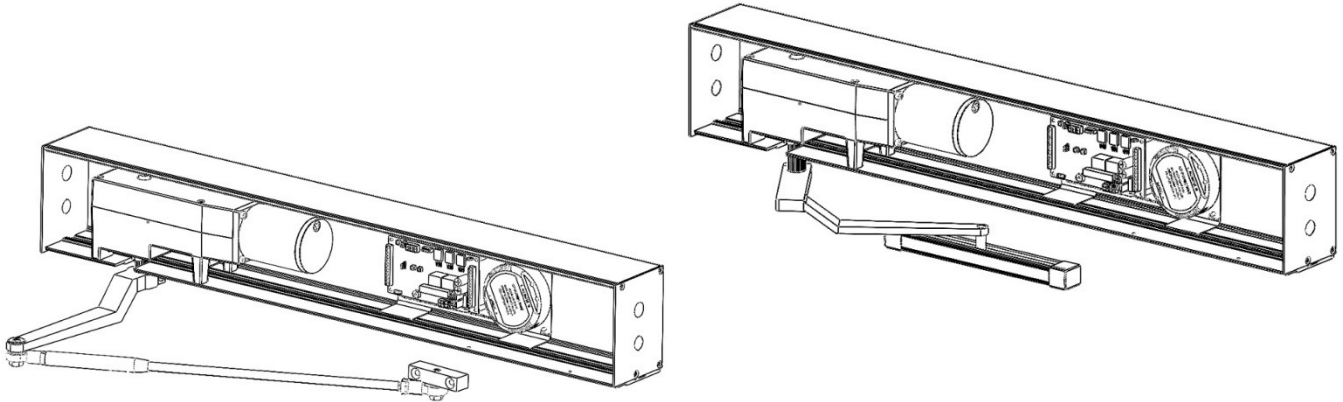




FA-85C SWING DOOR OPERATOR

INSTRUCTION MANUAL



⚠ WARNING: FAILURE TO FOLLOW THIS MANUAL PROPERLY CAN RESULT IN SERIOUS INJURY, PROPERTY DAMAGE OR DEATH.

- All Door Equipment and Automatic Systems should **ONLY** be installed by an AAADM Certified technician. Electrical work such as providing 120V AC power wires/supply should only be done by a Licensed Electrician in accordance with your local Electrical/Building codes.
- Before installation, ensure the door and frame is properly installed and balanced to support the Swing Door Operator.
- Ensure that all moving parts of the Door Operator (Gearbox, Arms, Slider) is mounted/secured safely so as not to cause injury to persons in the area.

WARNING: AN UNSECURED GEARBOX, ARM OR OTHER COMPONENT OF THIS OPERATOR PRESENTS A FALLING OBJECT HAZARD

- To reduce risk of injury this Swing Door Operator is to be used with pedestrian **swing** doors only.
- Ensure HIGH VOLTAGE (120V AC) wires are fed into header **SEPERATELY** from **LOW VOLTAGE**.
- The specifications for this product require that the installation of this operator be approved by an AAADM Certified Inspector.
- Learn more about the American Association of Automatic Door Manufacturers at <https://www.aaadm.com>

The FARRON FA-85C is a universal swing door operator that can be used in a wide variety of applications to facilitate access for disabled persons or otherwise. It can be used to push or pull common swinging doors via activation of push buttons, wireless wave sensors, presence/motion sensors and more.

IMPORTANT INSTALLATION INSTRUCTIONS

WARNING – To reduce the risk of severe injury or death:

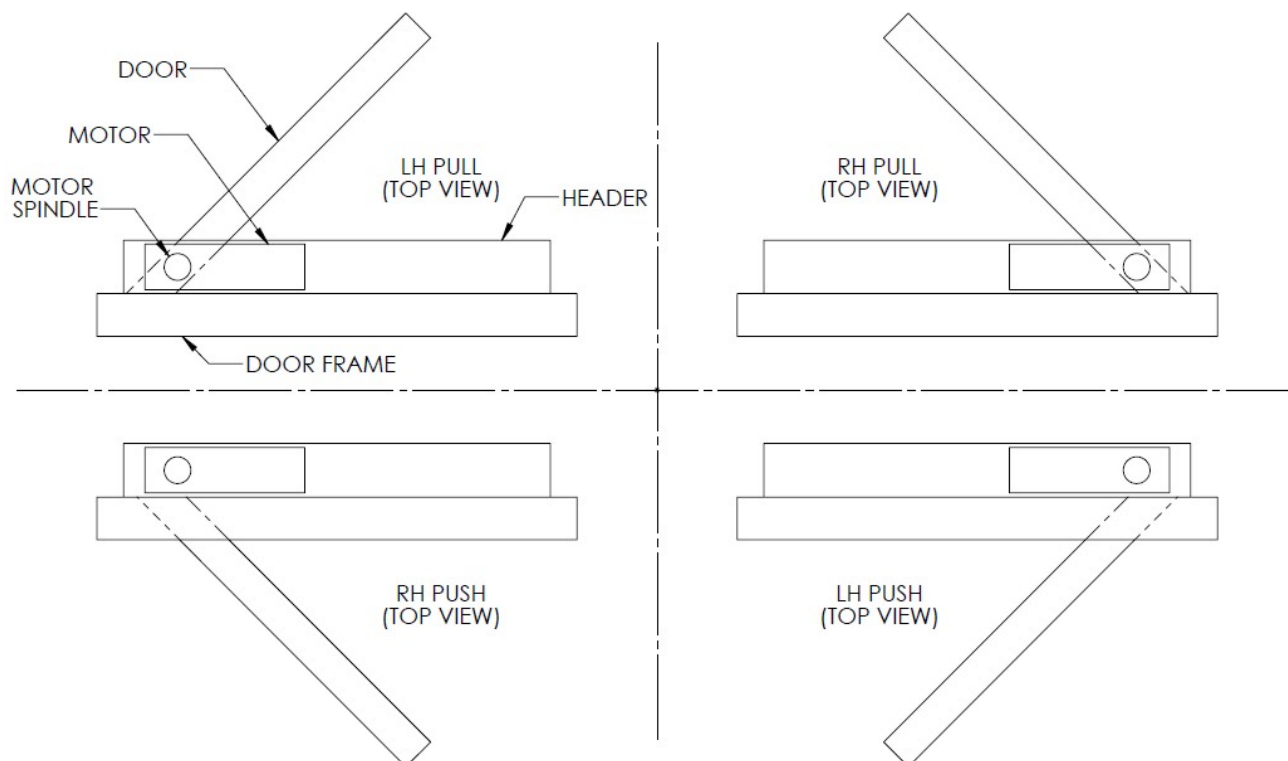
1. **READ AND FOLLOW ALL INSTALLATION INSTRUCTIONS.**
2. Install only on a properly operating and balanced door. A door that is operating improperly could cause severe injury. Have qualified service personnel make repairs to cables, spring assemblies, and other hardware before installing the operator.
3. Remove all pull ropes and remove, or make inoperative, all locks (unless mechanically and/or electrically interlocked to the power unit) connected to the door before installing the operator.
4. Do not connect the door operator to the source of power until instructed to do so.
5. Locate the control station: (a) within sight of the door, and (b) at a minimum height of 1.53 m (5 ft) above floors, landings, steps, or any other adjacent walking surface and (c) away from all moving parts of the door.
6. Never let children operate or play with door controls. Keep the remote control (where provided) away from children.
7. Personnel should keep away from a door in motion and keep the moving door in sight until it is completely closed or opened. **NO ONE SHOULD CROSS THE PATH OF A MOVING DOOR.**
8. Test the door's safety features at least once a month. After adjusting either the force or the limit of travel, retest the door operator's safety features. Failure to adjust the operator properly may cause severe injury or death.
9. **KEEP DOORS PROPERLY OPERATING AND BALANCED.** See Door Manufacturer's user manual. An improperly operating or balanced door could cause severe injury or death. Have trained door systems technician make repairs to cables, spring assemblies, and other hardware. **Disconnect power (switch off breaker) before servicing. WARNING: DO NOT DISCONNECT GEARBOX FROM CONTROL BOARD UNTIL DOOR IS SECURE (Ex. ARM IS REMOVED FROM SPINDLE). FAILURE TO SECURE DOOR PROPERLY WILL RESULT IN DOOR RAPIDLY SWINGING SHUT. ALWAYS BE VIGILANT AROUND AUTOMATIC DOORS.**
10. Only use manual door handles when the door is not activated. **DO NOT TRY TO FORCE THE DOOR CLOSED WHEN IT IS HOLDING OPEN. DOING SO MAY DAMAGE THE OPERATOR.**
11. **SAVE THESE INSTRUCTIONS**

