



Touchless ADO
Low-Energy, Surface-Mounted
Swing Door Automatic Operator

INSTALLATION GUIDE



IMPORTANT

READ THIS SECTION BEFORE PROCEEDING WITH INSTALLATION

Sargent & Greenleaf (hereafter referred to as "S&G") recommends that its automated pedestrian door products be installed by a trained automatic door technician and that the resulting performance of the product be in full compliance with the most current version of the American National Standards Institute (ANSI) document A156.19 as well as any applicable building codes and/or fire codes. S&G further recommends that a full inspection of the operating system be performed in accordance with the guidelines of the American Association of Automatic Door Manufacturers (AAADM). S&G recommends this documented inspection be performed upon completion of the installation, as well as following the completion of every service call thereafter. If service is not performed within one year of the previous service action, a routine AAADM inspection should be performed and documented. S&G does NOT recommend service on any of their automated pedestrian door products, by any individual who is not certified as an AAADM inspector.

Following the installation or service of any S&G automated pedestrian door product, if it is deemed unsafe, or is operating in an unsatisfactory manner according to national performance standards or recommended performance guidelines as defined by S&G, repairs should be made immediately. If an immediate repair cannot be made, the product should be disabled, and appropriate measures should be taken to secure the door in a safe position or to enable the door to safely be used manually. During this situation, every effort should be made to notify the owner (or person responsible) of the condition and to advise on corrective actions that must be taken to return the product to safe operation.

LOW ENERGY APPLICATION NOTE

When using the *Touchless ADO*, S&G recommends the use of a door-mounted presence sensor on the approach side of the door to be used as a secondary activation device. This type of sensor can be installed at time of installation or can also be retrofitted. This device serves to re-activate the door to the open position should a person enter into the closing path at the approach side of the door, as it is closing. Once the door is fully closed, a "knowing act" device must then be used for initial activation. S&G considers this device to be essential in reducing the possibility of doors "timing out" and closing before all pedestrians have passed through the doorway.



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PRODUCT DESCRIPTION & SPECIFICATIONS

The S&G *Touchless ADO* Low Energy Swing Door Operator provides safe and reliable point of entry door control featuring a state-of-the-art microprocessor-based controller with electro-mechanical drives. The unit is self-tuning and self-learning while offering non-handed operation, full mechanical stops, and a variety of interface options for sensors, push-plates, fire alarms, and electrified locks. A versatile, slim-line design makes it suitable for surface mounted (push/pull) applications.

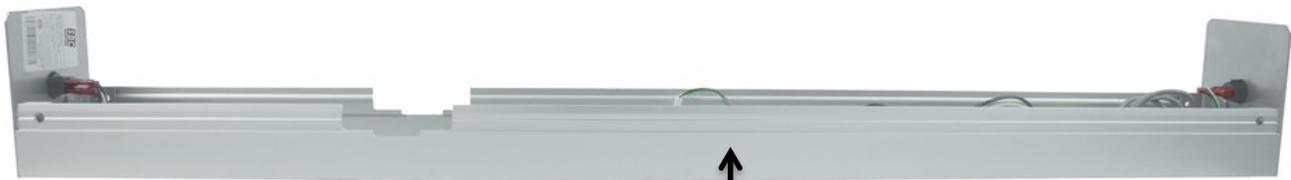
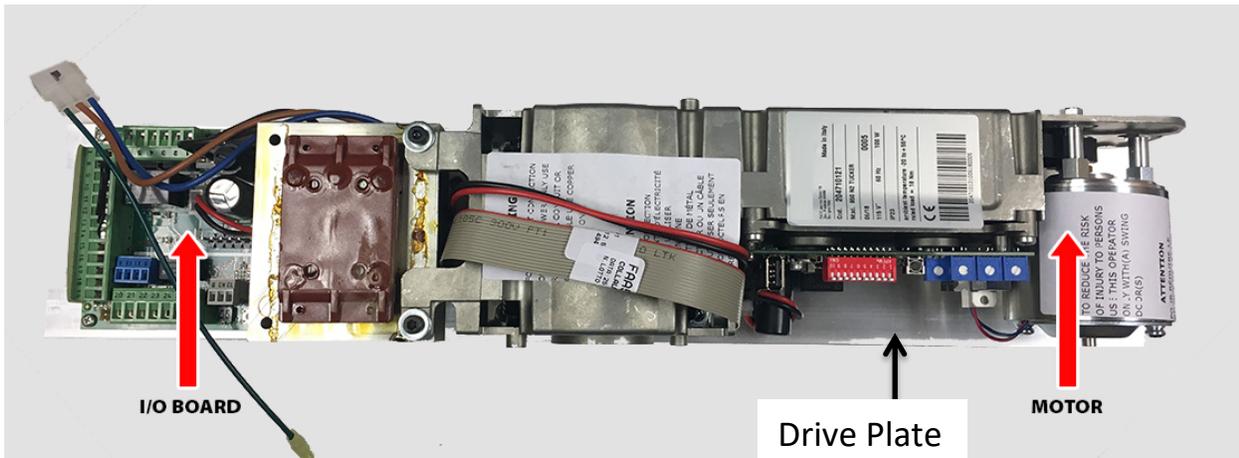
Power Supply	115 VAC (+6%, -10%) 60Hz								
Power Consumption	100W								
Current Consumption	1A								
Motor	24 VDC Permanent Magnet With Belt Driven Encoder								
Header Dimensions	4-1/2" x 4-7/8" (l x w x d); length: 39"/45"/51" for 36"/42"/48" opening, respectively								
Fused Protection	3.5A Fuse ("F1" located on I/O Board)								
Motor Assembly Weight	22 lbs. Per Operator Drive Assembly								
Ambient Operating Temperature	-4° to 131° F								
Ingress Protection	IP23 (protection from spray water up to 60° from vertical)								
Maximum Door Weight	<table border="0"> <tr> <td>PUSH ARM</td> <td>PULL ARM</td> </tr> <tr> <td>36" Door: 438 lbs.</td> <td>342 lbs.</td> </tr> <tr> <td>42" Door: 328 lbs.</td> <td>256 lbs.</td> </tr> <tr> <td>48" Door: 254 lbs.</td> <td>198 lbs.</td> </tr> </table>	PUSH ARM	PULL ARM	36" Door: 438 lbs.	342 lbs.	42" Door: 328 lbs.	256 lbs.	48" Door: 254 lbs.	198 lbs.
PUSH ARM	PULL ARM								
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24 VDC Accessories/Lock Power Supply	24 VDC / 1A max.								
Adjustable Speeds & Timers Potentiometers	Auto Opening Speed Auto Closing Speed Hold Open Time Closing Speed w/ Power Off								
External Selector Switch Functions	Automatic Hold Open Manual (Off/Night)								
Standard Control Outputs	24 VDC Power Supply Lock Relay Door Status (Fully Open and Fully Closed) Malfunction Alarm Signal								
Standard Control Inputs	Interior Activation Exterior Activation Emergency Shutdown Fire Alarm Input Secondary Activation (Push side door mounted presence sensor) Stop Safety Device Input (Pull side presence sensor)								



STEP 1: MOTOR ASSEMBLY REMOVAL & HOUSING BACKPLATE INSTALLATION



Remove the housing front cover by removing the 4 hex screws on the top & bottom of the operator.



Housing Backplate with end caps

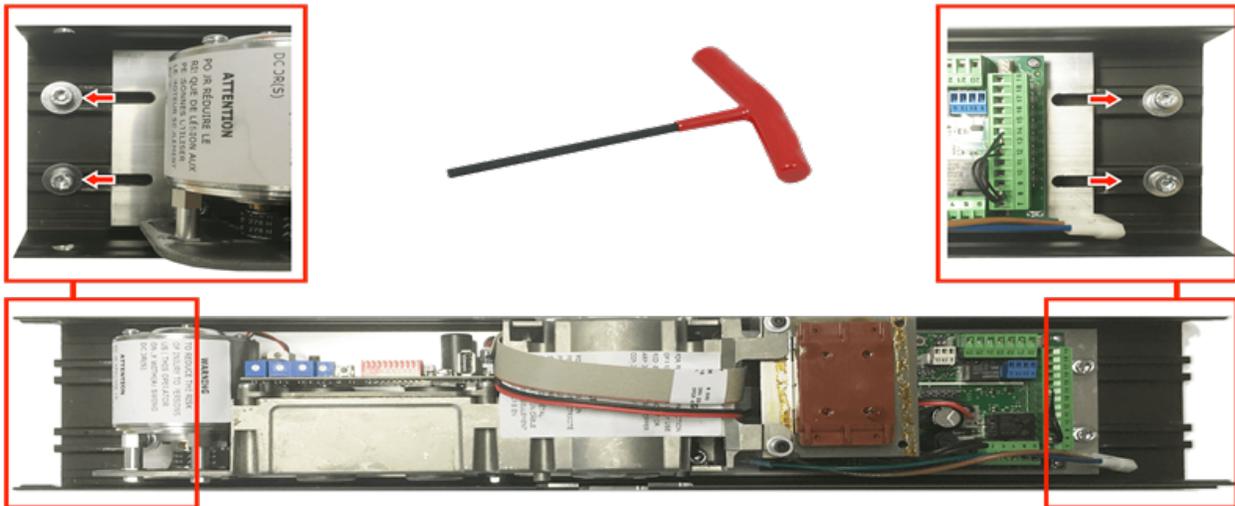
The motor assembly should be removed before installing the housing back plate. NOTE: When you order a PULL or PUSH operator, the motor assembly will likely be shipped from the factory in the appropriate PULL or PUSH orientation. Take note of the orientation before removing the motor assembly (i.e. Is the motor towards the center of the housing, or the edge of the housing)



The motor assembly is mounted to a short aluminum “drive plate”. It is secured to the slotted housing back plate using FIVE hex head bolts. Four (4) of the bolts secure the drive plate. The 5th bolt is fixed, and is used to correctly position the drive plate into the housing using a ‘keyhole’ configuration. The keyhole allows for easy removal of the drive plate without the need to loosen the 5th bolt. Removing the four (4) bolts allows the drive plate & operator to be removed from the header and, if required, rotated 180 degrees to change from a push to a pull or vice versa.

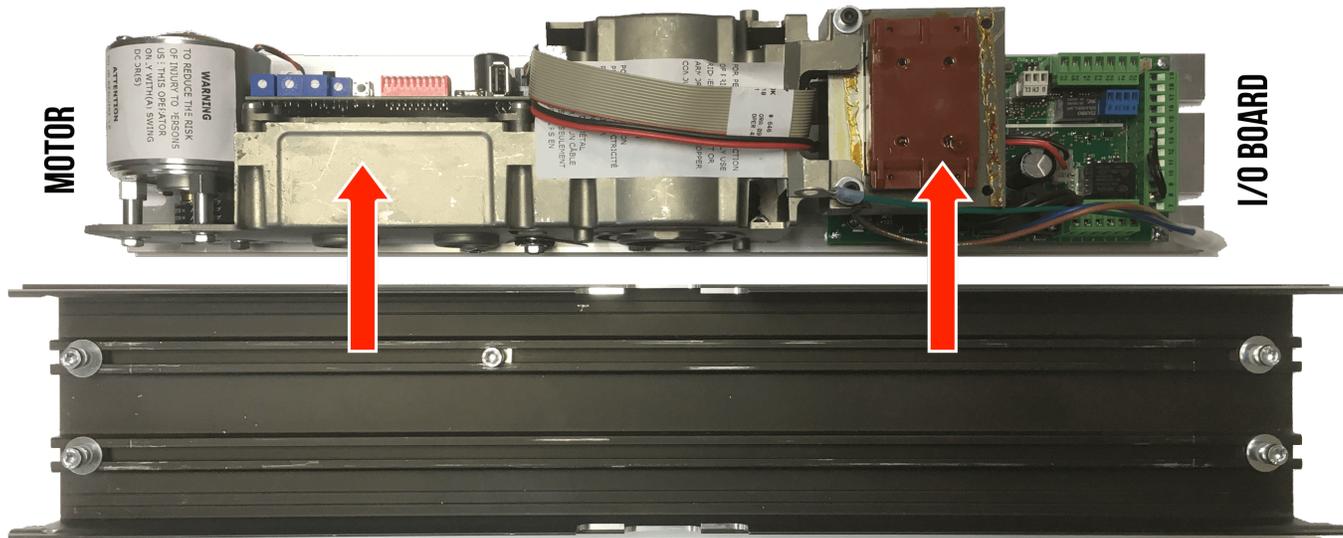
TO REMOVE THE MOTOR ASSEMBLY:

Disconnect the ON-Auto-OFF connector from the I/O board (plugs in below terminal 19)
Unplug the moxex main power connector (green, brown, blue wires).



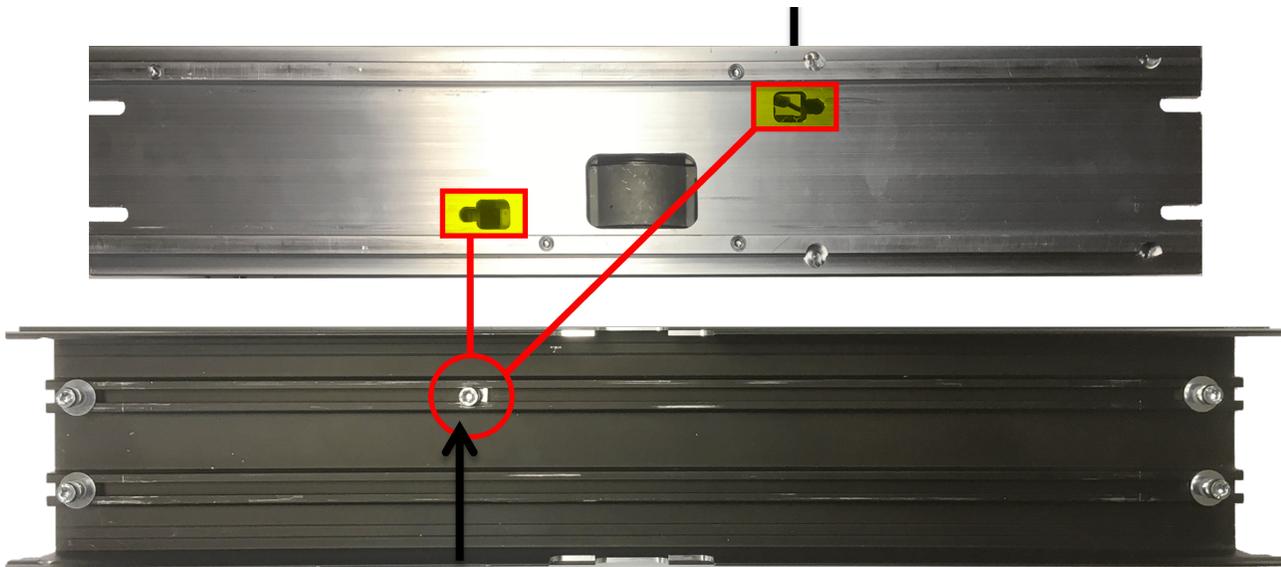
Next, locate & loosen the 4 side hex bolts (see above) using a 5mm allen wrench.

