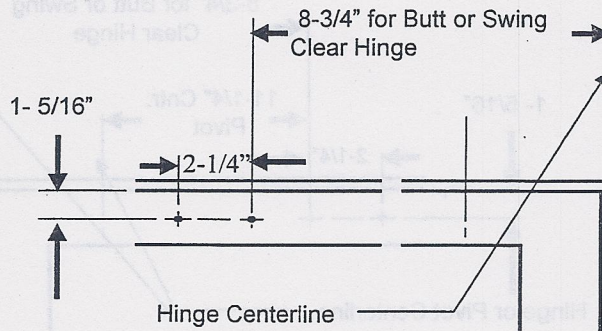


INSTALLATION INSTRUCTIONS  
REGULAR ARM - BUTT HINGE INSTALLATION

REGULAR ARM - BUTT HINGE INSTALLATION



DOOR FRAME MUST HAVE DOOR STOP

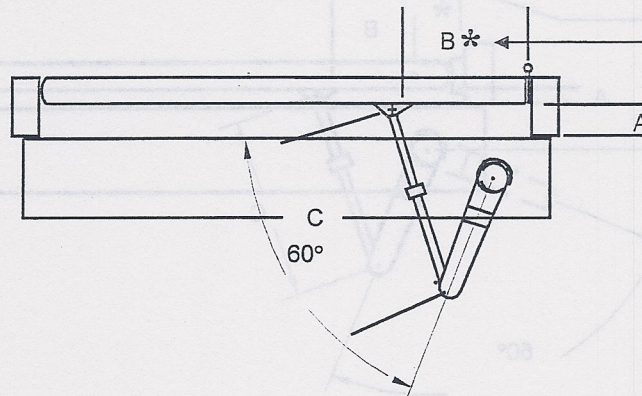


**Hole Instructions**

For **Metal Doors** with 1/8" surface thickness Drill #7 hole and tap for 1/4-20 x 5/8" machine screw (2 holes).

For **Metal Doors** with less than 1/8" surface thickness or **Wood Doors** Drill 3/16" pilot hole for #14 x 1-1/4" sheet metal screw (2 holes).

**Note:** All hole locations shown above are located from centerline of pivot or hinge.



See Correct Chart Below for Pivot and Arm Information  
(2-3/4 & 3-3/4 Pivot)

**Note** "B" dimension is from center line of pivot location to first door shoe screw.  
"A" dimension is the depth of reveal from face of frame to face of door.

**\*3100**

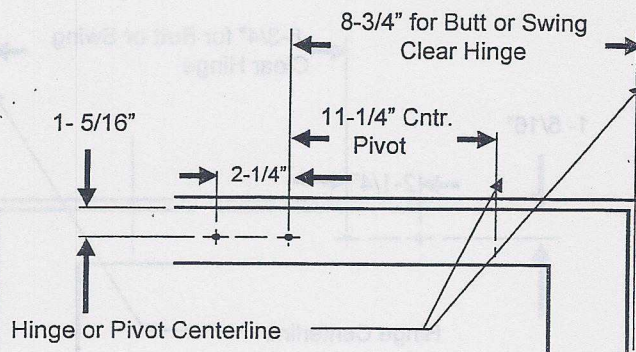
Depth of Reveal	A	2"	2 1/2"	3"	3 1/2"	4"	4 1/2"	5"	5 1/2"	6"
Pivot to 1st Dr. Shoe Screw	B	8 3/4"	8 3/4"	8 3/4"	8 3/4"	8 3/4"	8 3/4"	8 3/4"	8 3/4"	8 3/4"
Total Sec. Arm Length	C	15"	15 1/2"	16"	16 1/2"	17"	17 1/2"	18 "	18 1/2"	19 "
Secondary Rod Length	--	13"	13 1/2"	14"	14 1/2"	15"	15 1/2"	16 "	16 1/2"	17"