2.0 TECHNICAL SPECIFICATIONS

SPEC	(Model #)—FA 85C
Dimensions	(40") 1022 mm x (6") 152 mm / (45") 1143mm x (6") 152mm
Power Supply	INPUT: 100-277V AC, 5-15A, 48-62Hz OUTPUT: 24V DC, 3.33A
Motor	80 WATT, 24V DC, 0.53 N-m, 1500 RPM
Operation	Opening and Closing Cycles via low voltage activation

3.0 DOOR OPENINGS

The FA-85 operator can be configured based on the type of operator and Left Hand/Right Hand orientation as shown below. The motor/spindle is to be located by the hinge side of the door frame.



4.1 PRE-MOUNTING

Before mounting the FA-85C operator, ensure the floor space for the path of the door's motion is clear and is suitable for the activation buttons to be mounted. Refer to your local building authority/codes regarding automatic door installation.

- **Maximum door size: 5ft (1.53m) in width and 12ft (3.65m) in height.**
Maximum door weight: 150 kg (330 lbs)
- The door must move freely and easily open and close fully without significant force applied. Weather strips, thresholds, etc should not interfere with door opening and closing.
- Check to make sure power is supplied and all electrical conduits, cables and boxes are appropriately located in accordance with electrical codes/guidelines. The wiring for additional devices should be completed prior to mounting the operator.
- When installing the operator where strong winds are present (such as front doors), spring tension for closing force may be increased as required.

The main electrical supply is to be connected to the two wires coming out of the **transformer** and the ground should be connected to the control board's attached ground wire.

OPERATOR CONTENTS

X1- OPERATOR HEADER + LID (SEPARATE BOX)

X1- OPERATOR GEARBOX

X1- OPERATOR CONTROL BOARD

X1- OPERATOR ARM ASSEMBLY (PUSH/PULL)

X2- "CAUTION" DOUBLE-SIDED STICKERS

X1- "WARNING" STICKER

X1- INFO STICKER

X4- 16MM M6 x 1.0 FLAT HEAD SCREWS

4.2 HEADER MOUNTING

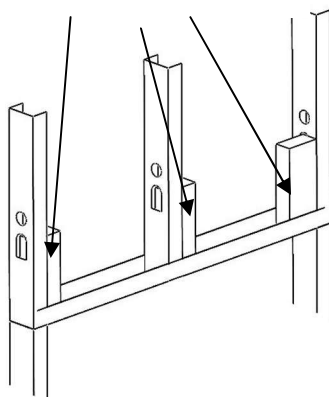
To mount the header, ensure the door frame is sturdy and properly installed. The wall above the door frame where the header is to be mounted **MUST** be reinforced to support the weight of the Operator and all additional equipment.

 Header **MUST** be able to support 200 lbs (90kg).

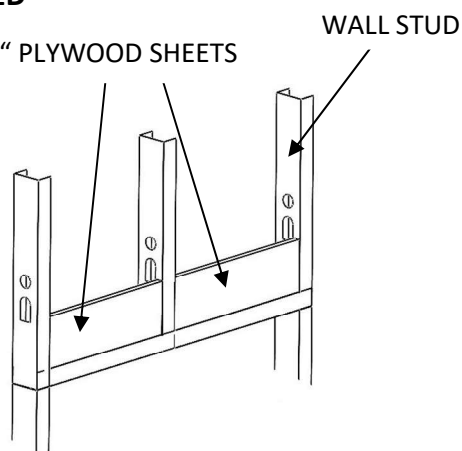
For example: A 3/4" Plywood sheet secured to the vertical studs or 2" x 4" wooden studs positioned vertically along the studs at spaced intervals is acceptable (as shown below). Ideally this should be done prior to fitting drywall.

REINFORCEMENT AS REQUIRED

2" X 4" WOOD PIECES

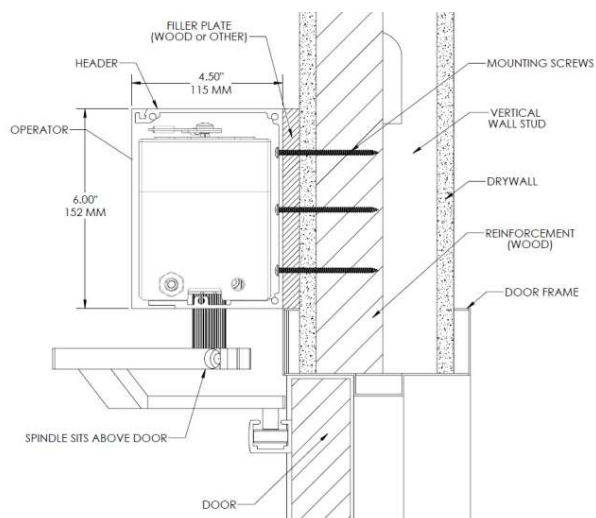


3/4" PLYWOOD SHEETS

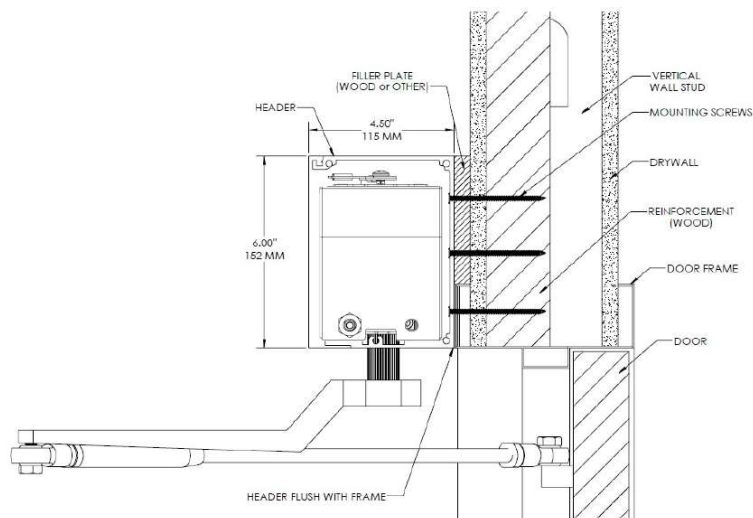


The header may be mounted against the door frame or on top depending on aesthetic preference or site constraints. Both methods should be completed as outlined below. In PULL applications the header may be mounted on top of the frame so long as the spindle clears the door path (Typically this will be 2.0" to 2.5" above the door on standard commercial frames). **Do not use drywall screws to mount header.** Ideally use a minimum of eight (8) #14 (at least 2" in length) Pan Head screws to mount header. Header may be mounted onto aluminum door/wall frames directly.