Slide the bolts away from the motor drive assembly allowing the assembly to be removed. The drive plate will be held in place by the 5th hex bolt.



Remove the drive plate by shifting the drive plate to the left and lifting the drive plate away from the back plate.

Key hole slots behind drive plate



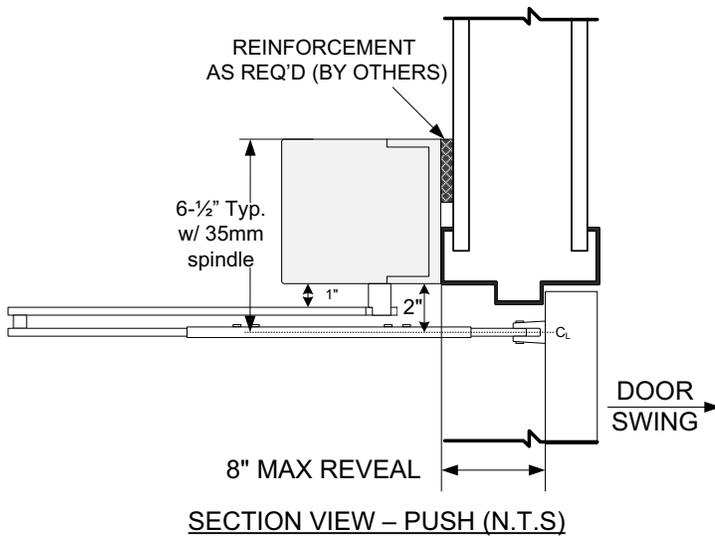
Fixed positioning bolt – do not attempt to remove



HOUSING BACKPLATE INSTALLATION:

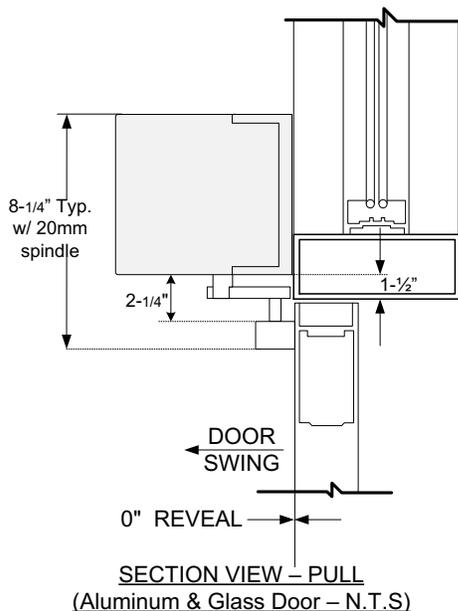
Mount the pre-drilled back-plate to the top door frame using appropriate fasteners for the type of frame.
(REFER TO DOOR PREP DRAWINGS ON PGS. 10-14.)

- Standard Push side mounting: Pre-drilled back-plate is flush with bottom of door frame.
- Standard Pull side mounting: Pre-drilled back-plate is mounted 1.5" up from bottom door frame.
- For non-standard mounting, longer spindles are available. Consult factory for non-standard applications
- Refer to Page 14 for Double Egress applications.
- Back-plate should overlap each jamb tube by 1.5".
- **Refer to the APPENDIX for fire rated door applications.**



PUSH-ARM APPLICATIONS:
Bottom of operator header is flush with bottom of top frame.

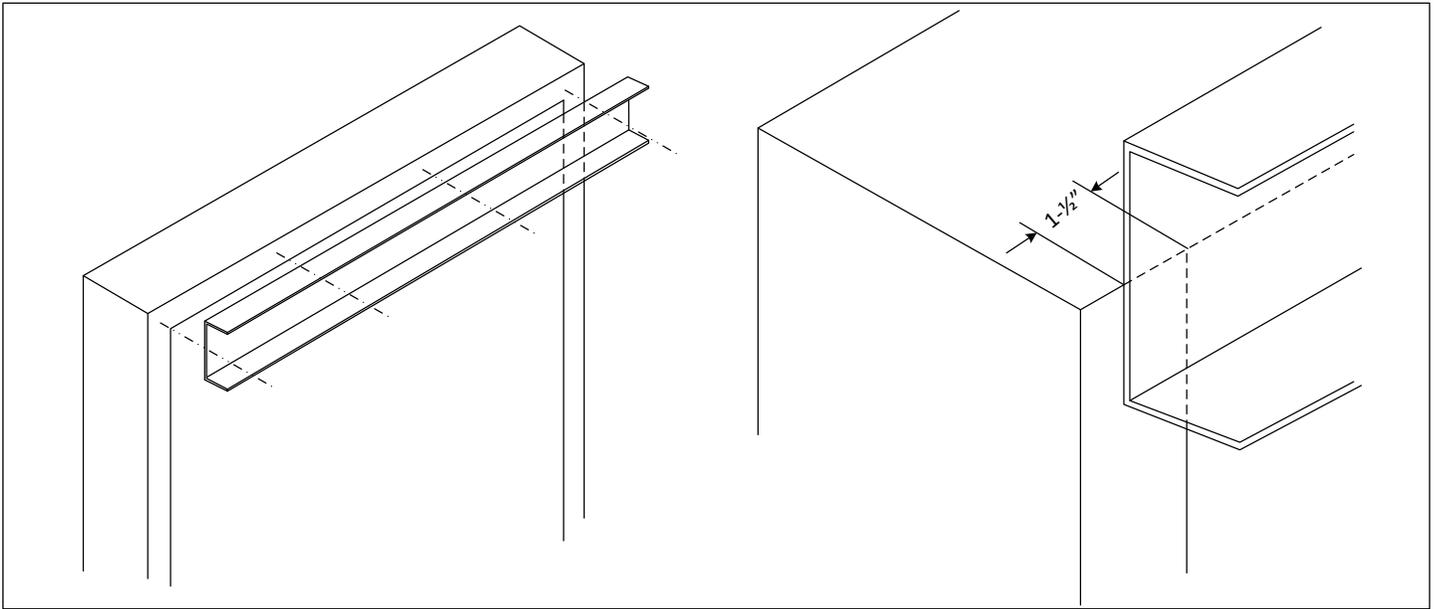
NOTE:
A 35 mm spindle adaptor is included with all standard push arm applications. This requires that the header assembly be mounted as shown at left, flush with bottom of frame face.



PULL ARM APPLICATIONS: Bottom of operator is mounted 1.5" up from the bottom side of top door frame



Backplate should overlap hinge side jamb tube by 1.5" (See figure below).



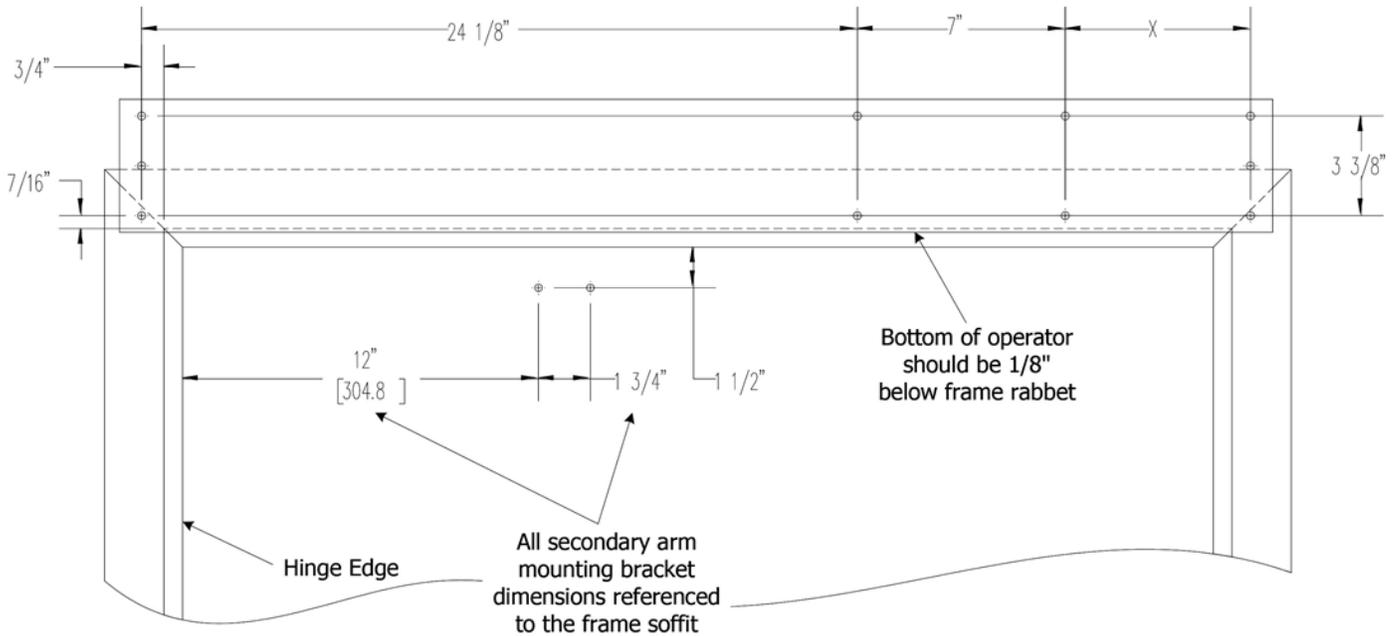


DOOR PREP DRAWINGS:

PUSH SIDE INSTALLATION – SINGLE DOOR

Opening Width	Housing Width	XDim
36"	39"	6.25"
42"	45"	12.25"
48"	51"	18.25"

NOTE: Hollow metal frame with 5/8" stop height shown.





PUSH SIDE INSTALLATION – PAIR OF DOORS

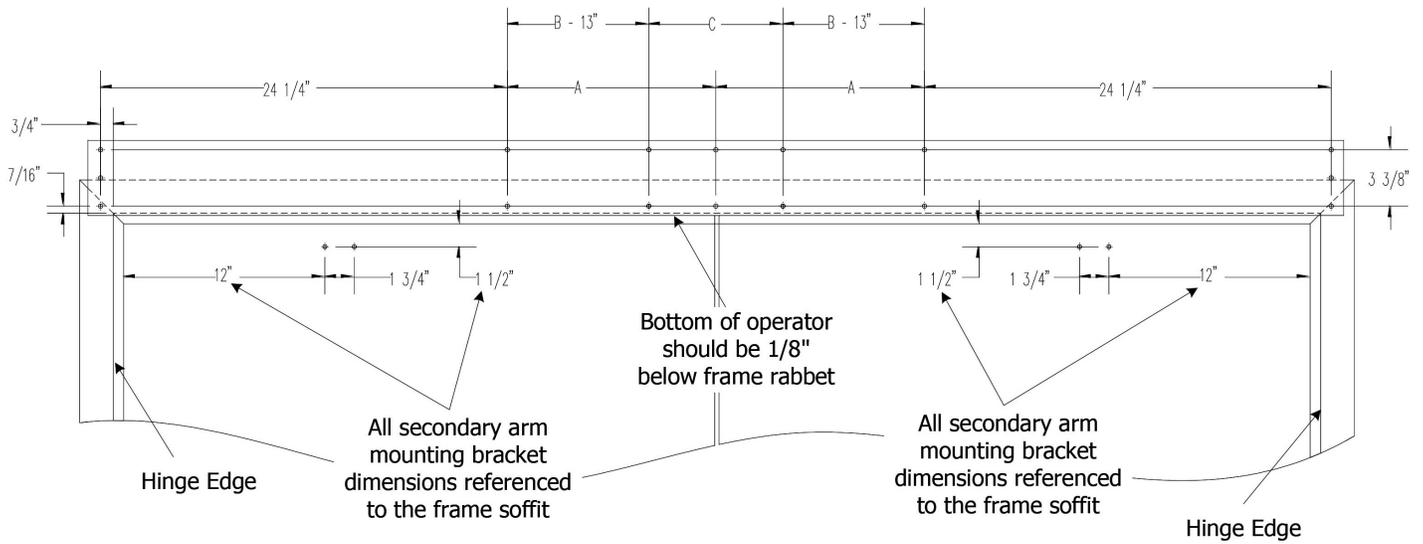
Opening Width	Housing Width	A Dim	C Dim
72"	75"	12-7/16"	N/A
84"	87"	N/A	10-7/8"
96"	99"	24-7/16"	22-7/8"

NOTES:

Hollow metal frame with 5/8" stop height shown.