**\*3000**

Depth of Reveal	A	2"	2 1/2"	3"	3 1/2"	4"	4 1/2"	5"	5 1/2"	6"
Pivot to 1st Dr. Shoe Screw	B	10 3/4"	10 3/4"	10 3/4"	10 3/4"	10 3/4"	10 3/4"	10 3/4"	10 3/4"	10 3/4"
Total Sec. Arm Length	C	16"	16 1/2"	17"	17 1/2"	18"	18 1/2"	19"	19 1/2"	20"
Secondary Rod Length	--	14"	14 1/2"	15"	15 1/2"	16"	16 1/2"	17"	17 1/2"	18"



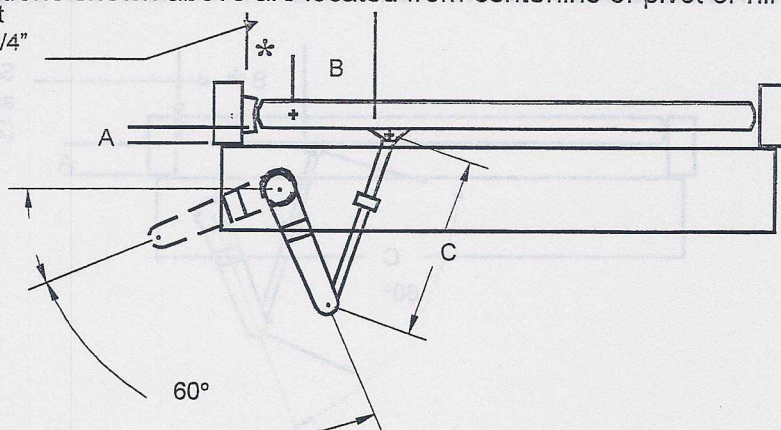
**REGULAR ARM - CENTER PIVOT INSTALLATION**

**DOOR FRAME MUST HAVE DOOR STOP**

**Hole Instructions**

 For **Metal Doors** with 1/8" surface thickness Drill #7 hole and tap for 1/4-20 x 5/8" machine screw (2 holes).

 For **Metal Doors** with less than 1/8" surface thickness or **Wood Doors** Drill 3/16" pilot hole for #14 x 1-1/4" sheet metal screw (2 holes).

**Note:** All hole locations shown above are located from centerline of pivot or hinge.  
 See Correct Chart Below for Pivot and Arm Information (2 3/4" & 3 3/4" Pivot)



**Note:** "B" dimension is from center line of pivot location to first door shoe screw.

"A" dimension is depth of reveal from face of frame to face of door.

**\*2 3/4" Center Pivot**

Depth of Reveal	A	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	4 1/2"	5"	5 1/2"	6"
Pivot to 1st Dr. Shoe Screw	B	11 1/8	11 1/8	11 1/8	11 1/8	11 1/8	11 1/8	11 1/8	11 1/8	11 1/8	11 1/8
Total Sec. Arm Length	C	15 1/2	16	16 1/2	17	17 1/2	18	18 1/2	19	19 1/2	20
Secondary Rod Length	--	13 1/2	14	14 1/2	15	15 1/2	16	16 1/2	17	17 1/2	18

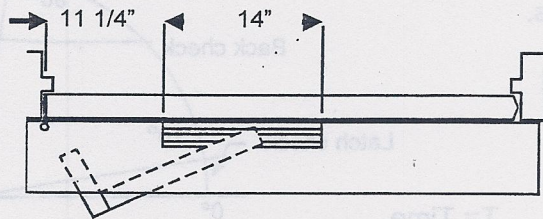
**\*3 3/4" Center Pivot**

Depth of Reveal	A	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	4 1/2"	5"	5 1/2"	6"
Pivot to 1st Dr. Shoe Screw	B	11 1/8	11 1/8	11 1/8	11 1/8	11 1/8	11 1/8	11 1/8	11 1/8	11 1/8	11 1/8
Total Sec. Arm Length	C	16	17	17	17	17	17 1/2	18 1/2	19	19 1/2	20
Secondary Rod Length	--	14	15	15	15	15	15 1/2	16 1/2	17	17 1/2	18

