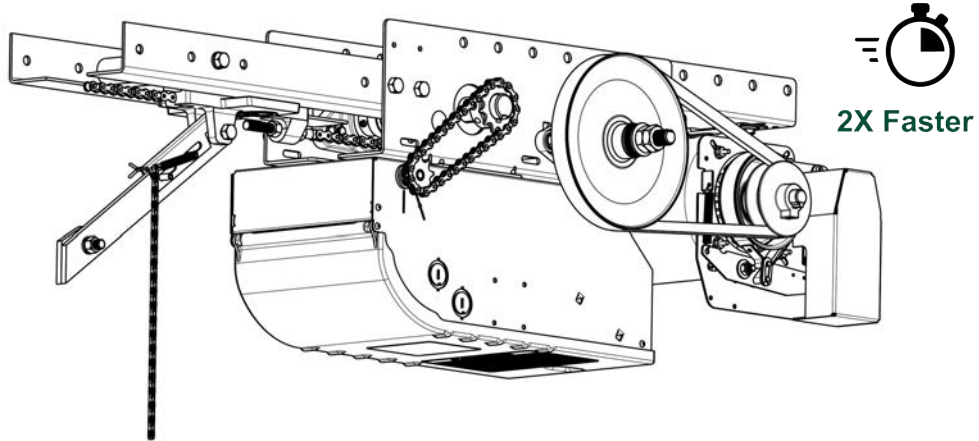


Installation & Instruction Manual

Commercial & Industrial High-Speed Heavy-Duty Trolley Operator
(For fast doors with high performance and speed managing requirements)



Rapido™ RTBH

CSA C22.2-247.92
UL 325 5th Ed.



**Electronic control for monitored
external entrapment protection devices
(BOARD 070M)**



READ AND FOLLOW ALL INSTRUCTIONS.
SAVE THESE INSTRUCTIONS.
GIVE TO END-USER.

Serial # _____

Model # _____

Wiring Diagram # _____

Project #/Name _____

Door #/Name _____



For technical support, please call 1-800-361-2260 or visit www.manaras.com for more information

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Installation Instructions

IMPORTANT INSTALLATION INSTRUCTIONS

WARNING

TO REDUCE THE RISK OF SEVERE INJURY OR DEATH TO PERSONS:

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. Installation of this door operator must be done by a qualified installer.
5. Verify that the operator is correct for type, size of door and frequency of use per the operator specifications.
6. Install the door operator at least 8 feet (2,44 m) or more above the floor. If the operator must be installed less than 8 feet (2,44 m) above the floor, then exposed moving parts must be protected by covers or guarding, provided by the operator manufacturer.
7. Do not connect the door operator to the source of power until instructed to do so.
8. Locate the control station: (a) within sight of the door, and (b) at a minimum height of 5 feet (1,5 m) above floors, landings, steps or any other adjacent walking surface and (c) away from all moving parts of the door.
9. Install the Entrapment Warning Placard next to the control station in a prominent location.
10. For products having a manual release, instruct the end user on the operation of the manual release.
11. If you have any questions about the safety of the door operating system, do not install the operator, contact Manaras-Opera at 1-800-361-2260.

For The California Market:



California Proposition 65 Warning



WARNING:

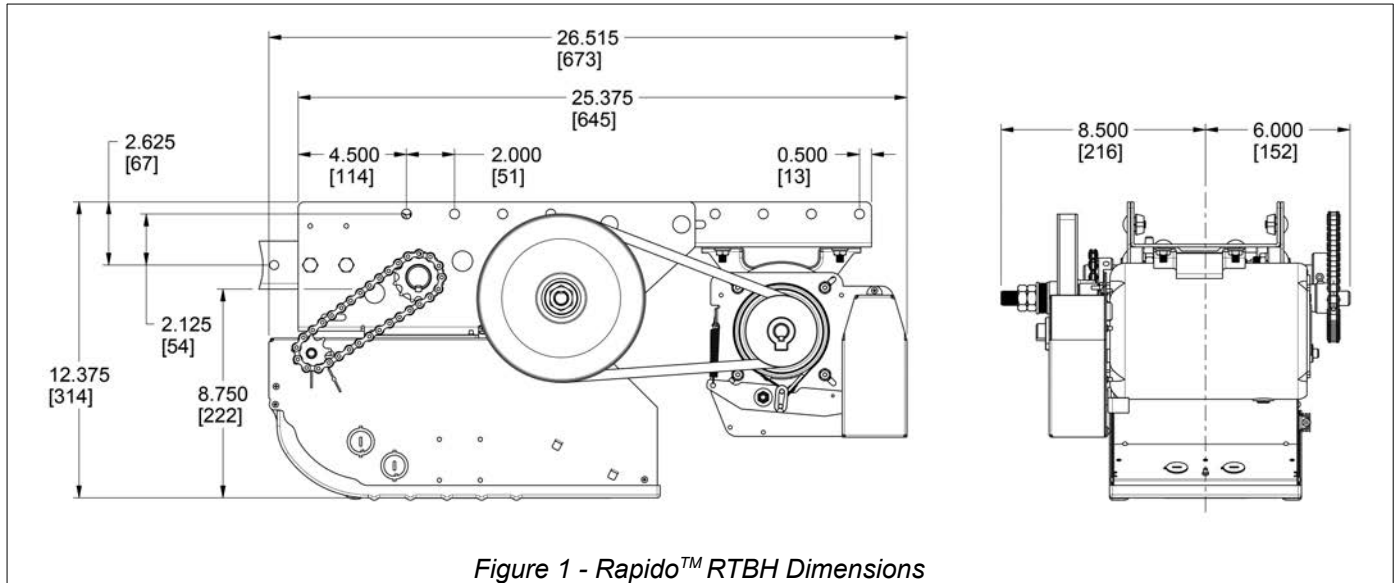
This product can expose you to chemicals including lead, which are known to the State of California to cause cancer or birth defects or other reproductive harm.

For more information go to: www.p65warnings.ca.gov

S227R0

1 General Specifications and Dimensions (Rapido™ RTBH)

SUPPLY VOLTAGE.....	115, 208, 230 VAC single-phase
CONTROL VOLTAGE.....	24 VAC class 2 transformer, 2 amp fuse type ACG
MOTOR.....	Continuous duty, 1 horsepower
MOTOR VOLTAGE.....	208 VAC three-phase
DOOR SPEED.....	19"/sec opening / 12"/sec closing (RTBH-1.19)
DOOR SPEED.....	23"/s opening / 15"/sec closing (RTBH-1.23)
DOOR SPEED.....	9"/sec opening / 6"/sec closing (RTBH-A.06)
OPERATOR MECHANICAL OUTPUT RATING.....	285 ft-lb/sec
NET WEIGHT (Operator only).....	73 lb (33 kg)
STANDARD WIRING TYPE.....	C2 (momentary contact to open/stop and constant-pressure-to-close)
APPLICATION.....	Ultra high-end heavy-duty v-belt drive for counter balanced sectional doors
DUTY.....	> 100 cycles/day



2 Operator User Guide

- ➔ This operator is to be used on properly counterbalanced standard lift type sectional doors not exceeding a total weight of 750 lb.
- ➔ The operator must not be loaded more than the maximum output rating of 285 ft-lb/sec.

For any questions regarding the proper use of this operator, please contact Manaras-Opera. For any application that is different from the one stated in this user guide, please contact Manaras-Opera.

3 Door & Operator Hardware

3.1 Delivery of Operator

Upon delivery of your RAPIDO™ trolley operator, inspect the unit immediately for any shipping damages. Verify that you have received all the hardware parts pertaining to your operator model, as listed in Table 1 and shown in Figure 2. If ordered, other items such as radio controls or other types of optional equipment may be present. If any item is missing or if there is evidence of damage, call the transport company or your direct supplier.

3.2 Hardware Supplied

Table 1 - Standard Hardware Parts Supplied

No	Qty	Description	
1	1	3-Push-button station (open/close/stop)	
2	1	Door lifting arm assembly	
3	2	Pre-drilled galvanized track ⁽¹⁾	Txxx
4	1	#410 (48)/#41 Drive chain ⁽¹⁾	
5	1	Front end u-bracket	
6	1	#410 (48)/#41 Front idler assembly	
7	2	Spacer	
8	1	Carriage	
9	6	Hex bolt 3/8-16 x 1-1/4"	T2- HBAG
10	1	Hex bolt 3/8-16 x 2-1/4"	
11	1	Take-up bolt 3/8-16 x 2-1/2"	
12	1	Connecting chain link	
13	8	Hex nut 3/8-16	
14	7	Helical spring lock washer 3/8	
15	1	Lock nut 3/8-16	
16	1	Entrapment Warning Placard	

(1) Length according to door height

Note: Depending on door height, the quantity of track hardware may vary.

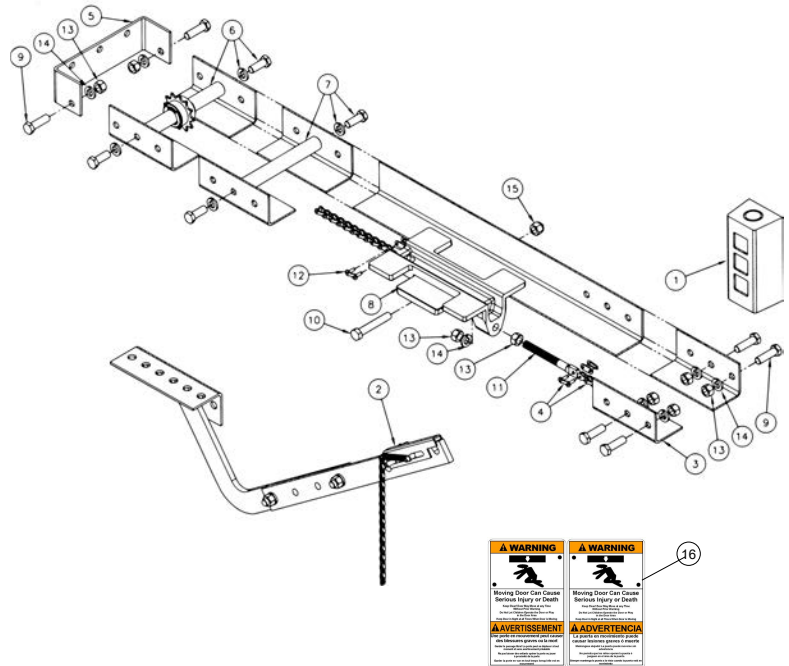


Figure 2 - Standard Trolley Hardware



Figure 3 - Entrapment Warning Placard

NOTE: Install the **Entrapment Warning Placard** (shown in Figure 3), next to the control station, visible in the area of the door.

4 Operator Installation

4.1 Assembly Instructions



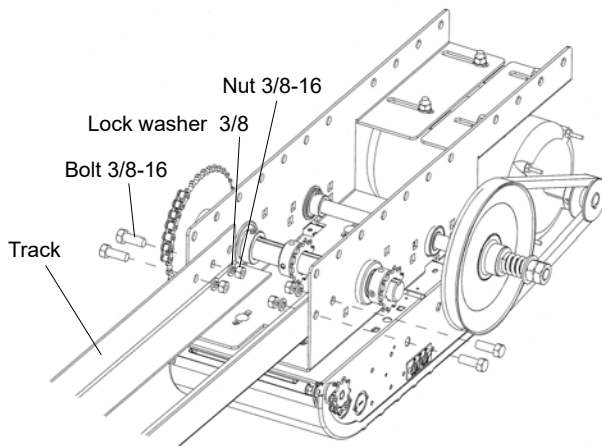
CAUTION

The operator has exposed moving parts and to prevent access to the pinch points, this operator must be installed at least 8 feet (2,44 m) or more above the floor. Alternatively, covers or guarding, provided by the manufacturer, must be installed when the operator is mounted less than 8 feet (2,44 m) above the floor.

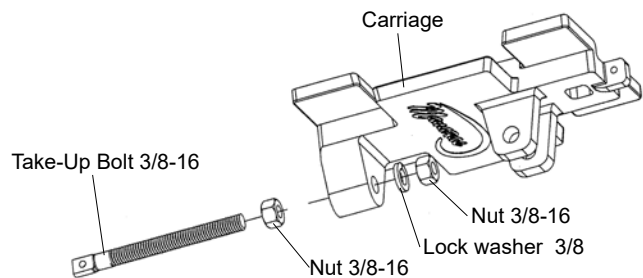
NOTICE

- Install the operator only when all openings of a horizontal slide door are guarded or screened from bottom of the door to a minimum of 4 ft (1,22 m) above the ground to prevent a 2-¼ in (57,2 mm) diameter sphere from passing through the openings anywhere in the door.

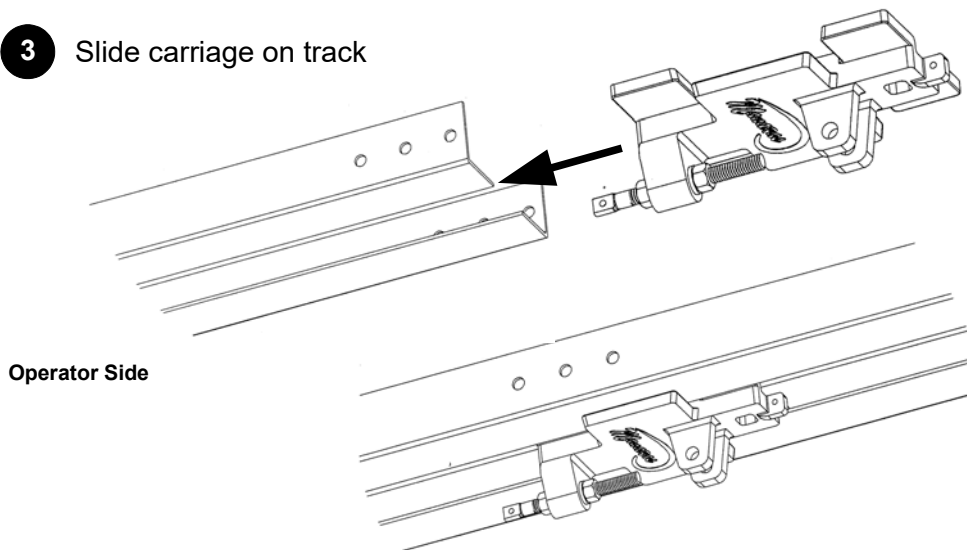
1 Attach tracks to operator



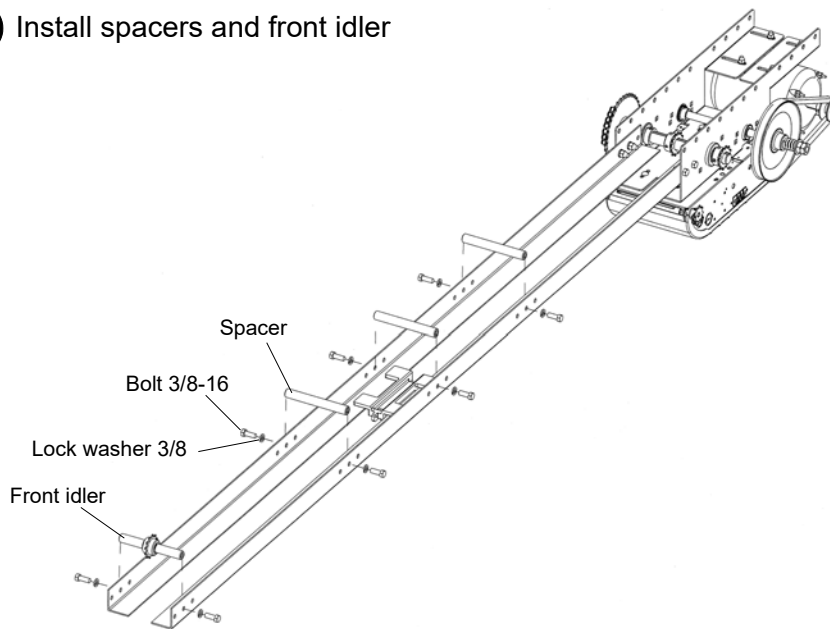
2 Assemble carriage



3 Slide carriage on track

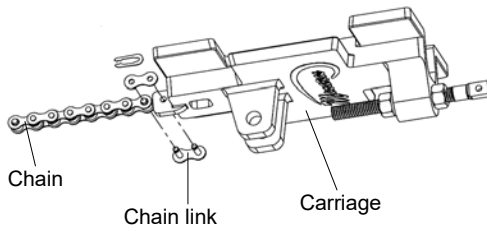


4 Install spacers and front idler

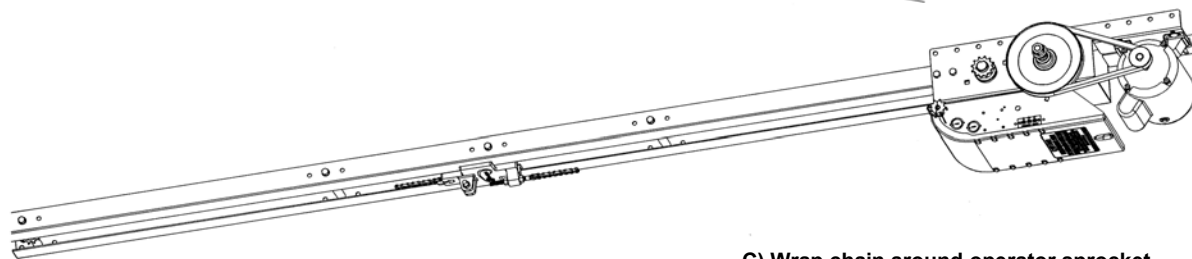
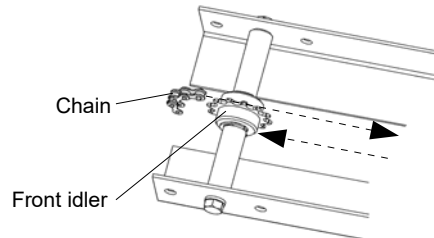


5 Install chain

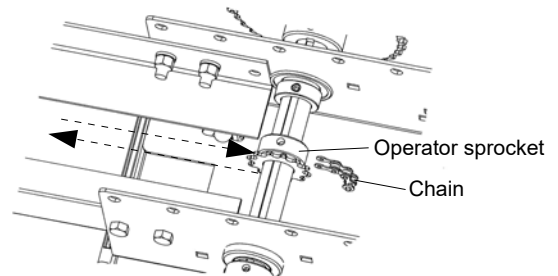
A) Attach chain to front of carriage.



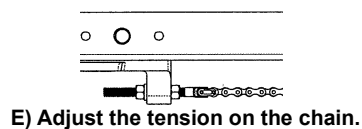
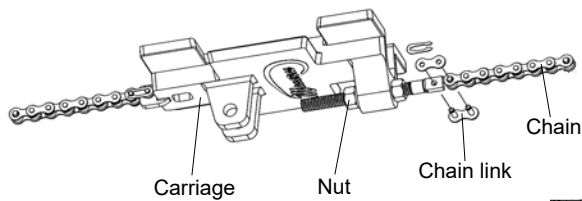
B) Wrap chain around front idler.



C) Wrap chain around operator sprocket.



D) Attach chain to back of carriage.

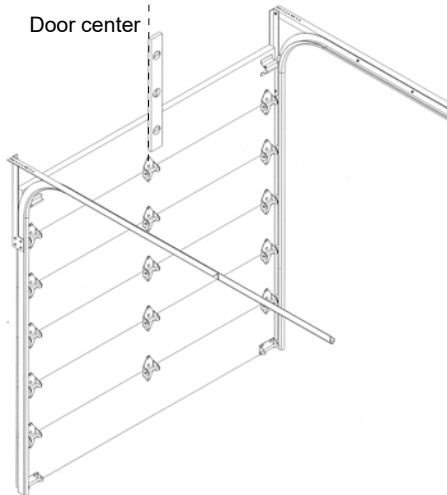


E) Adjust the tension on the chain.

