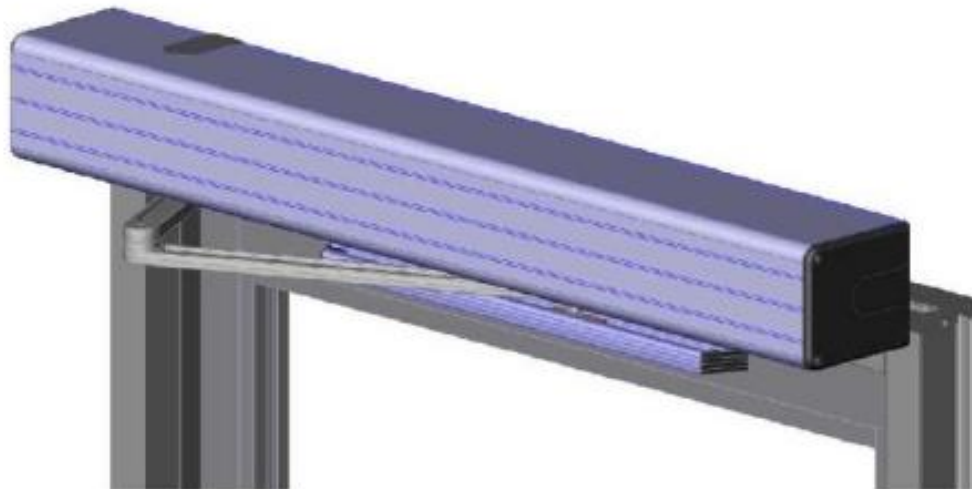
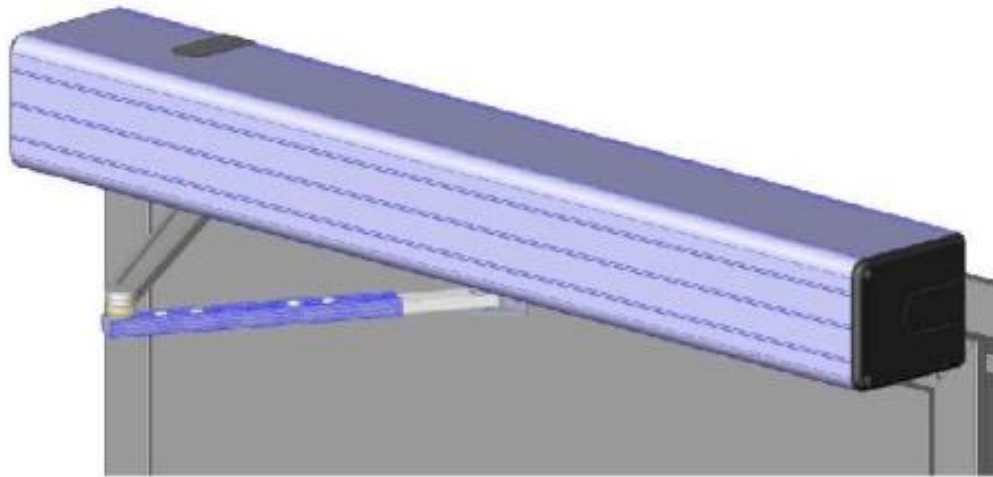


DEVICES COVERED IN THIS DOCUMENT:

8418 SINGLE OPERATOR
8419 PAIR – SIMULTANEOUS

8420 PAIR – INDEPENDENT
8421 PAIR-DOUBLE EGRESS-INDEP

8422 PAIR-DOUBLE EGRESS-SIMULT
8423 SINGLE OPERATOR W/EHMC



The manufacturer's specifications for this product require the installation to be approved by an AAADM certified inspector.

The Hager Series 8400 Operator has been carefully designed, built, and tested to provide years of service.

The life of the operator package is directly related to how carefully the installation is accomplished and how accurately the instructions are followed. Installation of this operator package should be done by properly trained and knowledgeable installers with knowledge of local code requirements and the requirements of ANSI A156.10 Standards for Power Operated Pedestrian Doors and A156.19 Standards for Low Energy and Power Assisted Pedestrian Doors. The authorized service / installation dealer must perform all measurements for forces, speeds, and times to insure proper and safe operation.

Hager Companies is not responsible for improperly adjusted or maintained automatic doors or activation / safety systems and assumes no responsibility for damages caused by automatic door systems that have not been properly installed, tested, and adjusted.

OWNER INFORMATION TO BE PROVIDED BY THE DISTRIBUTOR / INSTALLER

- After the installation instruct the owner on the safe operation of the door.
- Location and proper use of the power switches.
- Location of the main cutoff breaker.
- Necessary warnings not covered in general instructions.
- Owner’s Manual and Daily Safety Checklist.
- Phone number(s) for the local servicing dealer.
- What to do in the event that a dangerous situation should occur and how to shut the doors down and call for service.

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.

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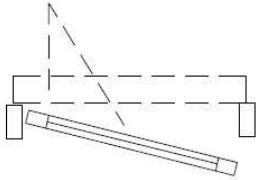
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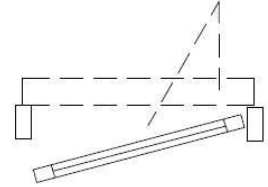
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Operator Handing Identification

LHR STD. ARM



RHR STD. ARM



**LH TRACK ARM
W/PANIC**



LH TRACK ARM



RH TRACK ARM

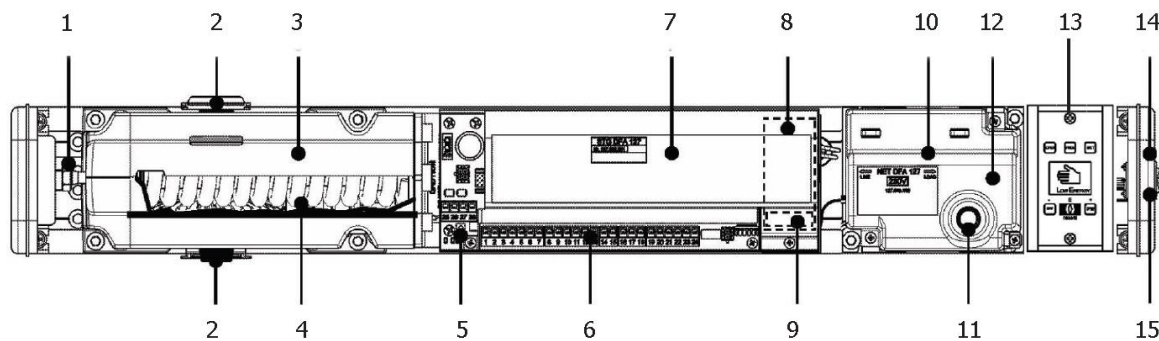


**RH TRACK ARM
W/PANIC**



Product Description

The Hager Series 8400 Swing Door Operator is a power-open, spring-close unit providing full functionality conforming to either ANSI A156.10 or ANSI A156.19 requirements. The self-monitoring microprocessor-based control maintains precise regulation throughout the door open / close cycle. Two operators can be connected together in a master/slave configuration providing synchronized operation. Safety is additionally increased by the use of a redundant force limitation.



- | | |
|--|--|
| <ul style="list-style-type: none"> 1. Adjusting screw for spring tension 2. Output shafts for arms & stop 3. Drive Unit 4. Closing spring 5. Multifunction push button/control 6. Terminal blocks for I/O 7. Microprocessor control | <ul style="list-style-type: none"> 8. Motor drive circuit board 9. Slide switch S1 (rotating direction) 10. Power supply 11. Fuse (2.0A, 5 x 20mm, Slo-Blo) 12. Power supply circuit board 13. Onboard programmer 14. On/Off/Open rocker switch 15. Status LED and reset push button |
|--|--|

Drive Arms: Three types of drive arms are available:

The Standard Arm provides the most flexibility –
Outswing (push) reveals to 12"
Inswing (pull) reveals up to 6"



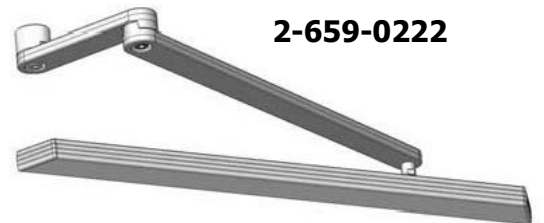
2-659-0153

The Slide Track Arm –
Inswing (pull) reveals to 6"
Outswing (push) reveals to 3"



2-659-0151

The Slide Track Arm with Offset Adapter –
Suitable for center-pivoted doors with
breakout capability;
Allow double-egress installations in a
common header.



2-659-0222

An extension adapter is included with each arm assembly, connecting the drive arm to the operator output shaft. The Standard Arm is provided with a 35mm adapter which mounts the drive arm approximately 1-1/8" below the bottom of the header. The Slide Track Arm includes a 20 mm adapter, mounting the drive arm approximately 1/2" below the bottom of the header.

Layouts for the different arm / installation configurations are attached. Check the arm assemblies prior to unit installation and verify dimensions and clearances.

Instructions to the Installer

This unit is to be installed and commissioned by a trained technician with knowledge of ANSI A156.10 and A156.19 Standards for Power Operated Doors, applicable local codes, and Hager Companies installation recommendations.

After installation, verify the door can be opened without power applied, and the force required to open the door does not exceed 50 pounds-force (222 N).

Information provided to the owner

The Owner's Manual with training and explanation of the daily safety check.
Location of the operator control panel (On / Off / Hold Open).
Specific information pertinent to the proper operation of the installation.

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.
Power requirements — 115 VAC, 60 Hz, 15 Amp Service.

Mechanical Installation

The door panel must move freely throughout its entire opening and closing rotation. The door frame must provide a stable base, structurally sufficient to support automatic operation. Typically the operator baseplate will overlap the door jambs by 1-1/2".

Verify the installation conditions and select the arm configuration that most closely matches the installation. As a general rule, the operator output shaft will mount 4" away from the hinge jamb, measured parallel to the closed door. The door mounted foot on a Standard arm assembly will typically mount 18" from the hinge jamb. For Slide Track arm assemblies, the door mounted track will mount with one end located 4" from the hinge jamb. Consult the attached layout drawings for additional details.

Securely attach the unit baseplate to the door frame; Hex Head Tek Screws are included - #14 X 2" for unit mounting to door frame, and #10 X 1-1/2" for Arm mounting to door.

Typically, the drive arm is attached to the operator with the unit in the closed position. Additionally, the arm is positioned on the splined output shaft with a slight pre-load, pushing the door against the door closed stop. The spline provides incremental adjustment of 6°; typically, one spline index for pre-loading is sufficient. The drive arm is attached to the lower operator output shaft using the extension adapter supplied with the arm assembly. Consult the appropriate arm configuration for proper arm positioning on the shaft (The most common application – an outswing / push configuration using the Standard arm assembly – has the drive arm mounted to the shaft perpendicular to the closed door.) When securing the arm on the shaft, insure the extension adapter has seated properly on the shaft spline. If not seated correctly, slippage of the arm on the shaft may occur. For Track arms, install the arm with the outer end of the arm against the closed door. Do not tighten the bolt; using the arm, pull the operator open and during the slow, controlled closing, insure the splines seat correctly and tighten the 6mm socket head bolt. Verify all fasteners are securely tightened.