"A" dimension is only located on the 72" & 96" operator

"C" dimension is only located on the 84" & 96" operator

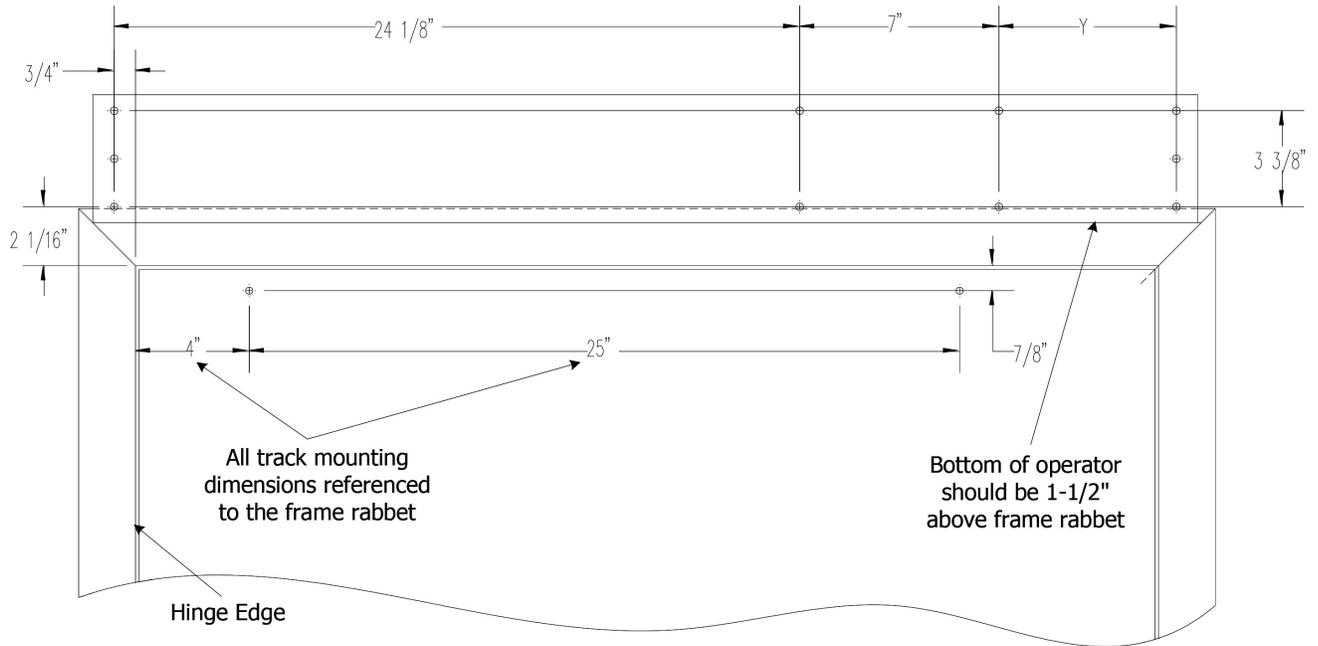




PULL SIDE INSTALLATION - SINGLE DOOR

Opening Width	Housing Width	Y Dim
36"	39"	6.25"
42"	45"	12.25"
48"	51"	18.25"

NOTE: Hollow metal frame with 5/8" stop height shown.





PULL SIDE INSTALLATION – PAIR OF DOORS

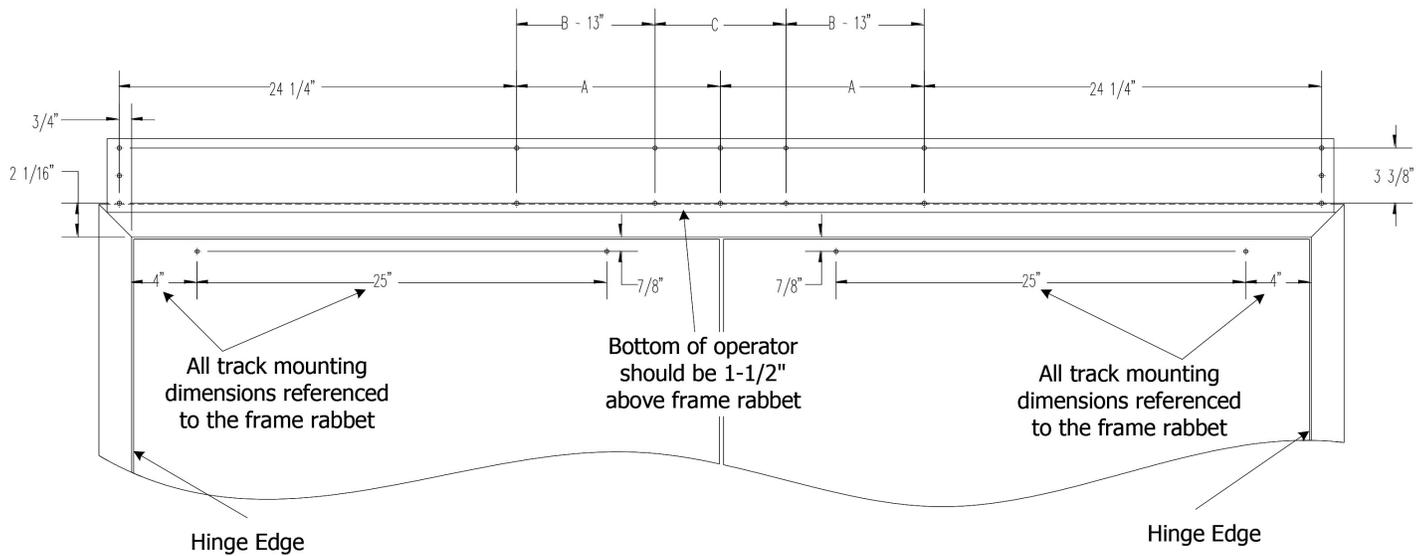
Opening Width	Housing Width	A Dim	C Dim
72"	75"	12-7/16"	N/A
84"	87"	N/A	10-7/8"
96"	99"	24-7/16"	22-7/8"

NOTES:

Hollow metal frame with 5/8" stop height shown.

"A" dimension is only located on the 72" & 96" operator.

"B" & "C" dimensions are only located on the 84", 88" and 96" operators.





DOUBLE EGRESS INSTALLATION – PAIR OF DOORS

(Shown with Double Egress Arm on the right; Push Arm with 80mm spindle on the left)

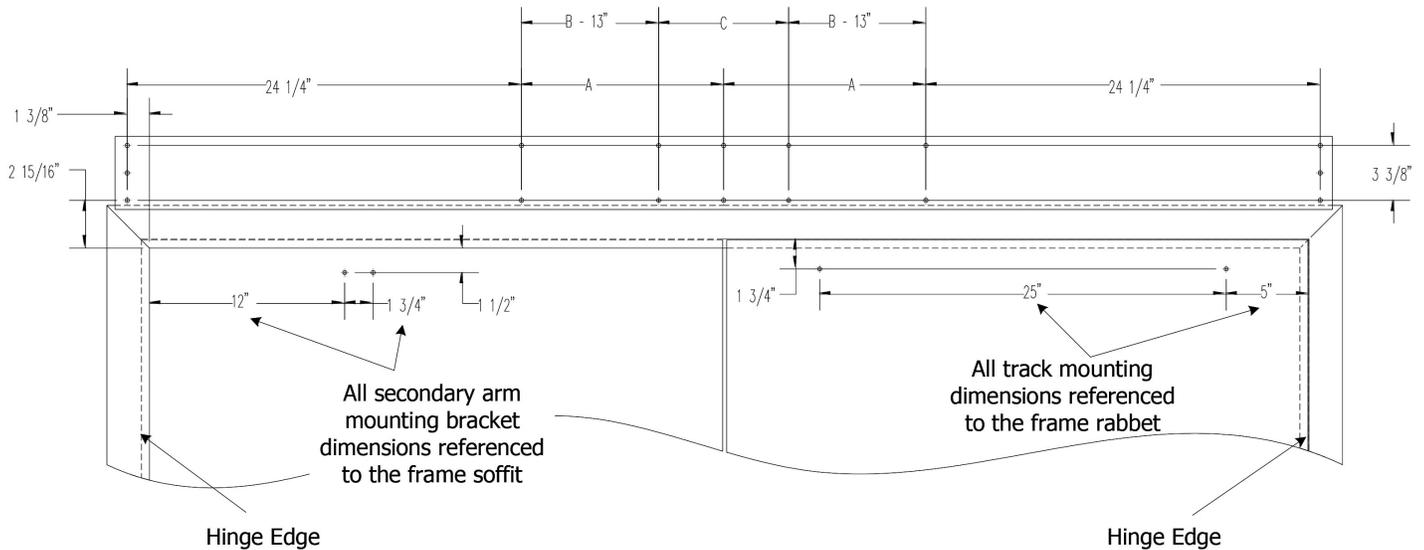
Opening Width	Housing Width	A Dim	C Dim
72"	75"	12-7/16"	N/A
84"	87"	N/A	10-7/8"
96"	99"	24-7/16"	22-7/8"

NOTES:

Hollow metal frame with 5/8" stop height shown.

"A" dimension is only located on the 72" & 96" operator.

"B" & "C" dimensions are only located on the 84", 88" and 96" operators.

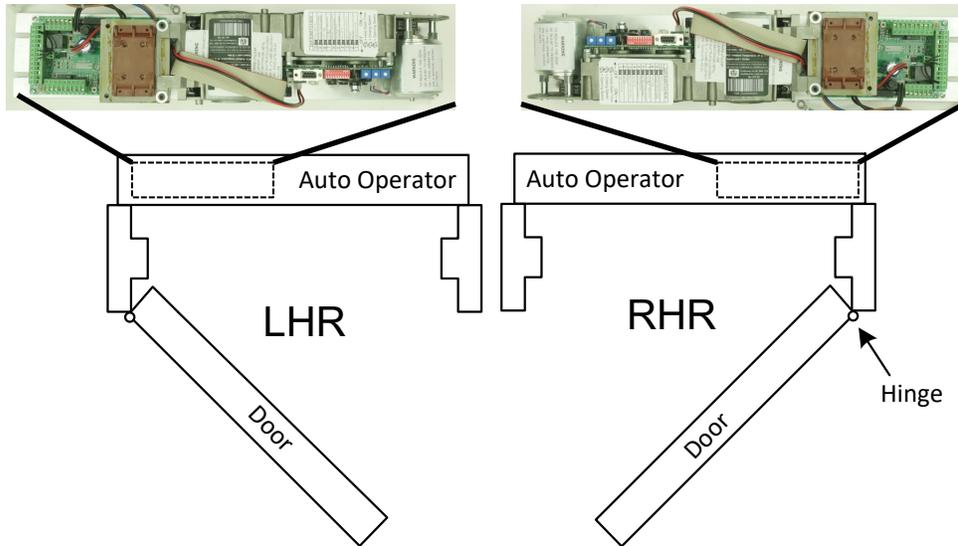




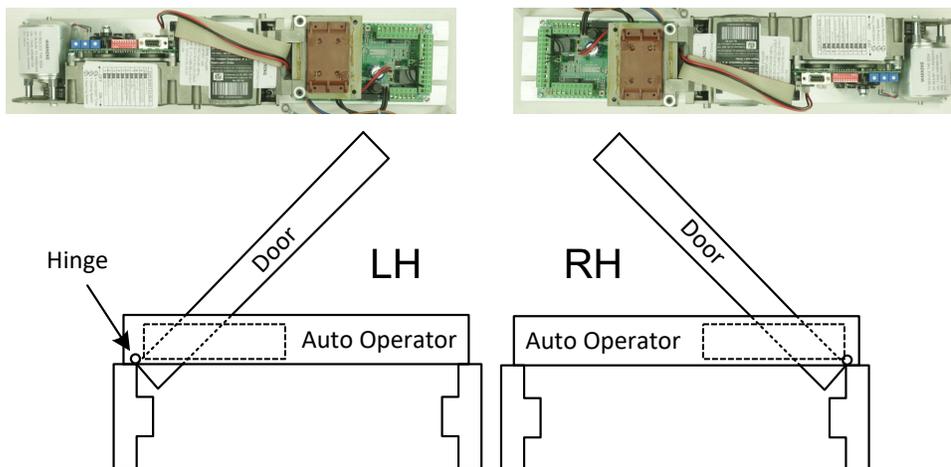
STEP 2: RE-MOUNT THE MOTOR ASSEMBLY

The orientation of the motor assembly will depend on the door handing & application (see below).

PUSH APPLICATION (I/O board towards the hinge)

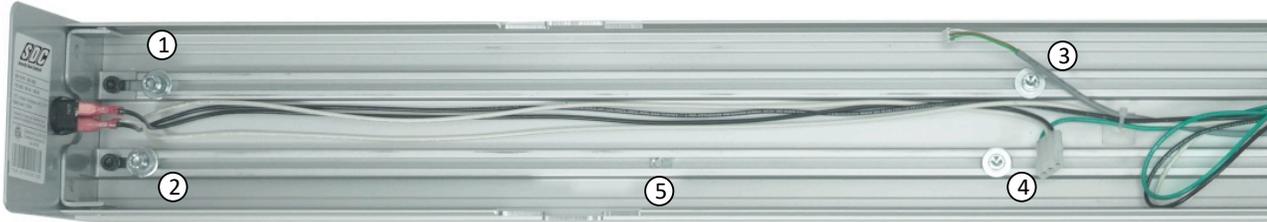


PULL APPLICATION (Motor towards the hinge)





Before reinstalling the motor, take notice of the location of the 4 mounting hex bolts, and the nut for the 5th mounting bolt



Place and Hold the motor assembly up to the header, allowing it rest on the slotted tracks.

Slide in the 4 outer hex bolts and tighten loosely. Slide the entire assembly left or right to line up the 5th hex bolt nut with the mounting hole from the bolt removed on page 5 (near the transformer). Reinsert the hex bolt and washers removed on page 5.

Temporarily remove one of the mounting hex bolts and washers from the I/O board side of the assembly to allow the ground wire ring connector to be reconnected.

After all 5 hex bolts have been inserted, reposition the whole assembly so that the spindle attachment point is centered with the spindle cutout, as shown on the bottom of page 5. Secure the motor assembly by tightening all 5 hex bolts.

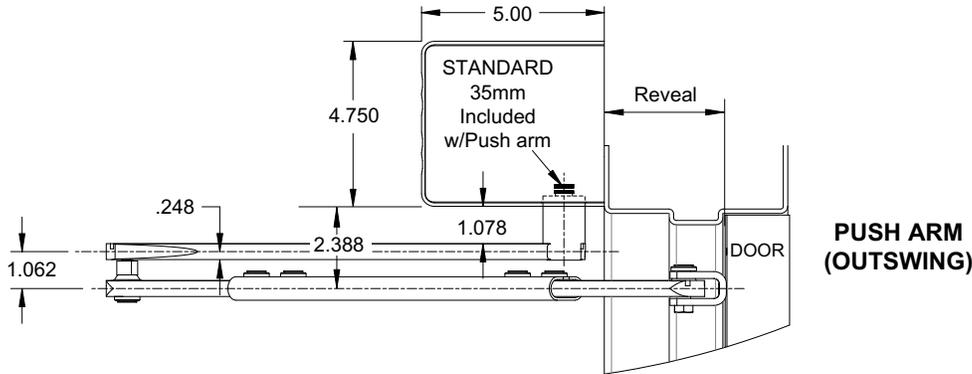
Reconnect the ON-Auto-OFF connector to the I/O board and the molex main power connector.