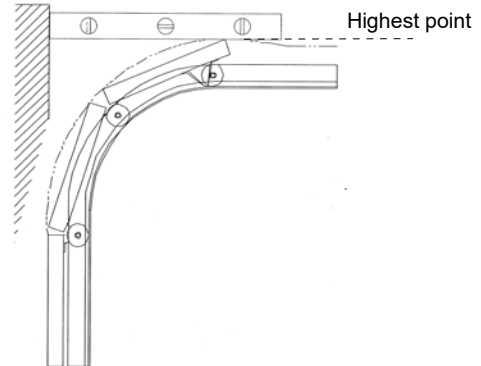
4.2 Installation

Trolley operators are designed to be mounted directly over the center of the door. The operator tracks should clear the door by approximately 2.5". Off center mounting may be required, for example, because of potential interfering structures. It is possible to install the operator slightly off the center on torsion spring doors. Extension springs require center mounting.

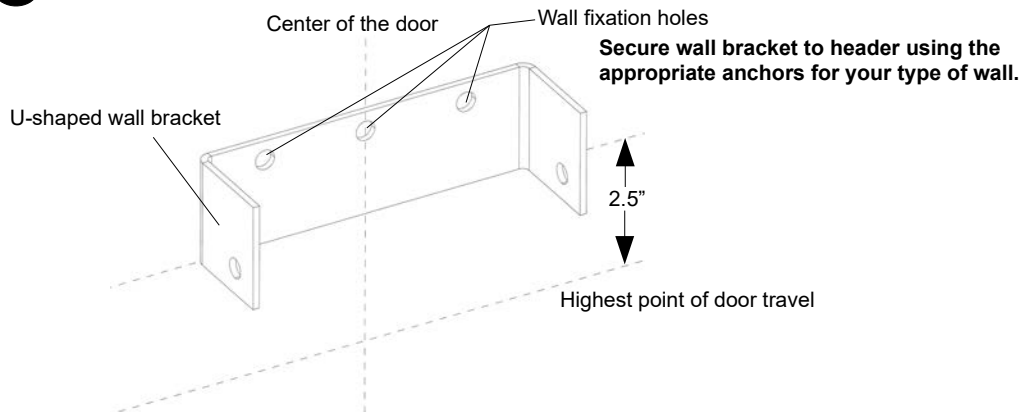
1 Establish the center of the door



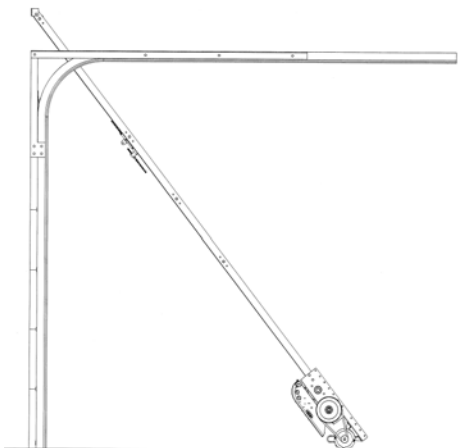
2 Establish the highest point of door travel



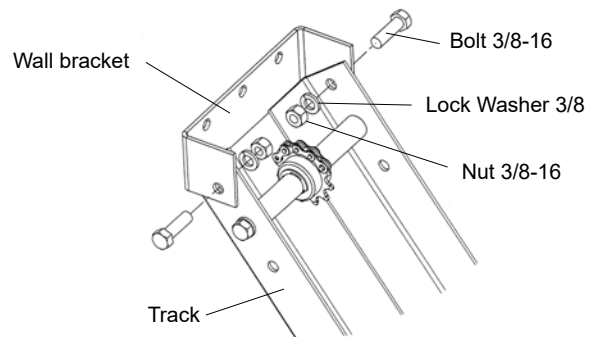
3 Position the U-shaped wall bracket



4 Attach tracks to U-shaped wall bracket

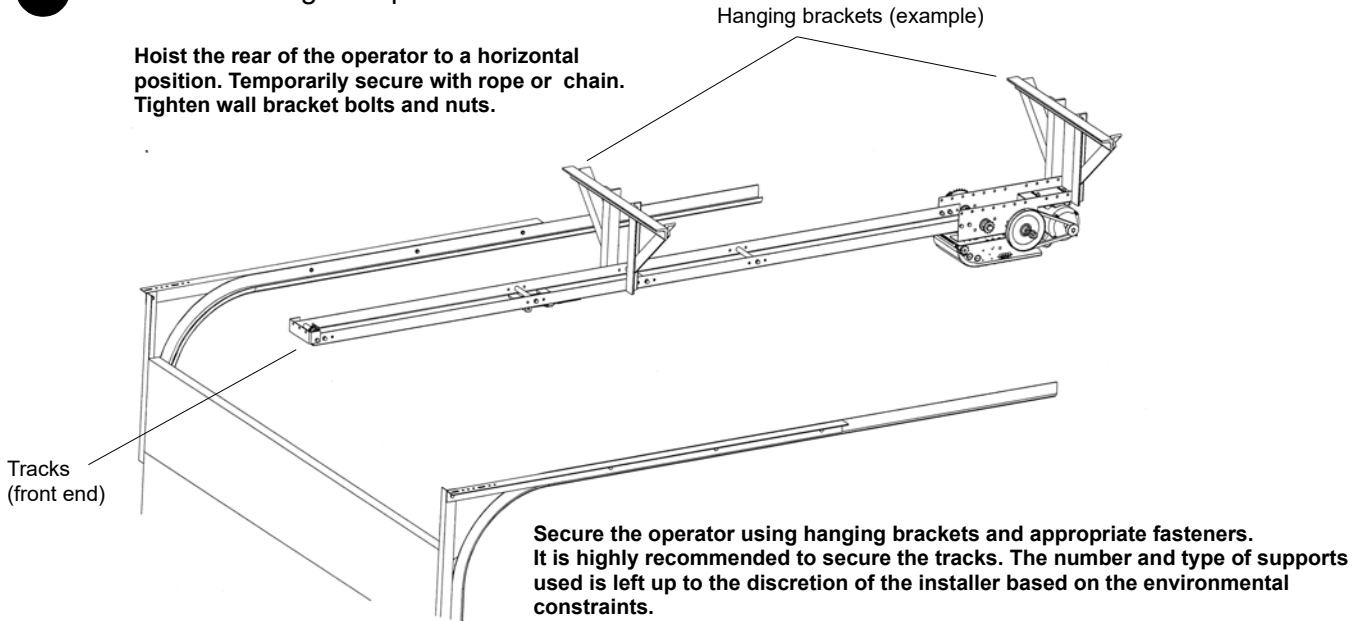


Allow the motor to rest on the floor and raise the front end of the rails and secure with the bolts and nuts (do not tighten).



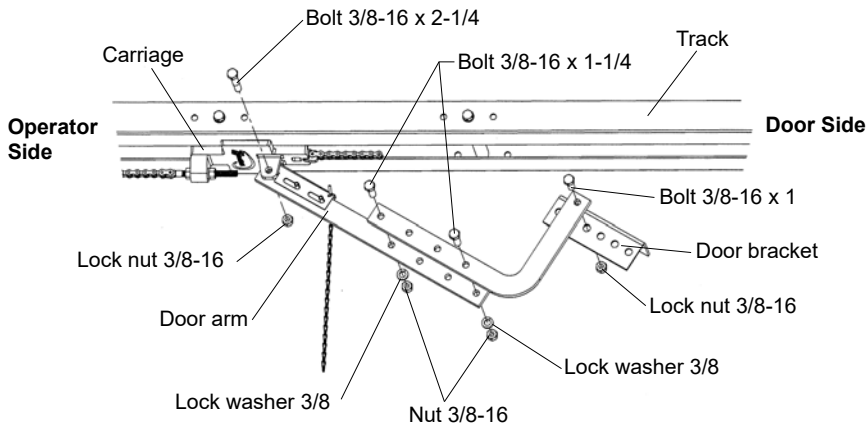
5 Position and hang the operator

Hoist the rear of the operator to a horizontal position. Temporarily secure with rope or chain. Tighten wall bracket bolts and nuts.



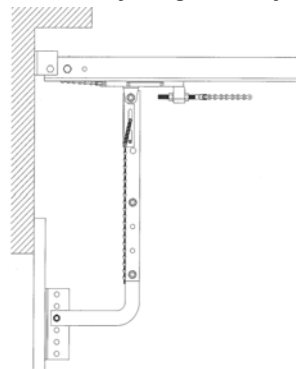
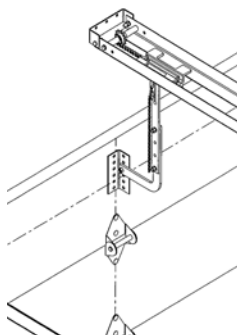
6 Attach door arm

Attach door arm to carriage.



Attach door arm to door using appropriate fasteners. Mount door bracket to the center of the door.

Door arm should ideally hang vertically when the door is closed.



5 Disconnect Mechanism

WARNING

To reduce risk of SEVERE INJURY or DEATH to persons:

- Do not stand directly under door arm when pulling the disconnect chain.
- Do not attempt to disengage the door while the operator is running.
- Do not attempt to manually force open or close a malfunctioning door.
- The door should ideally be closed when activating the disconnect mechanism.

The operator is equipped with a trolley disconnect mechanism to operate the door manually if necessary.

To manually operate the door:

1. Pull disconnect chain downwards, refer to Figure 4.
2. Disconnect trolley arm from carriage, refer to Figure 4.
3. Operate the door manually (by hand).

To return to electrical operation mode:

1. Pull on disconnect chain while reinserting the trolley arm onto the carriage.

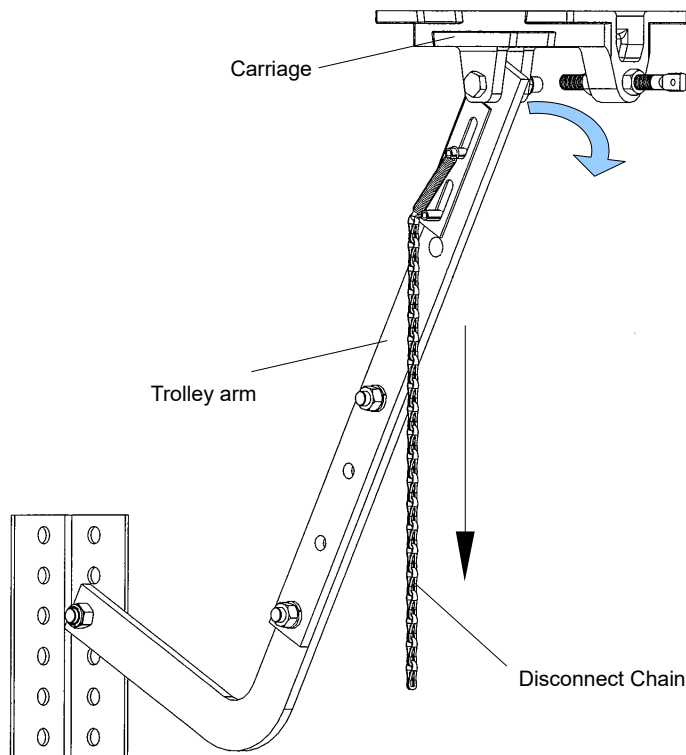


Figure 4 - Disconnect Trolley Arm From Carriage

6 Limit Switches & Limit Cams: Adjustment & Functionality

WARNING

To reduce risk of SEVERE INJURY or DEATH to persons:

- Do not attempt to make limit switch adjustments unless power has been electrically disconnected.
- Do not attempt to adjust the deceleration open/close limit switches as it will affect the door's stop position.

6.1 Limit Switch Adjustments: Open and Close Cam Settings

This operator is equipped with the **ACCU-CAM®** feature, for precise and quick one-handed limit setting adjustments.

To adjust the limit cams, see Figure 5.

1. Pull the cam's retaining bracket back.
2. Turn the cams for limit adjustment: turning cams toward the center of the limit shaft increases door travel or turning the cams toward the limit switch decreases door travel.

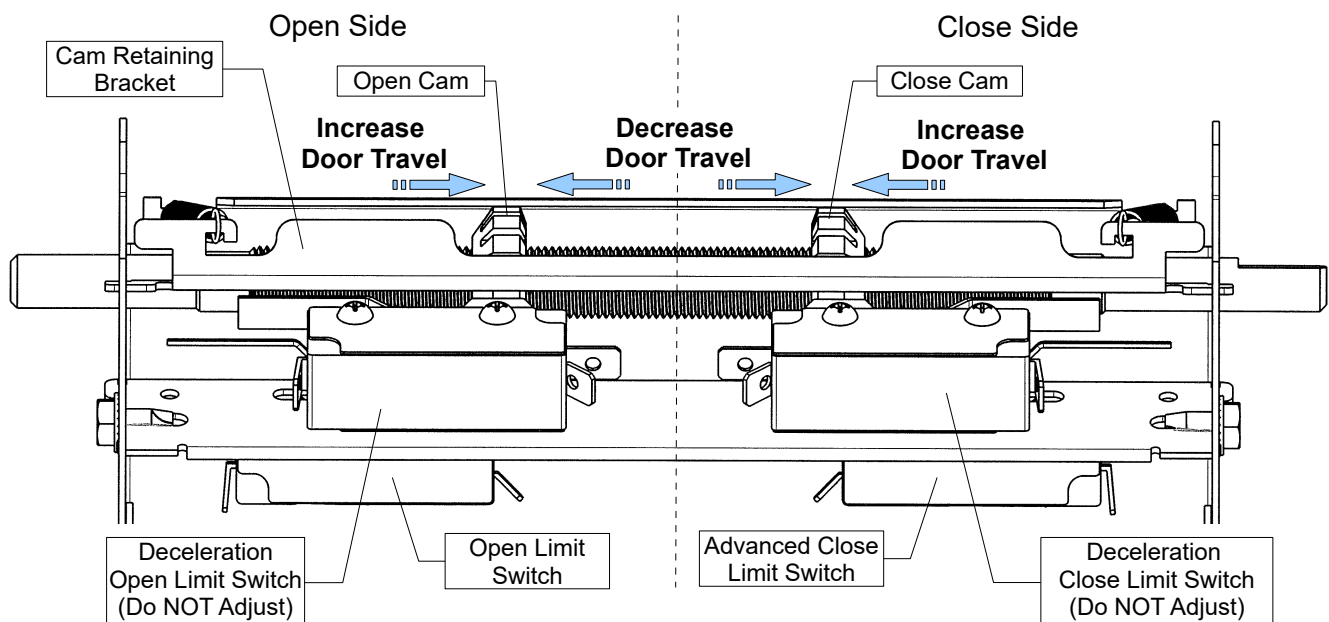


Figure 5 - Limit Switches and Cam Adjustments

6.2 Limit Switch Functionality

Open Limit Switch

When activated, the Open Limit Switch will stop the operator while the door is travelling in the upward direction. Should be adjusted accordingly to stop door in fully open position.

Close Limit Switch and Advanced Close Limit Switch

Close Limits are not present on operators with an ECB. In its place, the microprocessor has a built-in patented Advanced Close Time feature. While the door is travelling downwards and once the Advanced Close Limit Switch is activated, the door will stop after a factory preset time. The distance travelled varies according to the speed of the door. The value is fixed and cannot be re-programmed or adjusted.

Deceleration Limit Switch

The operator is provided with a **Variable Frequency Drive**. The open and close deceleration limit switches are factory set. No adjustment is required.

6.3 Limit Switch Adjustment Using Manual Hand Chain

Table 2 - Limit Switch Adjustment Procedures

Limit Switch	Adjustment Procedures
Open Position	<ol style="list-style-type: none"> 1. Using the hoist, manually raise the door to 6” below the desired open position. 2. Pull the cam-retaining bracket from the Open side, see Figure 5, and rotate the Open cam manually until it activates the Open Limit Switch sufficiently so that a “click” can be heard. 3. Release the cam-retaining bracket and make sure that the bracket engages in the slots of both cams.
Close Position	<ol style="list-style-type: none"> 1. Using the hoist, manually lower the door to approx. 6” above the ground. 2. Pull the cam-retaining bracket from the Close side, see Figure 5, and rotate Close cam manually until it activates the Close limit switch sufficiently so that a “click” can be heard. 3. Release the cam-retaining bracket and make sure that the bracket engages in the slots of both cams.
Limit Switch Fine Adjustment	<ol style="list-style-type: none"> 1. Limit switch fine adjustment SHOULD be done after the main power supply is connected to the operator. Note: One (1) notch on cam is equal (=) to approximately ½” of the door travel. 2. With the door in it's fully closed position, open the door. Progressively adjust the door's stop position by manually rotating the cams. Repeat until the desired stop position is attained. 3. With the door in it's fully opened position, close the door. Progressively adjust the door's stop position by manually rotating the cams. Repeat until the desired stop position is attained.

7 Electrical Wiring

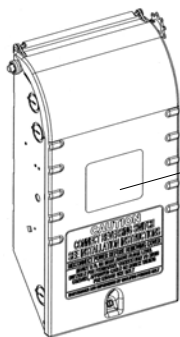
WARNING



To reduce risk of SEVERE INJURY or DEATH to persons:

- All electrical wiring should be permanent and should be done by a qualified professional and in accordance to local electrical codes.
- Always shut OFF the main power before performing any electrical intervention.
- Use proper wire gauge for incoming power line. Use copper conductors only.
- Use cable type CL2, CL2P, CL2R, or CL2X complying with the Standard “UL13 - Power-Limited Circuit Cables” for accessory connections.
- Install operator main circuit breaker next to operator for easy access for power shut-off.
- Use separate knockouts on operator control box for accessories and main power cables.
- Always separate low and high voltage wires.
- Operator should be properly grounded to the building ground and to the main power supply ground lug.
- Always use suitable and appropriate rating circuit breakers for operator protection.
- Compare available power supply voltage to voltage on operator name plate prior to electrical connection. Failure to connect appropriate power supply voltage may cause serious damage to the operator.

NOTICE

- THE OPERATOR MUST BE ADEQUATELY PROTECTED AGAINST OVERCURRENT AND SHORT-CIRCUIT.
- PLEASE REFER TO LOCAL ELECTRICAL CODE.
- PLEASE REFER TO NATIONAL ELECTRIC CODE (NFPA 70) ARTICLE 430 SECTION IV (430.51 / 430.52 / 430.53).
- PLEASE REFER TO CANADIAN ELECTRIC CODE (CSA 22.1) SECTIONS 28-200 / 28-206.



		TOLL FREE #			
		TEL: 1-800-361-2260			
		FAX: 1-888-626-0606			
		WWW.MANARAS.COM			
MODEL	<input type="text"/>	SER.#	<input type="text"/>		
HP	<input type="text"/>	VOLTS	<input type="text"/>	PH	<input type="text"/>
				AMPS	<input type="text" value="FLA"/>
CONTROL CIRCUIT	<input type="text"/>	60 Hertz	FT.LB/SEC	<input type="text"/>	
DATE MFG.	<input type="text"/>			Fabriqué au Canada Made in Canada	
<p>CAUTION DISCONNECT ELECTRIC POWER BEFORE ADJUSTING DOOR OR OPERATOR</p> <p>ATTENTION COUPEZ LE COURANT ELECTRIQUE AVANT DE METTRE AU POINT LA PORTE OU L'OPERATEUR</p>					

FLA = Full Load Amp

Guideline to determine the branch-circuit rating of the protective device [A]:

Time Delay Fuse: 1,75 x FLA

Non-Time Delay Fuse: 3,0 x FLA

A fuse that does not exceed the next higher standard ampere rating shall be permitted.