Operator Swing Direction

If the operator does not close slowly (with either arm), the handing selection switch (S1) should be changed. It is located behind a slot in the sheet metal cover for the operator control.

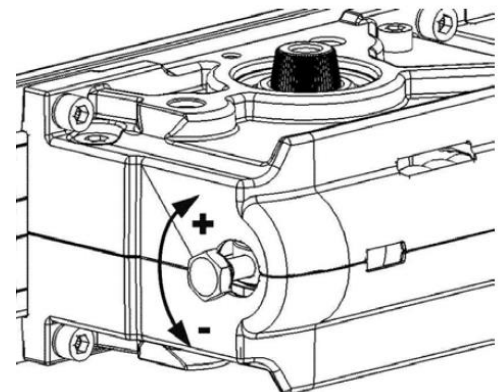
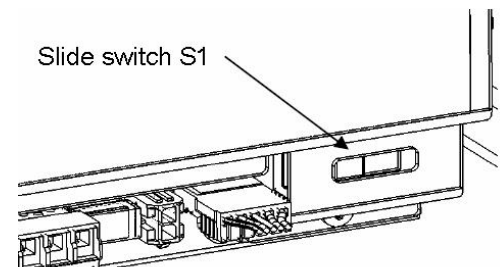
With no power applied, the operator should be capable of being easily pushed open and when released, will close the door at a controlled speed.

Closing Spring Adjustment

The closing force provided by the spring is adjustable.

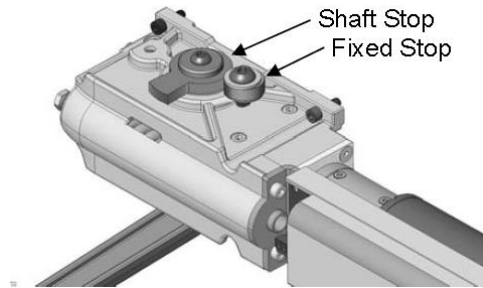
Do not adjust the force so low that the door will not consistently close under spring power.

On a typical 3'-0" door with a standard arm assembly, the spring closing force can be adjusted from less than 5 pounds force to more than 20 pounds force, measured at the leading edge of the door.



Open Stop

The unit is provided with an adjustable full open Fixed Stop. Rotate the door to the full open position; mount the Shaft Stop onto the upper output shaft and against the Fixed Stop. The spline of the output shaft allows indexing in 6° increments. For finer adjustment, the Fixed Stop is slightly eccentric; loosen and rotate until the desired stop location is achieved and re-tighten.



For installations where severe physical abuse may occur (such as extreme wind conditions), it is suggested a floor mounted stop be installed at full open. Additionally, the operator full open stop can be set at 100 degrees or more of opening, and program the operator to electronically stop at the 90 degree full open position. This can be accomplished by manually stopping the door at 90 degrees during a calibration run, or by reducing the opening angle under the parameter "Drive / Opening angle" (using an Hand Terminal or a Display Control Panel).

Power Supply Connection

Connect 115VAC, 60 Hz, 10A, to Power Supply terminal strip

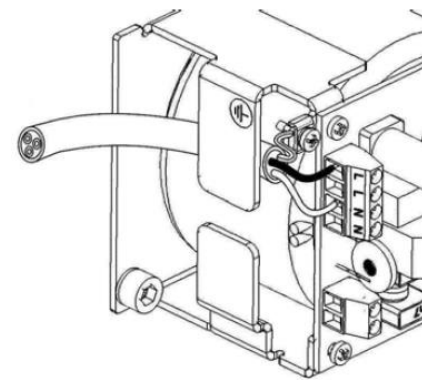
115VAC "Hot" (Line) to "L" terminal;

115VAC "Neutral" to "N" terminal

The second "L" and "N" terminals provide a convenient junction for dual operator systems.

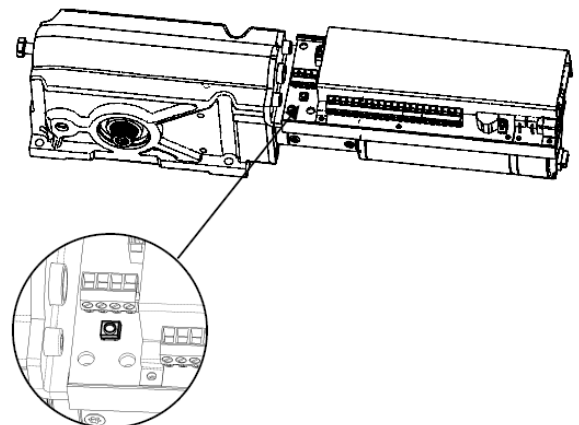
Proper grounding must be provided for the unit. A grounding tab and screw are located adjacent to the Power Supply terminal strip.

The power supply cover must be installed after connecting 115VAC primary service.



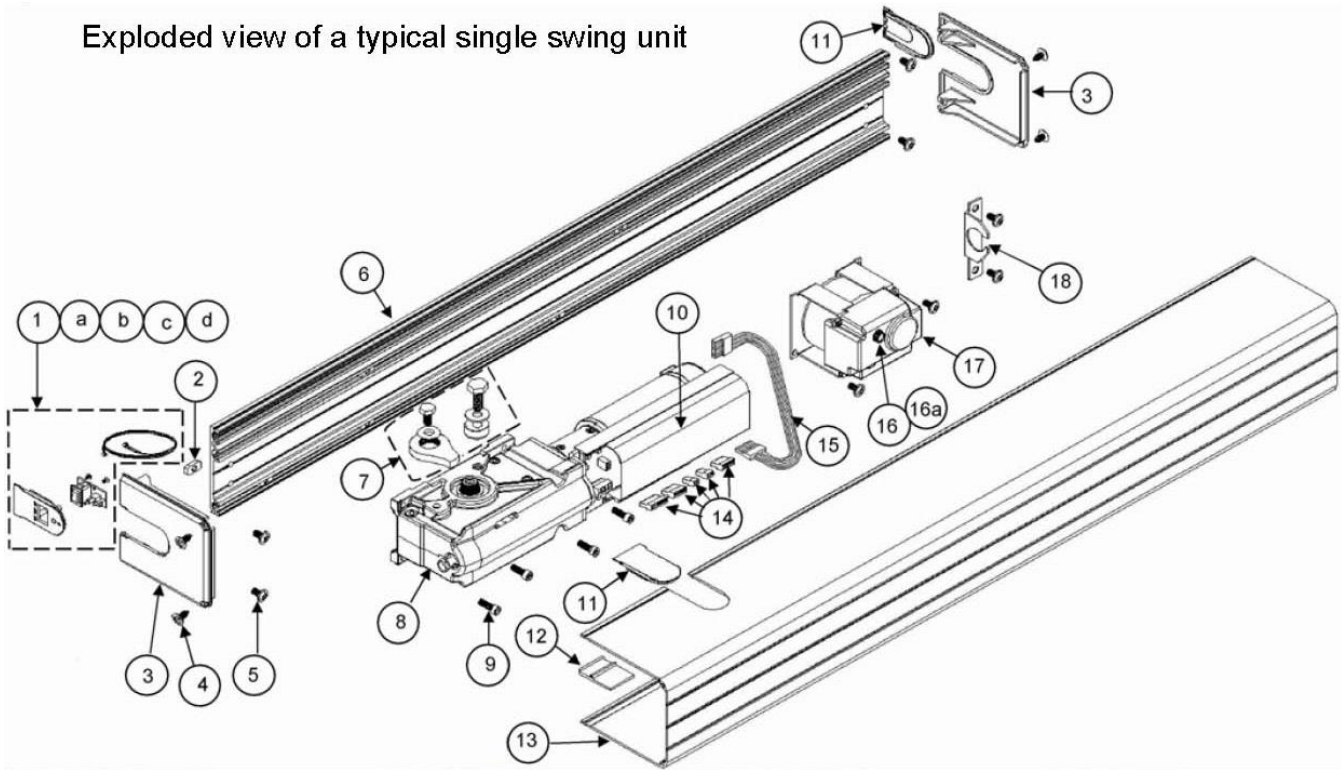
The **multifunction pushbutton** can be used for the following functions:

- 1 flash of the red LED will actuate a standard open cycle (if the rocker switch is on).
- 3 flashes of the red LED will initiate a calibration run.
- 4 flashes of the red LED will initiate the parameter adjust mode of a Display Control Panel.
- 8 flashes of the red LED will reset the unit's parameters to factory defaults.
- 15-17 flashes will cause the unit to reset without affecting any of the field set parameters.



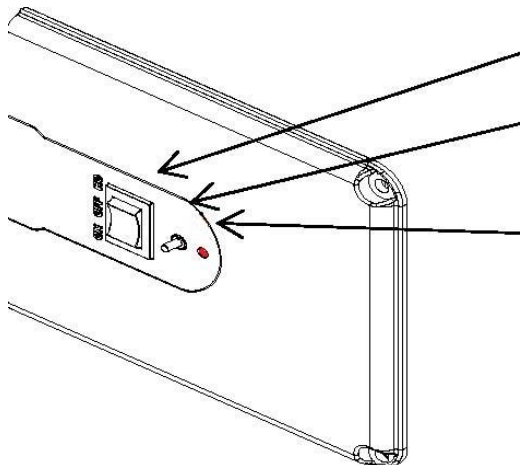
After completion of the mechanical installation and prior to adjusting the parameters, always initiate a calibration run by pressing and holding the pushbutton for 3 flashes of the red LED. This will insure proper door operation by calibrating the unit to the installation conditions.

Exploded view of a typical single swing unit



ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	KIT, ROCKER SWITCH, CABLE, INSERT, SCREWS	11	INSERT, PLAIN, COVER & END CAP
2	PLATE, NUT (1/4-20)	12	INSERT, SHAFT CUTOUT, COVER
3	END CAP, COVER	13	COVER, 8400 CL-DB
4	SCREW, 8 x 1/2" PH SMS BLK OXIDE	14	KIT, ELECTRICAL CONNECTORS, J1 - J6
5	SCREW, 1/4-20 x 3/8" ALLEN BH BLK OXIDE	15	HARNES, ENCODER
6	PLATE, OPERATOR MOUNTING, 8400	16	FUSE CAP
7	MOUNTING SET, HARD STOP ADAPTER	16a	FUSE, 2.5A, 5mm x 20mm
8	DRIVE MODULE, SERIES 8400 OPERATOR	17	POWER SUPPLY, 8400 SERIES
9	SCREW, 1/4-20 x 3/4" ALLEN BH, BLK OXIDE	18	BRACKET, CONDUIT ANCHOR
10	CONTROL, SERIES 8400 OPERATOR	19	HARNES, POWER SUPPLY TO CONTROL (not shown)

The Hager Series 8400 Standard Rocker Switch Control Panel includes:



3 Position Rocker Switch - ON / OFF / OPEN

Pushbutton - To reset the operator, press and hold for 8 seconds

LED (red) - Normally off; flashing indicates either the unit is performing a calibration run, or an error has been encountered.