PULL OPERATOR



PUSH OPERATOR



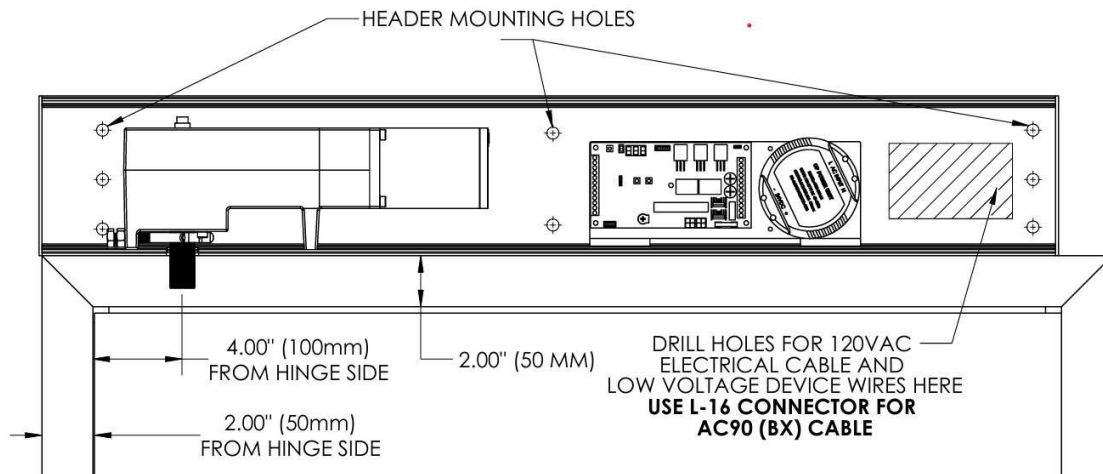
4.3 HEADER MOUNTING (CONTINUED)

When mounting the header, you may drill holes for the electrical supply cable and the low-voltage device wires. These holes should be drilled opposite to the gearbox, far enough to give room for the control board or additional devices. Typically the holes will be drilled on the latch/strike side of the door (Opposite to the hinges).

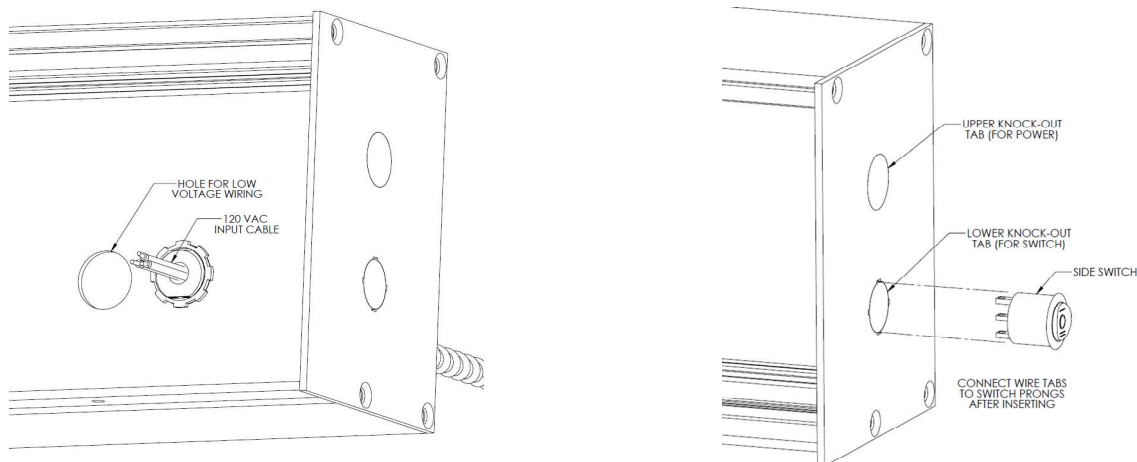
Typical installation shown below, actual installation may vary based on site conditions/constraints.

⚠ IMPORTANT: Ensure the header and all equipment is properly and securely fastened. The header must support at least 200 Lbs (90 kg).

The operator spindle should be at 4.0" (100mm) away from the hinge side of the door frame. This applies regardless of door frame size. Holes for electrical 120V AC power and Low Voltage Devices **MUST** be separate. The 120V AC power input and the base plate for the controller must be bonded (ground) to the header. Ensure the spindle clears the path of the door.

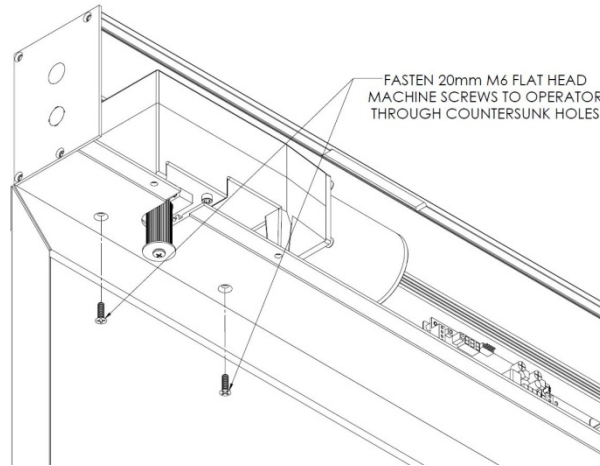


The 120 V AC AC90 (BX) cable can also be supplied from the sides of the header. Pre-sized knock-out tabs are located on both sides of the header. Insert the 3 position **AUTO/OFF/HOLD** Toggle switch on either side of the operator through the lower knock-out tab located on the side. The upper knock-out tab can be used for electrical connection. (Use conduit or armored cable appropriate for commercial applications).



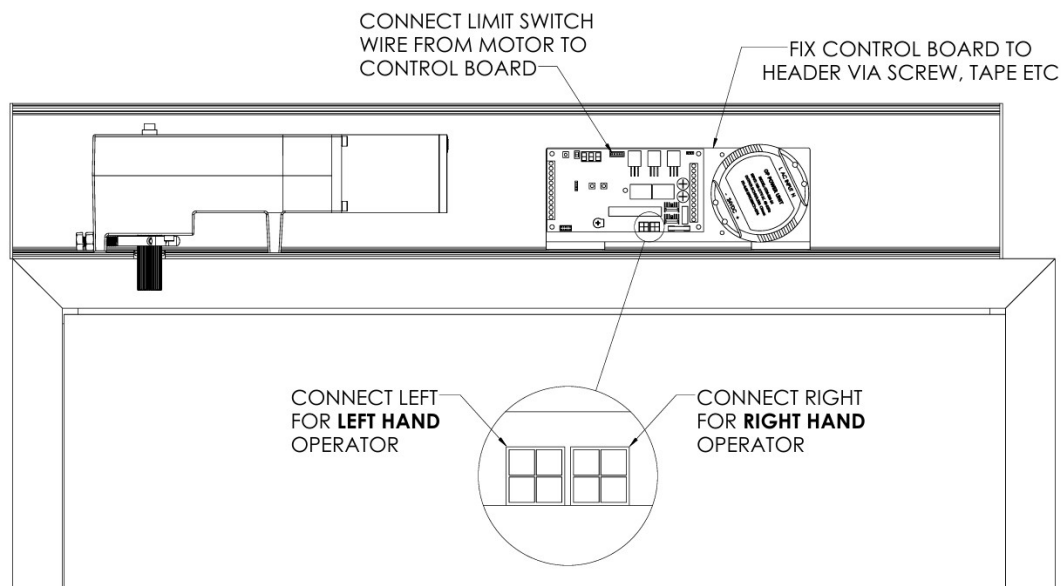
4.4 OPERATOR AND CONTROLLER INSTALLATION

When the Header has been securely mounted, place the gearbox inside the header with the arm spindle through the cut out slot on the bottom side of the header. Use 2 of the included 15mm M6 x 1.0 Flat head machine screws to fasten the gearbox to the header.