Example: If **FLA = 3,8A**

- Time Delay Fuse: $1,75 \times 3,8A = 6,65A \rightarrow$ Standard fuse to use: 10A
- Non-Time Delay Fuse: $3,0 \times 3,8A = 11,4A \rightarrow$ Standard fuse to use: 15A

NOTICE

- The installer **MUST** test for proper connection and functionality of the operator and its accessories before leaving the job site.
- The installer should also perform a demonstration for the end-user.

7.1 Low Voltage (Controls) and High Voltage (Power) Connections

1. Route the main power line wires either from the right or from the left of the control panel, as shown in Figure 6.
2. Route all low voltage control wires, as shown in Figure 6. **KEEP LOW VOLTAGE WIRES SEPARATE FROM LINE VOLTAGE WIRES.**
3. **USE COPPER CONDUCTORS ONLY.**

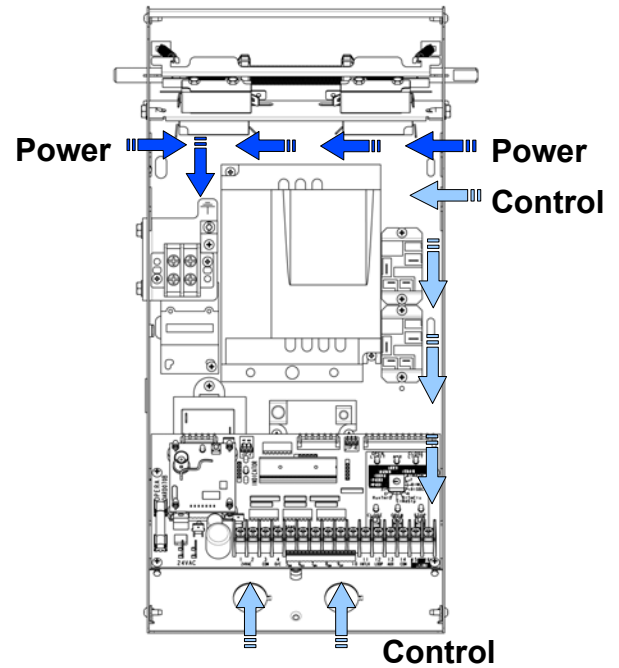


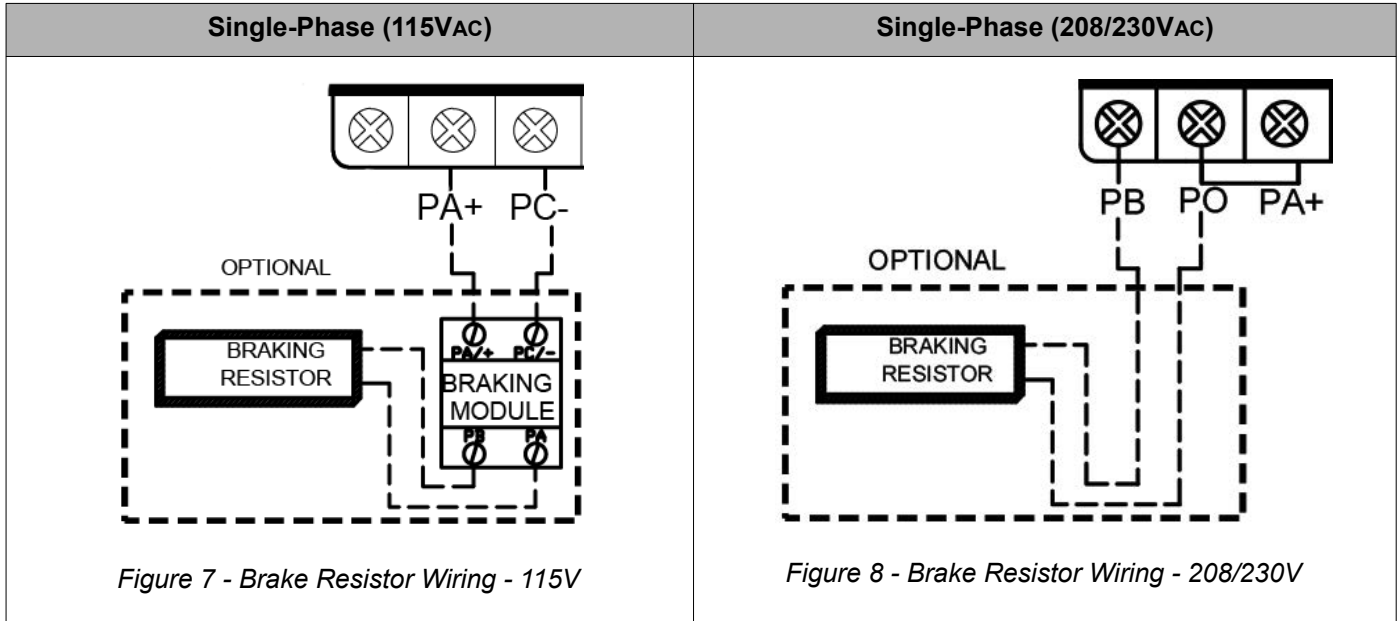
Figure 6 - Low Voltage (Controls) and High Voltage (Power) Connections

7.2 Main Power Supply Connection

Single-Phase (115VAC)	Single-Phase (208/230VAC)
<p><u>Correct motor rotation:</u> Switch ANY TWO lines from the electrical motor (M1 / M2 / M3) on the drive.</p>	<p><u>Correct motor rotation:</u> Switch ANY TWO lines from the electrical motor (M1 / M2 / M3) on the drive.</p>

7.3 Braking Resistor (Optional)

The Braking Resistor, if supplied with the operator, must be connected to the Variable Frequency Drive inside the control box. The Braking Resistor is required when the door is heavy or not properly counter-balanced. It ensures that the Variable Frequency Drive disperses excess energy when the door is closing. If the Braking Resistor is not present under these conditions, it can cause failure of the Variable Frequency Drive. Refer to Figure 7 and Figure 8 below for wiring instructions.



7.4 Push-Button Control Station Connection

WARNING

- Wall controls must be mounted in clear view of the door, far enough from the door, or positioned such that the user is prevented from coming in contact with the door while operating the controls and at least 5 feet (1,5 m) above the standing surface.

Push-Button Control Station (PBS) Connection

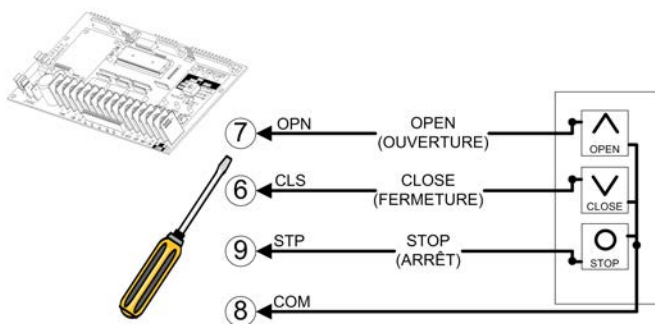


Figure 9 - STATION 020 / 084
3-PBS Open / Close / Stop

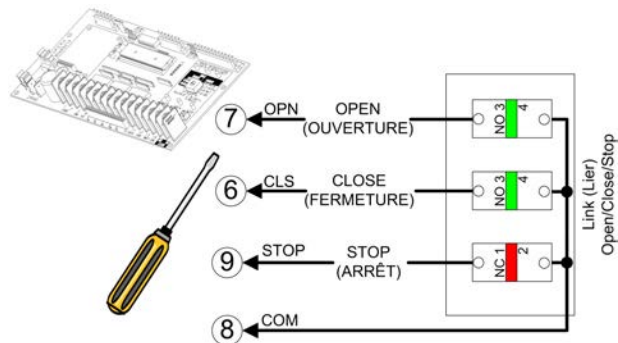


Figure 10 - STATION 041 / 049 / 056 / 076 / 078
3-PBS Open / Close / Stop

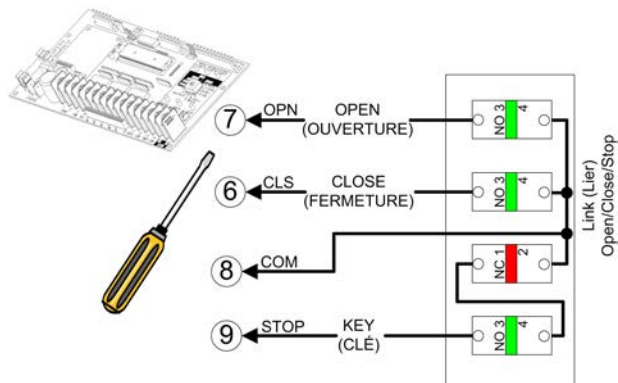


Figure 11 - STATION 079
3-PBS Open / Close / Stop with Key Lock-out

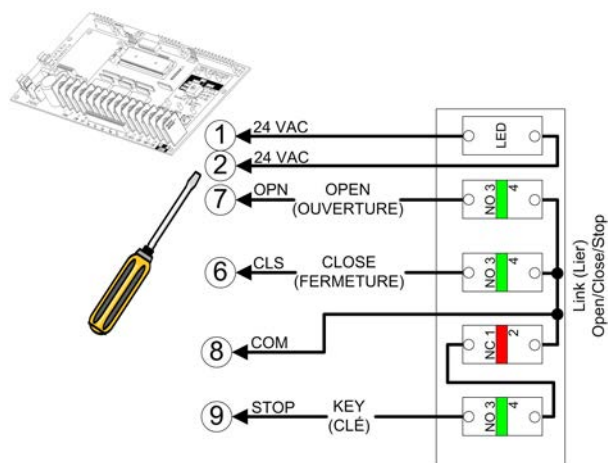


Figure 12 - STATION 080
3-PBS Open / Close / Stop with Key Lock-out and Light

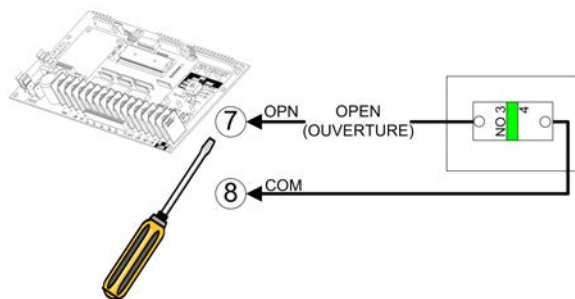


Figure 13 - STATION 001 / 081
1-PBS Open

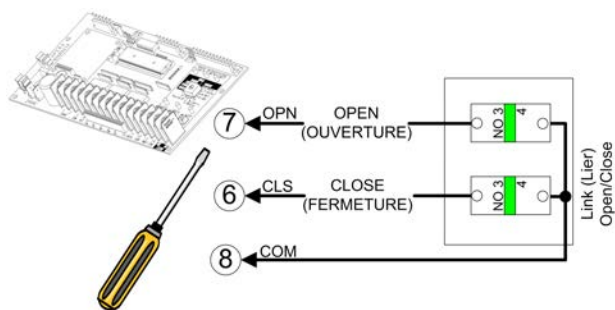


Figure 14 - STATION 010 / 082
2-PBS Open / Close

7.5 Monitored External Entrapment Protection Device Connection

NOTICE

- Do NOT connect more than one (1) monitored entrapment protection device simultaneously on the MONIT terminals without the use of an interface module, refer to section 7.5.4.
- Photoelectric cells must be installed facing each other across the door's path within 6" (15 cm) of the plane of the door and the beam no more than 5-3/4" (14,6 cm) above the floor.
- If a non-monitored photoelectric cell, pneumatic sensing edge or electric sensing edge is used instead of a monitored entrapment protection device, the operator will ONLY function in C2 (constant-pressure-to-close) mode. Radio or open/close controls will only open the door.

7.5.1 Monitored Photoelectric Cells

- **PHOTO 070:** Nema 1 photo cells, through beam type.
(Manufactured by Fraba / UL File # E323938 / p/n: RAY-NS 1001)
- **PHOTO 061:** Nema 4X photo cells, use in industrial environments, submersible and impact resistant, through beam type. (Manufactured by Fraba / UL File # E323938 / p/n: OSE-T or OSE-R or OPE)
- **PHOTO 065:** Nema 4X photo cells, use in industrial environments, heavy-duty housing, retro-reflective type.
(Manufactured by Fraba / UL File # E323938 / p/n: Ray/RT-2004)

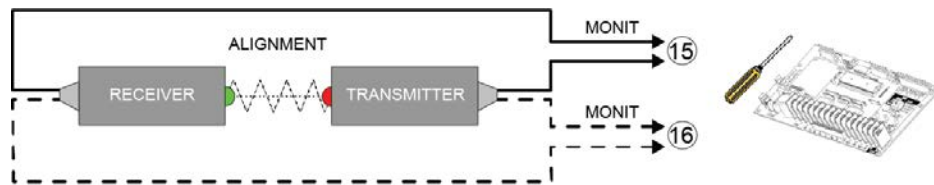


Figure 15 - PHOTO 061 / 061A / 070 Connection

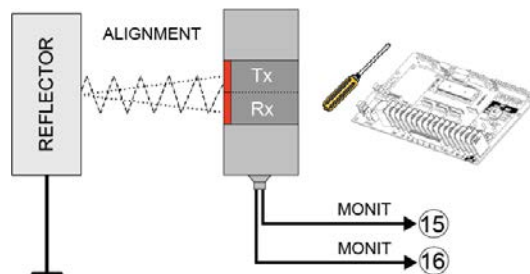


Figure 16 - PHOTO 065 Connection

7.5.2 Monitored Electric Sensing Edges

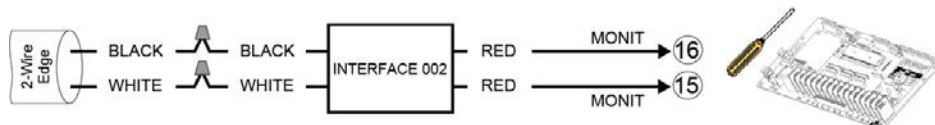


Figure 17 - SENSEEDGE 007UM / 018UM / 044UM / 046M and INTERFACE 002 Connection

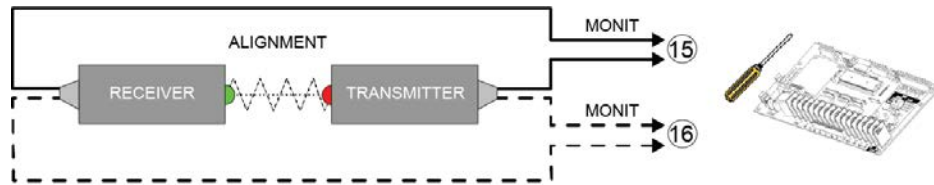


Figure 18 - SENSEEDGE 042 Connection

7.5.3 Monitored Light Curtains

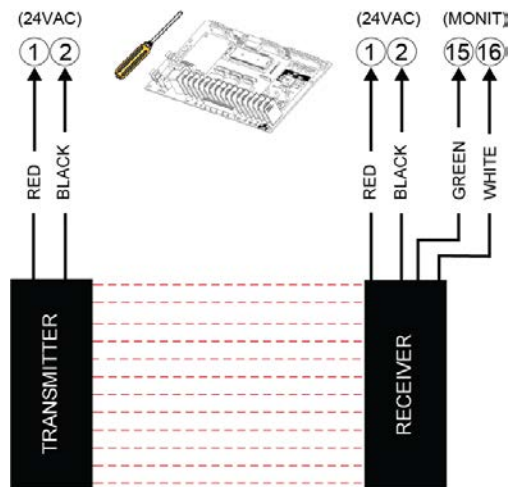


Figure 19 - LIGHTCURTAIN 001 / 002 Connection

7.5.4 Y-Connect Interface Module

When using more than one monitored entrapment protection device on the same door, a Y-connect interface module is required. The interface module will merge signals from the two devices on the same monitored input on the ECB.

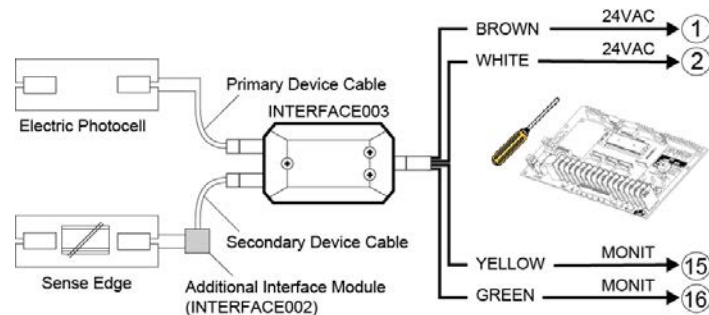


Figure 20 - INTERFACE 003 Connection

Please consult the documents supplied with the specific entrapment protection device for complete installation instructions.

Please contact your dealer or our inside sales department at **1-800-361-2260** for further information.

7.6 Optional Accessory Connections

NOTICE

- If the door is controlled by any device other than a constant pressure push-button station on close, including a timer-to-close, an entrapment protection device must be connected.
- Photoelectric cells must be installed facing each other across the door's path within 6" (15 cm) of the plane of the door and the beam no more than 5-3/4" (14,6 cm) above the floor.