To clear an error, press & hold the pushbutton for approximately 8 seconds or until the LED turns off.



Full Power & Low Energy
"Knowing Act" doors



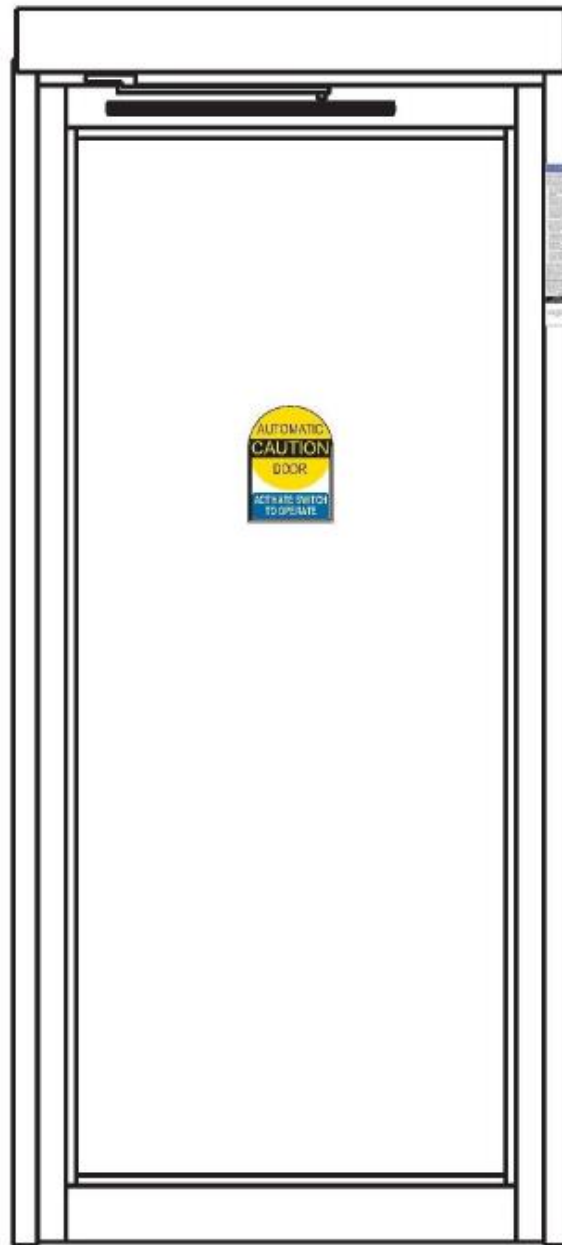
Full Power - Swing
Side, 2-Way Traffic;
Low Energy - Sensor
Activation



Full Power
Approach Side



Full Power
Non-Approach Side

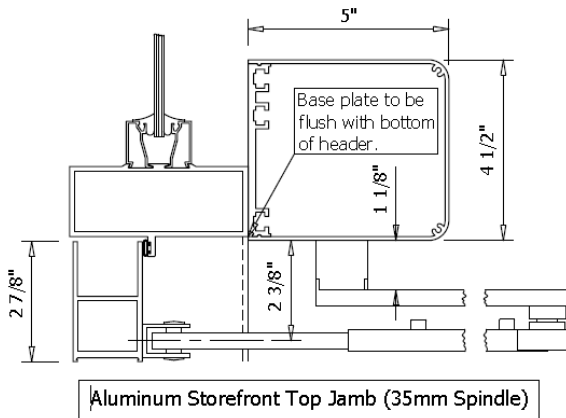


Daily Safety
Check locate
below control
panel

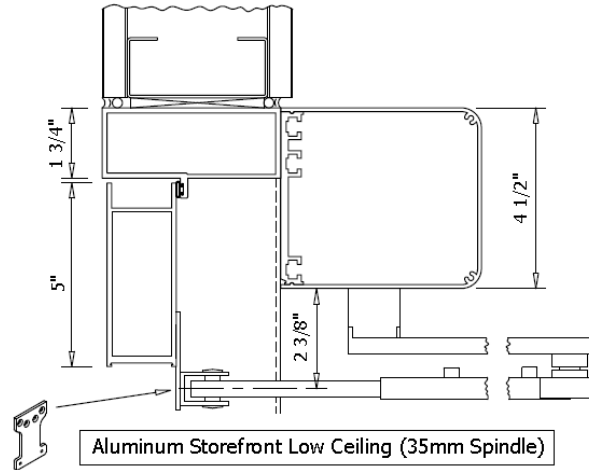
58"
±5"

**SAFETY DECAL
REQUIREMENTS**

STANDARD APPLICATIONS

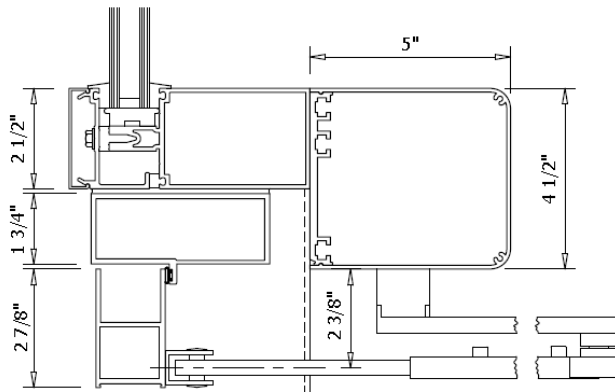


Aluminum Storefront Top Jamb (35mm Spindle)

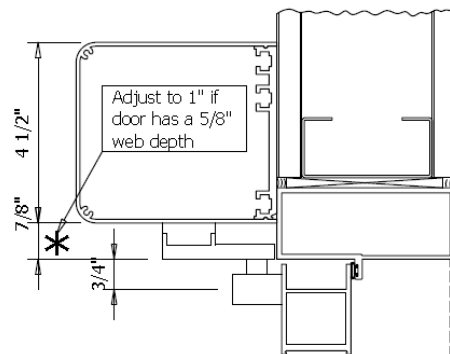


Aluminum Storefront Low Ceiling (35mm Spindle)

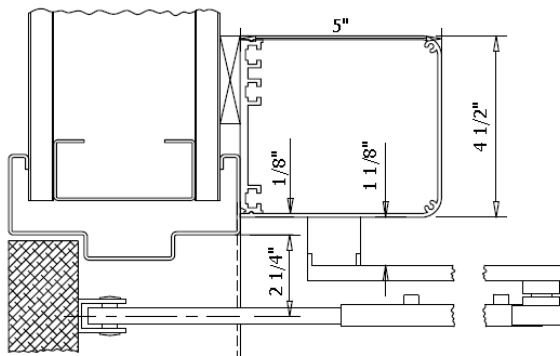
NOTE: Optional arm shoe drop plate is available for applications with a top rail less than 5". See page 13 for additional information.



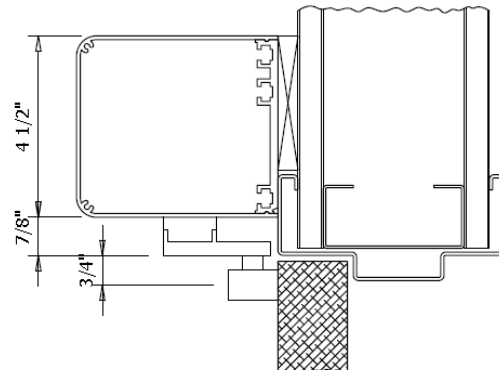
Aluminum Curtain Wall Sub Framing (35mm Spindle)



Aluminum Storefront Pull Side (20mm Spindle)



Hollow Metal Top Jamb Push (35mm Spindle)



Hollow Metal Pull Side (20mm Spindle)

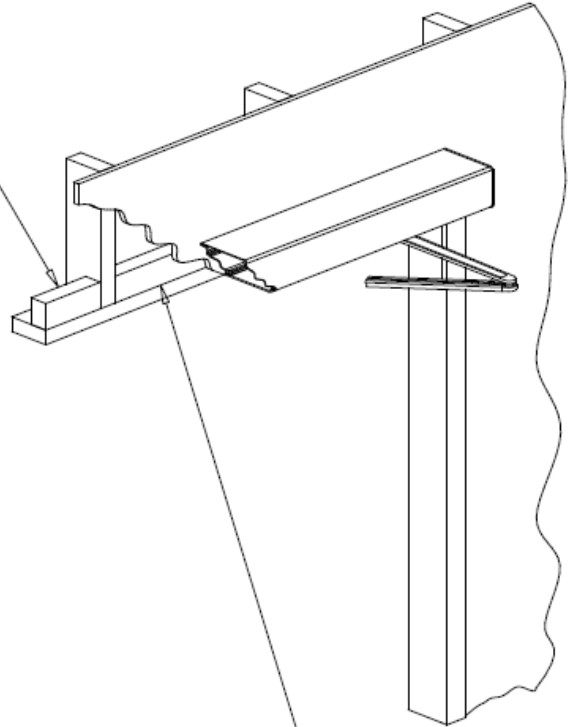
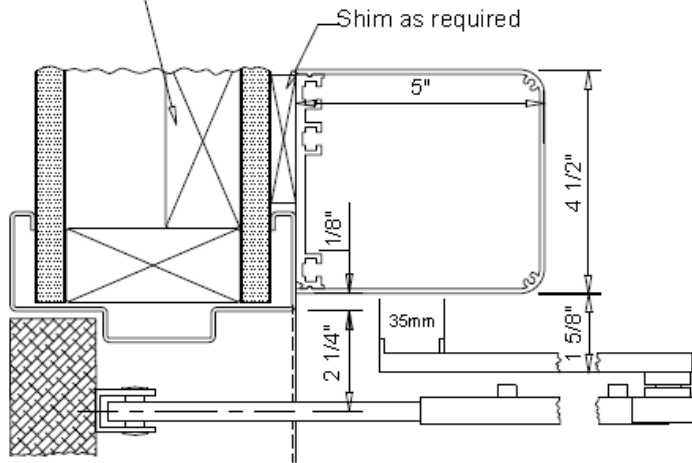
Note: See page 14 & 15 for additional layout information.