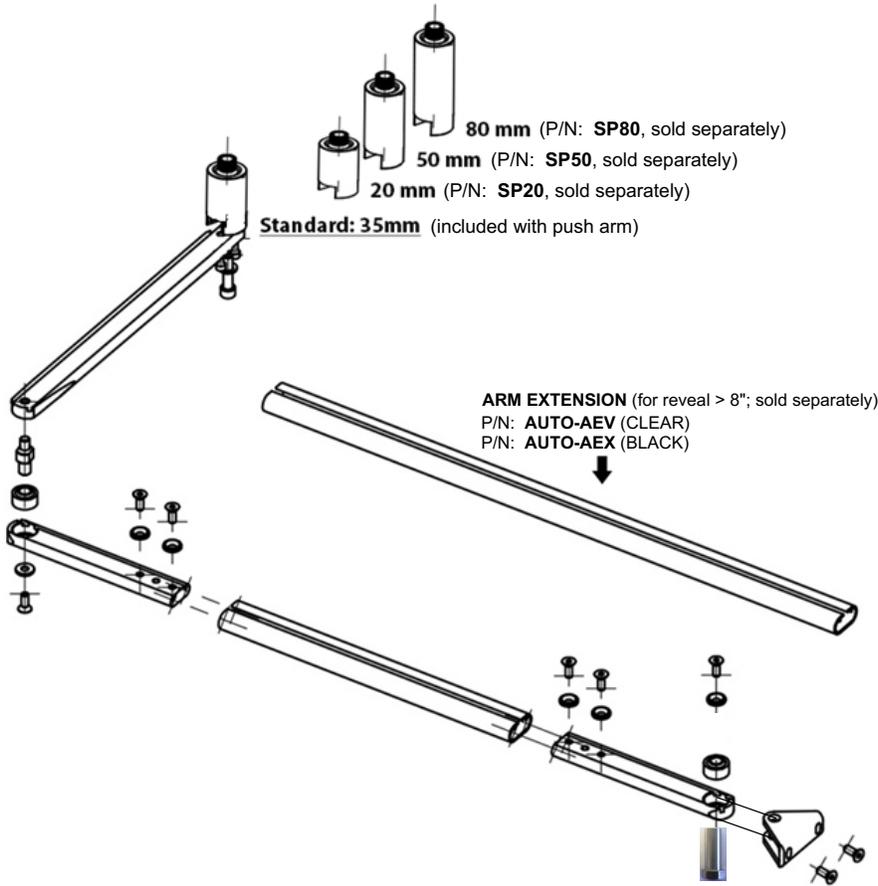


STEP 3: INSTALL THE ARM ASSEMBLY - STANDARD APPLICATION

NOTE: All operator arms include a standard spindle as shown below. Arm assembly options are detailed on the next three pages. Proceed to Page xx for arm installation instructions.

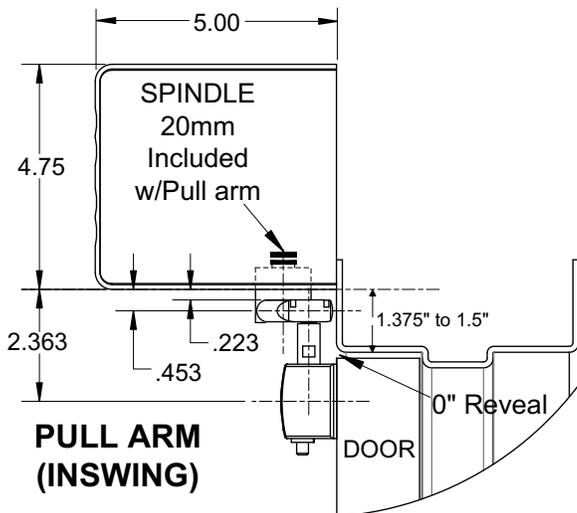
PUSH ARM FOR STANDARD PUSH APPLICATION FOR REVEALS UP TO 8"





PULL ARM FOR STANDARD PULL APPLICATION WITH 0" REVEAL

NOTE: FOR REVEALS > 0" BUT LESS THAN 1/2", A SPACER (PROVIDED BY INSTALLER) MAY BE INSTALLED BEHIND THE SLIDE TRACK TO ACHIEVE A 0" REVEAL. FOR A PULL APPLICATION WITH A REVEAL GREATER THAN 1/2", USE A DOUBLE EGRESS ARM WITH A 20mm SPINDLE.

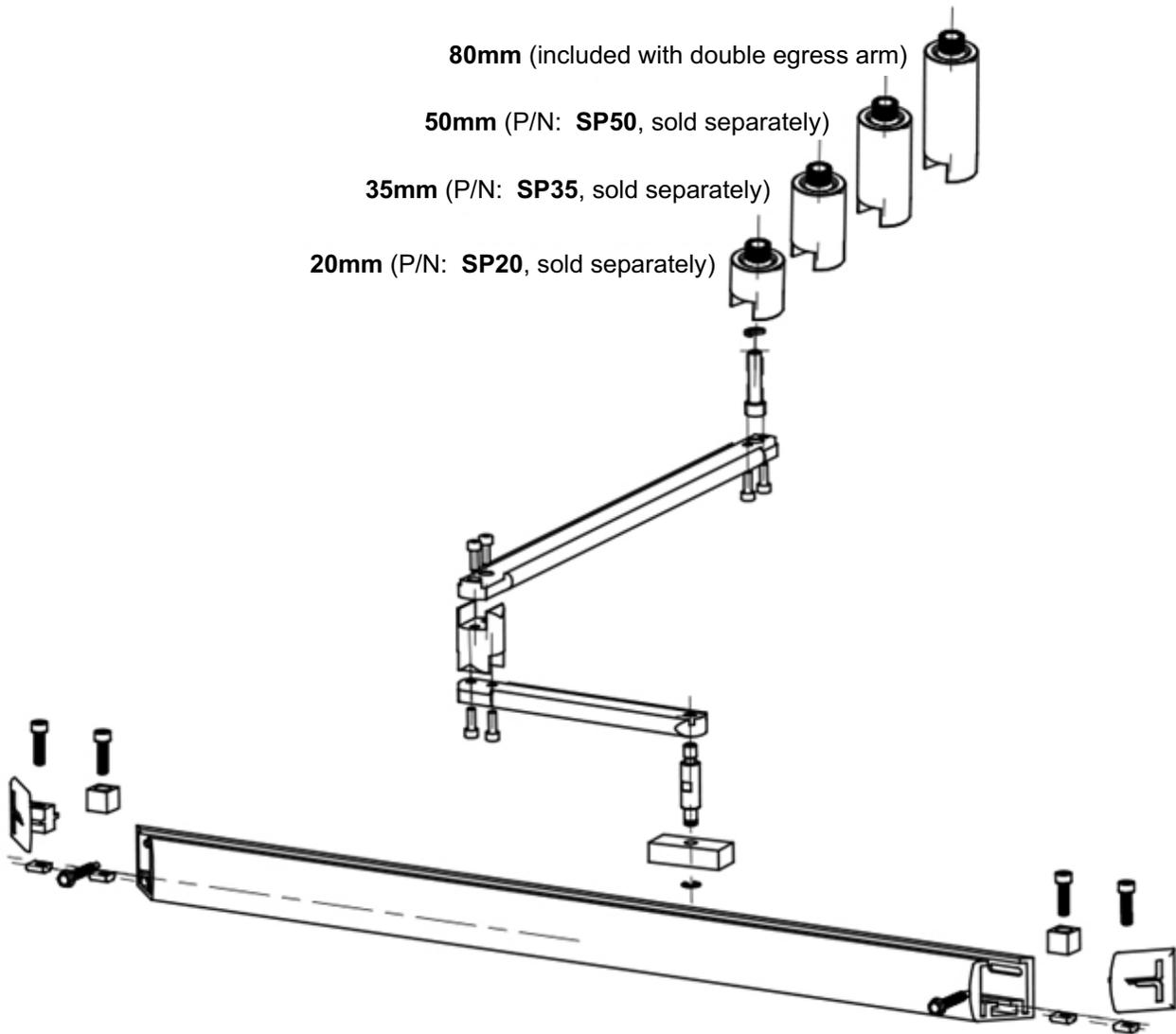




DOUBLE EGRESS ARM FOR STANDARD DOUBLE EGRESS PAIR OF DOORS, OR FOR A PULL APPLICATION WITH A REVEAL GREATER THAN ZERO INCHES

NOTE: AN 80mm SPINDLE IS INCLUDED WITH THE DOUBLE EGRESS ARM. THE 80mm SPINDLE SHOULD BE USED FOR DOUBLE EGRESS PAIR OF DOORS.

FOR PULL APPLICATIONS WITH REVEALS > 0", USE A DOUBLE EGRESS ARM WITH A 20mm SPINDLE (SOLD SEPARATELY).

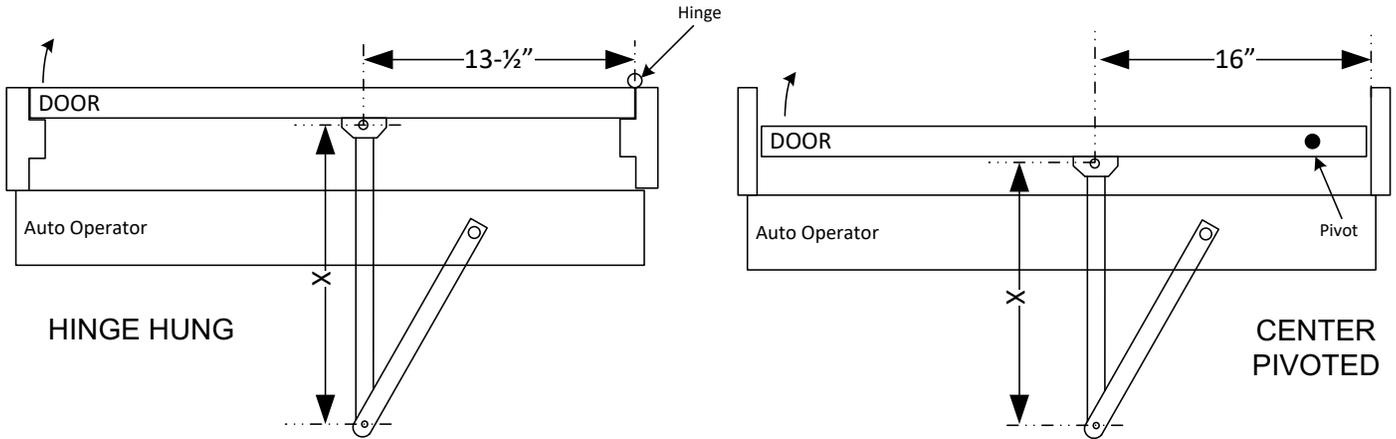




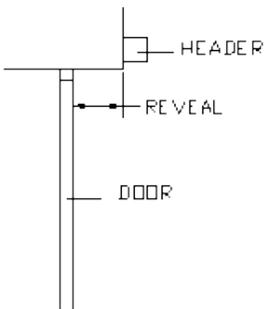
Follow the instructions listed below for a standard arm application using a "push" or a "pull" application.

PUSH ARM INSTALLATION

- Ensure the main power supply is removed or shut off at the control.



- Prior to beginning the push arm installation, gather the following information about the application:
 - Door configuration (Hinge Hung or Center Pivoted)
 - Reveal distance (inches)
- Attach the door shoe to the short arm. See figure on next page.
- Use the chart below to determine the prescribed length of the secondary arm assembly and note the dimensions.



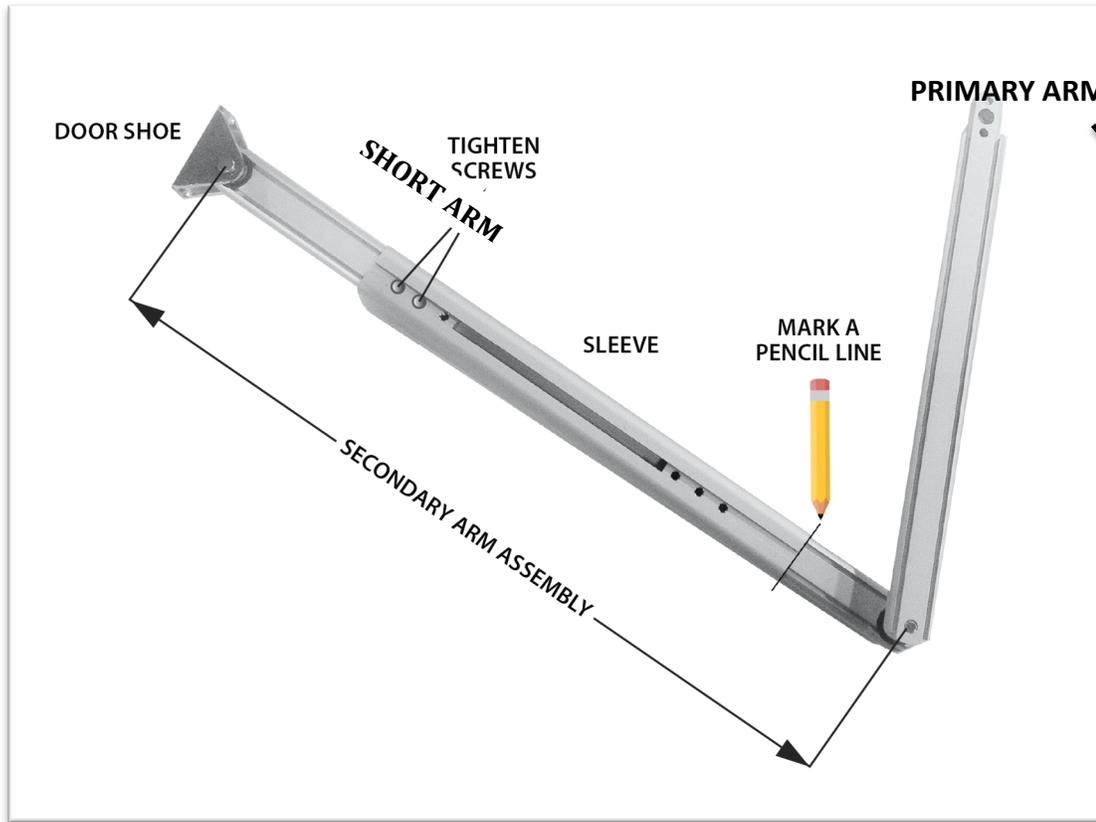
Reveal	Hinge Hung X Dim.	Center Pivot X Dim.
0"	13"	16"
1"	14"	17"
2"	15"	18"
3"	16"	19"
4"	17"	20"
5"	18"	21"
6"	19"	
7"	20"	
8"	21"	
FOR DEEPER REVEAL DISTANCES UP TO 15", USE ARM EXT.		