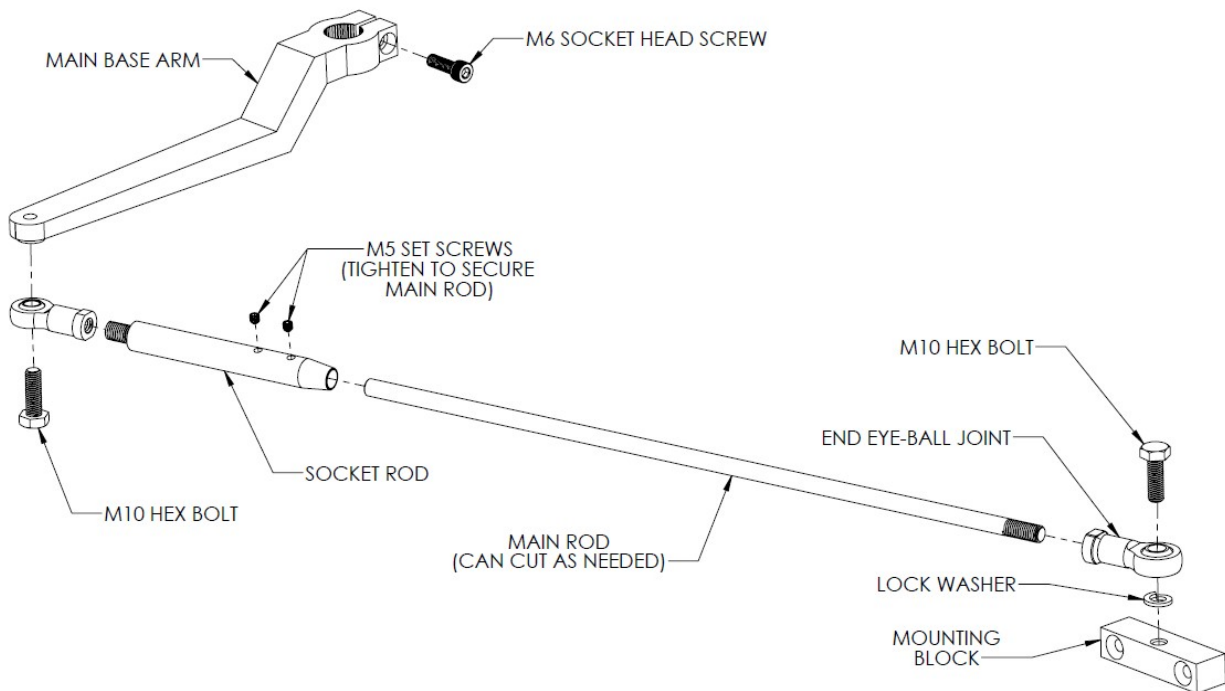
Next, insert the controller and secure in place via self-drilling screw through the mounting bracket, double-sided tape or any other secure method. Connect the controller to the 120 V AC power cable via the two power supply wires; make the connections using twist-on wire connectors and connect the ground wire to the header via screw. Insert the motor lead harness into either the **LEFT OR RIGHT** terminal depending on the handing of the gearbox (LEFT for left hand swing, RIGHT for right hand swing). The segmented program LED should turn on to indicate the controller is ON.

⚠ WARNING: Never disconnect motor harness from control board while the arm is attached to the door. Motor resistance against the spring will be severed and will cause the door to swing shut with force. Rapidly swinging door can present a safety hazard.



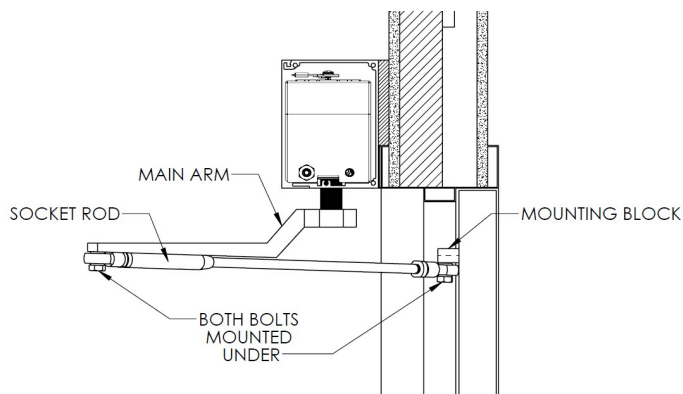
5.0 PUSH ARM INSTALLATION

In Operators provided with a PUSH arm, the arm consists of several components that are assembled together. The main rod that sits inside the socket end may be cut to the appropriate length for installation. (Usually remove 7 inches (178mm) for typical applications with standard commercial door frames)

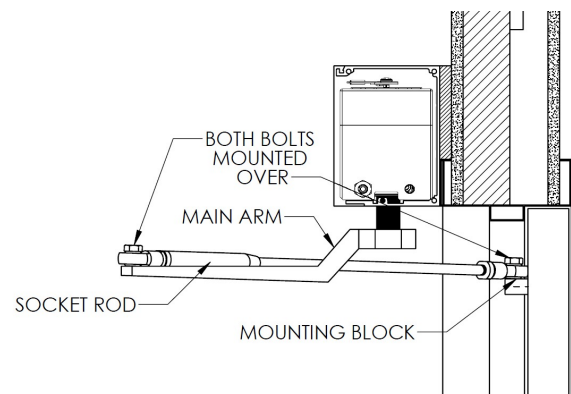


When installing the arm for PUSH applications, it is important to note the clearance between the rod end and the top jamb of the door. The Hex Cap bolts on the Push arm can be adjusted to provide additional clearance if necessary. Simply remove the bolt on either the socket end or the ball joint end (or both) as needed and re-fasten them the opposite direction. Both methods are pictured below. **The main base arm and the socket rod with the rod itself should be parallel to each other and should not form an extreme angle with each other.**

METHOD 1



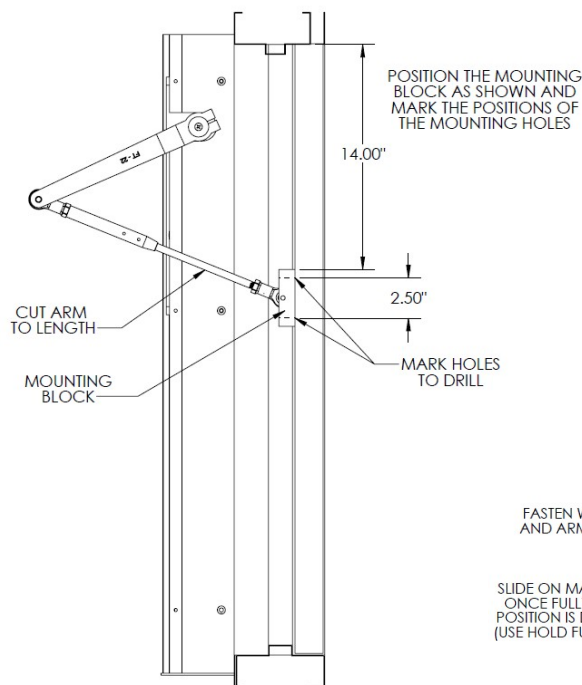
METHOD 2



5.1 PUSH ARM INSTALLATION (CONTINUED)

To affix the push arm to the door, first position the arm by sliding the main arm into the spindle, then position the arm with the appropriate method as mentioned in section 5.0; **do not tighten the arm to the spindle yet**. Mark the tap points for the mounting block screws and drill appropriately sized holes if needed.