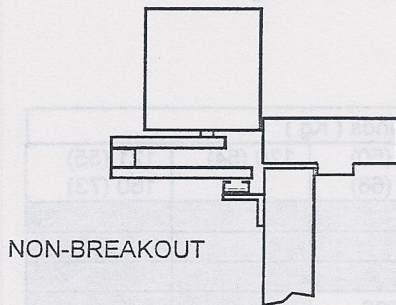
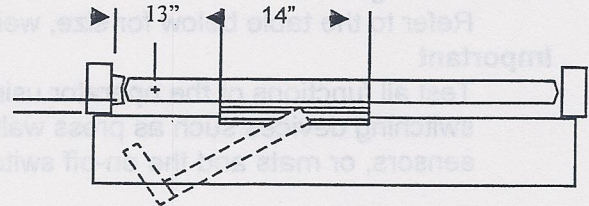


**SLIDE ARM - BUTT HINGE AND CENTER PIVOT  
RH SHOWN**

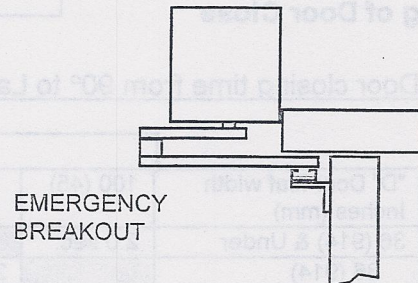
**BUTT HINGE**



**CENTER PIVOT (3 3/4")**

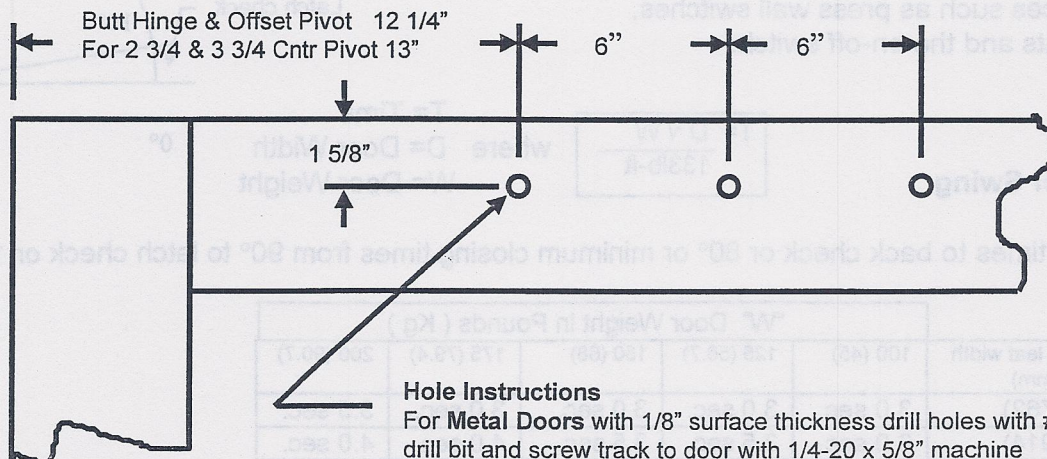


NON-BREAKOUT



EMERGENCY  
BREAKOUT

**DOOR PREP DETAIL FOR SLIDE TRACK**



**Hole Instructions**

For **Metal Doors** with 1/8" surface thickness drill holes with #7 drill bit and screw track to door with 1/4-20 x 5/8" machine screws. For **Metal Doors** with less than 1/8" surface thickness or **Wood Doors** drill 3/16" pilot hole for # 14 x 1- 1/4" sheet metal screw.



# INSTALLATION INSTRUCTIONS DOOR SPEED TABLES

## FULL POWER

### Door Opening Time

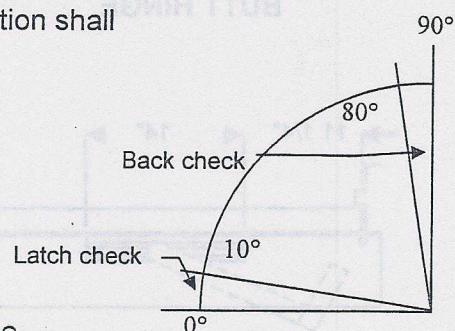
The door opening time to back check for a full power installation shall not be less than 1.5 sec.