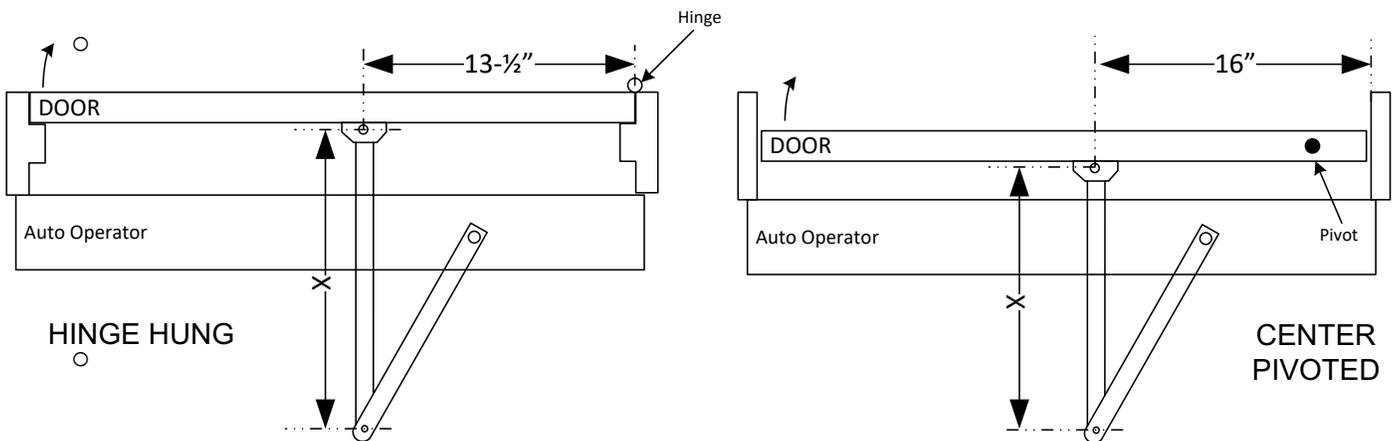
- Before installing any portion of the door arm assembly, it is easiest to lay the arm out on a flat surface and insert the secondary and primary arm into the sleeve as it will be when installed on the door:
 - Slide the short arms within the sleeve to obtain the prescribed "X" dimension. If the reveal falls between two of the values on the chart, use (Reveal + 13") for hinge hung doors, or (Reveal + 16") for Center Pivot doors
 - Tighten the screws on the short arm that is connected to the door shoe.
 - Double-check the "X" dimension of the arm - this is the distance between the center of the hole at the door shoe and the center of the hole at the pivot point of the primary arm (as shown).
 - Mark a pencil line at the edge of the sleeve where it overlaps the short arm that is connected to the primary arm. This will make it easier when positioning the primary arm for final installation.
 - After marking the line, remove the primary arm assembly only from the sleeve.



PUSH ARM



- Install the door shoe per the door hinge / pivot configuration:

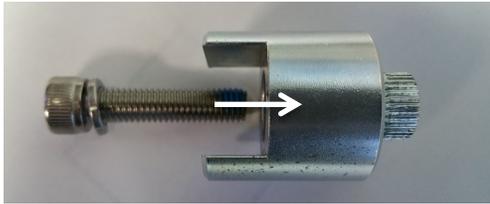


- Hinge Hung Doors: Centerline of door shoe at 13.5" in from inside of hinge jamb
- Center Pivot Doors: Centerline of door shoe at 16" in from inside of pivot jamb
- The horizontal centerline of the door shoe will be approximately 2-3/8" below the bottom of the backplate

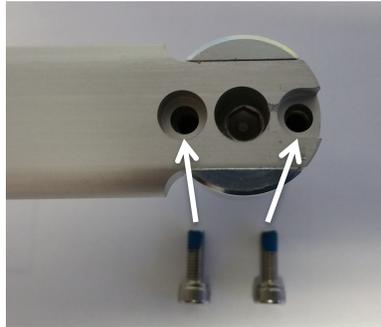
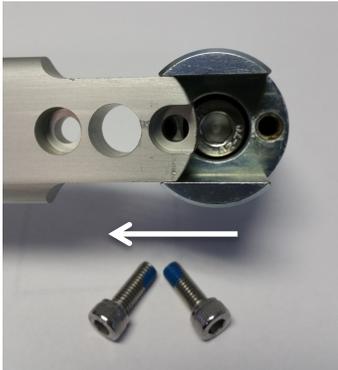


- Do NOT install the primary arm until instructed to do so

- Attach the spindle to the primary arm:

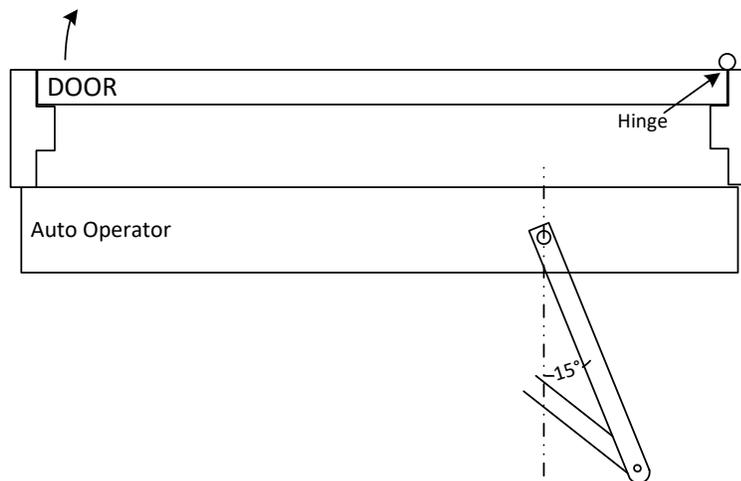


Insert the large hex bolt and washer into the spindle adaptor



Then, horizontally slide the adaptor onto the primary arm until the two mounting holes of spindle line up with the corresponding holes on the primary arm. The spindle is intended to fit tightly. Secure the spindle using the two small hex bolts, **BUT DO NOT OVERTIGHTEN.**

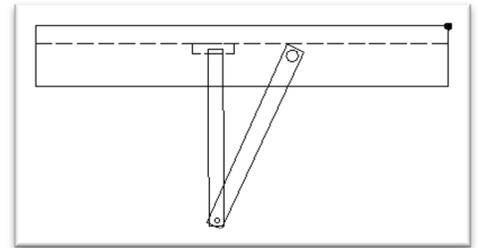
- Insert the primary door arm and spindle adaptor into the operator at a position where the primary arm is approximately 10-15 degrees from perpendicular, in the direction of the hinge.



- Tighten the spindle adaptor to the operator
- Turn & Slide the primary short arm into the sleeve to the pencil marked position. Tighten the hex screws within the sleeve once complete

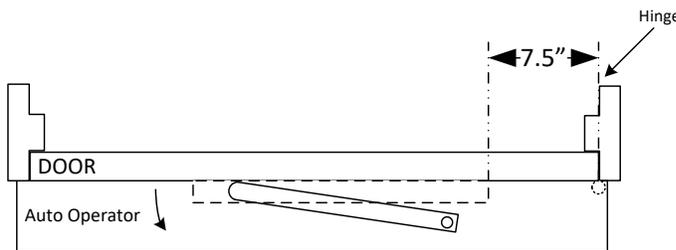


- With the door closed, the secondary arm should be at approximately 90 degrees to the face of the door as shown - it is not imperative that the arm be at this "exact" position
- Upon final installation of door arm assembly, press SW1 to launch a new setup - this is required for the control to learn the new door stroke. Refer to Steps 8 & 9, Power On & Tune In Sections for more information.
- Upon successful completion of setup, proceed with remainder of installation .

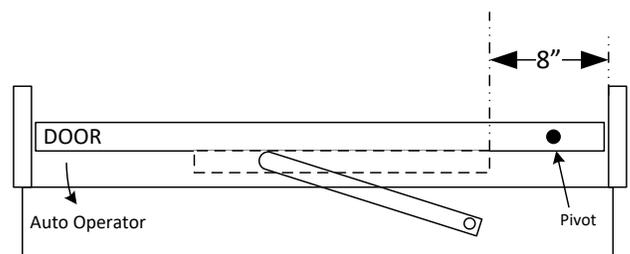


PULL ARM INSTALLATION:

- Ensure the main power supply is removed or shut off at the control.
- Install the slide track assembly to the door at the specified location.



HINGE HUNG



CENTER PIVOTED

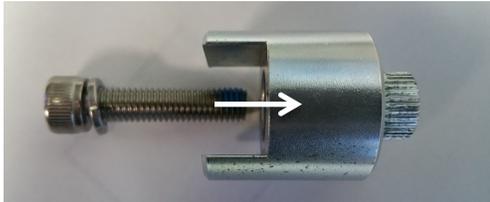
HINGE HUNG DOORS		CENTER PIVOTED DOORS	
PULL APPLICATION	Inside face of jamb to back edge of slide track	Inside face of pivot jamb to spindle	Inside face of pivot jamb to back edge of slide track
	7.5"	10.5"	8"

- When using the standard 20mm spindle, the center of the track should be approximately 2-1/4" below the operator header. Attach the track with the screws provided.

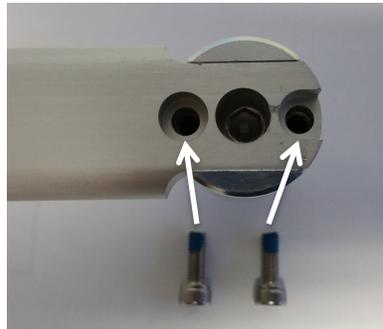
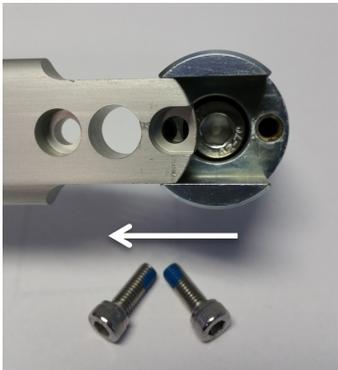


- The pull arm assembly is a fixed dimension and is not adjustable in length. The slide block and pull arm come pre-assembled from the factory.

- Attach the spindle to the pull arm:



Insert the large hex bolt and washer into the 20mm spindle adaptor



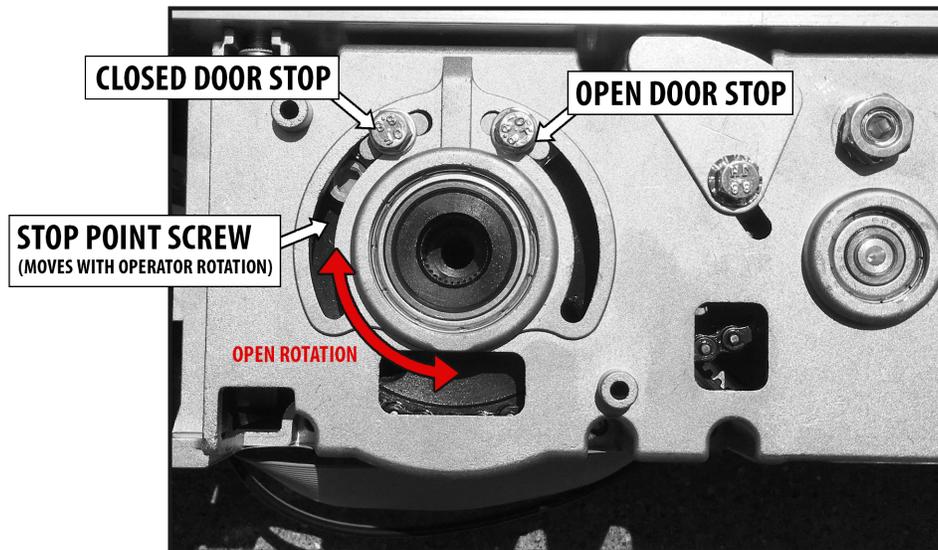
Then, horizontally slide the adaptor onto the primary arm until the two mounting holes of spindle line up with the corresponding holes on the primary arm. The spindle is intended to fit tightly. Secure the spindle using the two small hex bolts **BUT DO NOT OVERTIGHTEN**

- To install the pull arm, the operator must be powered to the full open position, as it is not possible to install the arm in the closed position as to allow proper preload.
- Power the door to the open position through the use of the hold-open switch on the side of the header. It may be necessary to first execute a “setup” on the operator prior to doing this. Refer to the first step on Steps 5 & 6 for proper instruction.
- Once the operator is rotated to the full open position, manually move the door to the desired full open position and insert the slide track guide block into the track. Release the hold-open switch. When completed, the end caps to the track can be installed.
- Once the arm is installed and door is closed, press and hold button SW1 to launch a new setup (see Step 6)



STEP 4: ADJUSTING THE MECHANICAL STOPS

- CAUTION – DO NOT REMOVE THE STOPS
- IMPORTANT – Step 4 may be optional depending on your application. See note on the following page.
- The mechanical stops are located on the top or bottom of the operator, depending on the handing of the door.



- The opening direction is always counter-clockwise rotation when viewed as shown above
- Loosen the bolts on the desired stop (do not remove bolts) and move to the desired position
- Re-tighten bolts securely and test the door travel stroke



IMPORTANT

- If the door closes against a fixed door stop that is door frame mounted, the CLOSED DOOR STOP does NOT have to be adjusted to meet the stop-point screw. This step is optional.
- The OPEN DOOR STOP setting is also optional. A "SOFT STOP" is sometimes preferred depending upon the application, particularly if heavy manual use is anticipated. The Soft Stop is simply a method of programming the door for the open position by means of a temporary stop method; such as holding your foot at the desired location during programming. To use the Soft Stop method, perform the following during the setup on Page 31:
 - During the first opening cycle, position your foot on the ground at the desired full open door position.
Allow the door to open and hit your foot during the first opening cycle during setup - you can then remove your foot from that position.
 - Allow the setup to complete itself thereafter
 - The door will open automatically thereafter to that position. When the door is pushed further than the soft stop location it will return to the programmed point automatically.
 - Do not use the soft stop method if there is anything behind the open door that the door could be repeatedly pushed into from manual openings - such as a glass wall.



