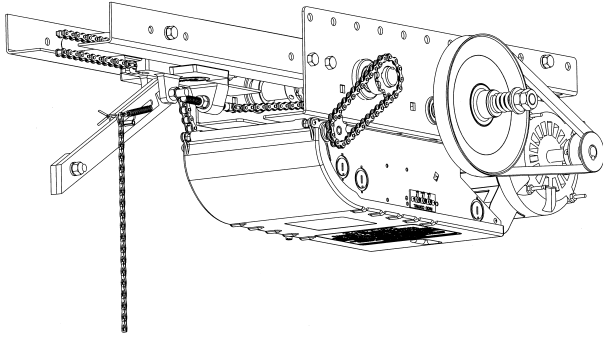
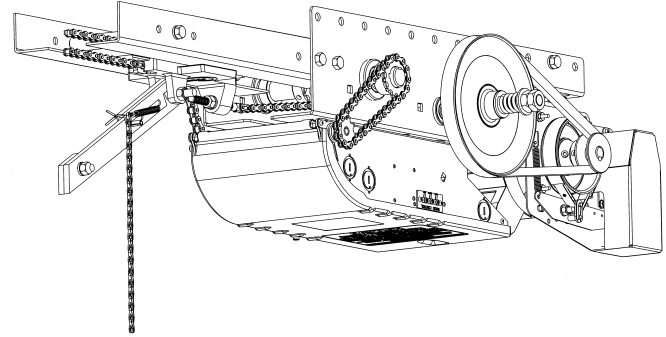


# Installation & Instruction Manual

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**OTH**



**OTBH**

Commercial & Industrial Heavy Duty Trolley Operator  
(For standard lift sectional doors)

## Hardwired Electric Control

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

Serial # \_\_\_\_\_

Model # \_\_\_\_\_

Wiring Diagram # \_\_\_\_\_

Project #/Name \_\_\_\_\_

Door #/Name \_\_\_\_\_



For more information, please visit [www.devancocanada.com](http://www.devancocanada.com) or call toll free at 855-931-3334

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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) that are 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 has exposed moving parts. 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.
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, (b) at a minimum height of 5 feet (1,5 m) above floors, landings, steps or any other adjacent walking surface so small children cannot reach it, 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.

# 1 General Specifications and Dimensions (OTH)

SUPPLY VOLTAGE.....	115, 230 VAC single-phase, 208, 460, 575 VAC three-phase
CONTROL VOLTAGE.....	24 VAC class 2 transformer, 2 amp fuse type ACG
MOTOR.....	Continuous duty 1/2, 3/4 horsepower
DOOR SPEED.....	12" / second
NET WEIGHT (Operator only).....	71 Lbs (32 Kg)
STANDARD WIRING TYPE.....	C2 (momentary contact to open/stop and constant-pressure-to-close)
APPLICATION.....	Heavy duty for standard lift sectional doors
DUTY.....	25 cycles/hour or 80 cycles/day maximum