### Door Closing Time

Refer to the table below for size, weight, and times.

### Important

Test all functions of the operator using operational switching devices such as press wall switches, sensors, or mats and the on-off switch.



$$T = \frac{D\sqrt{W}}{188\text{lb-ft}}$$

where

T= Time

D= Door Width

W= Door Weight

### Timing of Door Close

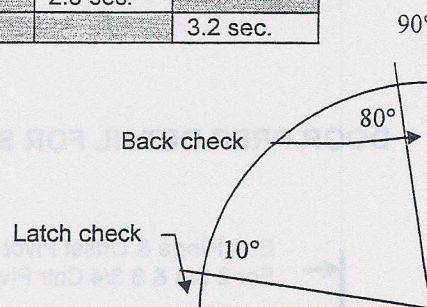
Door closing time from 90° to Latch check

"D" Door leaf width Inches (mm)	"W" Door Weight in Pounds ( Kg )					
	100 (45)	101 (46) 140 (64)	110 (50.0)	111 (50) 150 (68)	120 (54)	121 (55) 160 (73)
36 (914) & Under	2.0 sec.					
36 (914)		2.3 sec.				
42 (1067)			2.3 sec.			
42 (1067)				2.7 sec.		
48 (1219)					2.8 sec.	
48 (1219)						3.2 sec.

## LOW ENERGY

### Important

Test all functions of the operator using operational switching devices such as press wall switches, sensors, or mats and the on-off switch.



$$T = \frac{D\sqrt{W}}{133\text{lb-ft}}$$

where

T= Time

D= Door Width

W= Door Weight

### Timing of Door Swing

Minimum opening times to back check or 80° or minimum closing times from 90° to latch check or 10°.

"D" Door leaf width Inches (mm)	"W" Door Weight in Pounds ( Kg )				
	100 (45)	125 (56.7)	150 (68)	175 (79.4)	200 (90.7)
30 (762)	3.0 sec.	3.0 sec.	3.0 sec.	3.0 sec.	3.5 sec.
36 (914)	3.0 sec.	3.5 sec.	3.5 sec.	4.0 sec.	4.0 sec.
42 (1067)	3.5 sec.	4.0 sec.	4.0 sec.	4.5 sec.	4.5 sec.
48 (1219)	4.0 sec.	4.5 sec.	4.5 sec.	5.0 sec.	5.5 sec.

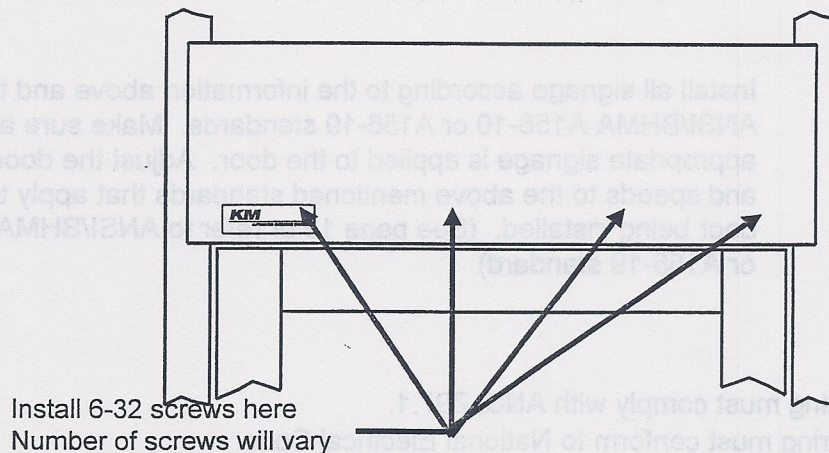
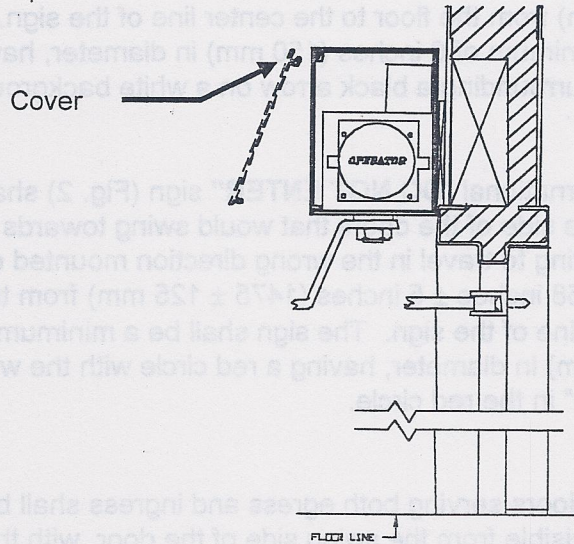
**ATTENTION:** These tables have been provided as a convenience for general setup.  
For complete specifications refer to ANSI A156.10 & 19.