Building and safety codes for entrance products and hardware vary widely. Operators are factory set for LOW ENERGY USA / ANSI A156.19. Any variation in this setting will require AAADM certification. Hager Companies recommends reviewing local codes for your specific application and assumes no responsibility. These drawings are for reference only. Hager Companies reserves the right to change these drawings when deemed necessary for improvement. © HAGER COMPANIES, INC. 2013

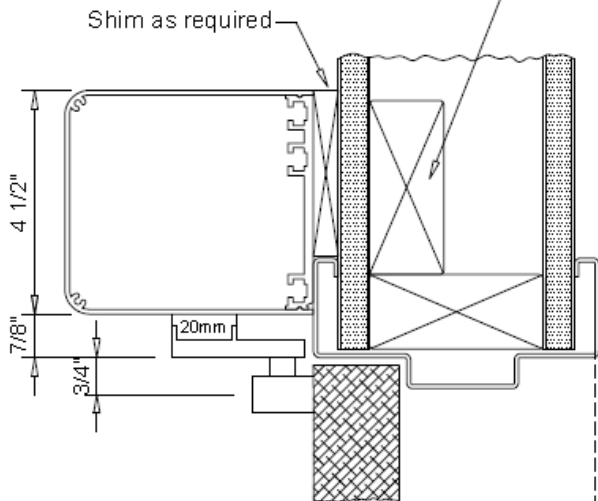
Hollow Metal Framing Requirements

(Arm configurations shown with 35mm standard arm spindle adapter and 20mm track arm spindle adapter)

- 1) - Must have adequate framing to properly support operator.
2) - Additional blocking, reinforcing, and shims by others.



- 1) - Must have adequate framing to properly support operator.
2) - Additional blocking, reinforcing, and shims by others.

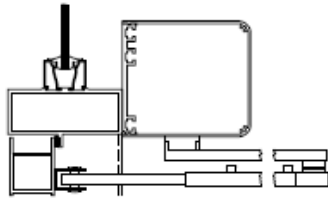


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Typical Aluminum entrance applications shown.

See page 13 for additional attachment options.
See pages 12 for double egress layout.
See pages 14 and 15 for fabrication layout information.

Aluminum Storefront Top Jamb



PUSH SIDE
MOUNTING

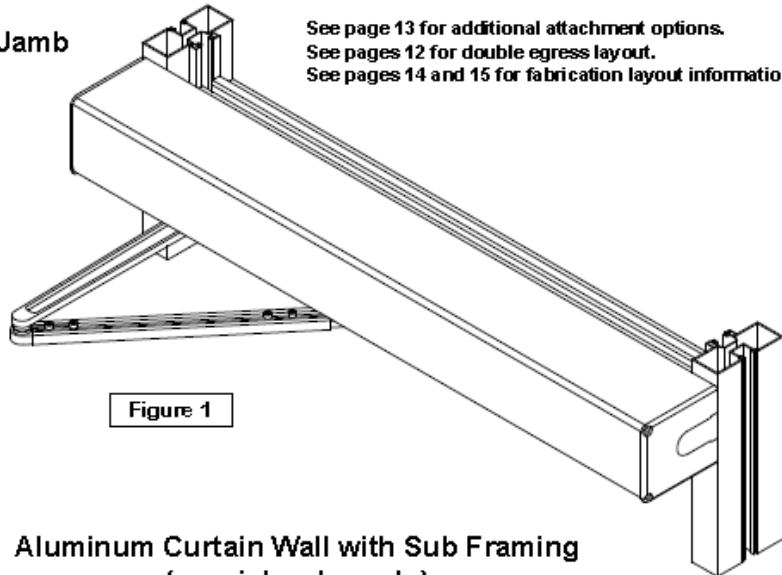


Figure 1

**Aluminum Curtain Wall with Sub Framing
(special order only)**

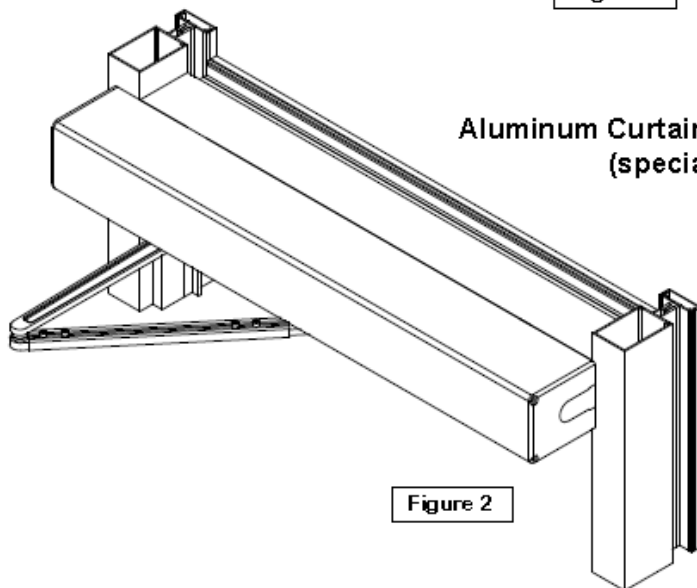
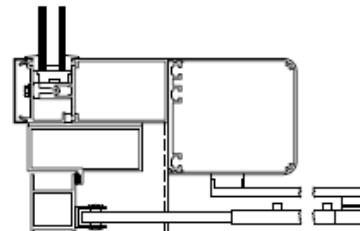
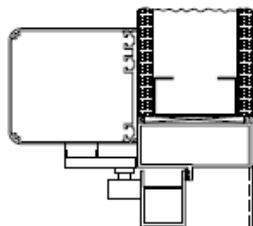


Figure 2



PUSH SIDE
MOUNTING

Aluminum Storefront Pull Side



PULL SIDE MOUNTING

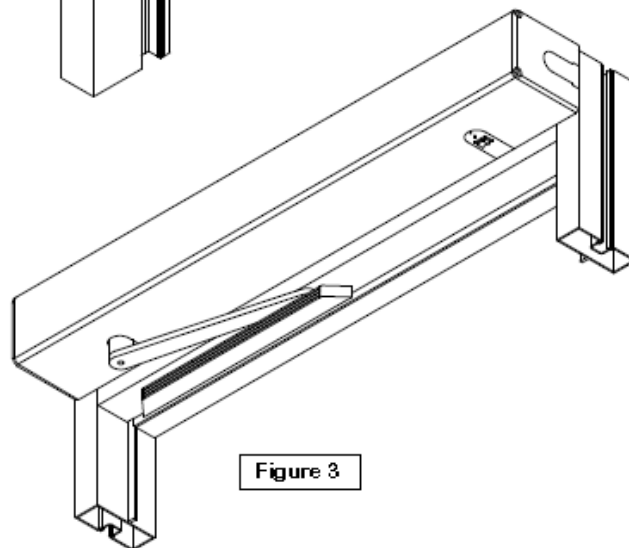
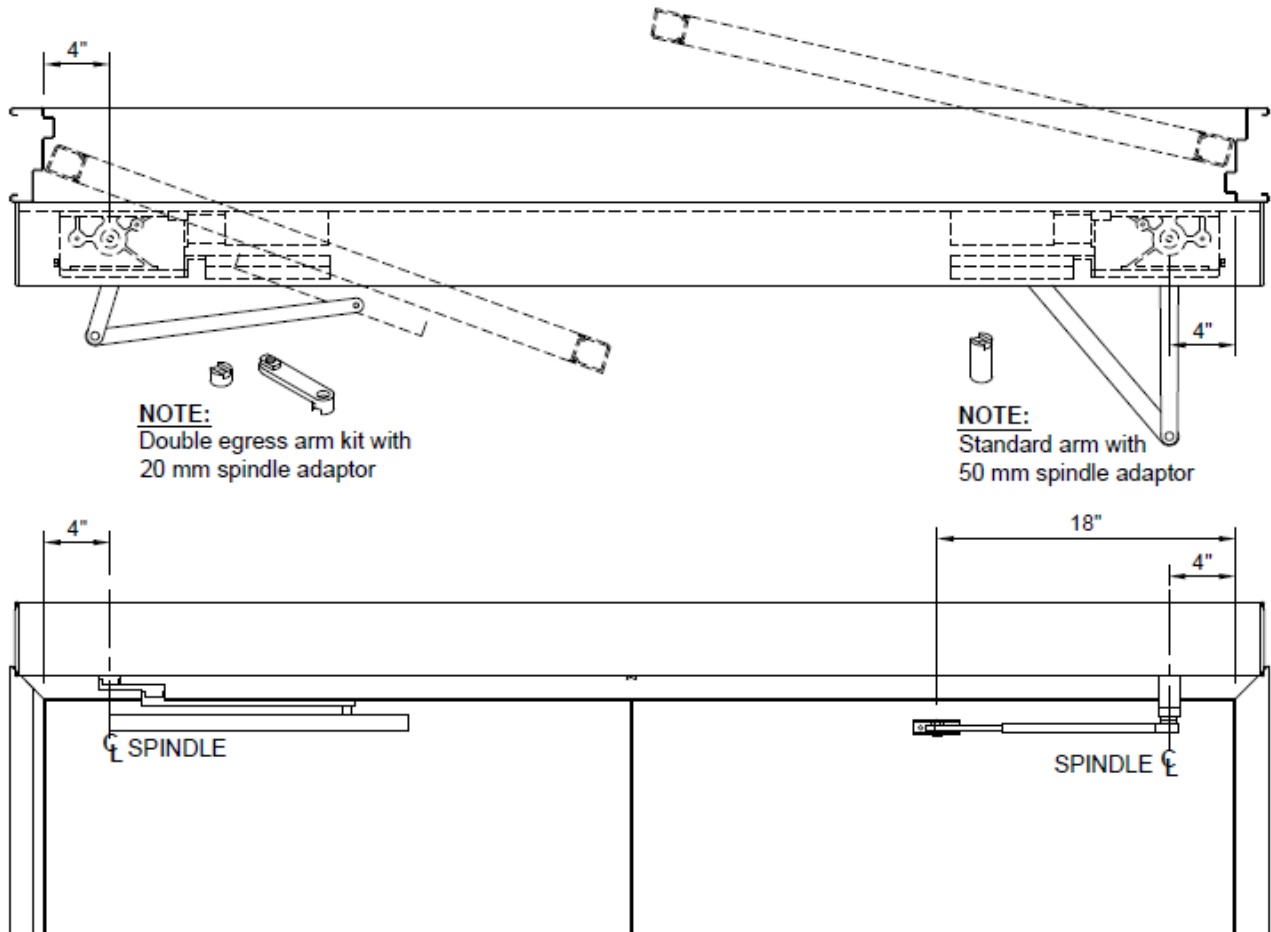