7.6.1 Photoelectric Cells (Non-Monitored)

Through Beam Type

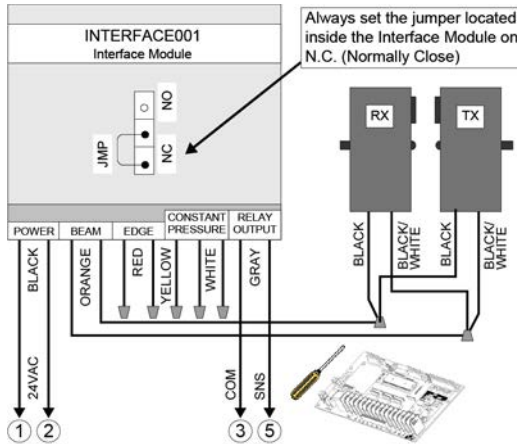


Figure 21 - PHOTO 008C3/C4/E1

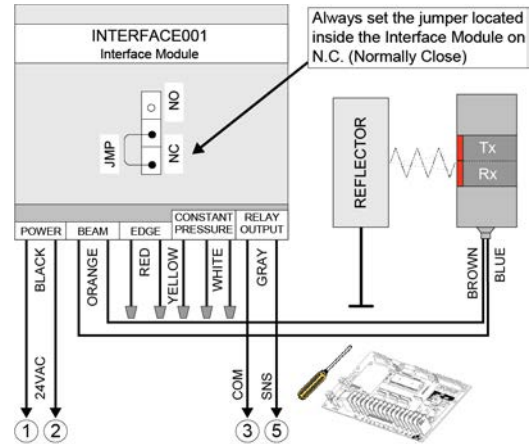


Figure 22 - PHOTO 008D1/D2

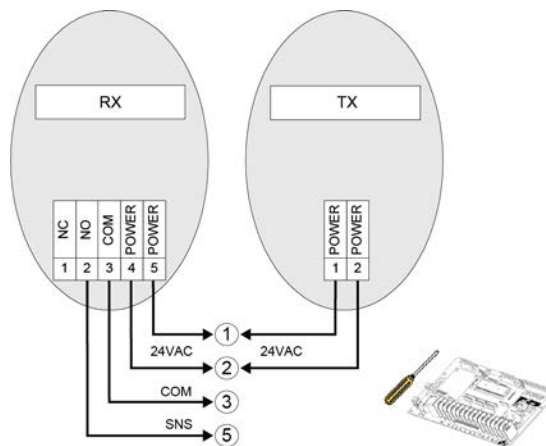


Figure 23 - PHOTO 015 / 016 / 045 / 050 / 051 / 059

Reflective Type

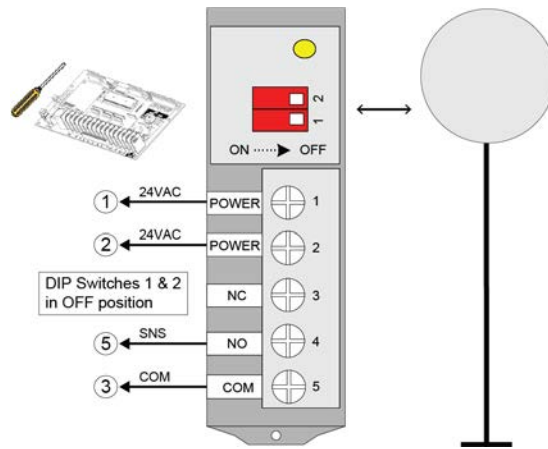


Figure 24 - PHOTO 060

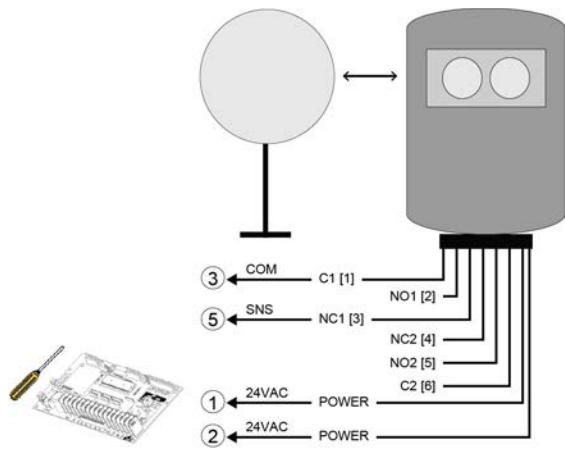


Figure 25 - PHOTO 018

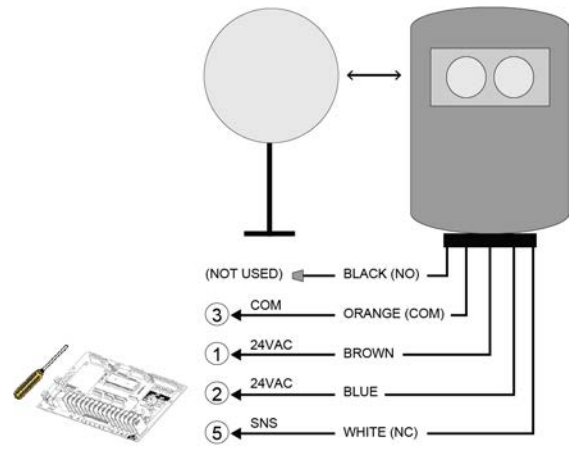


Figure 26 - PHOTO 038

7.6.2 Reversing Edge Device (Non-Monitored)

Installation

Pneumatic Sensing Edge

1. Place the air switch in position, refer to Figure 27.
2. Place the air hose in position.
3. Use a coil cord or take-up reel to connect the air switch to the operator terminals. Install electric wires according to Figure 28 or Figure 29.
4. Connect one end of the air hose to the air switch.
5. Place the air plug in the other end of the air hose.

Electric Sensing Edge

1. Place the junction box in position, refer to Figure 27.
2. Place the sensing edge in position.
3. Use a coil cord or take-up reel to connect the sensing edge wires to the operator terminals. Install electric wires according to Figure 30.
4. Connect the sensing edge to the junction box.
5. N/A

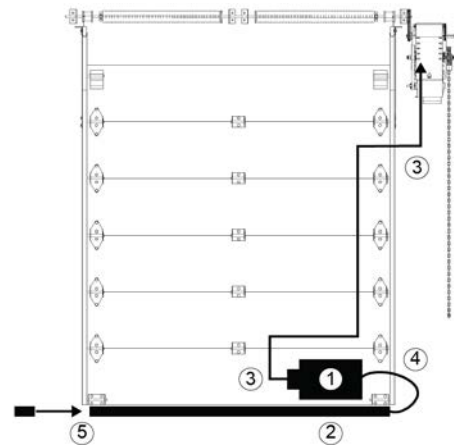


Figure 27 - Reversing Edge

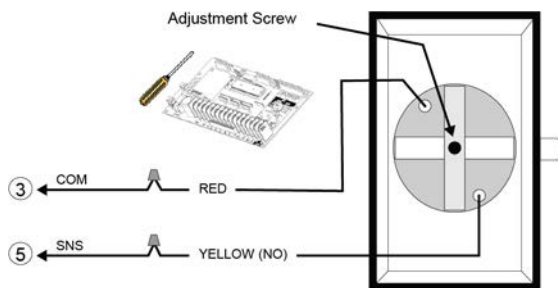


Figure 28 - AIRSWITCH 001 / 007

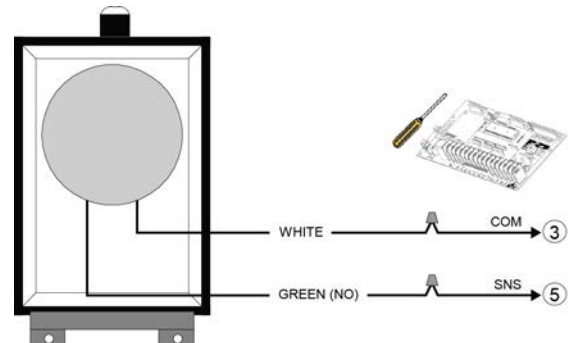


Figure 29 - AIRSWITCH 009 / 018

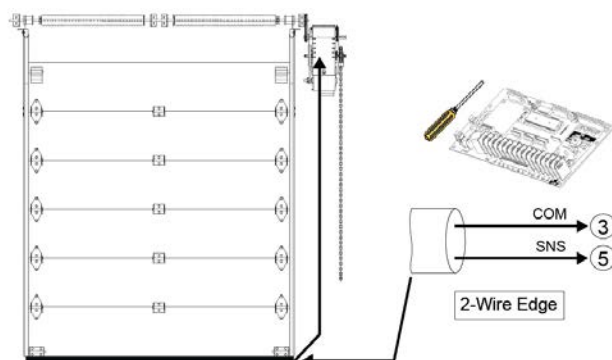


Figure 30 - Electric Reversing Edge

7.6.3 Pull Cord & Key Switch

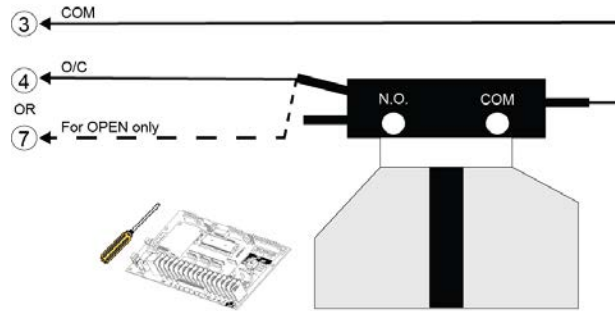


Figure 31 - PULLCORD 001 / 003 / 004 / 007

2-Position Key Switch

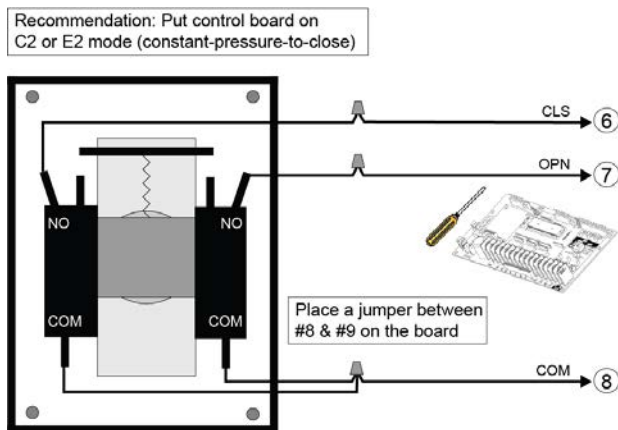


Figure 32 - KEYSWITCH 010 / 015

2-Position Key Switch & Stop Button

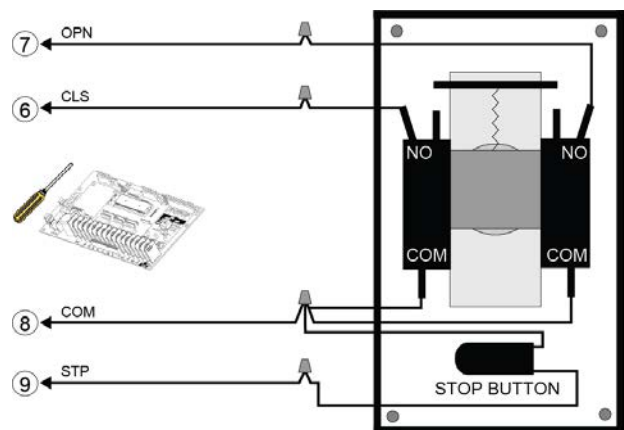


Figure 33 - KEYSWITCH 019

7.6.4 Vehicle Loop Detector

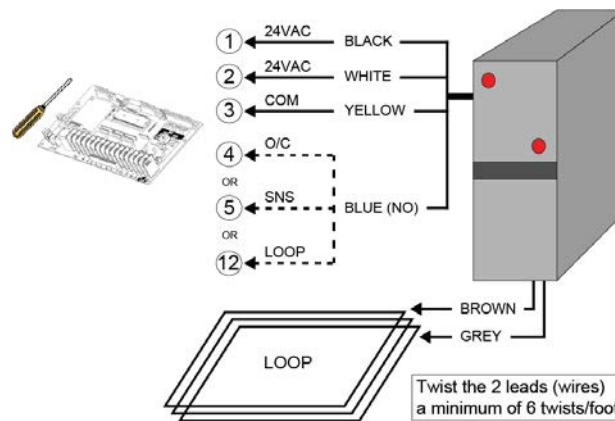


Figure 34 - Vehicle Loop Detector

For additional accessories, please contact your dealer or our inside sales department at **1-800-361-2260** for further information.

8 Electronic Control Board (ECB) – BOARD 070M

8.1 General Layout

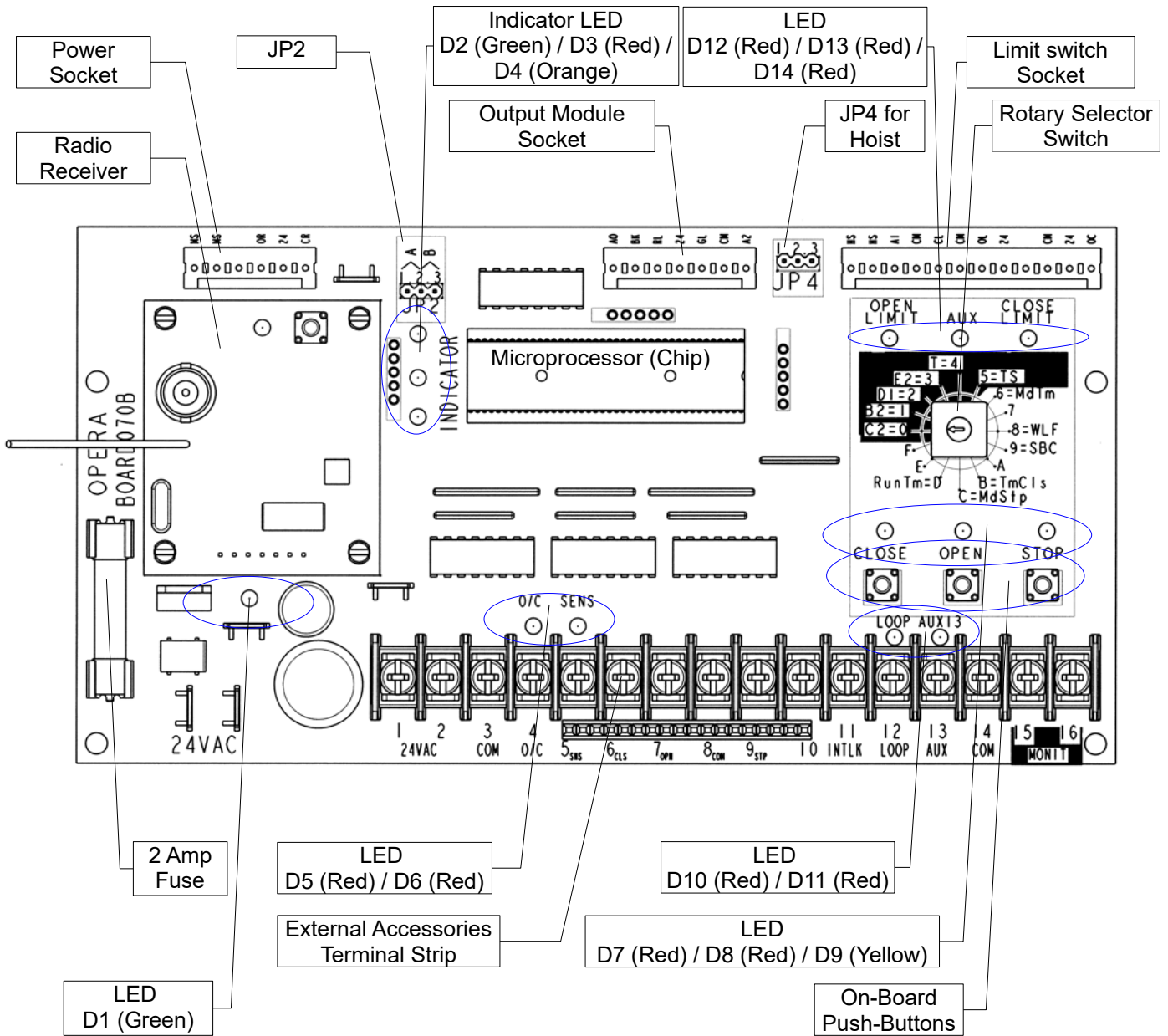














Figure 35 - Electronic Control Board – BOARD 070M

8.2 On-Board LED Monitoring Status

















The electronic control board's LEDs help with wiring and troubleshooting diagnostics. Every LED indicates the status of the door. BOARD 070M has a non-volatile memory and the LEDs return to their initial state after a power interruption. Refer to Figure 35, p.23 as reference.

Table 3 - LED Monitoring Status

LED	LED ON	Functions
D1	 GREEN	Indicates presence of 24VDC.
D2 / D3	Refer to Table 4, p.25 as reference.	
D4	 ORANGE	Indicates monitored photo cell activation or absence of monitored photo cell or defective photo cell.
D5	 RED	Only when single-button radio transmitter is activated (<i>stays ON for +/- 1 sec.</i>)
D6	 RED	When reversing or sensing edge is activated.
D7	 RED	When close command is activated.
D8	 RED	When open command is activated.
D9	 YELLOW	Indicates that the stop button is connected and hoist or disconnect switch is not engaged.
D10	 RED	When inductive loop (Terminal #12) is activated (<i>when loop is activated, door can be closed only by constant pressure</i>).
D11	 RED	Not applicable.
D12	 RED	When open limit switch is activated.
D13	 RED	When open deceleration limit switch is activated.
D14	 RED	When close limit switch is activated.

8.2.1 D2 / D3 LED Monitoring Status Combination Scenarios

Table 4 - D2/D3 LED Monitoring Status - Combination Scenarios

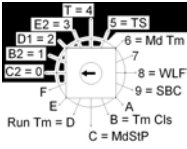
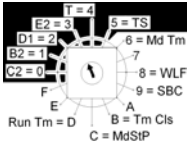
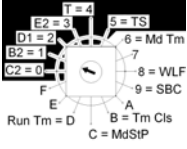
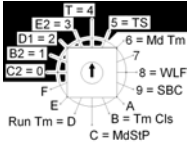
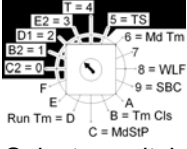
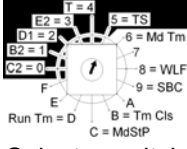
Scenario	D2 LED GREEN	D3 LED RED	Functions
1	 OFF	 OFF	Indicates a DC power failure.
2	 OFF	 Flash	When door is closing.
	 ON	 Flash	When deceleration close switch is activated.
3	 ON	 OFF	When operator is on standby.
4	 ON	 Flash	Indicates wrong handing feature activation (<i>if a limit switch is not released/deactivated within 3.6 sec while door starts to close/open from the fully open/closed positions</i>).
5	 Flash	 OFF	When door is opening.
6	 Flash	 Flash	When timer to close is counting before closing the door.
7	 Flash	 Flash	When door is opening during programming of the run timer or the mid-stop features. Refer to section 8.3.2, p.27 as reference.

8.3 Electronic Control Board (ECB) Programming

8.3.1 Run Mode Settings

NOTICE

- Always return the door to **fully closed position** before performing any program settings.

<p>C2 Mode</p>  <p>Selector switch position on 0</p>	<p>SET SELECTOR SWITCH ON C2 = 0</p> <p>Function: Momentary contact to open and stop, constant-pressure-to-close with 3-button station. Activation of monit./entrapment protection devices will reverse the door while closing. Auxiliary devices function as an Open control and will reverse the door while closing.</p>	<p>E2 Mode</p>  <p>Selector switch position on 3</p>	<p>SET SELECTOR SWITCH ON E2 = 3</p> <p>NOT AVAILABLE</p>
<p>B2 Mode</p>  <p>Selector switch position on 1</p>	<p>SET SELECTOR SWITCH ON B2 = 1</p> <p>Function: Momentary contact to Open, Close and Stop with 3-button station. Activation of monit./entrapment protection devices will reverse the door during closing. Auxiliary devices function as an Open-Close controls and will reverse the door while closing.</p>	<p>T Mode</p>  <p>Selector switch position on 4</p>	<p>SET SELECTOR SWITCH ON T = 4</p> <p>NOT AVAILABLE</p>
<p>D1 Mode</p>  <p>Selector switch position on 2</p>	<p>SET SELECTOR SWITCH ON D1 = 2</p> <p>Function: Constant-pressure-to-open and constant-pressure-to-close. Activation of monit./entrapment protection devices will stop the door while closing.</p>	<p>TS Mode</p>  <p>Selector switch position on 5</p>	<p>SET SELECTOR SWITCH ON TS = 5</p> <p>Function: Under Mode TS=5, if monit./entrapment protection devices are activated while door is closing, the door will reverse and will close by Timer to Close (TTC). TTC will also be refreshed if the chain hoist is engaged, if the stop is activated before elapsed time or in the case of a power outage.</p>
<p>TS (5) Mode: Only applicable with Timer to Close, refer to Features Programming section, p. 27.</p>			

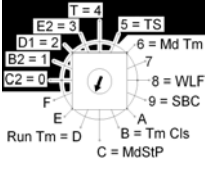
8.3.2 Features Programming

NOTICE

- Always return the door to **fully closed position** before performing any program settings.