Using the included #14 x 1 ¼" Flat Head screws, fasten the mounting block to the door approximately 14 inches (355mm) from the hinge side of the door. Ensure the arm sits parallel to the mounting block and is not angled. As pictured below the main arm rod should be cut so that the arm is angled inwards towards the door slightly; **this may or may not be necessary depending on the specific application**.

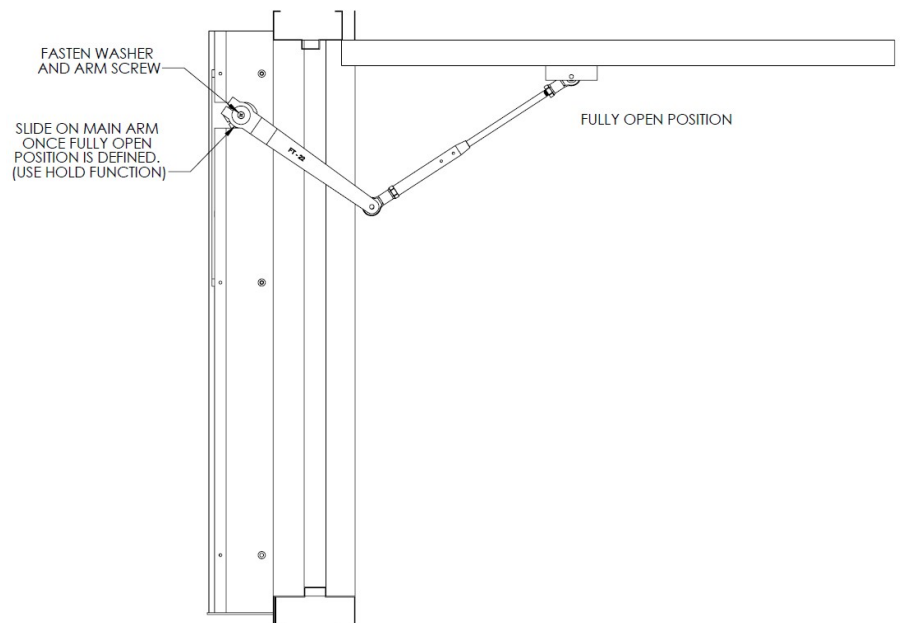


STEP 1:

Once the mounting block is affixed, slide the main arm off the spindle, ensure that it does not fall and set the side switch on the header to the **HOLD** position; wait for the spindle to fully rotate until the shaft stopper hits the stopper bolt.

STEP 2:

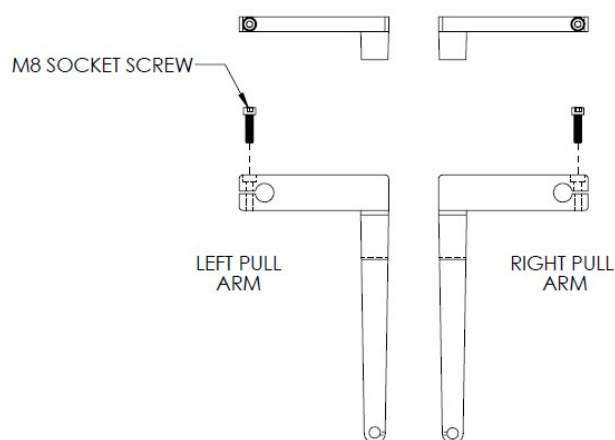
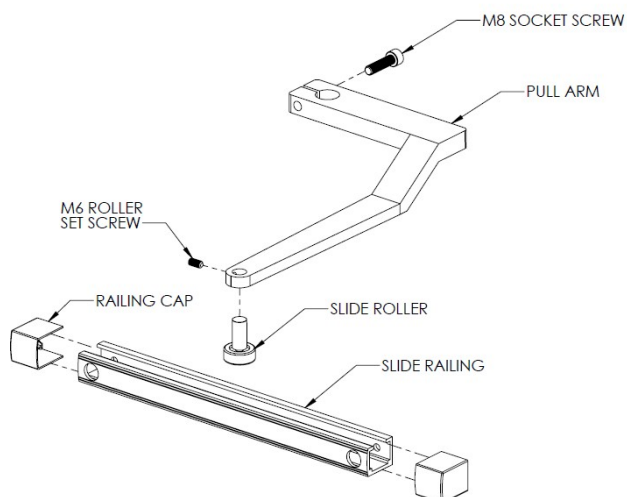
Once the shaft has stopped and is holding, fully open the door to the desired maximum open position. Then re-attach the main arm to the spindle and fasten the arm screw with the washer. Set the side switch to the **AUTO** position and allow the spring tension to close the door.



Ensure that all bolts, threaded ball joints as well as the rod set screws are properly fastened at the end of arm installation.

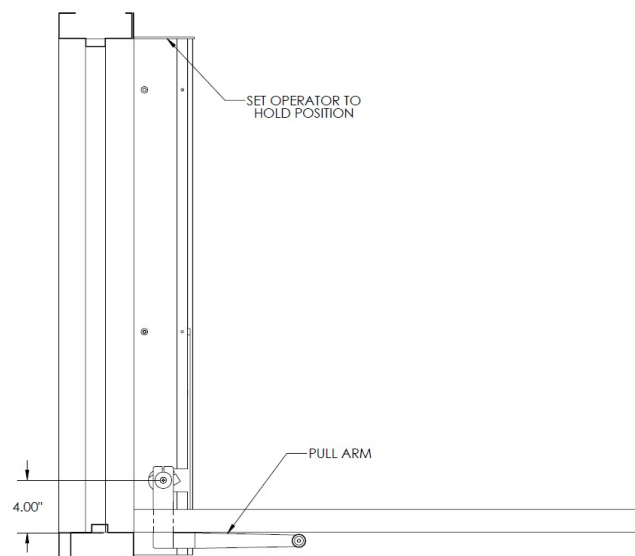
6.0 PULL ARM INSTALLATION

The Pull Arm consists of three components; the arm, the roller and the slider. The Pull arm included in this Operator will have either LEFT or RIGHT handing corresponding with the handing of the gearbox.



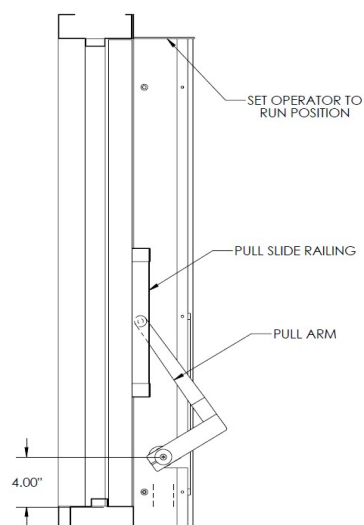
1. Set the side switch located on the header to the **HOLD** position and allow the spindle to rotate until the spindle stopper hits the stopper bolt on the operator. Door is now in the fully open position.