Figure 3

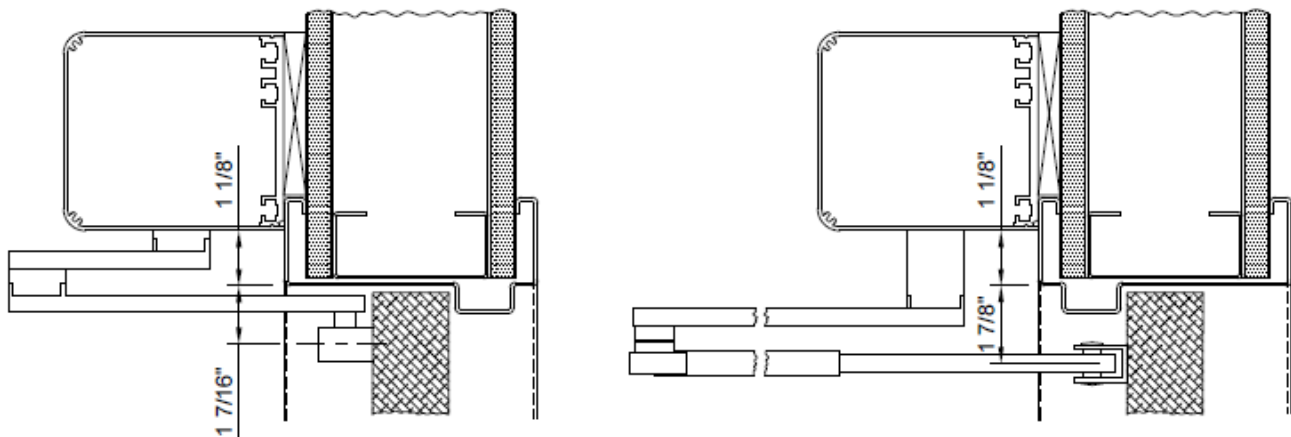
Building and safety codes for entrance products and hardware vary widely. Operators are factory set for LOW ENERGY USA / ANSI A156.19. Any variation in this setting will require AAADM certification. Hager Companies recommends reviewing local codes for your specific application and assumes no responsibility. These drawings are for reference only. Hager Companies reserves the right to change these drawings when deemed necessary for improvement. © HAGER COMPANIES, INC. 2013

Double Egress Installation Layout



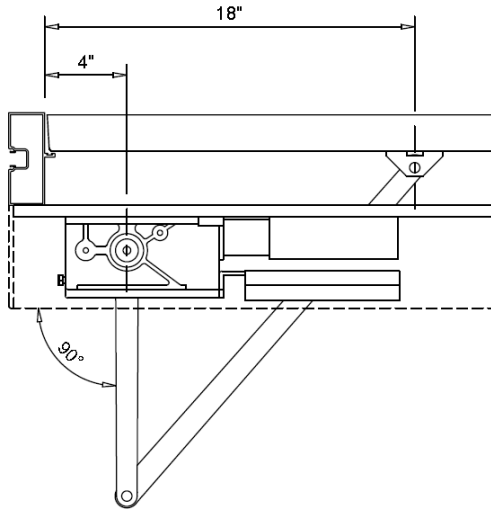
BOTTOM OF THE OPERATOR SHOULD BE 1-1/4" ABOVE DOOR OPENING

Operator vertical location is critical. Failure to meet it may result in arms impacting the frame or door.

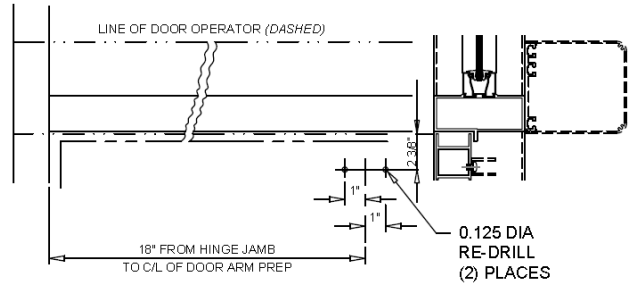


Building and safety codes for entrance products and hardware vary widely. Operators are factory set for LOW ENERGY USA / ANSI A156.19. Any variation in this setting will require AAADM certification. Hager Companies recommends reviewing local codes for your specific application and assumes no responsibility. These drawings are for reference only. Hager Companies reserves the right to change these drawings when deemed necessary for improvement. © HAGER COMPANIES, INC. 2013

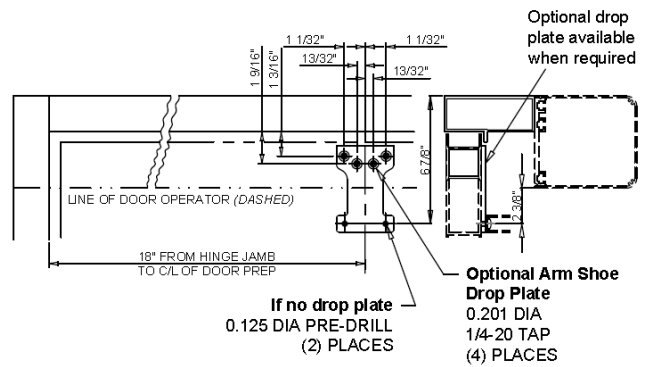
Typical Push Arm



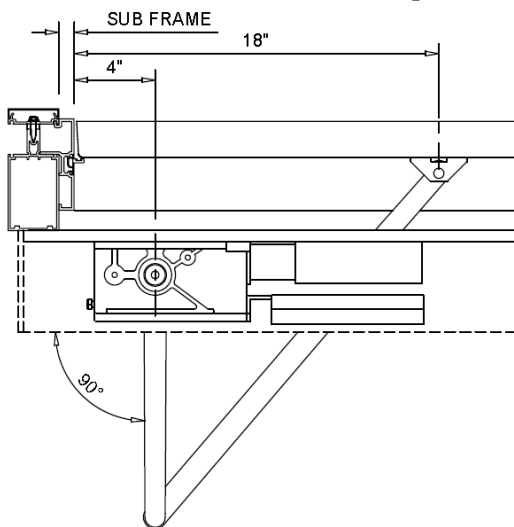
Top Jamb Door Fabrication



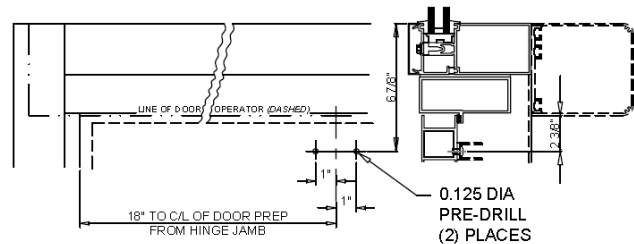
Low Ceiling Door Fabrication



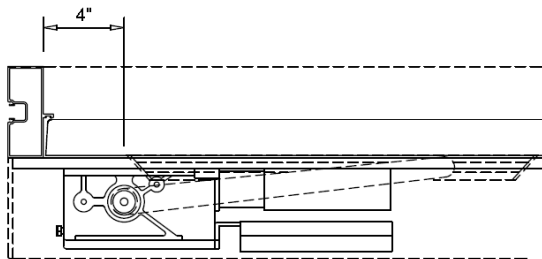
Push Arm with Sub Framing



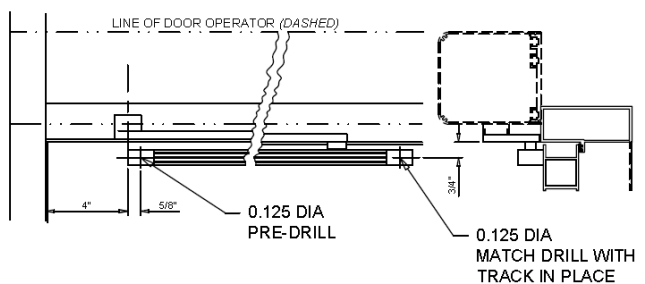
Sub Framing Door Fabrication



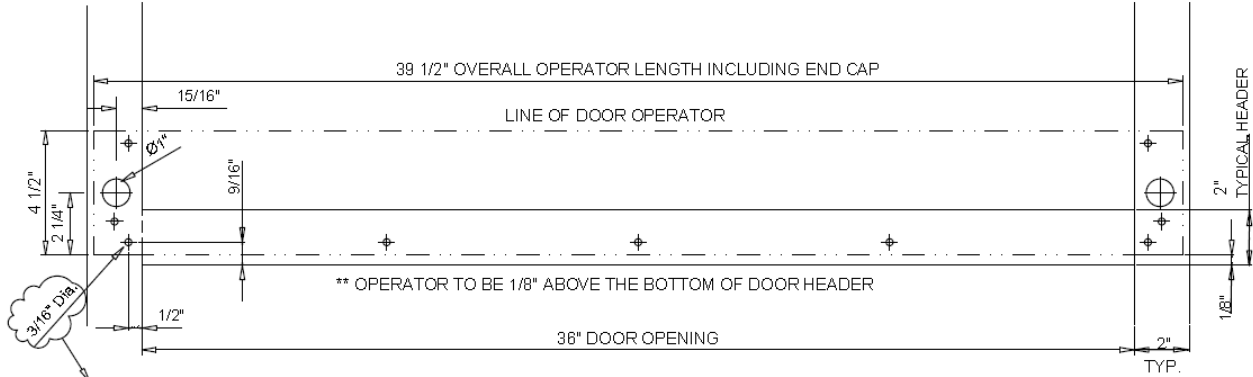
Optional Pull Arm



Pull Arm Track Fabrication

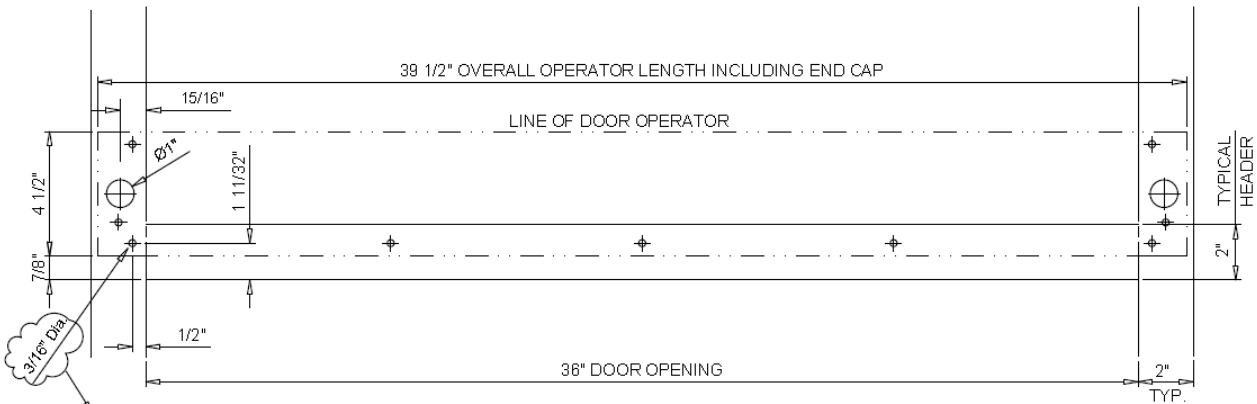


Hollow Metal Push Mounting



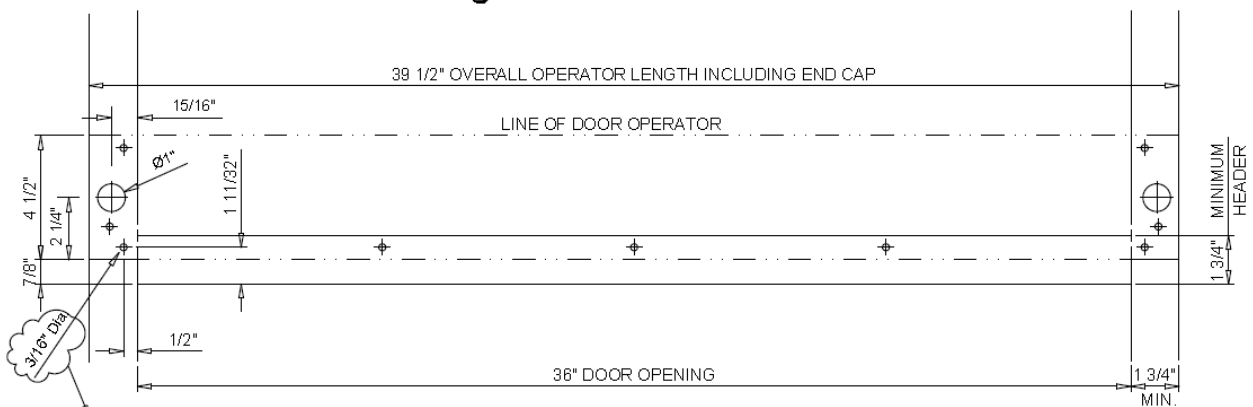
NOTE: Locate pre-installation hole and install fastener as shown on page 16 figure 4.
Once the operator is in place match drill remaining holes.