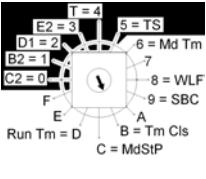
Maximum Run Timer

Maximum run timer is set to 90 seconds by default. When programmed, this feature calculates the total time required for the door to travel from the fully closed to the fully opened position and adds **5 seconds** to this time. Therefore, if the door is obstructed while travelling up or down, this feature will stop the operator after the maximum run timer time has elapsed.

Run Timer Programming	Selector Switch	Set Run Timer to Default
<ol style="list-style-type: none"> Verify if the close limit switch is activated and if the close limit LED is ON. Set selector switch on D = Run Tm. Press the “Open” button and let the door reach the fully opened position. Result: 5 sec is added to the total travel time. Set selector switch on run mode (0, 1, 2 or 5). 		<ol style="list-style-type: none"> Verify if the close limit switch is activated and if the close limit LED is ON. Set selector switch on D = Run Tm. Press the “Stop” button. Result: The max. run timer is set to the default value of 90 sec. Set selector switch on run mode (0, 1, 2 or 5).

Timer to Close (TTC)

Timer to Close (TS = 5 Mode), will close the door from the fully opened and mid-stop positions after a factory preset time (5 sec.). Timer to Close can be programmed in increments of 1 sec. or 15 sec.

TTC Programming	Selector Switch	TTC Deactivation
<ol style="list-style-type: none"> Verify if the close limit switch is activated and if the close limit LED is ON. Set selector switch on B = Tm Cls. Press the “Stop” button to return the time to 0 sec. or to reprogram. Press the “Open” button to add 15 sec. increments, or press the “Close” button to add 1 sec. increments. Max. 4 min. Set selector switch TS = 5. Refer to Run Mode Settings section, p. 26 for mode descriptions. 		<ol style="list-style-type: none"> If the TTC is not required, set selector switch on run mode (0, 1, or 2).

Timer to Close User Suspension Feature

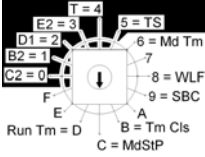
This feature allows the Timer to Close to be enabled/disabled from the floor by using a wall push-button control station. This feature allows the user to keep the door opened for ONE CYCLE only.

TTC Deactivation	TTC Activation
While the door is in the closed position, press the push-button control station's “Stop” button 3 times and then the “Close” button 3 times consecutively. This will deactivate the TTC (<i>TTC is suspended</i>).	The TTC is re-activated (<i>TTC returns to normal function</i>) once the door is fully closed.

Mid-Stop (MD STP)**NOTICE**

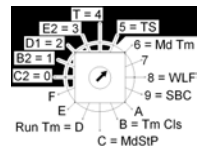
- The Mid-Stop position must always be programmed/adjusted so that there is a minimum gap of 12" between the top of the tallest vehicle and the bottom edge of the door.
- Always cycle the operator 10 times or more before programming Mid-Stop (MD STP).

Mid-Stop, when activated, will allow the door to stop at a predetermined position when an open signal is given from the fully closed position. The Radio control or Close push-button will close the door from the mid-stop position. The door will open fully from mid-stop position if the Open button is activated.

Mid-Stop Activation	Selector Switch	Mid-Stop Deactivation
<ol style="list-style-type: none"> 1. Verify if the close limit switch is activated and if the close limit LED is ON. 2. Set selector switch on C = MdStP. 3. Press the "Open" button. While door is moving press "Stop" button at desired (mid-stop) position. The door opening speed will be reduced during programming. 4. Set selector switch on run mode (0, 1 or 5). 		<ol style="list-style-type: none"> 1. Verify if the close limit switch is activated and if the close limit LED is ON. 2. Set selector switch on C = MdStP. 3. Press the "Stop", "Close" and "Open" buttons consecutively. 4. Set selector switch on run mode (0, 1, 2 or 5).

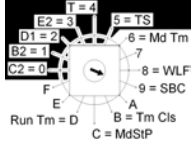
Mid-Stop Timer (MD TM)

This feature allows the Timer to Close to be enabled/disabled at the Mid-Stop position.

MD TM Activation	Selector Switch	MD TM Deactivation
<ol style="list-style-type: none"> 1. Verify if the close limit switch is activated and if the close limit LED is ON. 2. Set selector switch on 6 = Md Tm. 3. Press the "Close" button. 4. Set selector switch on run mode (5). 		<ol style="list-style-type: none"> 1. Verify if the close limit switch is activated and if the close limit LED is ON. 2. Set selector switch on 6 = Md Tm. 3. Press the "Stop" button. 4. Set selector switch on run mode (0, 1, 2 or 5).

Single-Button Control (SBC)

With this feature, it is possible to use a single-channel transmitter for a Commercial Application, as well as a Single-Button Control (SBC). The SBC provides the user with the possibility to open, stop or close the door by using a single-button radio transmitter (or a single push-button station).

SBC Activation	Selector Switch	SBC Deactivation
<ol style="list-style-type: none"> 1. Verify if the close limit switch is activated and if the close limit LED is ON. 2. Set selector switch on 9 = SBC. 3. Press the "Open" button. 4. Set selector switch on run mode (1 or 5). 		<ol style="list-style-type: none"> 1. Verify if the close limit switch is activated and if the close limit LED is ON. 2. Set selector switch on 9 = SBC. 3. Press the "Stop" button. 4. Set selector switch on run mode (0, 1, 2 or 5).

Universal Auxiliary Output Module (8 = WLF)

The universal auxiliary output module is sold separately. The module allows for the connection of external devices such as: red and green warning lights (custom sequences available, ask Manaras-Opera for details), air curtains, horns, locks, etc...

Please contact your dealer or our inside sales department at **1-800-361-2260** for further information.

9 On-Board Radio Receiver

9.1 Radio Receiver Components and Compatible Transmitting Devices

The On-Board Radio Receiver is factory installed on all operators equipped with an Electronic Control Board **BOARD 070** and features Rolling Code Technology. Mix and match any Transmitter from the Series 100 (Rolling Code Technology) with the On-Board Radio Receiver. One (1) Receiver will accept up to 50 Transmitters. One (1) Receiver controls 1 Door.

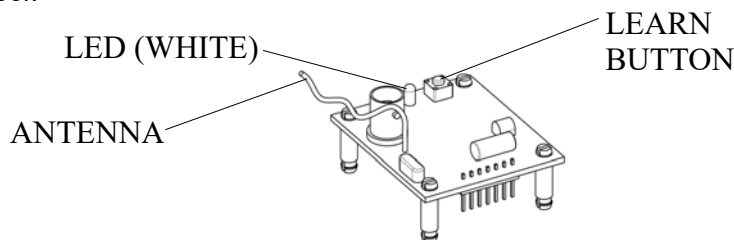







Figure 36: RADIOEM100 (ECB BOARD070)

Series 100 – Rolling Code Technology Transmitters

	RADIOEM 101: 1-Button Opera Brand Transmitter is used for operation of a Single Door. Can be configured as a traditional Commercial Sequence or as a Single-Button Control (The SBC provides the user with the possibility to Open / Stop / Close the door by using a single-button radio transmitter or a single push-button station).
	RADIOEM 102: Mini Key-chain Opera Brand Transmitter can be used as either a 1-Door 3-Button Transmitter (with Open / Close / Stop function) or as a 3-Door Transmitter (Commercial Sequence or SBC). Field selectable.
	RADIOEM 103 SD: 3-Button Opera Brand Transmitter is used for operation of a Single Door (SD) with Open / Close / Stop function. RADIOEM 103 MD: 3-Button Opera Brand Transmitter is used for operation of 3-Doors (Commercial Sequence or SBC). The SD or MD function is field selectable, as well as the Commercial Sequence or SBC for the MD model.
	RADIOEM 144: 3-Button Opera Brand Transmitter is used for operation of up to 144 doors with Open / Close / Stop function. Two rotary dials (Letters: A to L) and (Numbers: 1 to 12) permit for a proper door selection.
	KEYLESS 042: Wireless Entry Transmitter for keyless access to 1-Door or Multiple-Doors (up to 4-Doors).

FCC and ISED

This device complies with Part 15 of the FCC Rules and Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

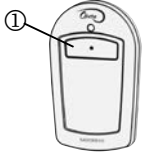
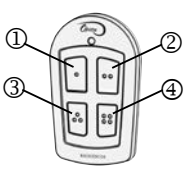
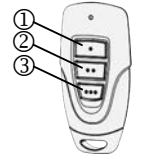


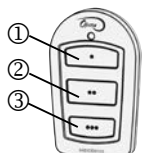


NOTE: This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules and Industry Canada ICES standards. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

9.2 Transmitter Programming: RADIOEM101, RADIOEM102, RADIOEM103, RADIOEM104

The Opera Brand Transmitters can be used as either a 1-Door x 3-Button Transmitter or as a Multiple-Door Transmitter (Commercial Sequence or SBC). Commercial Sequence or SBC settings depend on the operator programming settings. The Transmitters can be re-programmed as needs change.

Table 5 - Radio Control Programming

Transmitter	Modes and Functions	Transmitter Programming
 <p>RADIOEM101</p>	<p>1-Door 1-Button Transmitter ⁽¹⁾</p> <p>1. OPEN / STOP / CLOSE → Only Button</p>	<p>No initial programming is required.</p>
 <p>RADIOEM104</p>	<p>4-Door 4 x 1-Button Transmitter ⁽¹⁾</p> <p>1. DOOR #1 → Top Left Button 2. DOOR #2 → Top Right Button 3. DOOR #3 → Bottom Left Button 4. DOOR #4 → Bottom Right Button</p> <p>⁽¹⁾ Each button acts separately as a 1-Button Transmitter. Commercial Sequence or SBC Programming depends on the Operator Settings, please refer to the Commercial Sequence or SBC Programming instructions, p. 32).</p>	<p>The Transmitters are ready to be matched to the On-Board Radio Receiver, please refer to section 9.3, p.32.</p> <p>For pairing with a compatible Opera Brand External Radio Receiver, please consult the documentation included with the particular accessory.</p>
 <p>RADIOEM102 Mini Key Chain</p>	<p>1-Door 3-Button Transmitter (Factory default for RADIOEM103SD)</p> <p>1. OPEN → Top Button 2. CLOSE → Middle Button 3. STOP → Bottom Button</p>	<p>1. Press and HOLD Buttons ① and ③ for 5 sec. The RED LED will  BLINK. You have 15 sec. to complete the configuration or you will need to restart.</p> <p>2. Release Buttons ① and ③.</p> <p>3. Press Button ①.</p> <p>4. The RED LED will stop  blinking. Programming is now complete.</p>
 <p>RADIOEM103 Single Door (SD) / Multiple Door (MD)</p>	<p>3-Door 3 x 1-Button Transmitter ⁽¹⁾ (Factory default for RADIOEM102 & RADIOEM103MD)</p> <p>1. DOOR #1 → Top Button 2. DOOR #2 → Middle Button 3. DOOR #3 → Bottom Button</p> <p>⁽¹⁾ Each button acts separately as a 1-Button Transmitter. Commercial Sequence or SBC Programming depends on the Operator Settings, please refer to the Commercial Sequence or SBC Programming instructions, p. 32).</p>	<p>1. Press and HOLD Buttons ① and ③ for 5 sec. The RED LED will  BLINK. You have 15 sec. to complete the configuration or you will need to restart.</p> <p>2. Release Buttons ① and ③.</p> <p>3. Press Button ③.</p> <p>4. The RED LED will stop  blinking. Programming is now complete.</p>

9.3 On-Board Radio Receiver Programming Instructions

To MATCH a Transmitter to the Receiver	To DELETE ALL Transmitters from the Receiver' Memory
1. HOLD the Receiver's LEARN button until the LED flashes (approx. 2 sec.) (frequency of 1 sec. ON / 1 sec. OFF). 2. HOLD any button on the Transmitter until the Receiver's LED stops flashing.	1. HOLD the Receiver's LEARN button until the LED flashes (approx. 10 sec.) (frequency of 1/3 sec. ON / 1/3 sec. OFF).
Optional External Radio Receivers (Ordered Separately)	
- RADIORE 901: Opera Brand Universal Radio Receiver, 1 Door, compatible with both Rolling Code Transmitters (up to 50) and Fixed Code (Dip-Switch) Transmitters (unlimited # of identical). Ideal for Hardwired Operators. - RADIORE 102: Opera Brand External Radio Receiver, 1 Door, up to 1000 Transmitters/Receiver.	

9.4 Commercial Sequence or SBC Programming (Optional)

Modes	Functions	Programming (On operator's ECB)
Commercial Sequence - 1-Button	OPEN / CLOSE → Button Door is CLOSED: - Click Button → Door OPENS FULLY During UPWARD Travel: - Click Button → Nothing happens Door is OPENED: - Click Button → Door CLOSES FULLY During DOWNWARD Travel: - Click Button → Door reverses and OPENS FULLY Door is STOPPED: - Not possible in this mode. Door is either FULLY OPENED or FULLY CLOSED.	Standard default mode. 1. Door is in fully CLOSED position. 2. On ECB, verify if the close limit switch is activated (CLOSE LED is ON). 3. On ECB, set select switch on 9 = SBC . 4. On ECB, press " STOP " button. 5. On ECB, select run mode (1, 4, or 5) .
Single Button Control (SBC) Available with the Electronic Control Board (ECB) only. Alternating Sequence	OPEN / STOP / CLOSE → Button Door is CLOSED: - Click Button → Door OPENS During UPWARD Travel: - Click Button → Door STOPS Door is STOPPED: - Click Button → Door CLOSES During DOWNWARD Travel: - Click Button → Door STOPS Door is STOPPED: - Click Button → Door OPENS Note: If the door is STOPPED for more than 2 minutes, the next movement will be UPWARD regardless of the previous movement.	1. Door is in fully CLOSED position. 2. On ECB, verify if the close limit switch is activated (CLOSE LED is ON). 3. On ECB, set select switch on 9 = SBC . 4. On ECB, press " OPEN " button. 5. On ECB, select run mode (1, 4, or 5) .

10 Operator Start-up

WARNING

To reduce risk of SEVERE INJURY or DEATH to persons:

- 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.
- Never go under a stopped, partially opened door.

1. Turn power ON.
2. Use on-board, wall-button station (Open/Close/Stop), external entrapment device or jumper wires for testing, see Table 6.

Table 6 - Start-up and Testing Guide

Test	Door Position	Action	Door Response	LED Status
Open	Door at 6" from the closed position	<ol style="list-style-type: none"> 1. Press "OPEN". 2. Check if door is stopped by Open limit switch. 3. If required, re-adjust Open limit, as shown in Figure 5, p.11. 	Door should open instantly.	"Open Limit" LED is ON
Close	Door at fully open position	<ol style="list-style-type: none"> 1. Press "CLOSE". 2. Check if door is stopped by Close limit switch. 3. If required, re-adjust Close limit, as shown in Figure 5, p.11. 	<p>- C2 mode: (selector switch on C2=0 or if external monitored entrapment device is not connected).</p> <p>Door should close as long as the close button is activated.</p> <p>- B2 mode: (selector switch on B2=1 and if external monitored entrapment device is connected).</p> <p>Door should close instantly.</p>	"Close Limit" LED is ON
Sense Edge	A) Door at fully closed position	Activate external entrapment device OR	Door should stay at closed position.	"SENS" LED is ON as long as the contact is maintained
	B) Door is closing (movement)	Momentarily touch #3 & #5 on the main terminal with a jumper wire.	Door should stop and then reverse to fully opened position.	
O/C (single-button radio)	A) Door at fully opened position	Activate the single-button transmitter OR	Door should close.	"O/C" LED is ON as long as the contact is maintained (+/- 2 sec)
	B) Door at fully closed position	Momentarily touch #3 & #4 on the main terminal with a jumper wire.	Door should open.	
	C) Door is closing (movement)		Door should reverse to fully opened position.	

11 Clutch Adjustment

NOTICE

- The friction clutch is NOT intended to protect people. It is designed to protect the operator and door system against potential damage.
- The friction clutch is factory adjusted during final testing. Proper adjustments should be done on site according to the door characteristics and application.
- In order to avoid the door from getting damaged when the lock is on, the friction clutch must be properly adjusted according to the instructions below.

Best Practices Encouraged by Manaras-Opera

Manaras-Opera recommends the installation of a hard stop at the end of the tracks (ex. bolt, deformation of tracks, bumper spring, pusher spring, etc). With such installation, the door is prevented from running out of the tracks. The clutch (torque limiter) will prevent any damage to occur to the door system.

This operator is supplied with a **Door Lock Sensor feature**. The door lock sensor feature prevents the door from getting damaged when the door lock hasn't been removed prior to electronic operation. It eliminates the need of expensive external interlock wiring.

This feature can only be used on operators equipped with a friction clutch. When the lock stops the door, the clutch slips and in less than 1 second, the door will reverse a fraction of a second to release the tension on the lock.

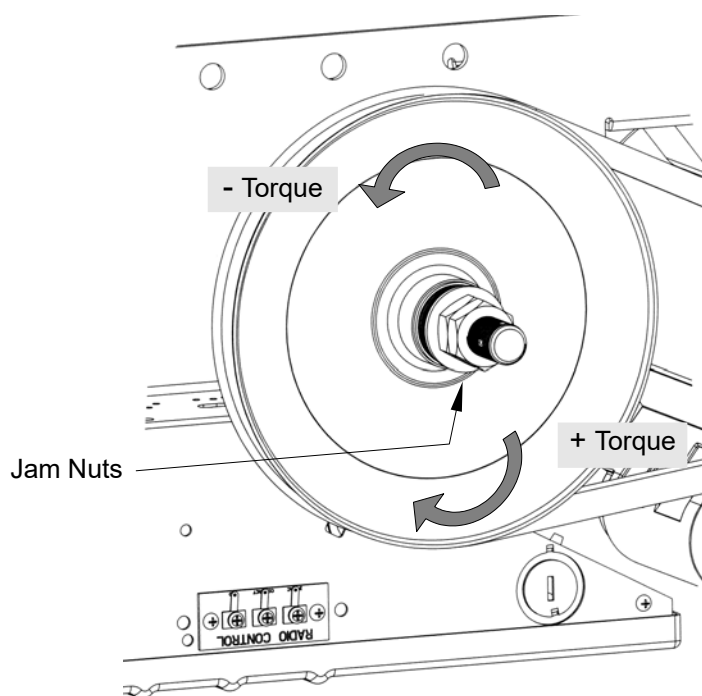


Figure 37 - Clutch Adjustment

To adjust the clutch:

1. Unlock the jam nuts with two (2) 7/8" keys, refer to Figure 37.
2. Rotate the nut counter-clockwise to release the tension.
3. Gradually rotate the nut clockwise until there is just enough tension to permit smooth operation (while still allowing the clutch to slip if the door is obstructed).
4. Lock the jam nuts.

User Instructions

IMPORTANT SAFETY INSTRUCTIONS



WARNING

TO REDUCE THE RISK OF SEVERE INJURY OR DEATH TO PERSONS:

1. READ AND FOLLOW ALL INSTRUCTIONS.
2. Never let children operate or play with door controls. Keep the remote control (where provided) away from children.
3. 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.**
4. 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.
5. For products having a manual release, if possible, use the manual release only when the door is closed. Use caution when using this release with the door open. Weak or broken springs may cause the door to fall rapidly, causing severe injury or death.
6. **KEEP DOORS PROPERLY OPERATING AND BALANCED.** See Door Manufacturer's Owner 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.
7. **SAVE THESE INSTRUCTIONS.**

For The California Market:



California Proposition 65 Warning



WARNING:

This product can expose you to chemicals including lead, which are known to the State of California to cause cancer or birth defects or other reproductive harm.