Slide on the pull arm and set the maximum open position of the door. Fasten the spindle screw and washer. Stopper bolt may be adjusted to fine tune the final opening position.



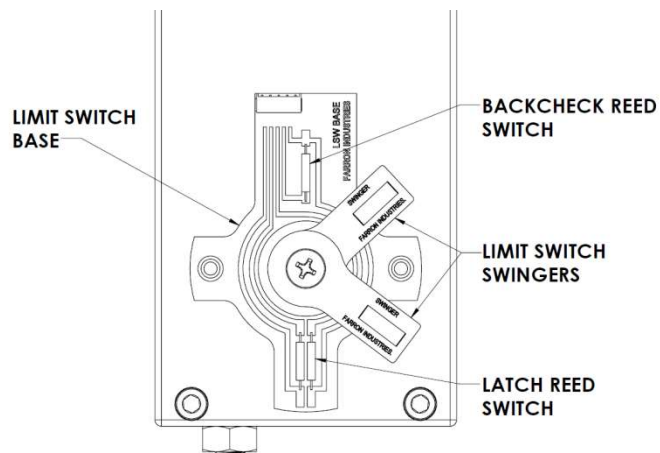
2. When the pull arm has been fastened to the spindle, set the side switch to the **AUTO** position. Allow the door to close with the spring tension.

Slide on the Pull Slide Railing and position it so that it will cover the roller's path of travel when the door opens and closes. Fasten the railing to the door. Finally slide on the plastic caps to the sides of the railing.



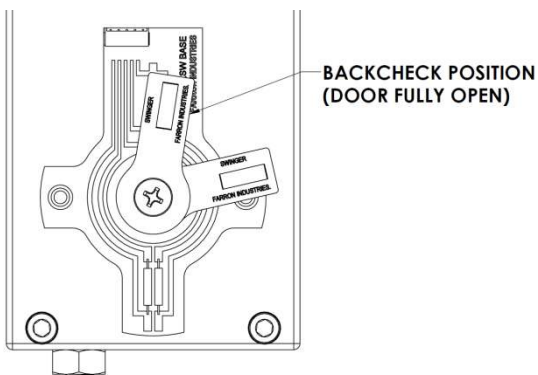
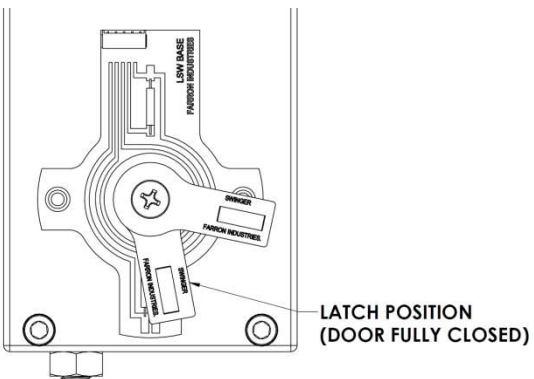
7.0 PROGRAMMING AND SETUP

Once the Operator is secured in the header and the arm is properly affixed, the Operator can now be set up and fine-tuned to the specific application.

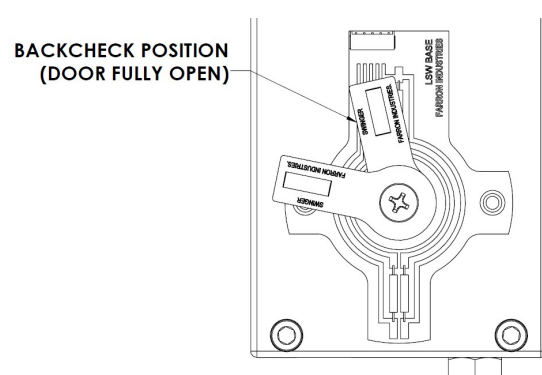
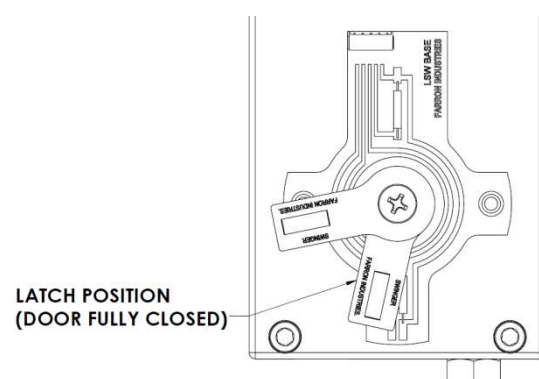


The limit switches located on the top of the operator communicate the position of the door to the controller, they will slow down the door so that the door will hold open and close gently. There is Back Check position (Fully open) and Latch Position (Fully closed). The limit switches should be adjusted so that the position of the Limit Switch Swinger magnets align with the corresponding position reed switches on the Limit Switch base.

LEFT HAND OPERATOR



RIGHT HAND OPERATOR



7.1 PROGRAMMING TABLE

Use this table alongside the information in section 8.0 when programming and setting up the FA-85C

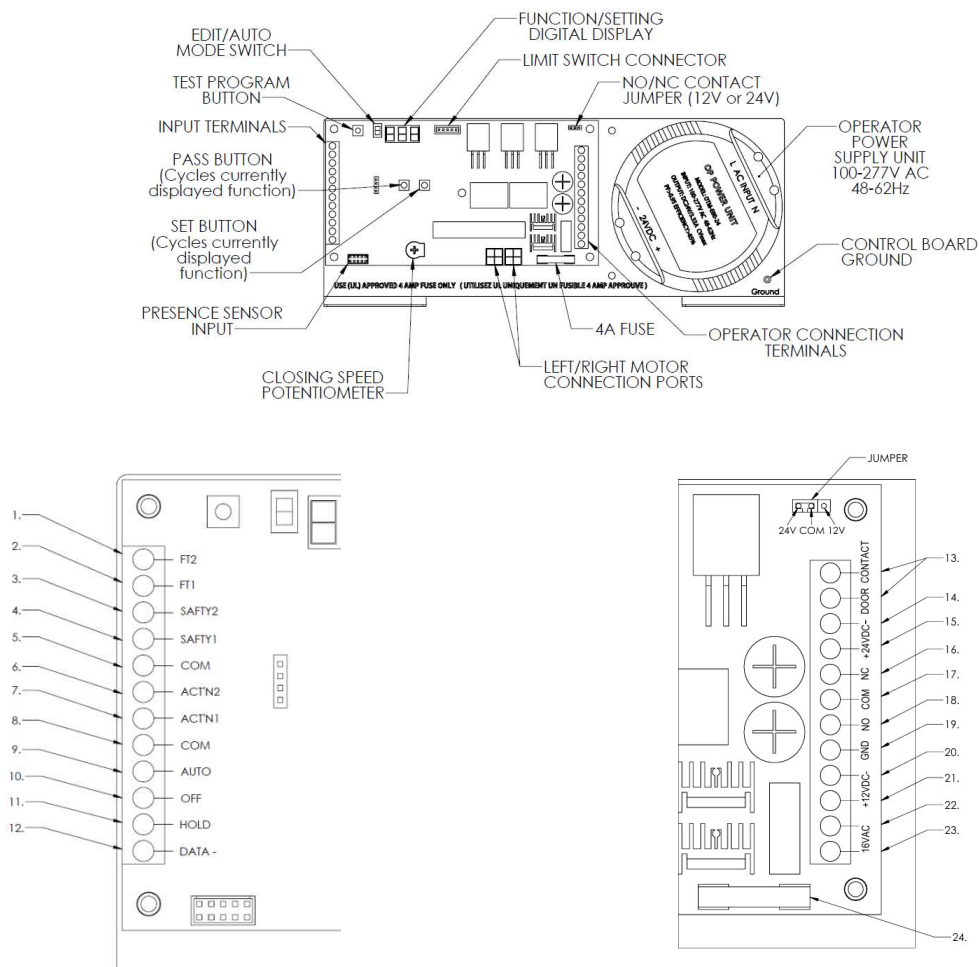
TO RESET TO DEFAULT SETTINGS: To reset the control board program to factory default settings:

1. Set 3 position SIDE TOGGLE switch to **AUTO**
2. Set **EDIT/AUTO MODE SWITCH** to **EDIT**
3. Press and hold the **PASS** and **SET** buttons simultaneously for 10 seconds.
4. The green LED should flash to indicate control board settings have been reset.

FUNCTION	DEFAULT	SETTING	DESCRIPTION
0	7	1=2sec 6=12sec 11=30sec 2=4sec 7=14sec 12=60sec 3=6sec 8=16sec 13= 05min 4=8sec 9=18sec 14=10min 5=10sec 10=20sec 15=15min	INSTANT ACTIVATION TIME & PUSH & GO OPEN TIME (NON-CLUTCH OPERATORS ONLY)
1	4	0 to10 0=min (150 RPM/Sec) 10=max	HOLD FUNCTION SPEED
2	5	0 to10 0=min (150 RPM/Sec) 10=max	OPEN SPEED
3	6	0 to 6 0=min (As door fully closes) 6=max	LATCH SPEED
4	3	0 to 9 0=min (As door fully opens) 9=max	BACK CHECK SPEED
5	2	0=0sec 4=5sec 1=1sec 5=10sec 2=2sec 6=15sec 3=3sec 7=20sec	DELAYED ACTIVATION TIME
6	0	0=0.0sec 3=1.5 sec 1=0.5sec 4=2.0 sec 2=1.0sec 5=3.0 sec	SECURITY 1 INHIBIT (SAFETY 1)
7	0	0=0.125 2=0.50 4=1.25 1=0.25 3=1.0 5=1.50	STRIKE DELAY
8	2	0=Instant 3=1/2sec 1=1/4sec 4=5/8sec 2=3/8sec 5=3/4sec	PUSH AND GO SENSITIVITY (FOR NON-CLUTCH OPERATORS ONLY)
9	1	0 = MIN 5 = MAX	OVERLOAD

CODE			SELECT ON(1)	SELECT OFF(0)
FUNCTION	SETTING	DEFAULT SETTING		
F	0	0	PUSH AND GO= ON (Non-Clutch Operators Only)	PUSH AND GO=OFF (Clutch Operators Only)
F	1	0	If Lockout is ON. Body Guard Sensor Mounted on DOOR. -If door is fully closed and Safety 1 is activated: Door Will Open -If door is closing and Safety 1 is activated: Door will stop and hold in its current position and then open at set HOLD SPEED. -ONLY when door <u>opening</u> Safety 1 remains disabled.	If Lockout is ON. Body Guard Sensor Mounted OVERHEAD. -If door fully closed and Safety 1 -is activated: Door will not open -If door is fully opened and Safety is activated: Door will not Close. -When door in <u>motion</u> (opening or closing), Safety 1 remains disabled.
F	2	0	Safety 2 OFF (At Back Check) Super Scan	Safety 2 ON (Always on) Super Scan
F	3	1	Lockout ON-When door is closing and Safety 1 is enabled, door will stop before hitting obstruction.	Lockout OFF- When door is closing & Safety 1 is enabled, door will not stop.
F	4	0	SAFETY 1 is Normally Closed (NC)	SAFETY 1 Normally Open (NO)
F	5	0	SAFETY 2 is independent on Activation (ACT'N1/N2) Safety 2: ON=Door Holds Safety 2: OFF=Door Opens	Safety 2 is dependent on Activation ACT'N1/N2) If Safety 2 and ACT'N1/N2: ON=Door Holds If Safety 2: OFF=Door Opens If ACT'N1/N2: OFF=Door Closes
F	6	1	MONITORING OF FT1 (ON)	MONITORING OF FT1 (OFF)
F	7	1	MONITORING OF FT2 (ON)	MONITORING OF FT2 (OFF)
F	8	0	PULL to CLOSE: Manually pulling door will deactivate all functions and door will close including when hold function is ON.	PULL to CLOSE: Function off. Door will not close when manually pulled.

8.0 CONTROL BOARD PROGRAMMING



INPUTS (Top to Bottom of Input Terminals **LEFT SIDE** and **RIGHT SIDE**); Terminal labels in **bold**.

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. FT2—Used with SAFTY2 (SAFETY 2) 2. FT1—Used with SAFTY1 (SAFETY 1) 3. SAFTY2—(SAFETY 2) Contact for SUPERSCAN Sensor 4. SAFTY1—(SAFETY 1) Contact for PRESENCE Sensor 5. COM— Common of SAFTY1 and SAFTY2 6. ACT'N2—Second input, use for Delayed Activation 7. ACT'N1— First Input, use for Instant Activation 8. COM—Common of ACT'N1 and ACT'N2 9. AUTO—Regular operating mode. All programs and settings are active in this mode; connected to 3 position switch (Red wire) 10. OFF— Wire for Operator Off Function; Programmed Operations are inactive in this mode; connected to 3 position Switch (Black wire) 11. HOLD— Wire for Operator Hold Function; Operator will HOLD in the fully open position (Maximum 4 hours); connected to 3 Position Switch (Yellow wire) 12. DATA— Used when cable to Bodyguard does not have plug on both ends (+ = 24VDC) | <ol style="list-style-type: none"> 13. DOOR CONTACT – Contact terminals for magnetic door contacts. 14. -24V —24V Ground (GND) 15. +24V —24 Volt Power Supply 16. NC—Normally Closed Contact, use with electric strike and other devices requiring relay 17. COM - Common of NO / NC contacts (Select + 12 V or + 24 V from Jumper; Refer to image above.) 18. NO— Normally Open Contact, use with door strike and other devices requiring relay. 19. GND— Ground/Common, use with electric strike and other devices requiring relay 20. -12V—12 volt negative (GND) 21. +12V—12 volt power supply 22. 16 VAC— 16 Volt AC for transformer connection. 23. 16 VAC— 16 Volt AC for transformer connection. 24. FUSE – USE (UL) APPROVED 4.0 AMP FUSE ONLY. |
|---|--|

NO/NC CONTACT JUMPER TO BE USED FOR STRIKE TO TOGGLE BETWEEN 12V AND 24V OUTPUT.

9.0 CONTROL BOARD PROGRAMMING

Observe the two buttons and the segmented LEDs that indicate the selected program and the program's value. Refer to the program list before changing the default settings on the control board.