Hollow Metal Pull Mounting



NOTE: Locate pre-installation hole and install fastener as shown on page 16 figure 4.
Once the operator is in place match drill remaining holes.

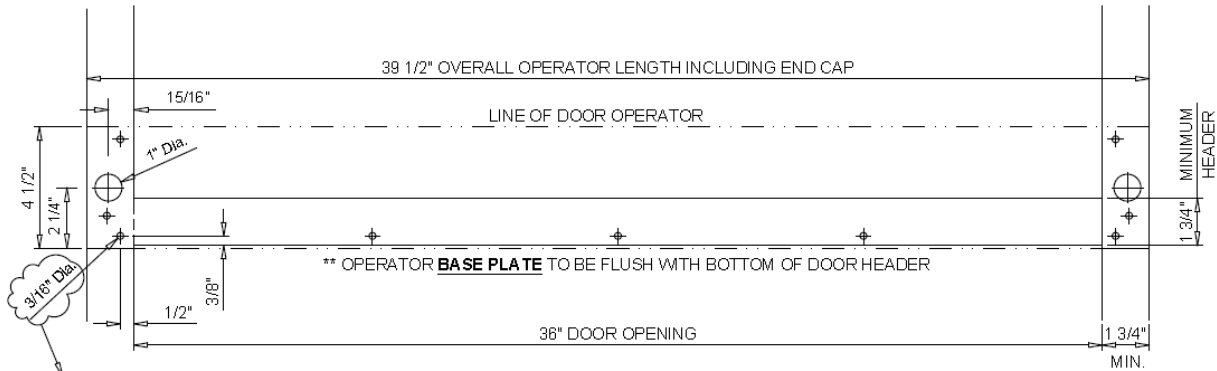
Aluminum Storefront Pull Mounting



NOTE: Locate pre-installation hole and install fastener as shown on page 16 figure 4.
Once the operator is in place match drill remaining holes.

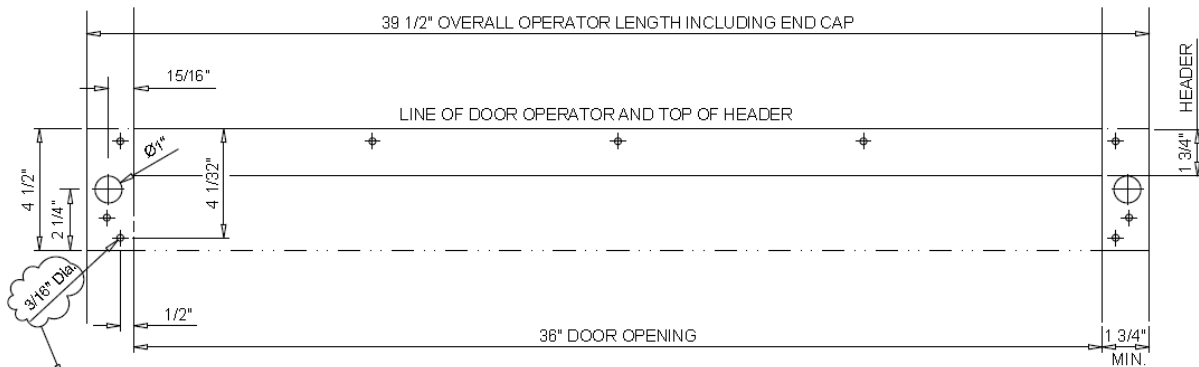
Building and safety codes for entrance products and hardware vary widely. Operators are factory set for LOW ENERGY USA / ANSI A156.19. Any variation in this setting will require AAADM certification. Hager Companies recommends reviewing local codes for your specific application and assumes no responsibility. These drawings are for reference only. Hager Companies reserves the right to change these drawings when deemed necessary for improvement. © HAGER COMPANIES, INC. 2013

Aluminum Storefront Top Jamb



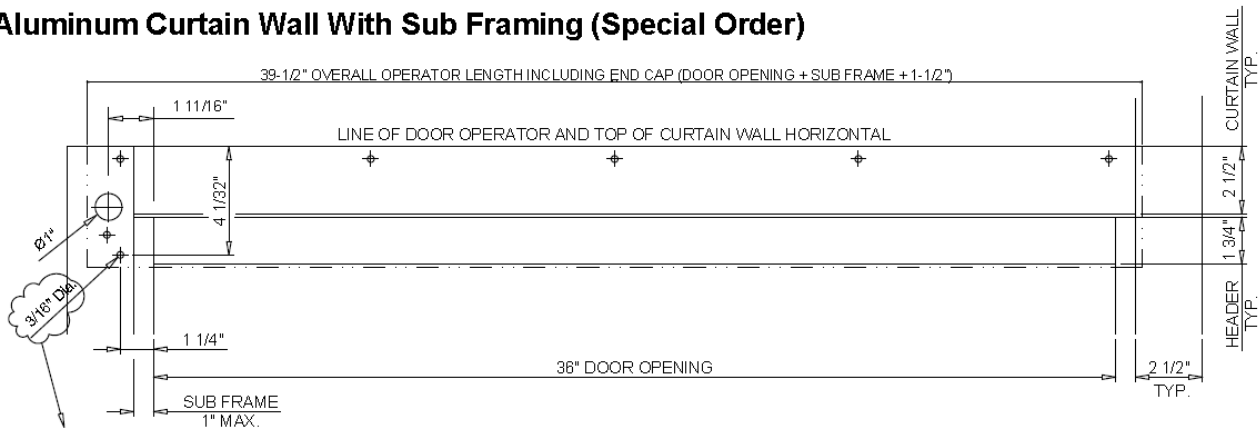
NOTE: Locate pre-installation hole and install fastener as shown on page 16 figure 4. Once the operator is in place match drill remaining holes.

Aluminum Storefront Low Ceiling



NOTE: Locate pre-installation hole and install fastener as shown on page 16 figure 4. Once the operator is in place match drill remaining holes.

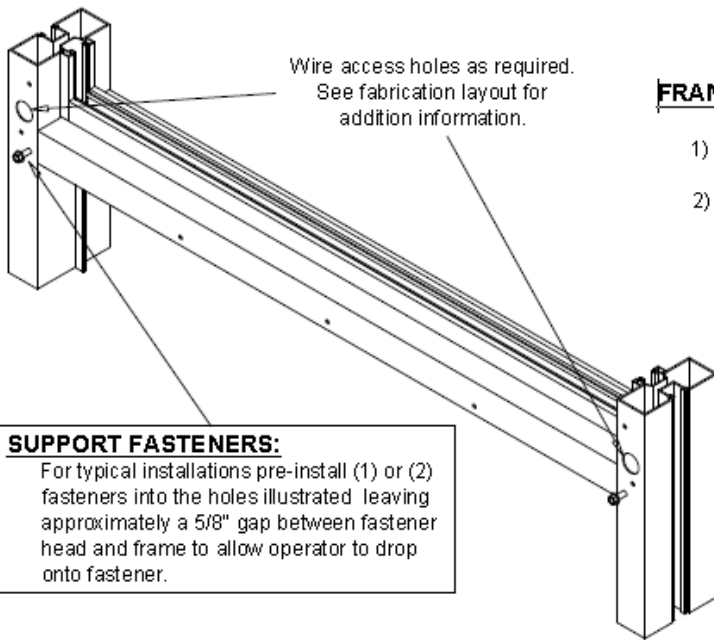
Aluminum Curtain Wall With Sub Framing (Special Order)



NOTE: Locate pre-installation hole and install fastener as shown on page 16 figure 4. Once the operator is in place match drill remaining holes.

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Installation of the operator



FRAME FABRICATION:

- 1) Refer to fabrication layouts on page 14 or 15 for additional layout dimensions.
- 2) Coordinate conduit and wire pulls with electrical contractor.

SUPPORT FASTENERS:

For typical installations pre-install (1) or (2) fasteners into the holes illustrated leaving approximately a 5/8" gap between fastener head and frame to allow operator to drop onto fastener.

Figure 4

Slotted attachment holes are provided at both ends of the base plate to assist with the initial installation.

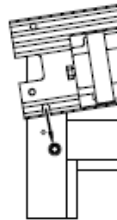


Figure 5

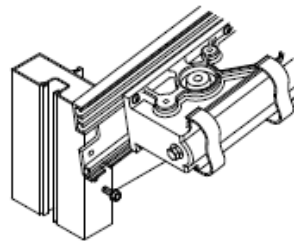
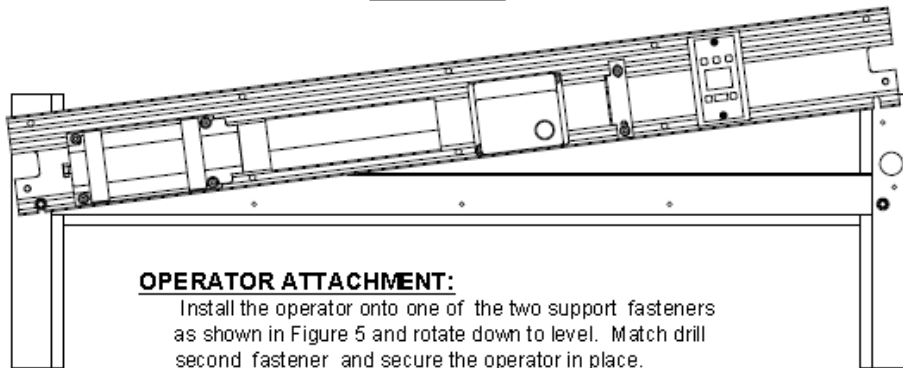


Figure 6



OPERATOR ATTACHMENT:

Install the operator onto one of the two support fasteners as shown in Figure 5 and rotate down to level. Match drill second fastener and secure the operator in place.