For more information go to: www.p65warnings.ca.gov

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NOTICE

- The installer should perform a demonstration of the operator and its accessories (ex: push-button station, radio control), external entrapment protection device and manual release for the end-user.

1 *Operation Instructions*

Door Operation Instructions	Refer to Installation Instructions
<ul style="list-style-type: none"> • Disconnect Mechanism: 	Section 5, p.10.
<ul style="list-style-type: none"> • Push-Button Wall Station: - Use Open/Close or Stop on the push-button wall station 	Section 8.3.1, p.26.
<ul style="list-style-type: none"> • Radio Transmitter: 	Section 9, p. 30.

2 Quick Fix Instructions

Table 7 - Basic Troubleshooting Guide ~ from floor level

Symptom	Possible Cause	Fix Problem
Door doesn't respond to any command	<ul style="list-style-type: none"> ◆ "Stop" button is stuck. (LED D9 is OFF) ◆ No power supply. (LED D2 is OFF) 	<ul style="list-style-type: none"> ➔ Press and release the "Stop" button on the wall station several times. ➔ Verify the incoming power line from the main breaker, making sure it has not tripped or blown a fuse.
Door closes only on constant pressure	<ul style="list-style-type: none"> ◆ Photo cells are not properly aligned or are obstructed. (LED D4 is ON) ◆ Loop is obstructed (presence of metal). (LED D10 is ON) 	<ul style="list-style-type: none"> ➔ Clear the obstruction or re-align photo cells. ➔ Clear the obstruction.
When pressing "Open" button, door opens ~1-2 ft, then stops and reverses	<ul style="list-style-type: none"> ◆ Mechanical door lock is engaged. ◆ Verify if the rubber seal at the bottom of the door is frozen to the ground (winter time). 	<ul style="list-style-type: none"> ➔ Release the door lock. ➔ Clear ice and free the rubber seal at the bottom of the door.
Door doesn't respond to any radio command	<ul style="list-style-type: none"> ◆ No power supply (transmitter light is OFF) ◆ Poor radio control range. ◆ Photo cells are not properly aligned or are obstructed. (LED D4 is ON) 	<ul style="list-style-type: none"> ➔ Replace transmitter's battery. ➔ Bring the radio transmitter closer to the operator. ➔ Clear the obstruction or re-align photo cells.
Timer to Close doesn't close the door	<ul style="list-style-type: none"> ◆ Timer to Close has been suspended accidentally for ONE cycle. 	<ul style="list-style-type: none"> ➔ Timer to Close will return to normal after door have been fully closed. Refer to p.27 for further details.
Timer to Close closes the door after being suspended	<ul style="list-style-type: none"> ◆ Timer to Close is reactivated accidentally. 	<ul style="list-style-type: none"> ➔ To suspend the Timer to Close, close door completely. Then press the "Stop" button 3 times and then press the "Close" button 3 times. Refer to p.27 for further details.

Maintenance Instructions

IMPORTANT SAFETY INSTRUCTIONS

WARNING

TO REDUCE THE RISK OF SEVERE INJURY OR DEATH TO PERSONS:

- Inspections, service and repairs should be performed anytime a malfunction is observed or suspected.
- Only qualified persons should perform maintenance on a door operator and all safety precautions should be taken into consideration.
- When servicing, always disconnect operator from main power supply.
- **KEEP DOORS PROPERLY OPERATED AND BALANCED.**
- See Door Manufacturer's Owner Manual. An improperly operated or balanced door can cause severe injury or death. Have qualified door system technicians perform repairs to cables, spring assemblies and other hardware.

For The California Market:



California Proposition 65 Warning



WARNING:

This product can expose you to chemicals including lead, which are known to the State of California to cause cancer or birth defects or other reproductive harm.

For more information go to: www.p65warnings.ca.gov

S227R0

1 Preventative Maintenance Schedule

1.1 Mechanical Inspection

The door area should always be kept clear of dirt, rocks or any other substances in order to insure proper operation. Maintenance of the door operator should be performed according to the schedule in Table 8.

Table 8 - Mechanical Inspection Schedule

Time Frame	Inspection
Every Month	<ul style="list-style-type: none"> • Test the door's safety features. • Verify the brake function (if applicable). • After adjusting either the clutch or the limit's travel, retest the operator's safety features. • Verify gear reducer's oil level (if applicable).
Every 3 Months	<ul style="list-style-type: none"> • Verify and adjust the clutch if necessary.
Every 6 Months	<ul style="list-style-type: none"> • Lubricate all moving parts. Bushings are oil impregnated and are lubricated for life. • Verify that all mechanical parts function properly. • Inspect the V-belt and adjust or replace if necessary. • Manually operate the door. If the door does not open or close freely, correct the cause of the malfunction.
Once a Year	<ul style="list-style-type: none"> • Run the operator a few cycles: <ul style="list-style-type: none"> ◦ Make sure that the door rollers are rolling smoothly on the track. ◦ Listen to the motor: The motor should hum quietly and smoothly. ◦ Verify that the limits operate quietly and smoothly: investigate any unusual noise. • Verify that the mounting bolts are holding the unit securely. • Inspect the unit for evidence of corrosion. • Change the gear reducer's oil, at the very least, after every 2500 hours of operation or once a year (if applicable).

1.2 Electrical Inspection

It is recommended that the electrical maintenance inspections be performed at the same intervals as the mechanical maintenance inspections.

Table 9 - Electrical Inspection

Time Frame	Inspection
Every Month	<ul style="list-style-type: none"> • Inspect the unit for evidence of corrosion on electrical wires and connectors. • Inspect the wiring compartment and remove any dirt from the control units. • Verify all the grounding wires and terminals for corrosion. Be particularly careful to verify the ground wires. • Verify the terminal strips to insure that all the screws are tightened. • Verify that the pneumatic edge or other entrapment protection devices installed on the operator are fully operational. • Verify the voltage at the input terminals while the operator is running. The voltage must not drop more than 10% momentarily. If the voltage drop is too deep when running, the relays may chatter and the contact points will wear prematurely and may eventually seize. Verify the power terminals for corrosion. • Verify the current consumption of the unit with an amp-meter. The current value should be consistent with the nameplate specifications. Investigate any anomaly.

1.3 Band Brake Maintenance

WARNING

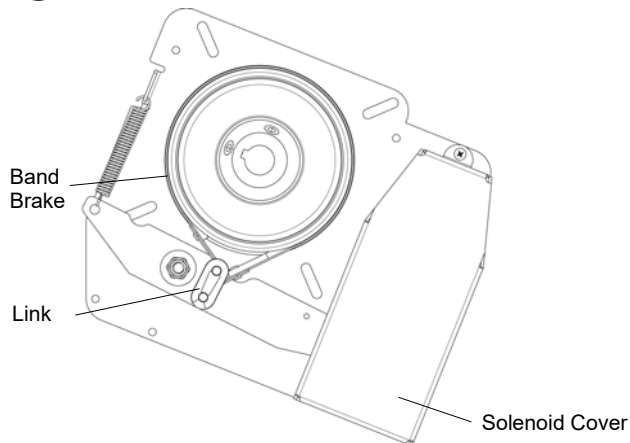
To reduce the risk of SEVERE INJURY or DEATH to persons:

- Be sure that the main power is OFF before performing any changes on the operator.

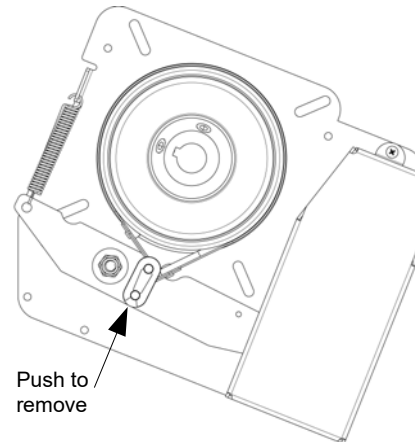
1.3.1 Changing a Brake Band

The brake is factory set, however, after extensive use the brake may need to be adjusted.

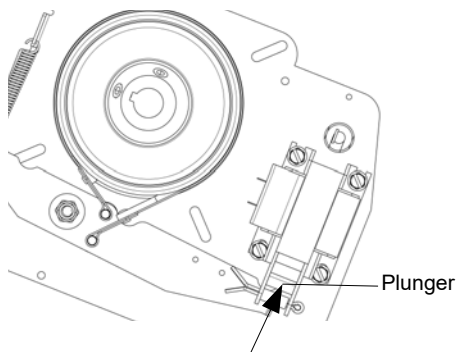
1 Remove solenoid cover



2 Remove link and used band brake

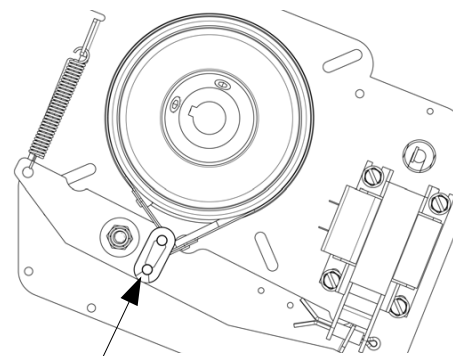


3 Replace band brake



Push solenoid plunger to reduce tension when removing or installing the band brake.

4 Place the link



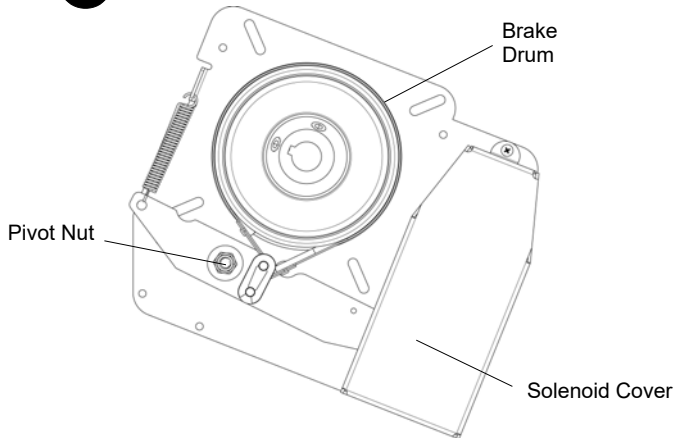
Be sure that the link is securely fastened on the two pins.

5 See brake adjustment on next page

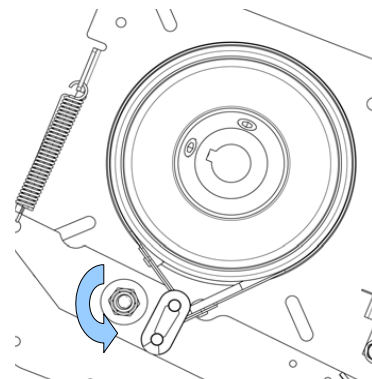
1.3.2 Brake Adjustment

The brake is factory set, however, after extensive use the brake may need to be adjusted.

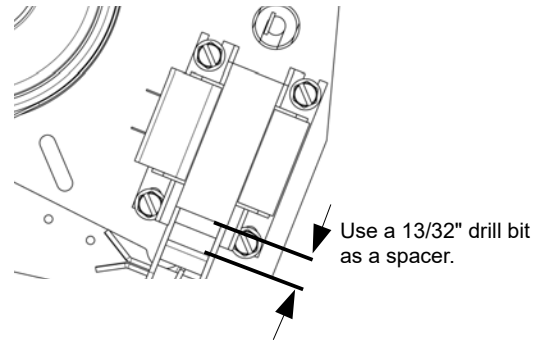
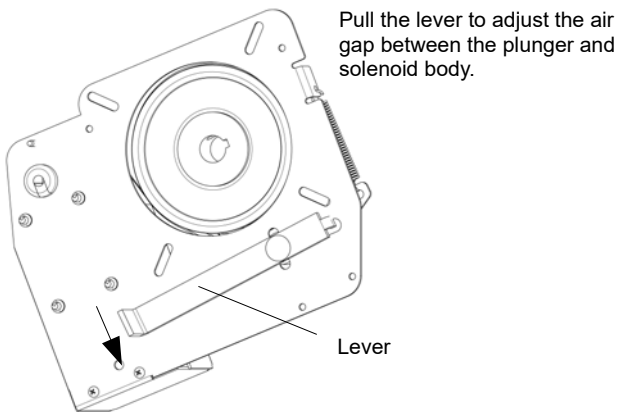
1 Remove solenoid cover



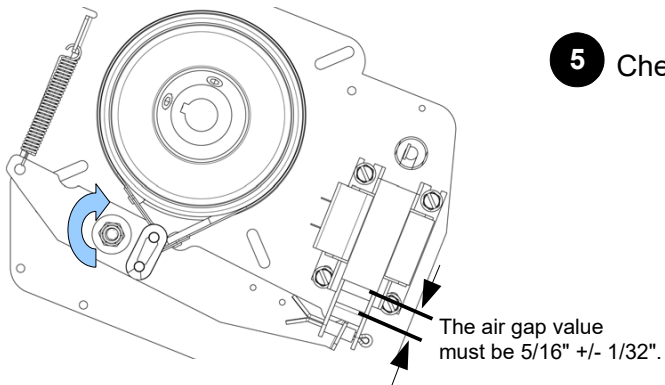
2 Loosen pivot nut



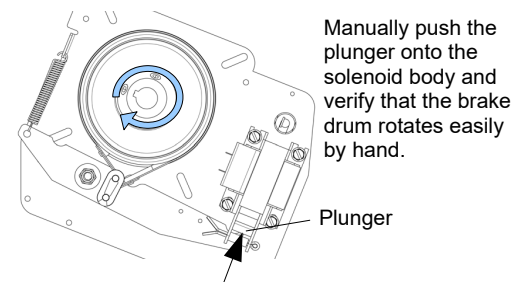
3 Adjust solenoid gap



4 Tighten pivot nut and measure the gap



5 Check brake adjustment



6 Re-install solenoid cover

2 Troubleshooting Guide

The electronic control board LEDs help with wiring and troubleshooting diagnostics. Every LED indicates the status of the door. The electronic control board has a non-volatile memory and the LEDs return to their initial state after a power interruption.

Easy Fix: Before starting any intervention, verify the LED's monitoring status and refer to Table 3, p.24 for a proper diagnosis.

Table 10 - Troubleshooting Guide - Part 1

Symptom	Probable Cause	Suggested Action
Door doesn't respond to any command	<ul style="list-style-type: none"> ◆ "Stop" button is stuck. (LED D9 is OFF) ◆ Control station not connected or wired correctly. (LED D9 is OFF) ◆ No power supply. (LED D2 is OFF) 	<ul style="list-style-type: none"> ➔ Press and release any "Stop" button. ➔ Verify and correct wiring. ➔ Verify the incoming power line from the main breaker, making sure it has not tripped or blown a fuse.
Door closes only by constant pressure	<ul style="list-style-type: none"> ◆ Selector switch set on C2 mode. ◆ Photo cells are not properly aligned or are obstructed. (LED D4 is ON) ◆ Faulty monitored photo cells or loose wires. (LED D4 is ON) ◆ Reversing device not connected (Monitored photo cell as per UL325). (LED D4 is ON) ◆ Loop is obstructed (Presence of metal). (LED D10 is ON) 	<ul style="list-style-type: none"> ➔ Set switch on B2 mode (B2=1). ➔ Clear the obstruction or re-align. ➔ Verify, tighten or replace. ➔ Connect monitored photo cells as per UL325 for momentary contact to close. ➔ Clear the obstruction.
Operator not operating as expected	<ul style="list-style-type: none"> ◆ Selector switch is not set on the desired mode. 	<ul style="list-style-type: none"> ➔ Set switch on desired mode, refer to p.26 for further details.
Timer to Close doesn't close the door	<ul style="list-style-type: none"> ◆ Timer to Close has been suspended accidentally for ONE cycle. 	<ul style="list-style-type: none"> ➔ Timer to Close will return to normal after door have been fully closed. Refer to p.27 for further details.
Door doesn't respond to any radio command	<ul style="list-style-type: none"> ◆ No power supply (Transmitter light is OFF) ◆ Transmitter is not properly programmed. ◆ Photo cells are not properly aligned or are obstructed. (LED D4 is ON) 	<ul style="list-style-type: none"> ➔ Replace the transmitter's battery. ➔ Reprogram transmitter. ➔ Clear the obstruction or re-align.
"Stop" button doesn't stop the door	<ul style="list-style-type: none"> ◆ Two 3-push button stations (or more) are connected in parallel. 	<ul style="list-style-type: none"> ➔ Verify and correct wiring. (Stop buttons in series, only Open & Close in parallel).

Table 11 - Troubleshooting Guide - Part 2

Symptom	Probable Cause	Suggested Action
Door doesn't respond to "Open" command, but does respond to "Close" command	<ul style="list-style-type: none"> ◆ Defective "Open" push-button or "Open" limit switch. ◆ Loose wire on "Open" push-button or "Open" limit switch. 	<ul style="list-style-type: none"> ➔ Replace push-button or limit switch. ➔ Verify and correct wiring.
Door doesn't respond to "Close" command, but does respond to "Open" command	<ul style="list-style-type: none"> ◆ Defective "Open" push-button or "Open" limit switch. ◆ Loose wire on "Open" push-button or "Open" limit switch. 	<ul style="list-style-type: none"> ➔ Replace push-button or limit switch. ➔ Verify and correct wiring.
Door reverses to fully open position after the door closes and reaches the floor	<ul style="list-style-type: none"> ◆ The "Close" limit switch is not being engaged by travelling cam. ◆ An "Open" command is being given. 	<ul style="list-style-type: none"> ➔ The close limit switch needs to be adjusted properly at the end of travel. ➔ Verify "Open" push-button or any opening device for short-circuit.
Door doesn't open or close, motor hums or blows the main breaker	<ul style="list-style-type: none"> ◆ Mechanical door lock is engaged. ◆ Door is jammed. ◆ Brake doesn't release, if applicable. ◆ Loose wire on solenoid brake, if applicable. ◆ Faulty solenoid brake, if applicable. 	<ul style="list-style-type: none"> ➔ Release the door lock. ➔ Verify manual operation of door. ➔ Verify and adjust brake tension. ➔ Verify and correct wiring. ➔ Replace.
Motor hums when "Open" or "Close" buttons are pressed	<ul style="list-style-type: none"> ◆ Loose motor wires. ◆ Defective capacitor. 	<ul style="list-style-type: none"> ➔ Verify and correct wiring. ➔ Replace.
Motor fails to shut off at fully closed or fully opened positions	<ul style="list-style-type: none"> ◆ Defective limit switch. ◆ Limit cams are not adjusted. ◆ Limit drive chain is broken. ◆ Loose sprocket on limit shaft. ◆ Limit shaft does not rotate. 	<ul style="list-style-type: none"> ➔ Operate limit switch manually while door is moving. If door does not stop, replace the switch. ➔ Verify and adjust. ➔ Replace. ➔ Tighten set screw. ➔ Verify and replace accordingly.
Motor turns but door does not move	<ul style="list-style-type: none"> ◆ Sprocket key is missing. ◆ Drive chain is broken. ◆ Clutch is slipping. 	<ul style="list-style-type: none"> ➔ Replace. ➔ Replace. ➔ Adjust clutch to proper tension.
Limit switches do not hold their settings	<ul style="list-style-type: none"> ◆ Loose drive or limit chain. ◆ Limit cam retaining bracket is not engaging in the slots of the limit cams. ◆ Limit cams are binding on shaft threads. ◆ Limit shaft has a slight "play". 	<ul style="list-style-type: none"> ➔ Adjust chain to proper tension. ➔ Be sure it is engaged in slots of both cams. ➔ Lubricate shaft threads. Limit cams should turn freely. ➔ Verify and adjust.
Poor radio range	<ul style="list-style-type: none"> ◆ Transmitter battery is low. ◆ Radio antenna is not properly positioned. ◆ Ambient radio, environmental or building structure interference. 	<ul style="list-style-type: none"> ➔ Verify and replace battery. ➔ Make sure antenna cable is not bent. Cable should be passed through control box. ➔ Check connection of plug-in antenna. If required add an external antenna (socket on receiver available).