STEP 5: 120 VOLT AC ELECTRICAL CONNECTION

WARNING:

Ensure all incoming electrical power is shut off before proceeding with any high voltage wiring. Failure to do so may result in damage to equipment or personal harm.

- Connect the main power to the Black / White / Green connector on the back-plate.
 - Main power supply: 120 VAC, 15A, Single Phase, 60 Hz. circuit
 - Attach the incoming 120 volt AC line wires to the wiring provided in the header – as shown below. NOTE: IF THE UNIT HAS TWO WHITE WIRES, BOTH WILL CONNECT TOGETHER TO INCOMING NEUTRAL.
- DO NOT TURN POWER ON until all remaining wiring has been completed.

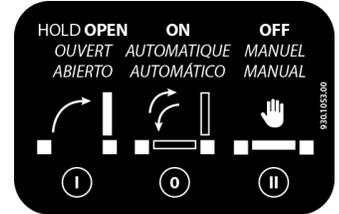
BLACK: 115 VAC
Power
WHITE: Neutral
GREEN: Ground





STEP 6: POWER ON & TUNE-IN

- Ensure the 120 VAC is connected and secure
- Ensure Off-On-Hold Switch is in the middle (0) position
- Apply power and observe the LED's on both boards:
 - On the I/O board, LED's for inputs 12, 13, & 14 must be ON upon power up.
 - For the Adjustment board LED's, see Page 26.
- The I/O board will not accept an activation until approx. 8 seconds after powering on AND until an initial setup is completed.
- Initial setup should be done with all dip switches in the OFF position for PUSH applications, and with DIP #2 ON for pull applications.



SETUP BUTTON



- As a general rule for I/O board LED observation:
 - For normally open inputs, the respective LED will illuminate upon triggering the input.
 - For normally closed inputs, the respective LED will extinguish upon triggering the input.

I/O Board LED Status

LED	LED ON	LED OFF	NOTES
LD1	Accessories power is present	No accessories power	
LD2	Active internal opening command	Internal opening command inactive	Indicates status of input 10
LD3	Active external opening command	External opening command inactive	Indicates status of input 11
LD4	Emergency command inactive	Emergency command active	Indicates status of input 12
LD5	Secondary Activation inactive	Secondary Activation command active	Indicates status of input 13
LD6	Stop command inactive	Stop command active	Indicates status of input 14
LD7	In active	Inactive	Inactive
LD8	Alarm command is active	Fire Alarm command inactive	Indicates status of input 16
LD9	Overhead Presence Command Active	Overhead Presence Command Inactive	Indicates status of input 17

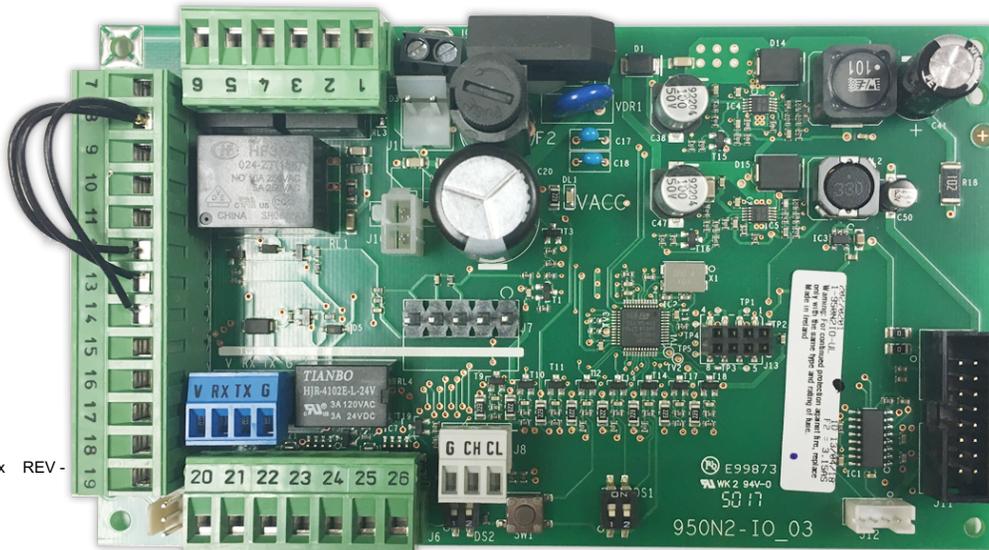


STEP 6 Cont.: POWER ON & TUNE-IN

- **Perform an initial setup at the I/O board as follows:**
 - Ensure main power is on
 - At the I/O control board, depress the SW1 button for approximately 5 seconds. When the red LED (LD2) at the Adjustment Board begins flashing rapidly, release the button.
 - Door will slowly go open, recycle partially, close and then re-open.
 - Do not interrupt the process and do not move the door manually during this time.
 - If the door does not open and the red LED (LD2) is flashing slowly, check to make sure the motor is plugged in properly at the control board. Correct as necessary.
 - Once the setup process is complete, the door will close and the LED will go out.
 - Setup is complete.

IMPORTANT NOTE: If the operator stroke is altered in any way, a re-learn must be accomplished.

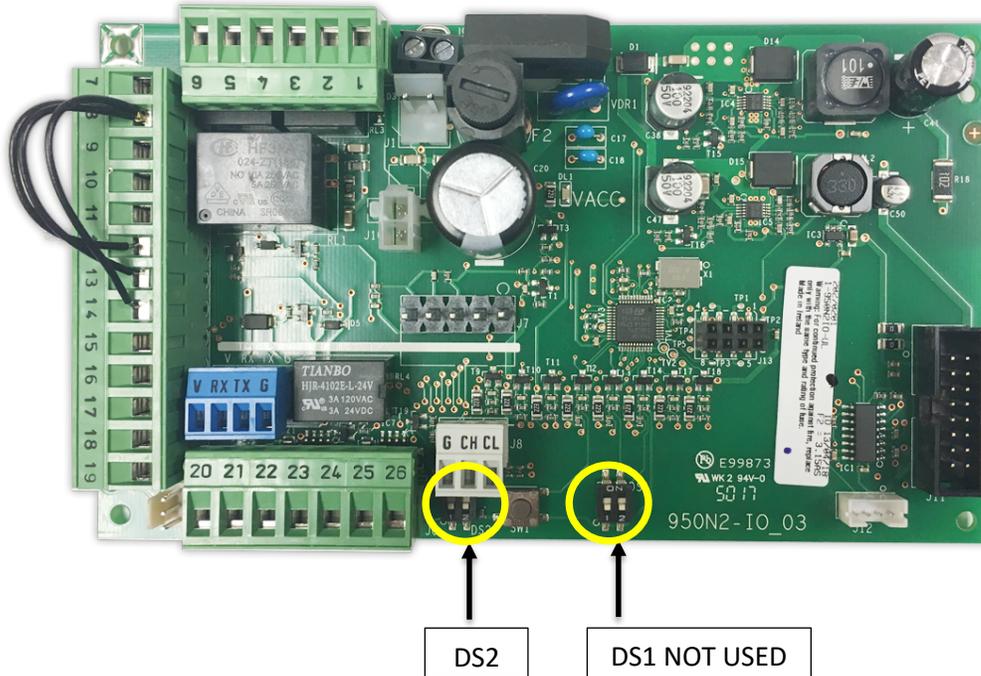
- Upon completion of the Setup, momentarily jumper terminals 7 & 11 to activate the door to open and ensure all performance is acceptable.
- Go to Step 7. Adjust dip switches for your specific application.
- Go to Step 8. Connect activation and ancillary devices as required.
- Go to Step 9. Adjust opening and closing speeds, and door hold open time as necessary. If speeds are changed, a re-learn is not required.
- A re-learn is not required following a main power recovery.





STEP 7: SET THE DIP SWITCHES ON THE I/O BOARD

- Set the dip switches according to the application. The default settings are usually sufficient for most applications.
- Dip switches are used to apply specific functions to the control.
- There are 2 sets of dip switches. A 2-position on the I/O board (DS2), and a 10-position on the adjustment board (DS10).

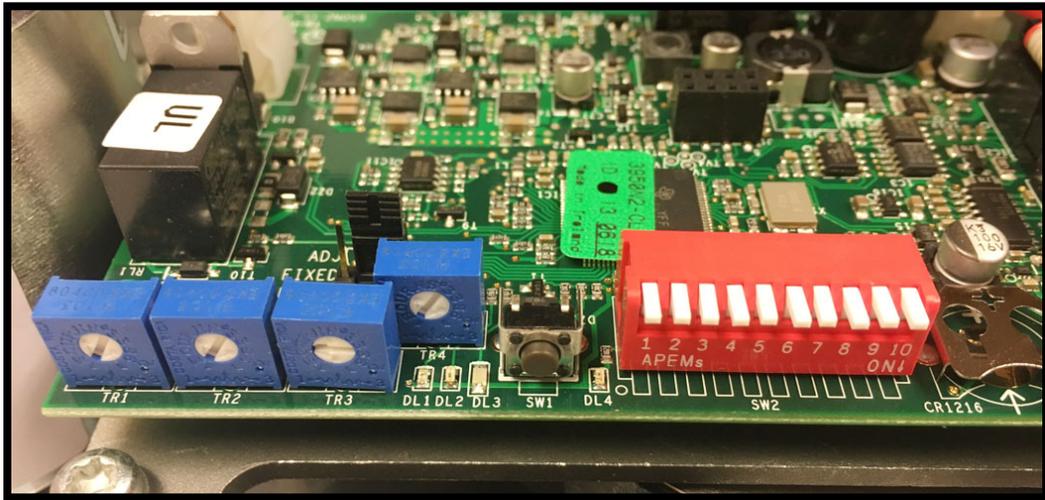


		Description	ON	OFF
DS2	1	For factory use only		3 Seconds (Default)
	2	Electric Lock Delay	500 milliseconds	200 milliseconds (Default)



STEP 7 Cont. : SET THE DIP SWITCHES ON THE ADJUSTMENT BOARD

- Set the dip switches according to the application. See the table on the next page.
- ON is with the switch towards the number. Initial setup should be done with all dip switches in the OFF position for



position
PUSH

applications, and with DIP #2 ON for pull applications. All other dip switches may be set after the initial setup.



Adjustment Board Indicators

DL1 : GREEN WHEN USB CONNECTION PRESENT

DL2: FLASHING RED LED

DL3: BLUE 5V POWER SUPPLY

DL4: BOARD VALUES DIFFER FROM DIP SWITCHES

(PRESS SW1 MOMENTARILY TO EXTINGUISH YELLOW LED)

Upon applying power, observe the above LED's.

NORMAL OPERATION: DL3 will come on steady and then begin flashing after a few seconds.

FAULTY OPERATION; DL2 will be flashing red. This indicates...

- An error condition exists – correct as necessary
- Operator requires setup – launch a setup and proceed accordingly

NOTE: DL4 will illuminate yellow anytime a change has been made to the control, such as a speed or time adjustment. Momentarily press on SW1 to acknowledge the change and extinguish the yellow LED.

	Description	ON	OFF
1	Closed Door Force	Additional force applied while door is in closed position. Be sure to maintain ANSI compliance if using on low energy application. Cannot exceed 30 lbf to get door moving from jamb.	Disabled (Default)
2	Push / Pull Arm	Use for Slide Arm Applications. Operator stroke at 90° degrees or less. Visible change in performance may not always be noticeable.	Push Arm Application. Operator stroke 90° or greater. (Default)
3	Night Function (Exit Only)	Allows activation at input 10 when On-Off switch is in OFF (night function) position.	Disabled. The On/Off switch, when OFF, requires manual operation of the door. (Default)
4	Push and Go	Enabled	Disabled (Default)
5	Full Power / Low Energy	Low Energy performance enabled. 5 seconds to open, 7 seconds hold open, 5 seconds to close. Speed & time potentiometers are disabled. Settings are fixed.	Disabled. Control can be adjusted for full power or low energy operation via potentiometers. (Default)
6	Not used for Low		Set to OFF for Low Energy



	Energy Applications		Applications. Required when using Stall Safety input (14)
7	Inhibit at 30 Degrees Before Door Fully Open. Only used if Input 14 is used.	Input 14 is disabled at 30 degrees prior to full open door position.	Stall function remains uninhibited for full door stroke. (Default)
8	Power Close	Additional closing force applied for final 10 degrees of closing.	Disabled (Default)
9	Assisted Manual Closing***	Enabled assisted closing following a manual opening	Disabled assisted closing following a manual opening
10	FACTORY USE ONLY		

***** S&G recommends the use of a door-mounted secondary activation device when dip switch 9 is ON - Enabled.**



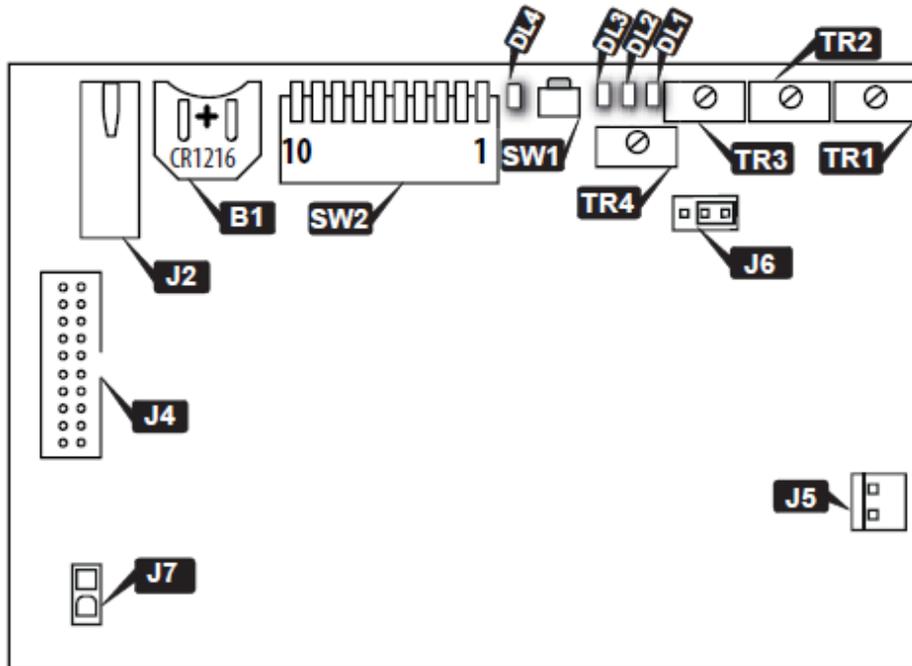
STEP 8: WIRING CONNECTIONS (See Appendix for sample wiring diagrams)