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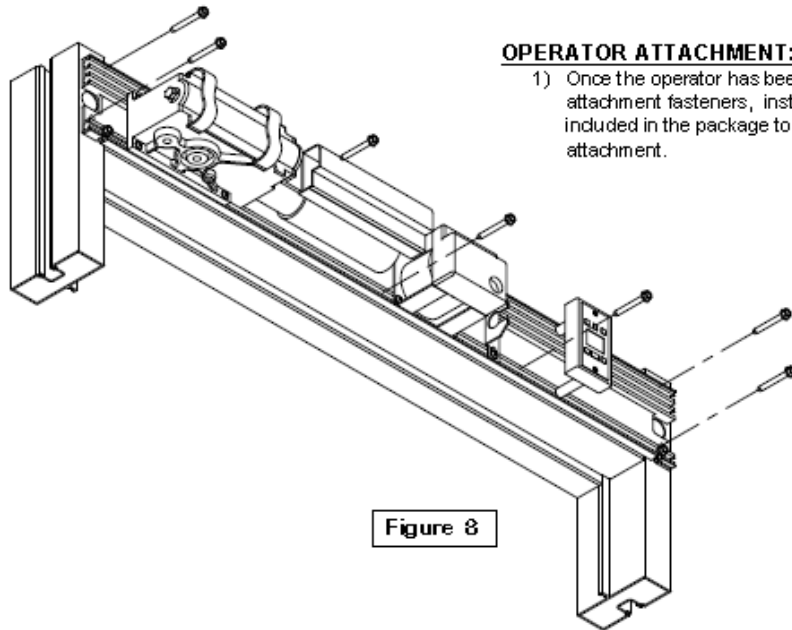


Figure 8

OPERATOR ATTACHMENT:

- 1) Once the operator has been located with the two quick attachment fasteners, install remaining fasteners included in the package to complete the operator attachment.

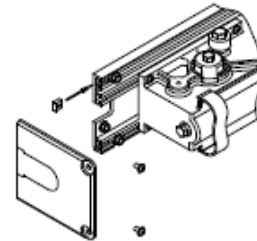


Figure 9

END CAP INSTALLATION:

- 1) Install square nuts into back channel recess.
- 2) Secure end cap with fasteners included.

ELECTRICAL CONNECTION:

- 1) Coordinate the conduit and wire pulls with **electrical contractor**.
- 2) Attach the conduit connector to anchor bracket on operator (Figure 10).
- 3) Connect the 120 VAC per instructions page 6.

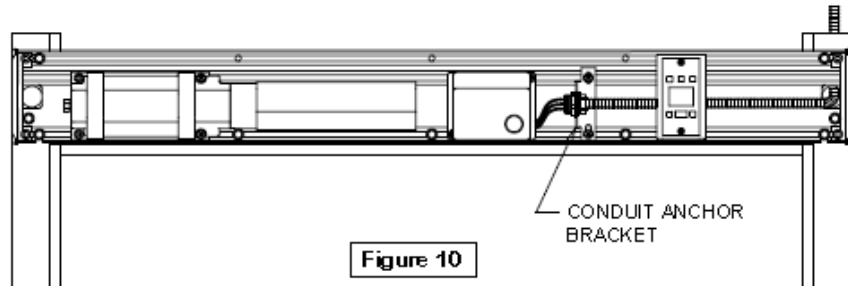


Figure 10

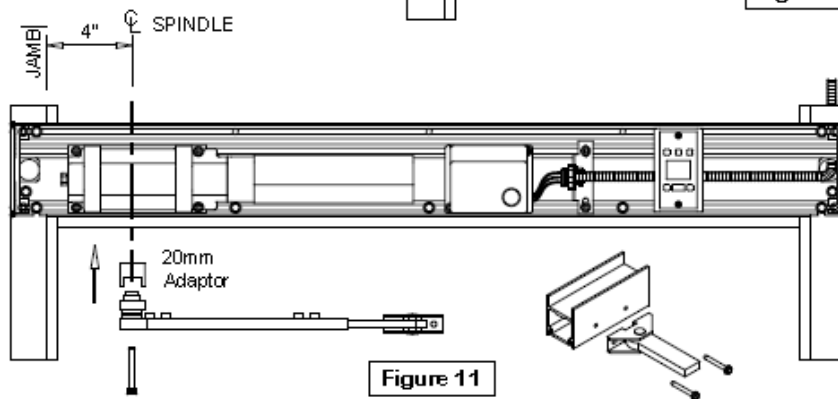


Figure 11

ARM INSTALLATION:

- 1) The arm is to be attached to the operator with the door in the closed position.
- 2) The arm is to be positioned on the motor shaft allowing for approximately 6° of pre-load. The power should be off when pre-loading arm.
- 3) With 6° of pre-load, the arm should be approximately 90° to the door as shown on page 6.
- 4) Cut arm channel to length as required. Attach arm to door as shown.
- 5) Set operator stop to allow for 90° opening (figure 12). Turn on power to the operator.
- 6) Initiate the calibration run per instructions page 6.
- 7) Adjust the opening, dosing, and swing per instructions page 6.

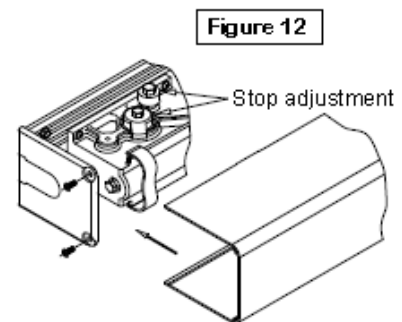


Figure 12

COVER INSTALLATION:

- 1) Snap cover onto base plate.
- 2) Secure cover to end cap with fasteners include.

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OPTIONAL BRACKET PACKAGE:

- (2) BRACKETS
- (2) ATTACHMENT FASTENERS

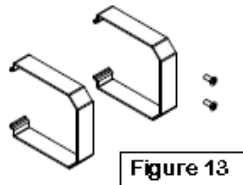


Figure 13

GENERAL NOTES:

These instructions are for applications where there is no access to use the standard cover attachment fasteners that attach through the end cap. When unable to attach by normal practices use the optional bracket package shown in Figure 13.

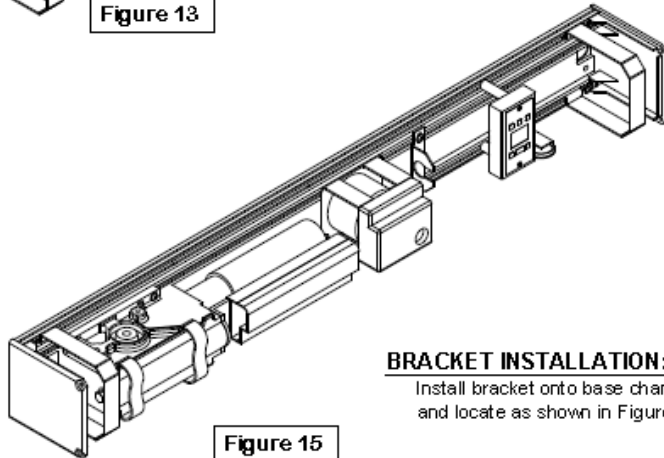


Figure 15

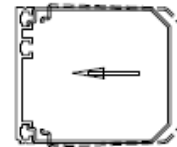


Figure 14

BRACKET INSTALLATION:

Install bracket onto base channel as illustrated in Figure 14 and locate as shown in Figure 16.

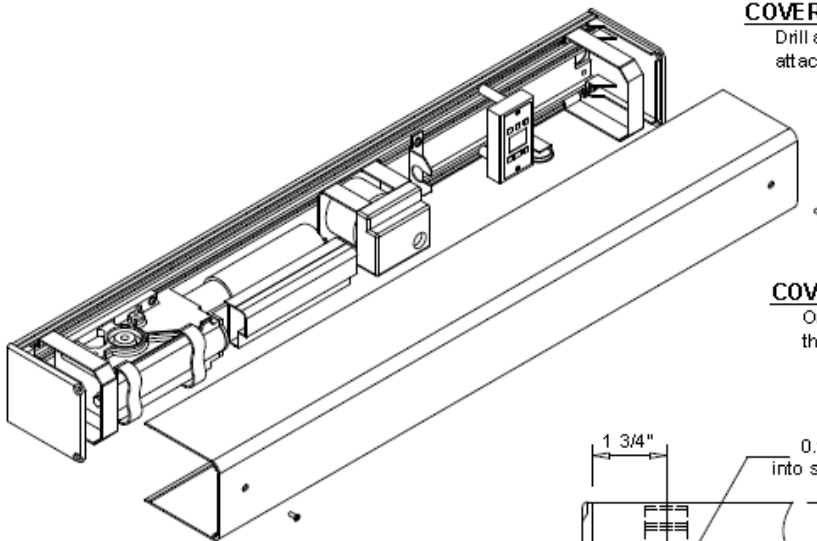


Figure 16

COVER FABRICATION:

Drill and countersink (2) fastener attachment holes as shown in Figure 16.

COVER INSTALLATION:

Once cover is fabricated slide cover over the brackets and snap into position.

BRACKET FABRICATION:

With cover in place match drill the holes into the bracket as shown in Figure 5 and install (2) thread cutting fasteners supplied in the package.

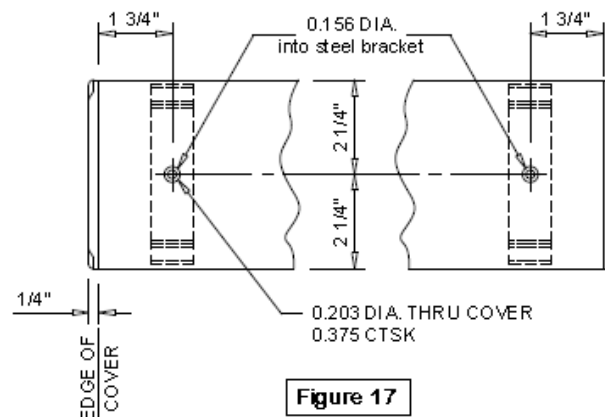


Figure 17

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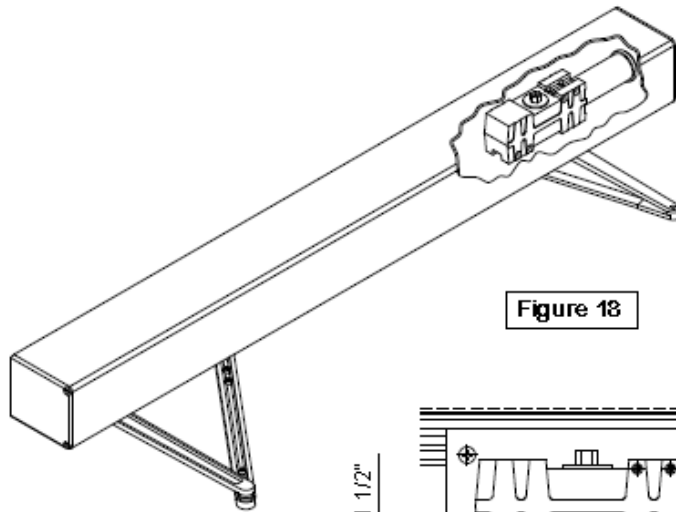


Figure 18

Hager 8423 EHMC:

- 1) Hager lowenergy operator on active leaf and Hager 5100 heavy duty hydraulic mechanical closer on inactive leaf.
- 2) Mechanical closer shipped installed to operator base plate.