3 Electrical Drawings

3.1 1 Phase 115VAC Rapido™ RSH/RVH/RGH/RTBH Operator with BOARD 070M

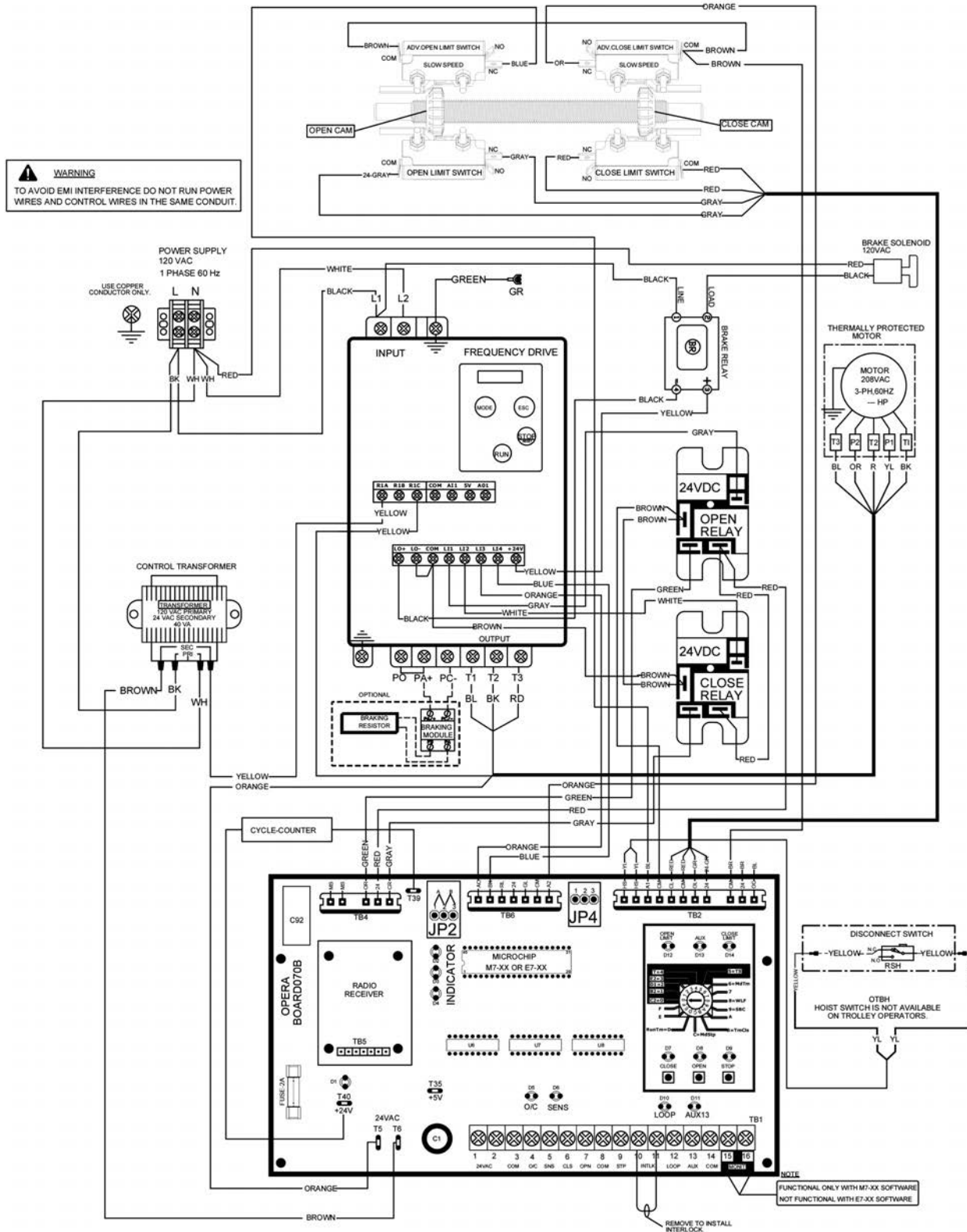


Figure 38 - EDWG14070VFD03

3.2 1 Phase 208VAC Rapido™ RSH/RVH/RGH/RTBH Operator with BOARD 070M

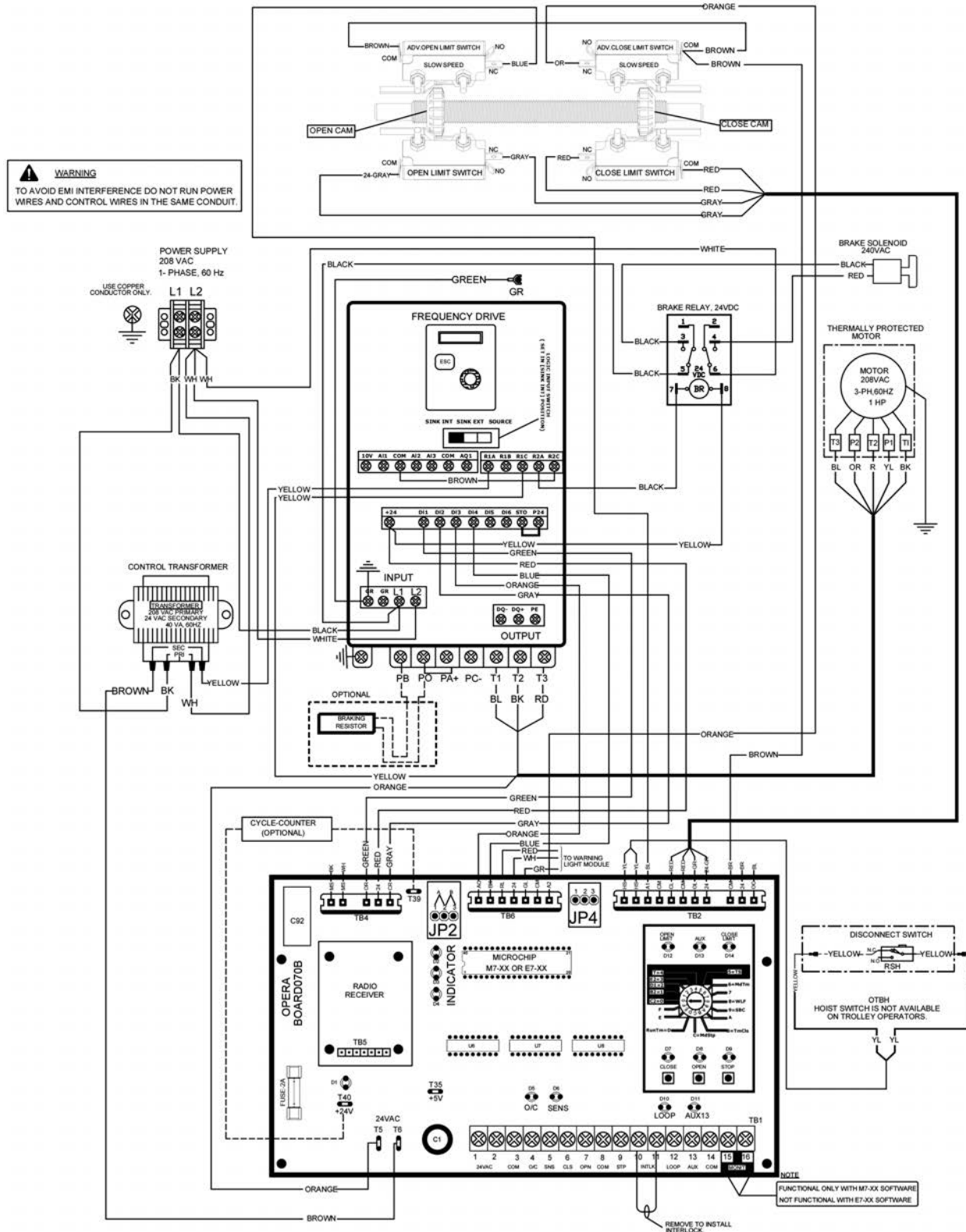


Figure 39 - EDWG14070VFD07

3.3 1 Phase 230VAC Rapido™ RSH/RVH/RGH/RTBH Operator with BOARD 070M

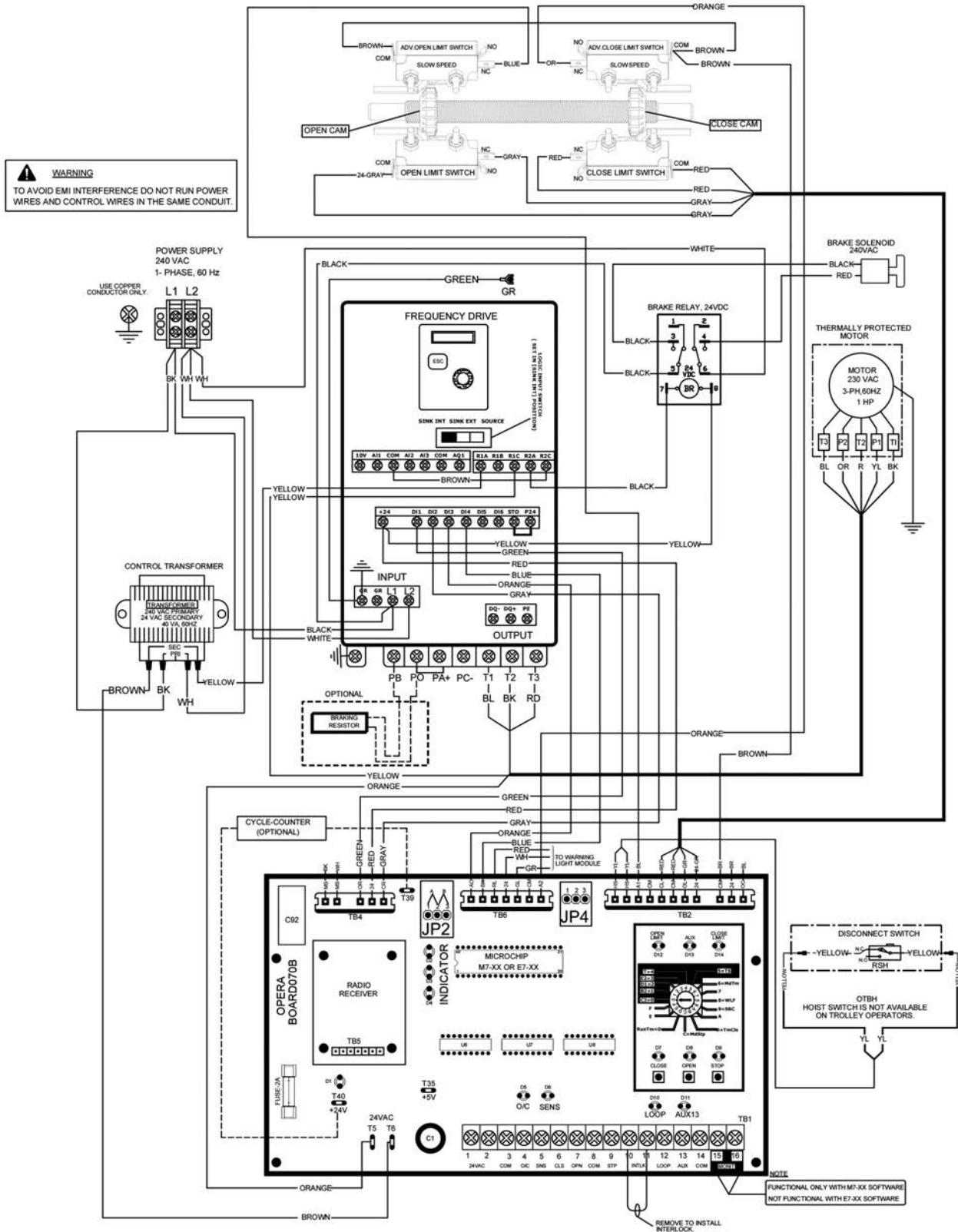


Figure 40 - EDWG14070VFD08

3.4 External Wiring with BOARD 070M

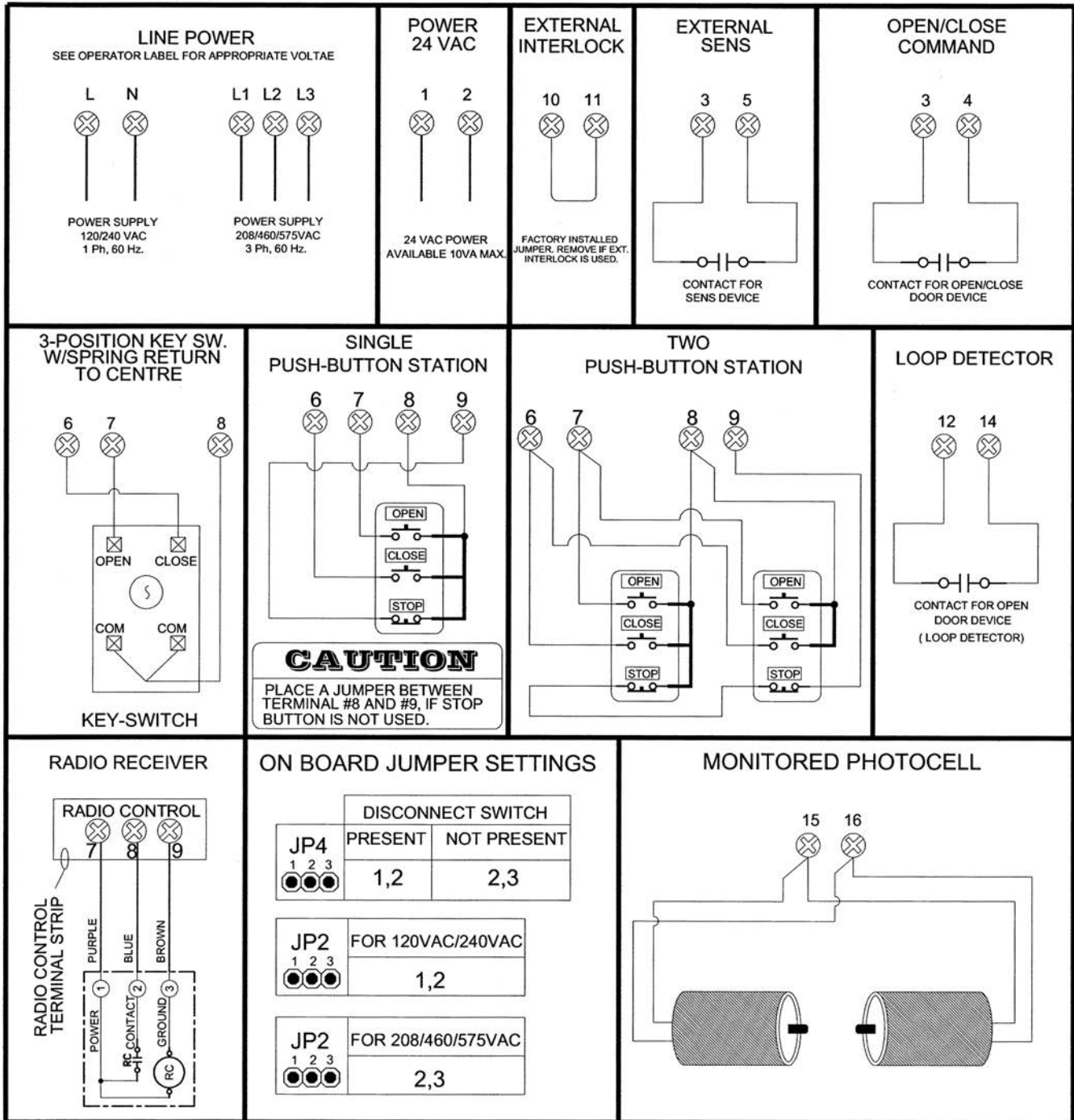


Figure 41 - External Wiring

4 Mechanical Exploded Views and Replacement Components

4.1 Rapido™ RTBH General View

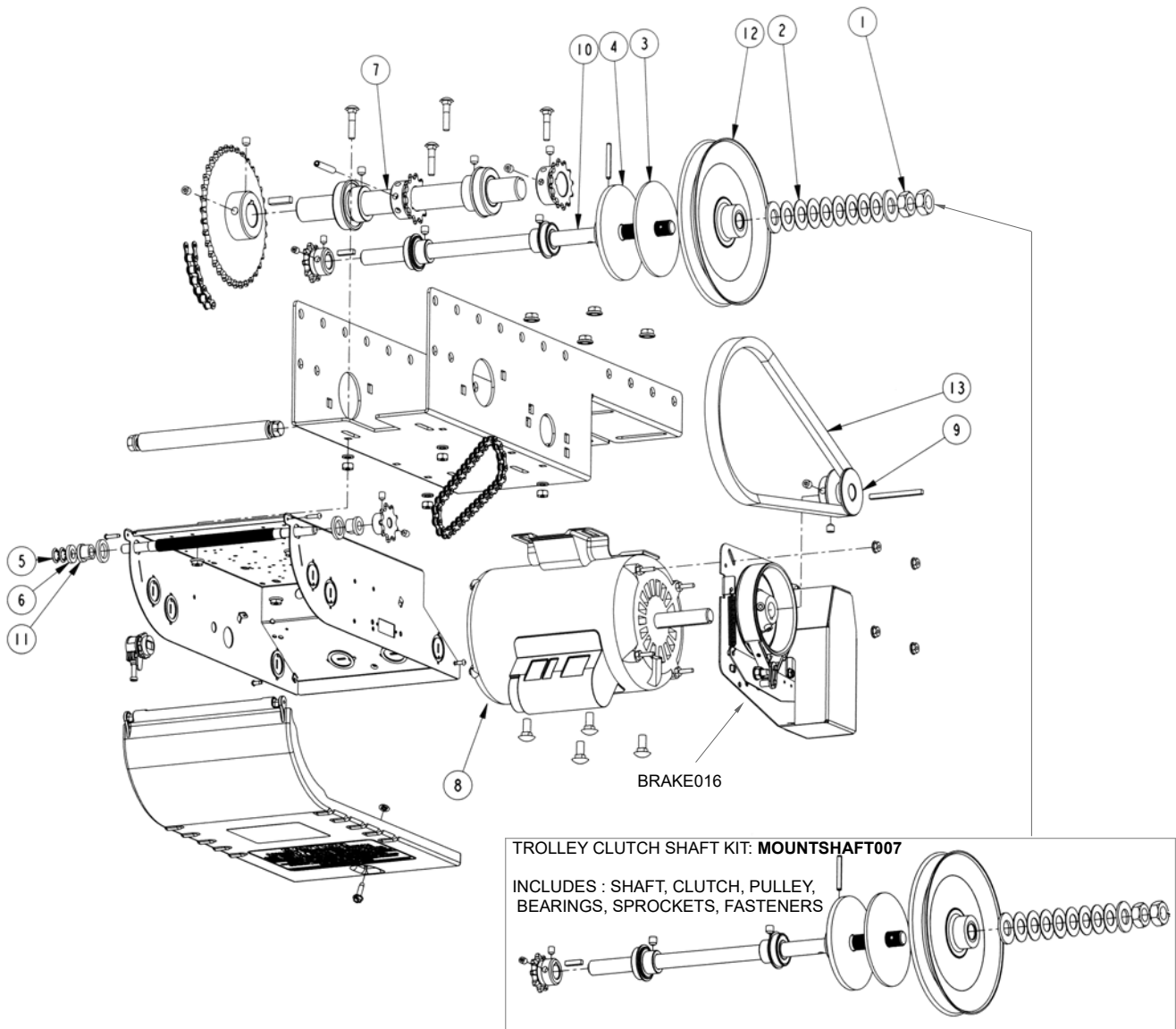


Figure 42 - Rapido™ RTBH Mechanical Exploded View

Table 12 - Rapido™ RTBH Replacement Components

No	Qty	Description	Manaras-Opera Part #	No	Qty	Description	Manaras-Opera Part #
1	2	5/8-24 HEX JAM NUT ZP	NUT015	8	1	MOTOR	MOTOR275
2	8	BELLEVILLE WASHER (31.5X16.3X0.8)	WASHER035	9	1	MOTOR PULLEY 2.0 x 5/8 5L STL	PULLEY014
3	1	CL.PAD 5/8x4x0.125"	CLUTCHPAD005	10	1	MTBH INPUT SHAFT 5/8-24X14-3/4	SHAFT080
4	1	CLUTCHPLATE 5/8	CLUTCHPLATE004	11	2	OPERA LIMIT SHAFT BUHING	BUSHING055
5	2	EXTERNAL 3/8 RETAINING RING	CLIP021	12	1	PULLEY 7" x 5/8" 5L/B	PULLEY020
6	1	FLT WASHER 3/8 (.391 x .750 x .130) ZP	WASHER064	13	1	TYBE B, INSIDE LENGHT 30	VBELTB30
7	1	MDJ, MGT, MSJ, MTH, MTBH DRIVE	SHAFT048				