**INSTALLATION INSTRUCTIONS  
COVER INSTALLATION**

**COVER INSTALLATION**

Install the cover into the top groove and rotate down until it snaps into the bottom lip of the header.  
Secure the cover with the 6-32 flat head screws across the bottom edge of the header.  
**DO NOT USE A DRILL / DRIVER TO INSTALL THESE SCREWS, THEY MAY STRIP.**



Install 6-32 screws here  
Number of screws will vary



## SIGNAGE APPLICATION



Fig 1



Fig. 2



Make sure that all doors have proper signage as follows. An arrow sign (Fig. 1) shall be visible from the approach side of a swinging door mounted on the door at a height 58 inches  $\pm$  5 inches (1475  $\pm$  127 mm) from the floor to the center line of the sign. The sign shall be a minimum of 6 inches (150 mm) in diameter, having a green circle surrounding a black arrow on a white background.

An international "DO NOT ENTER" sign (Fig. 2) shall be visible from the side of the doors that would swing towards pedestrians attempting to travel in the wrong direction mounted on the door at a height 58 inches  $\pm$  5 inches (1475  $\pm$  125 mm) from the floor to the center line of the sign. The sign shall be a minimum of 6 inches (150 mm) in diameter, having a red circle with the wording "DO NOT ENTER" in the red circle.

Swing doors serving both egress and ingress shall be marked with a decal, visible from the swing side of the door, with the words "AUTOMATIC CAUTION DOOR" (see Fig. 3). The sign shall be mounted on the door at a height 58 inches  $\pm$  5 inches (1475  $\pm$  125mm) from the floor to the center line of the sign. The sign shall be a minimum of 6 inches (150mm) in diameter and with black lettering on a yellow background.

Install all signage according to the information above and to ANSI/BHMA A156-10 or A156-19 standards. Make sure all appropriate signage is applied to the door. Adjust the door forces and speeds to the above mentioned standards that apply to the door being installed. (See page 15 or refer to ANSI/BHMA A156-10 or A156-19 standard)

## Code Conformance

- Glass and glazing must comply with ANSI Z97.1.
- All electrical wiring must conform to National Electrical Code.
- Proper fingerguard must be applied to the hinge stile of the door. (Ref. UL 325, Paragraph 27.12)
- All "Knowing Act" activation devices must be installed within eyesight of door motion.
- All public swing door installations must comply with either ANSI/BHMA A156.10 or ANSI/BHMA A156.19.