1. Push the slider switch upwards into the **EDIT** position. This will allow you to adjust the Operator programming ONLY in **AUTO** mode (Does not work if side toggle switch on **OFF** or **HOLD** position).
2. Press the **PASS** button to cycle between functions. Press the **SET** button to adjust the value of the selected function.
3. Push the slider switch back downwards into the **AUTO** position. This will set the program when using the Operator. Use the **TEST** button to run the active program.
4. Adjust **OVERLOAD** (setting #9) to increase/decrease power of the operator. (Ex. Increasing may be necessary in situations such a heavy door or areas subjected to high winds)
5. Adjust **CLOSING SPEED** Potentiometer to increase/decrease the door closing speed of the operator.

OUTPUT by FEEDBACK CONTROL SYSTEM (FCS)

Motor - 2 Way rotation option switch with connector (Left: Clockwise/Right: counter clockwise)

OTHER FEATURES

Stopper adjustment– Adjust the stopper bolt located on the spindle side of the operator to manually fine tune final stop position.

Opening Speed Control – Adjustable (Control the speed at which operator opens. This should not exceed safe opening speed as per ANSI/BHMA standards for Low-Energy power operated pedestrian doors)

BHMA A156.19 (4.5): *The kinetic energy of a door in motion shall not exceed 1.25 lbf-ft (1.69 Nm).*

Table I provides speed settings for various widths and weights of doors for obtaining results complying with this paragraph.

Table I:

“D” Door Leaf Width - Inches (mm)	“W” Door Weight in Pounds (kg)				
	100 (45.4)	125 (56.7)	150 (68.0)	175 (79.4)	200 (90.7)
*30 (762)	3.0	3.0	3.0	3.0	3.5
36 (914)	3.0	3.5	3.5	4.0	4.0
42 (1067)	3.5	4.0	4.0	4.5	4.5
48 (1219)	4.0	4.5	4.5	5.0	5.5

Matrix values are in seconds

10.0 SAFETY SENSOR WIRING DIAGRAMS

Figure 1: SAFETY MONITORING WIRING DIAGRAM

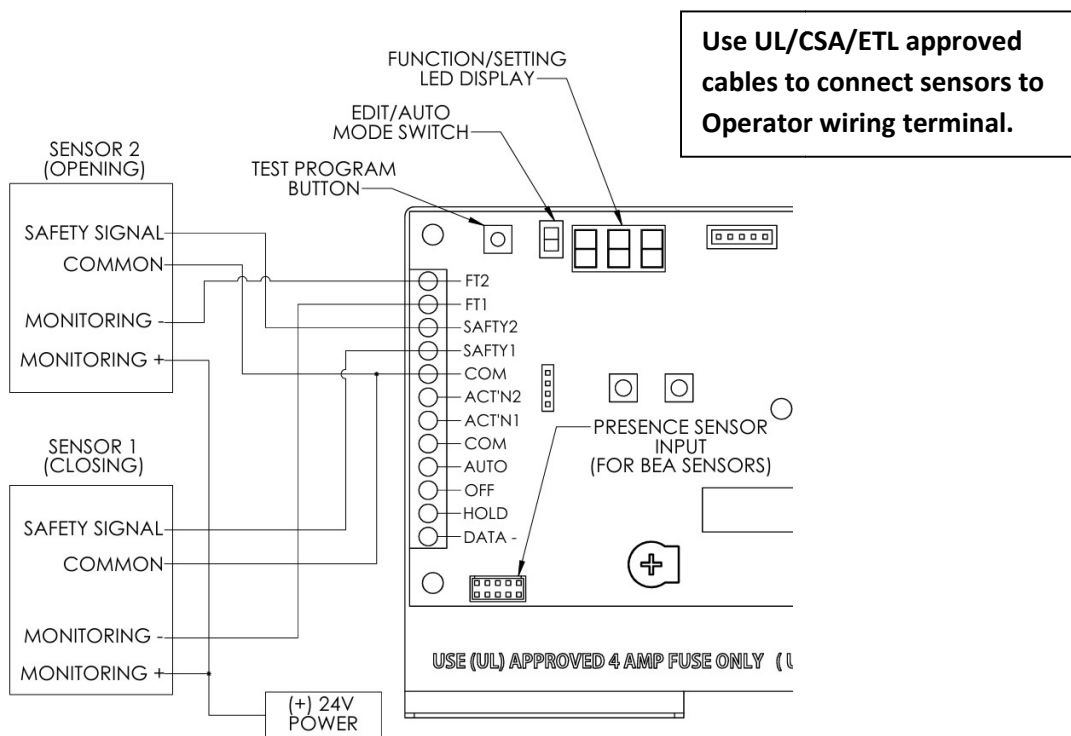
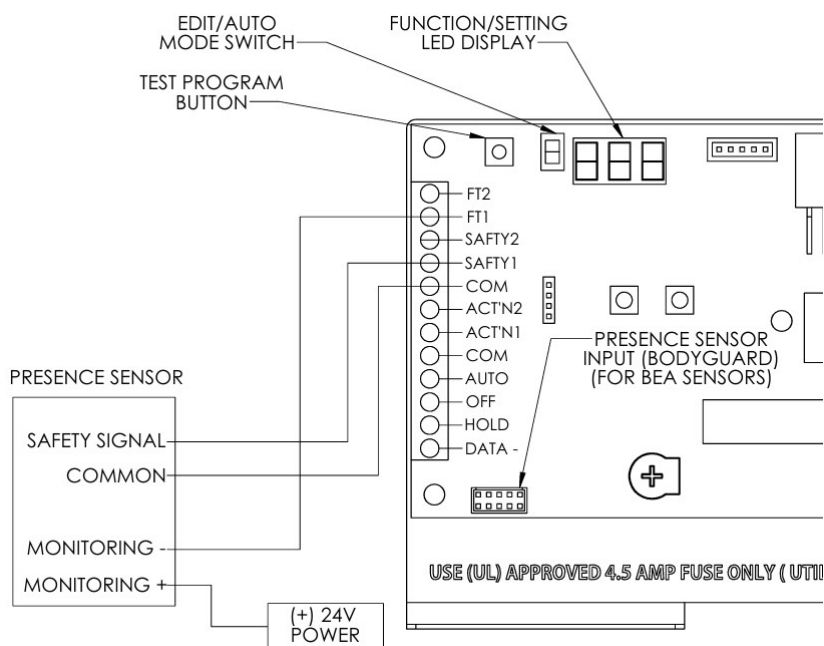


Figure 2: PRESENCE SENSOR WIRING DIAGRAM



11.0 TROUBLESHOOTING

ISSUE	POSSIBLE SOLUTION
Door does not open upon instant/delayed activation.	• Ensure that the control board's slider switch is set to the AUTO position. • Check that power is supplied. (LED lights should be ON) • Check activation wires and connection to the activation device (i.e. Push button) • Check switch on side of header is set to AUTO position
LED does not turn on even after power connection.	• Check to ensure motor LEFT/RIGHT wire harness is connected properly to control board with respect to orientation. • Ensure fuse on control board is not blown and replace if needed. • Check to ensure power is being supplied to the controller power supply unit.
Door Opens/Closes too slow/fast	• Adjust limit switches on Operator to ensure they are correctly tuned to the back check and latch positions according to the door. • Adjust closing speed potentiometer on control board • Adjust opening speed Function (2)
Door does not close automatically/holds open indefinitely	• Ensure that the activation wires are not being shorted. (Check Activation buttons/devices). Activation devices may malfunction and send continuous OPEN signals to the Operator. This may result in blown fuse. • Ensure that header side switch is not in the HOLD position.