4.2 Rapido™ RTBH Brake (BRAKE 016)

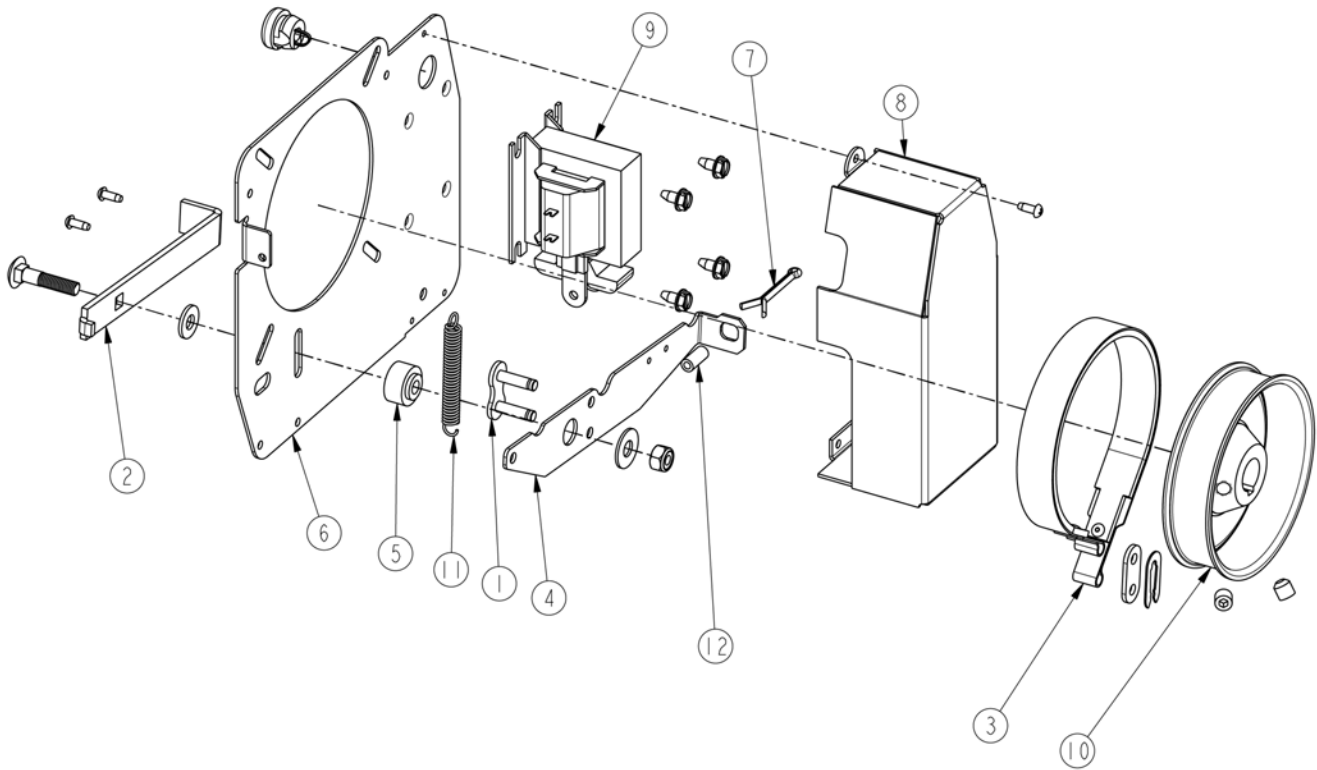


Figure 43 - BRAKE 016 Mechanical Exploded View

Table 13 - BRAKE 016 Replacement Components

No	Qty	Description	Manaras-Opera Part #	No	Qty	Description	Manaras-Opera Part #
1	1	#50 CONNECTING LINK 50-1	LINK011	7	1	PIN COTTER 1/8 X 1-1/2	PIN001
2	1	ADJUSTMENT BRAKE LEVER	LEVER064	8	1	PLATED SOLENOID COVER	COVER048
3	1	BRAKE BAND ASSEMBLY #2	BRAKEPART021	9	1	SOLENOID SWITCH 120V / SOLENOID SWITCH 240V	SOLENOID010 / SOLENOID002
4	1	BRAKE LEVER	LEVER098	10	1	STEEL BRAKE DRUM ID 0.626	DRUM005
5	1	BRAKE LEVER PIVOT	BUSHING074	11	1	TROLLEY ARM DISCONNECT SPRING	SPRING026
6	1	BRAKE PLATE	PLATE122	12	1	ZINC PLT STEEL SPACER 1/4OD 9/16L	BUSHING072

4.3 Rapido™ RSH/RVH/RGH/RTBH 115VAC Control Box with BOARD 070M

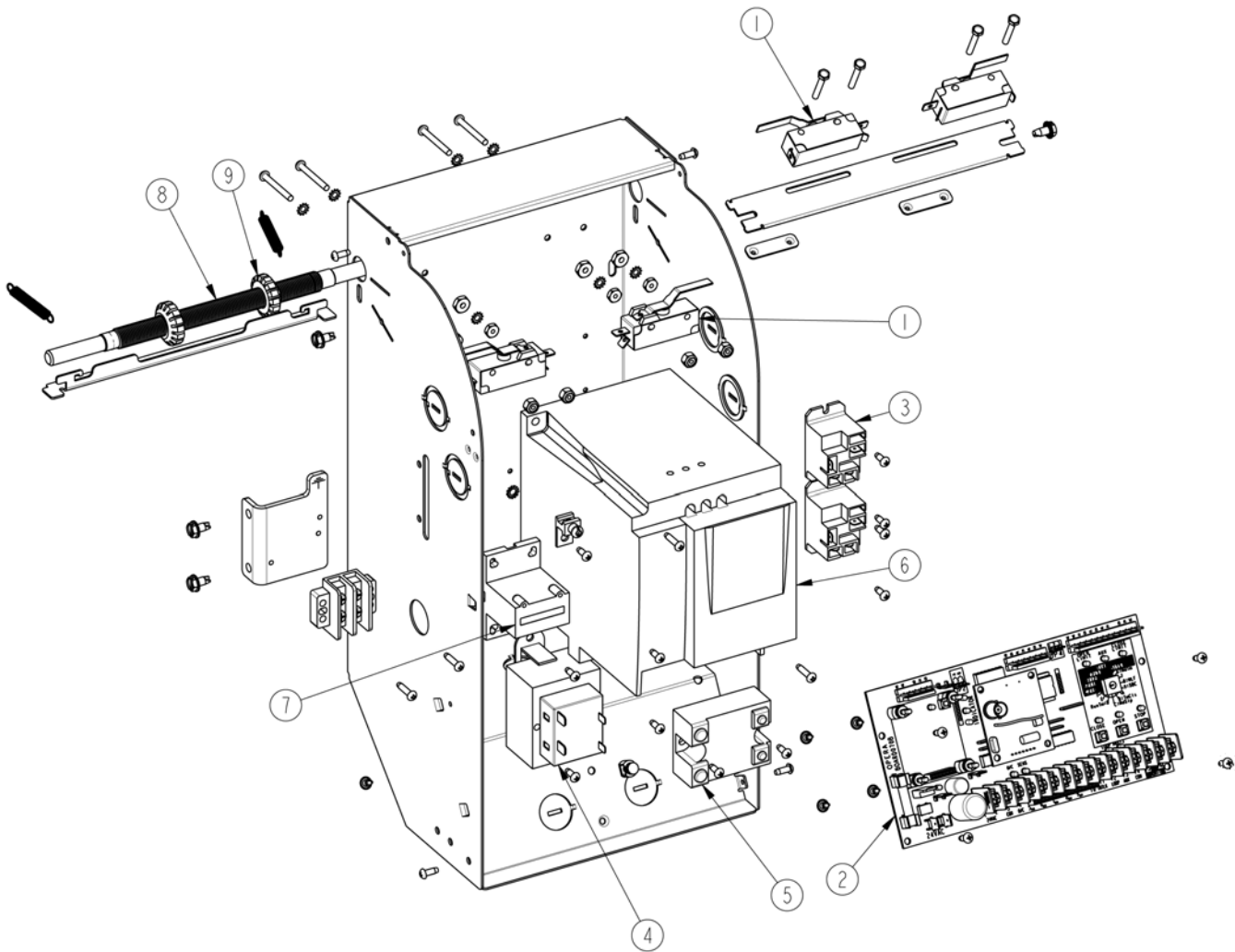


Figure 44 - Rapido™ RSH/RVH/RGH/RTBH 115VAC Control Box with BOARD 070M

Table 14 - Rapido™ RSH/RVH/RGH/RTBH 115VAC Control Box Replacement Components (CBOX 043)

No	Qty	Description	Manaras-Opera Part #
1	4	SINGLE LIMIT SWITCH - LEVER 46 DEG	LIMIT023
2	1	STD ELECT. CONTR. BOARD	BOARD070M
3	2	SPST-NO 30A 24VDC FLANGE MOUNT.	RELAY068
4	1	TRANSFO 115/240-24 40VA	TRANSF143
5	1	SPDT 4-32VDC RELAY	RELAY062
6	1	AC. DRIVE 1HP 120V 1PH	DRIVE009
7	1	EL/MEC COUNT. BASE MT. 24VAC 6D	CYCLE006
8	1	OPERA LIMIT SHAFT	SHAFT103
9	2	CAM LIMIT OPERA	CAM011

4.4 Rapido™ RSH/RVH/RGH/RTBH 208/230VAC Control Box with BOARD 070M

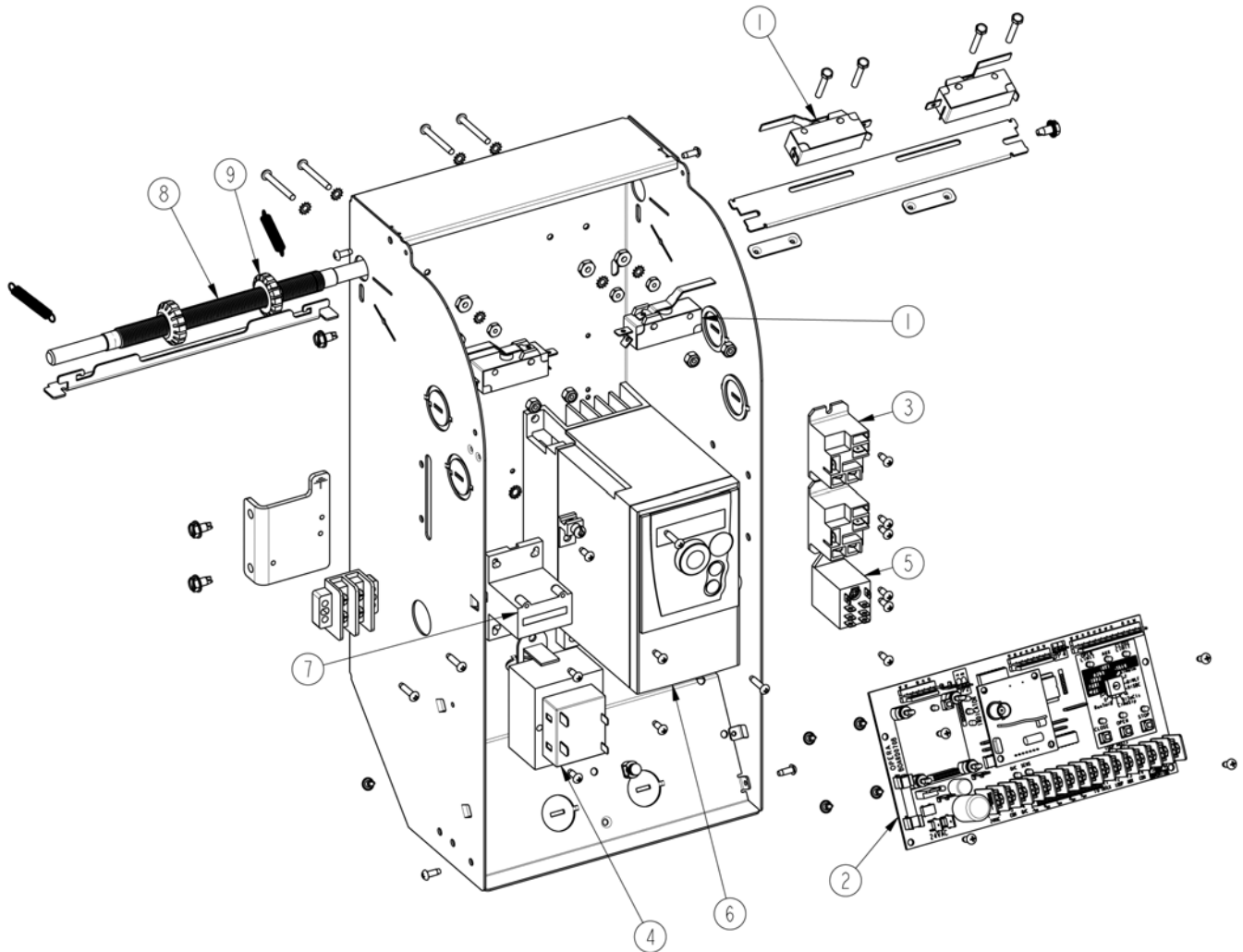


Figure 45 - Rapido™ RSH/RVH/RGH/RTBH 208/230VAC Control Box with BOARD 070M

Table 15 - Rapido™ RSH/RVH/RGH/RTBH 208/230VAC Control Box Replacement Components (CBOX 043)

No	Qty	Description	Manaras-Opera Part #
1	4	SINGLE LIMIT SWITCH - LEVER 46 DEG	LIMIT023
2	1	STD ELECT. CONTR. BOARD	BOARD070M
3	2	SPST-NO 30A 24VDC FLANGE MOUNT.	RELAY068
4	1	TRANSFO 120/230-24 40VA	TRANSF037 (208V) / TRANSF143 (230V)
5	1	DPDT 24VDC RELAY	RELAY052
6	1	AC.DRIVE 1HP 240V 1PH	DRIVE016
7	1	EL/MEC COUNT. BASE MT. 24VAC 6D	CYCLE006
8	1	OPERA LIMIT SHAFT	SHAFT103
9	2	CAM LIMIT OPERA	CAM011

Notes



Notes



Notes



Warranty

Manaras-Opera warrants its operators to be free from defects in material and workmanship under normal and proper use for a period of two years from date of invoice, unless otherwise stated. Mechanical, electrical and electronic accessories are warranted for one year from date of invoice, unless otherwise stated. Wearing parts such as, but not limited to, clutch pads, V-belts, and brake bands are excluded from warranty.

Manaras-Opera's only obligation shall be to repair or replace defective equipment which does not conform to the warranty. Manaras-Opera shall not be liable for any injury, loss or damage, direct or consequential, arising out of the inability to use the equipment. Before using, the Buyer and/or the ultimate User shall determine the suitability of the product for its intended use, and User assumes all risks and liability in connection therewith. The foregoing may not be changed except by an Agreement signed by an authorized representative of Manaras-Opera.

The articles that are replaced pursuant to the terms of this warranty shall be retained by Manaras-Opera, and the User is responsible for any freight costs relating to repair or replacement.

The foregoing warranty is exclusive and in lieu of all other warranties of quality, whether written, oral or implied (including any other warranty of merchantability or fitness for purpose).

The following are exclusions from warranty:

- If usage, product modification, adaptation or installation are not in accordance with our installation and operating instructions.
- If the product has been opened, dismantled or returned with clear evidence of abuse or other damage.
- If our written specifications are not properly applied by the Buyer when selecting the equipment.
- If our written instructions for installation and wiring of the electrical connections have not been followed.
- If our equipment has been used to perform functions other than the functions it was designed to handle.
- If Manaras-Opera equipment is used with electrical accessories (switches, relays, etc.) that have not been previously approved in writing by the Manaras-Opera Engineering Department.
- If electrical accessories and other components have been used in disregard of the basic wiring diagram for which they were designed.

All costs related to installation and re-installation of the Manaras-Opera equipment covered by this warranty are not the responsibility of Manaras-Opera. Manaras-Opera will not be responsible for any consequential damages following installation procedures performed by the Buyer or the User. If the Buyer resells any Manaras-Opera products to another Buyer or User, it shall include all of the terms and provisions of this warranty in such resale. Manaras-Opera's responsibility to any such Third Party shall be no greater than Manaras-Opera's responsibility under the warranty to the original Buyer.

Returns

No returns will be accepted without prior written authorization by Manaras-Opera. All returns must be accompanied by a Return Authorization Number issued by Manaras-Opera, and all unauthorized returns will be refused. The return shipment is to be freight prepaid by the Buyer, and under no circumstances shall the Buyer deduct the value of the returned merchandise from any remittance due. A restocking fee of 15% of the Manaras-Opera sale price will be charged for all returns not covered under warranty.

2X FASTER*



RAPIDO™ TWICE AS FAST

OPEN AND CLOSE YOUR DOOR TWICE AS FAST WITH A RAPIDO OPERATOR FROM MANARAS-OPERA.

The RAPIDO™ features a door speed up to 2 times faster than standard models available to the commercial and industrial door market.

The RAPIDO™ increases the longevity of the complete door system, designed to speed-up industrial standard lift sectional doors while smoothly managing soft-starts and soft-stops.

CHOOSING THE RAPIDO™ IS SIMPLE WHEN TIME AND ENERGY SAVINGS IS A MUST.

On-board control and monitoring of external entrapment protection devices, provide speed managing features and enhanced performance and reliability.

*The RAPIDO™ operator is up to 2X the speed of a standard jackshaft operator.

CALL US FOR MORE INFORMATION: 1-800-361-2260

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MEMBER OF THE 

RTBH-1.19



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