I/O BOARD CONNECTIONS

	Position	Function	Description
TERMINAL STRIP J5	1	Electric Lock Relay	Common
	2	Electric Lock Relay	N.O. Dry contact – Contact closes upon activation. May be used for fail-secure locks by routing 1 leg of power through the relay. Relay is triggered by activation inputs 10, 11, or 16. Relay remains energized until door is fully closed again.
	3	Electric Lock Relay	N.C. Dry Contact - Contact opens upon activation. May be used for fail-safe locks by routing 1 leg of power through the relay. Relay is triggered by activation inputs 10, 11, or 16. Relay remains energized until door is fully closed again.
	4	Door Status - Closed	N.O. Contact is closed when door is closed. The contact opens as soon as the door opens.
	5	Door Status – Common	Common contact for door status
	6	Door Status - Open	N.C. – Contact is closed when door is open. The contact opens as soon as the door starts to close. This input can be used for motor connection at lockout relay when power is looped through, thus switching power on when door is open.
TERMINAL STRIP J4	7	GND	Common GND
	8	GND	Common GND
	9	+ 24 VDC	1A Max. Current
	10	Internal Activation	Requires N.O. Contact between input 10 & COM. Remains capable to activate when dip switch 3 is ON AND On-Off switch is OFF.
	11	External Activation	Requires N.O. Contact between input 11 & COM.
	12	Emergency Closing	Requires N.C. contact between 12 & COM. Upon open contact, door closes and overrides all other inputs. Remains jumpered if input is not used.
	13	Secondary Activation	Requires N.C. contact between 13 & COM. Disabled in full closed position. Used for AUTO-IR door-mounted presence sensor.
	14	Stall Safety	Requires N.C. contact between 14 & COM. Upon open contact, during opening, door stops, then resumes at reduced speed when input is released.
	15	Key Input	N.O. connection
	16	Alarm Input	N.O. contact, when closed causes door closing. All inputs inhibited during closed contact (not available on all software versions)
	17	Not Used	Requires N.O. contact
	18	GND	Common GND
	19	GND	Common GND
	20	Aux Relay	Auxiliary Relay COM. NOTE: Relay is triggered by input 16
	21	Aux Relay	Auxiliary Relay N.O.
	22	Aux Relay	Auxiliary Relay N.C.
	23	Alarm Output - Common	Common
	24	Alarm Output	N.O. output is closed upon closed contact from fire alarm. LED 2 also illuminates.
	25	+ 24 VDC	1A max. (Total for terminals 9 & 25)
	26	GND	Common GND



STEP 9: ADJUSTING TIMERS ON ADJUSTMENT BOARD



LEGEND:

B1 – Battery – use CR1216 battery – required to maintain timer settings and date programmed by the TAP

TR1 – Opening speed adjustment. Increase speed by turning clockwise = decrease open cycle time

TR2 – Closing speed adjustment. Increase speed by turning clockwise = decrease open cycle time

TR3 – Hold-open time adjustment

TR4 – Closing speed adjustment when power is OFF **TR4** will only be enabled when jumper J6 is moved to the correct pins. (It is enabled by default).

J2 – USB port

J4 – Ribbon cable connector between boards

J5 – Motor Connector

J7 – Power supply connector between boards

SW1 – Adjustment board “reset”

SW2 – 10 Position “Functions” Dip Switch

For adjustments beyond those mentioned herein, consult the factory.

HELPFUL NOTES:

- **Speed/time and Dip Switch adjustment changes will not take effect until the door closes fully after the adjustment has been made AND amber light DL4 is cleared by pressing the switch next to DL4.**
- Hold Open time affects the delay following activation from input 10, 11, and 13.
- When Dip Switch 5 is ON, the blue speed and time potentiometers are disabled.

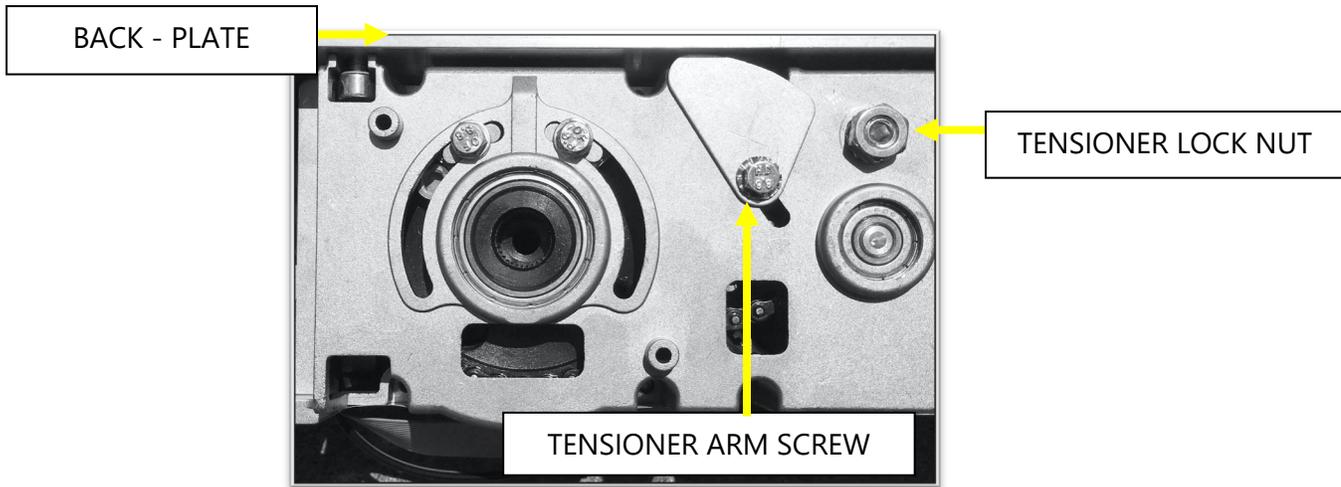


TROUBLESHOOTING

Door will not open	<ul style="list-style-type: none">• Check On-Off switch for proper position• Check LED status for LD 5, 6, and 7. If any of these LED's are OFF, the door will not open. They require a normally closed circuit.• Launch a new setup• Check status of emergency input 12• Door has traveled close past the 0 degree position
Door will not close	<ul style="list-style-type: none">• Check status of LEDs" LD2, 3, 4, 8 on the I/O board.• If any of the LED's are ON, check the associated input
Door will not reach its full open or closed position	<ul style="list-style-type: none">• Check the mechanical stops on the operator for proper adjustment (see page 16)
Slow flashing red LED (LD2) at the Adjustment Control Board	<ul style="list-style-type: none">• Indicates a possible fault in the control.<ul style="list-style-type: none">○ Check LED status for the other inputs. This will identify if any inputs are currently active.• Indicates a potential faulty setup.<ul style="list-style-type: none">○ Loose or incorrect motor connection○ Possible loose chain tensioner - refer to Appendix for chain tensioner adjustment procedures.○ Launch a new setup. If problem repeats and there are no other discrepancies noted, replace the operator/control sub-assembly.
Door closes too fast at last 5 to 10 degrees of closing	<ul style="list-style-type: none">• Ensure dip switch 8 is OFF.• Ensure there is no binding of the door as it is closing through the last few degrees of closing. If binding exists (from a tight bottom sweep, for example), correct the condition and then re-launch a new setup.



APPENDIX – CHAIN TENSIONER ADJUSTMENT



SIGNS OF A LOOSE CHAIN TENSIONER

- First reach through the square hole where the chain is showing and try to move the chain. There should be a fair amount of tension on the chain. If so, it's likely not a loose chain.
- If it is loose, you will be able to flop the chain around.
- Opening or Closing door movements may be erratic
- The door may reverse open on its own during the closing cycle
- When a setup is launched, the door may appear to open a few degrees at a time, especially as it is just beginning to open
- Door may not open to its full open position - it may stop short and then close, as it thinks there was an obstruction
- Operator may make a loud clicking noise - this is created by the chain jumping on the sprockets
- There may be a "lag" between operator movement and door movement - this is due to the chain "slack" being taken up before door movement
- Door may go through a setup correctly but then will show a flashing red error LED upon completion of setup, or upon the first attempt to open
- If chain is excessively loose, it is possible for the chain to become bound up on itself, thus preventing automatic door movement - this will usually happen on the closing stroke
- Abnormal noises may come from the operator as you use the door manually
- Wear marks may be evident on the body of the operator where the tensioner bolt has slipped
- Contact the factory for tensioning instructions.



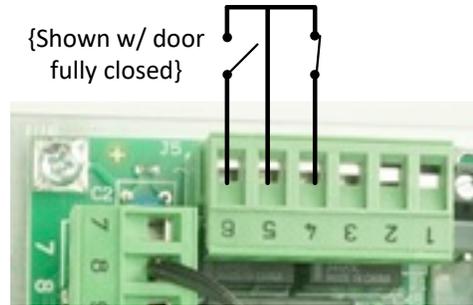
APPENDIX – WIRING DIAGRAMS

DOOR STATUS SWITCH OUTPUT

Terminal 4: Door “Closed” status switch: Contact closes upon full door closed position.

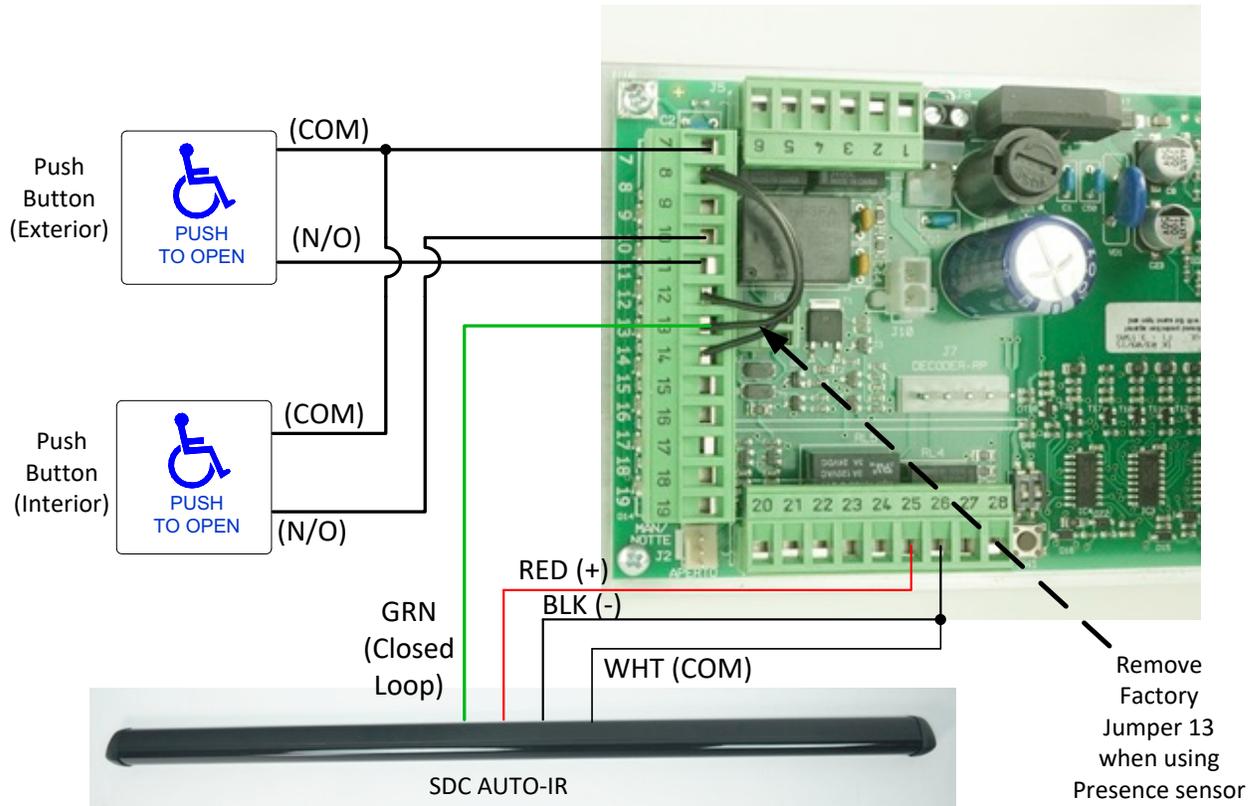
Terminal 5: Common for both Door Open & Closed status

Terminal 6: Door “Open” status switch: Contact is closed when door is full open.