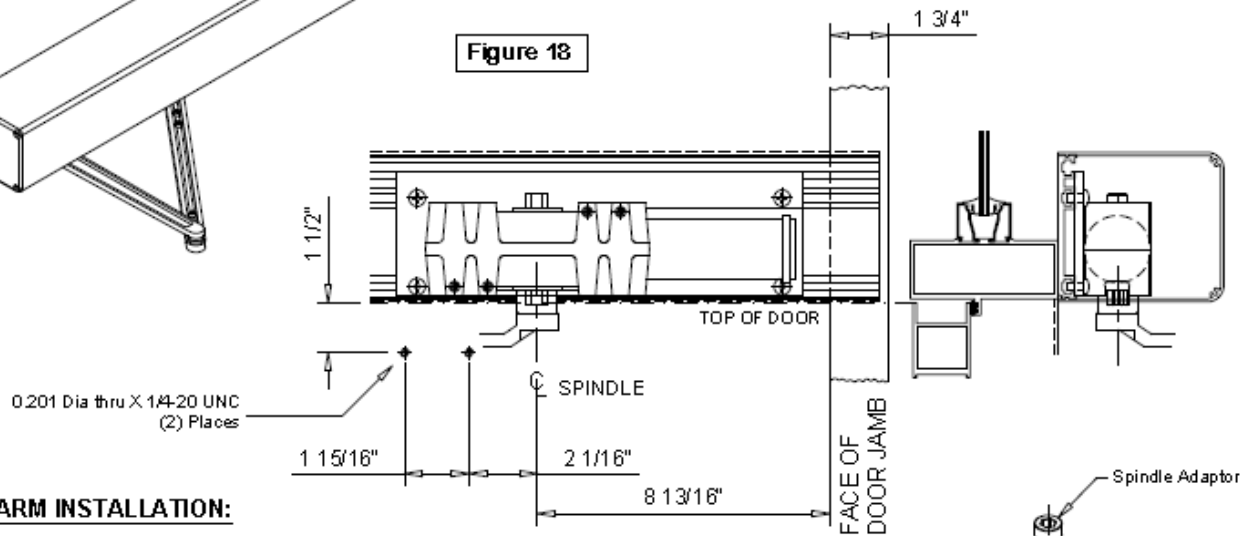


Figure 19

DOOR ARM INSTALLATION:

- 1) Drill and tap door rail per figure 18.
- 2) Attach arm to closer body using adaptor and fastener supplied with operator.
- 3) Secure arm shoe to door with 1/4-20 fasteners include.

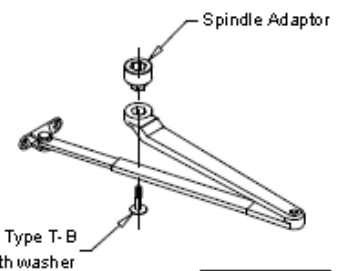


Figure 20

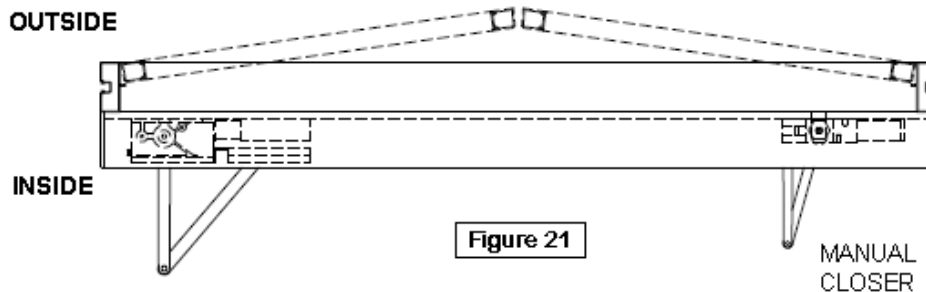


Figure 21

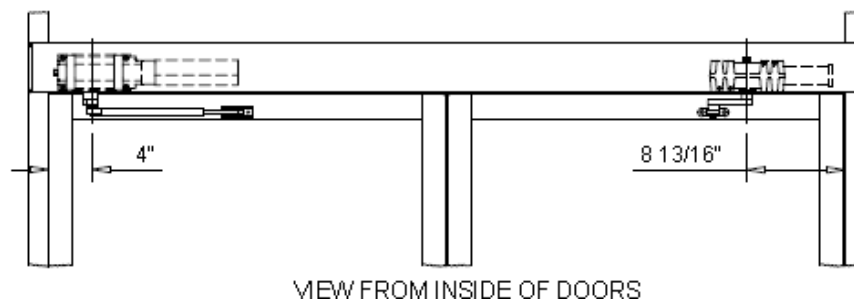
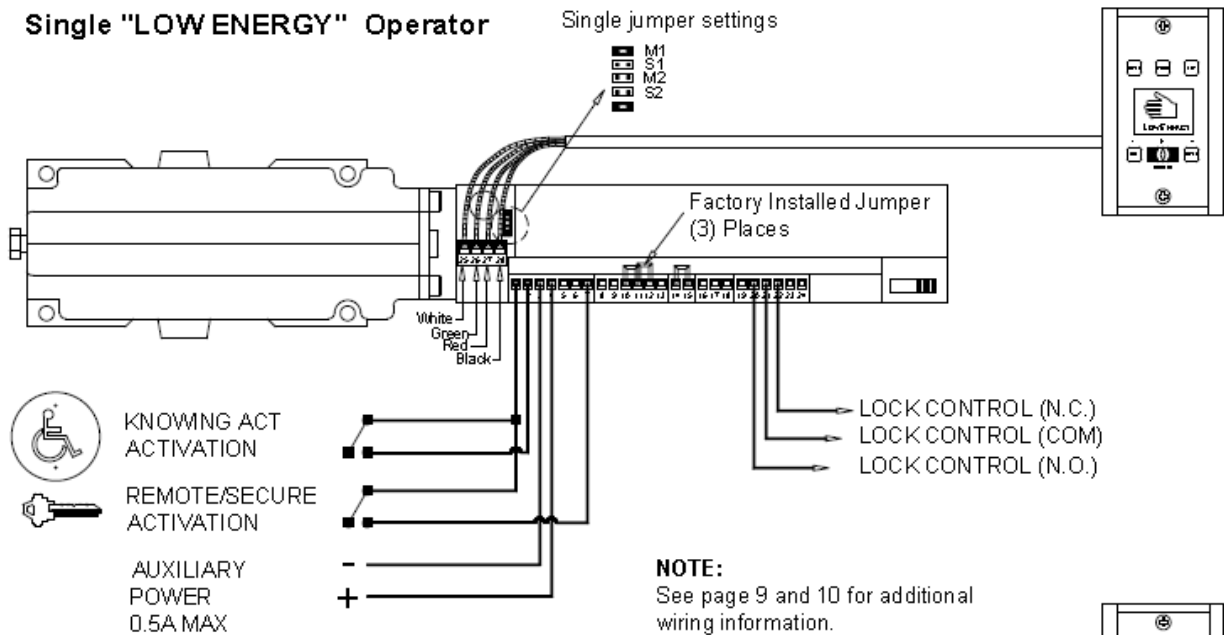


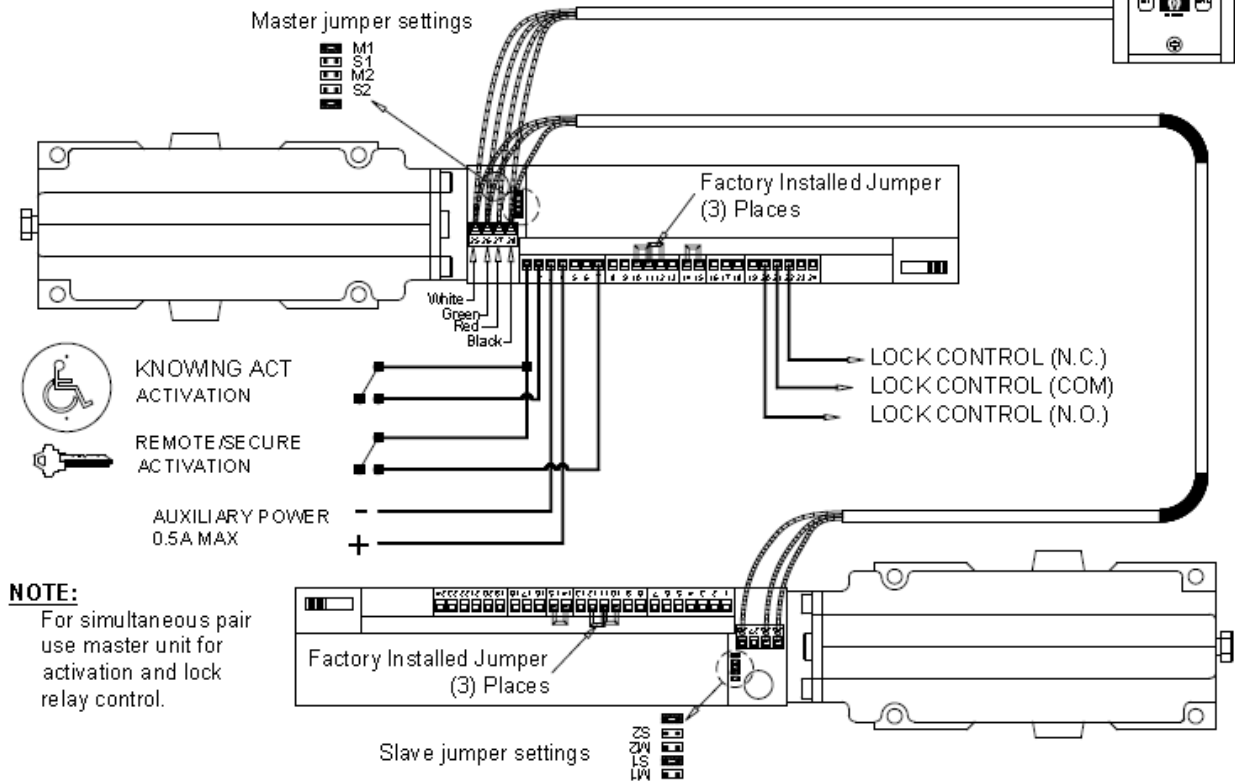
Figure 22

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Single "LOW ENERGY" Operator



Simultaneous Pair "LOW ENERGY" Operator



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