AUTOMATED ENTRANCE SYSTEMS

# KM SYSTEMS, INC.

4910 STARCREST DRIVE (28110)

P.O. BOX 3099

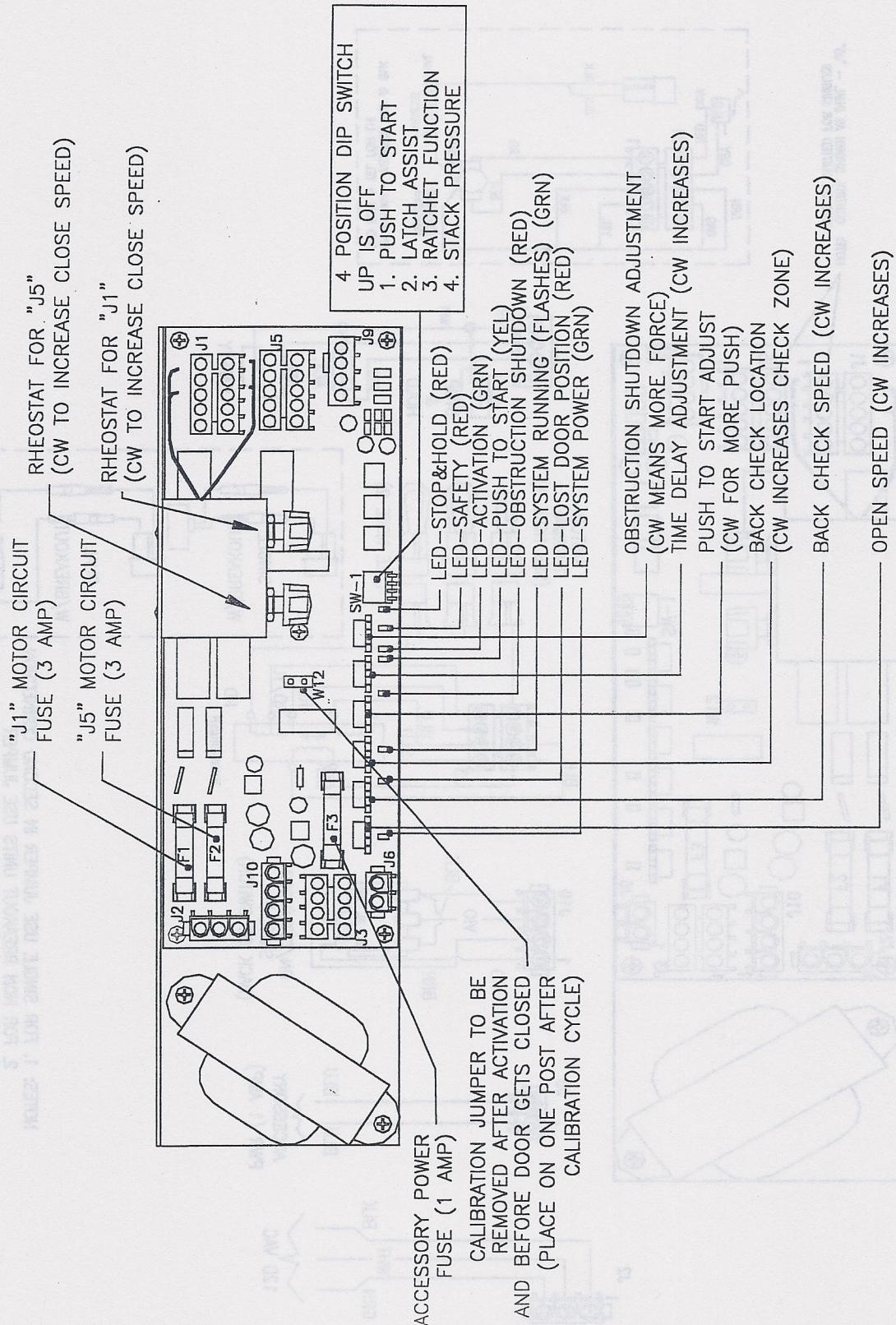
MONROE, NC 28111-3099

PH. 1-800-438-1937

SERIES 3000, 3100 (MICRO)

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## INSTALLATION INSTRUCTIONS CONTROL ADJUSTMENT DIAGRAM





INSTALLATION INSTRUCTIONS  
CONTROL CONNECTION DIAGRAM