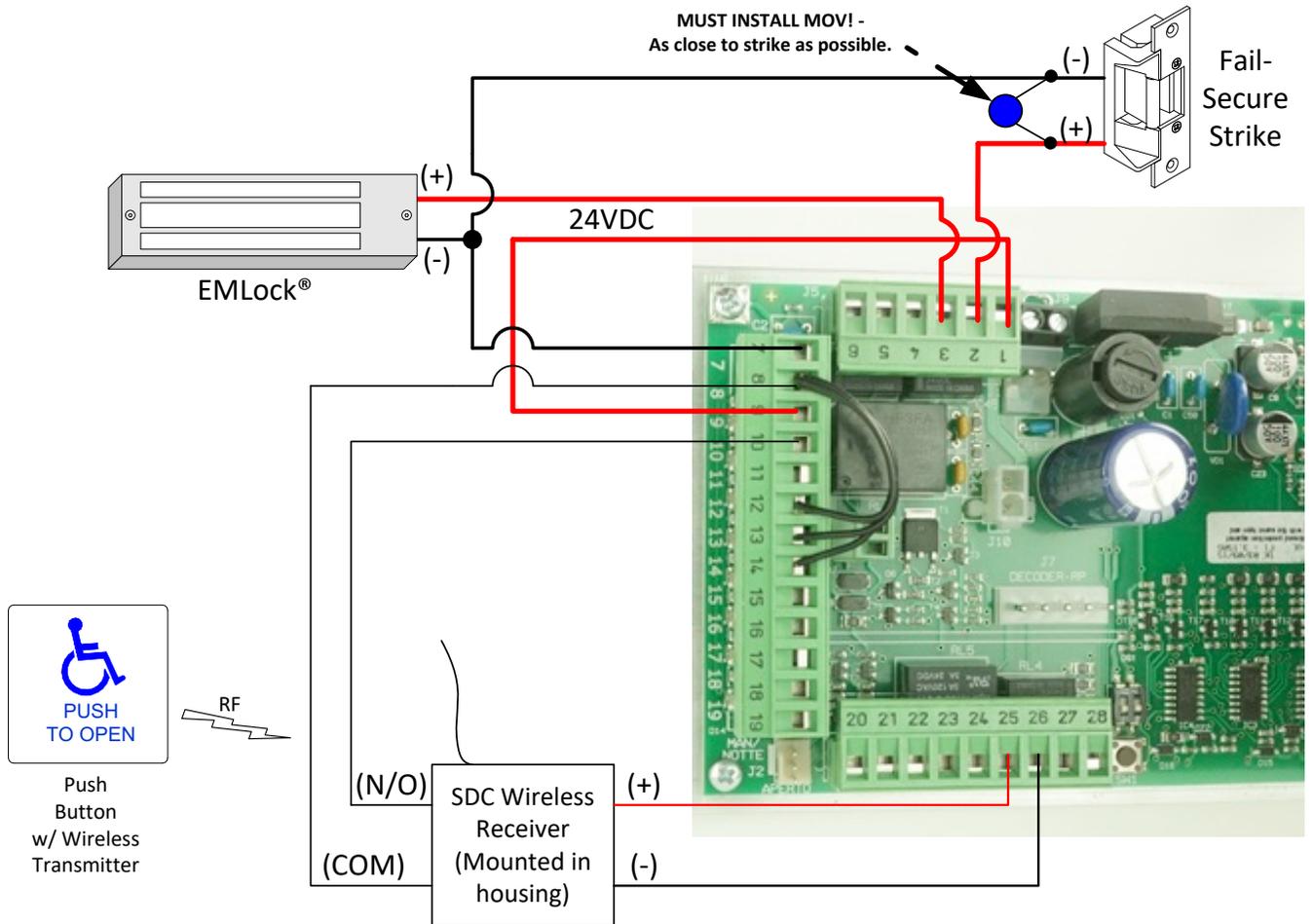
LOW ENERGY APPLICATION 1: PUSH PLATES WITH APPROACH SIDE DOOR-MOUNTED SENSOR



- Non-Swing Side (approach) door-mounted sensor is wired into the secondary activation input (13) at the I/O board. It is a normally closed circuit. Remove factory jumper on terminal 13.
- Door-mounted sensor will cause re-activation when in detection during the closing cycle.
- Secondary activation input is disabled at the full closed door position.
- Jumpers must be installed between terminal 8 and 12 & 14 if those inputs are not required for the application. If they are used for the application, they must be connected to a N.C. circuit.



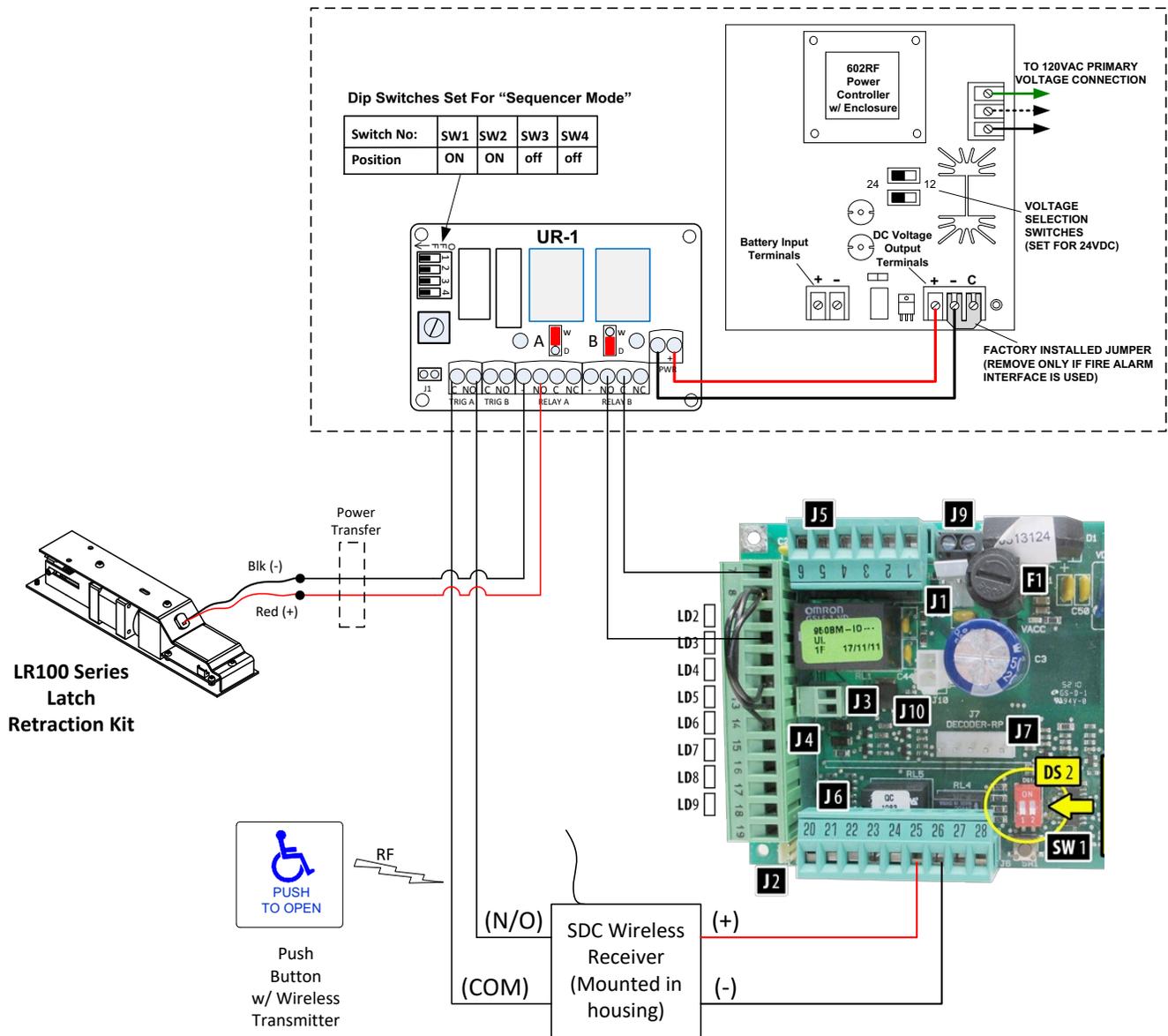
LOW ENERGY APPLICATION 2: WIRELESS PUSH PLATE WITH 24VDC ELECTRIC STRIKE OR MAGLOCK





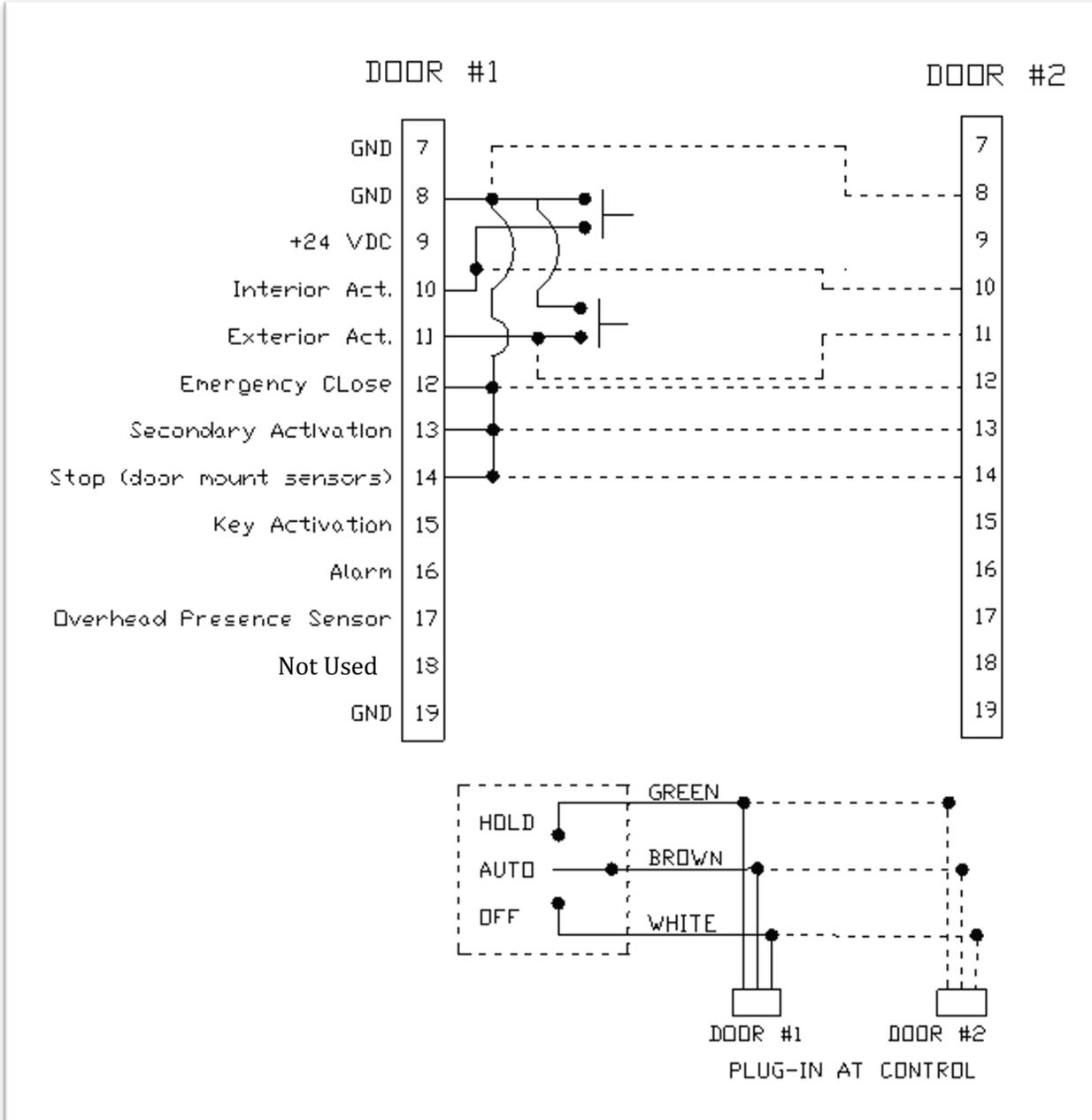
LOW ENERGY APPLICATION 3:

WIRELESS PUSH PLATE WITH SDC Electric Latch Retraction Kit & Separate SDC Power Supply





LOW ENERGY APPLICATION 4: SIMULTANEOUS PAIRS





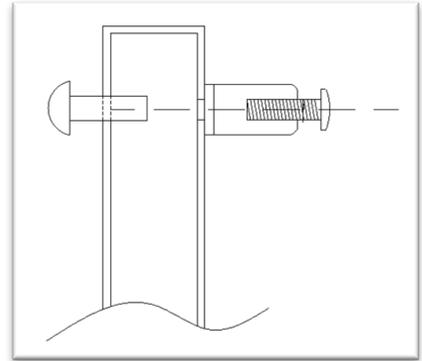
- When wiring controls for use as a simultaneous pair, all required inputs need to be synchronized (connected) between Door #1 and Door #2 (shown as dotted lines in above diagram).
- Example shown above: Push plates are connected to inputs 8, 10 and 11 at door #1 and are connected via sync line to Door #2.
- When using pairs of controls, N.C. inputs 12, 13 and 14 may be sync'd to each other, OR each control may have its own jumpers installed. If any of these inputs are required for the application, the jumper will be removed for the respective input – in place of the jumper, a N.C. switching circuit will be connected to Door #1, and a sync line will be connected to Door #2.
- For simultaneous pairs, each plug-in connector for the control is wired in parallel to the On-Off-Hold switch located in the header end-cap. One switch will control both doors.
- All control adjustments (speed & time delay) must be made independently at each control.
- All dip switches at each control must be set independently and must match between controls.



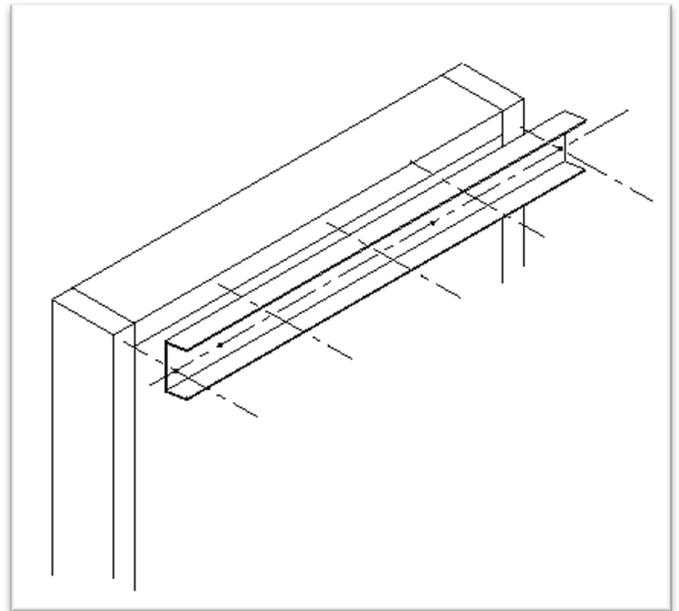
APPENDIX- FIRE RATED DOOR APPLICATION

- Perform the installation according to the instructions outlined in this manual. Additionally, ensure the following conditions have been met:

- When attaching the door arm to the door, use steel binding posts (Sex Bolts) to attach. Do NOT use sheet metal screws into the face of the door. The door arm bracket must be through-bolted.



- When attaching the header to the hollow metal door frame, ensure there are 5 attaching screws spaced equally apart. They should be #12 sheet metal type screws.





- Fire rated power operated doors must close and latch during a fire alarm condition. Ensure proper procedures have been followed to allow a main power disconnect during a fire alarm condition. Always check to ensure compliance to local building codes.
 - Upon job completion, always perform a functional test to ensure that the door(s) close and latch following a power loss.
- Other hardware may be required to complete the installation. For example, for pairs of doors, if an Astragal is installed, a mechanical door coordinator may be required to ensure a proper coordinated closing during a power loss.
- Only fire rated hardware shall be used on a fire rated door & frame assembly.
- Ensure the operator that is being installed has the proper fire rated label applied to the header.