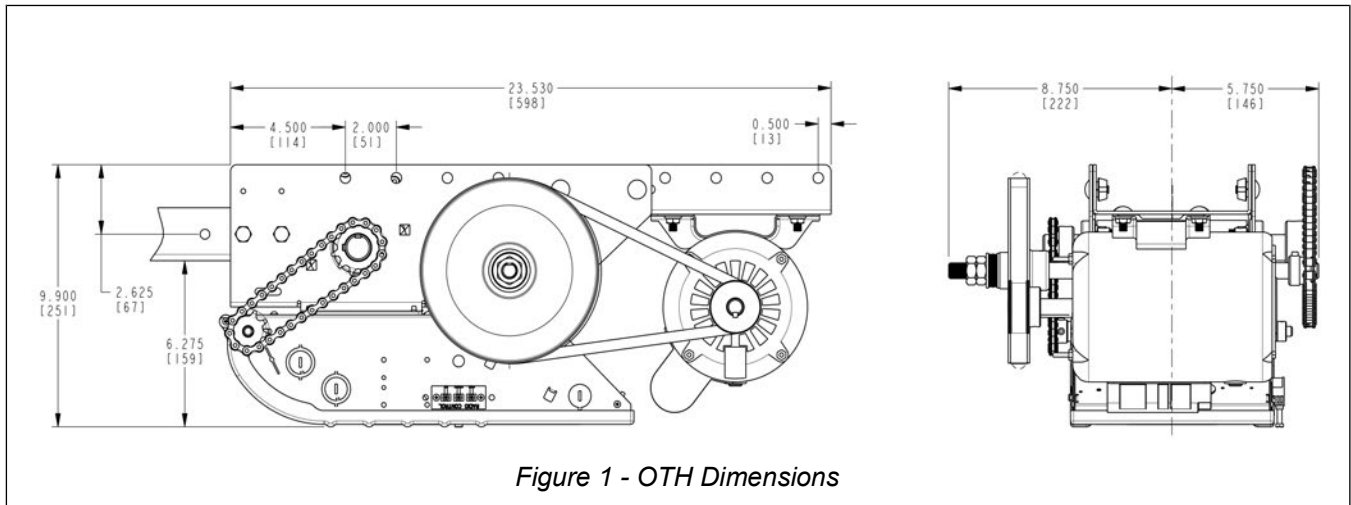


Table 1 - Operator Selection Guide

## Maximum Area in Square Feet (general guideline)

Sectional Doors					
HP	Steel 18 ga ins.	Steel 18 ga 20 ga ins.	Wood Steel 20 ga, 22 & 24 ga ins.	Alu. Steel 22 & 24 ga	Fiber Glass
1/2	196	245	314	343	392
3/4	270	319	441	490	549

## 2 General Specifications and Dimensions (OTBH & OSL)

SUPPLY VOLTAGE.....	115, 230 VAC single-phase, 208, 460, 575 VAC three-phase
CONTROL VOLTAGE.....	24 VAC class 2 transformer, 2 amp fuse type ACG
MOTOR.....	Continuous duty 1/2, 3/4, 1 horsepower
DOOR SPEED.....	12" / second
NET WEIGHT (Operator only).....	73 Lbs (33 Kg)
STANDARD WIRING TYPE.....	C2 (momentary contact to open/stop and constant-pressure-to-close)
APPLICATION.....	Heavy duty for standard lift sectional doors
DUTY.....	25 cycles/hour or 80 cycles/day maximum

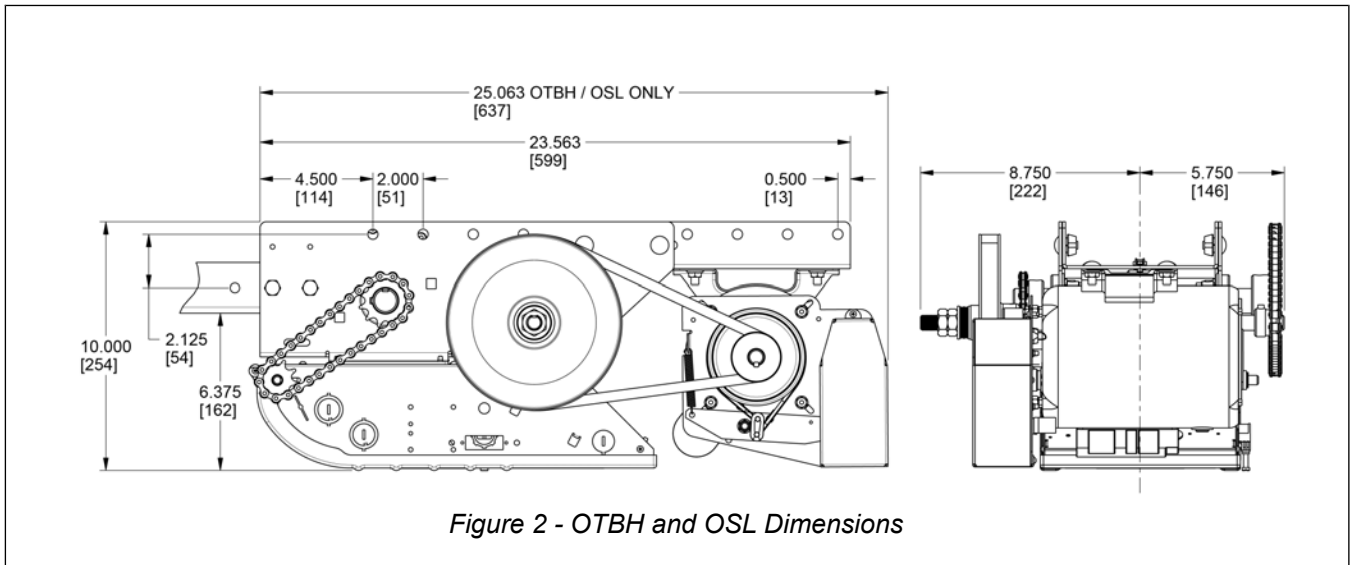


Table 2 - Operator Selection Guide

### Maximum Area in Square Feet (general guideline)

Sectional Doors					
HP	Steel 18 ga ins.	Steel 18 ga 20 ga ins.	Wood Steel 20 ga, 22 & 24 ga ins.	Alu. Steel 22 & 24 ga	Fiber Glass
1/2	196	245	314	343	392
3/4	270	319	441	490	549
1	294	392	490	564	613

## 3 Door & Operator Hardware

### 3.1 Delivery of Operator

Upon delivery of your OPERA 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 3 and shown in Figure 3. 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 3 - 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 <sup>(1)</sup>	Txxx
4	1	#410 (48)/#41 Drive chain <sup>(1)</sup>	
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.

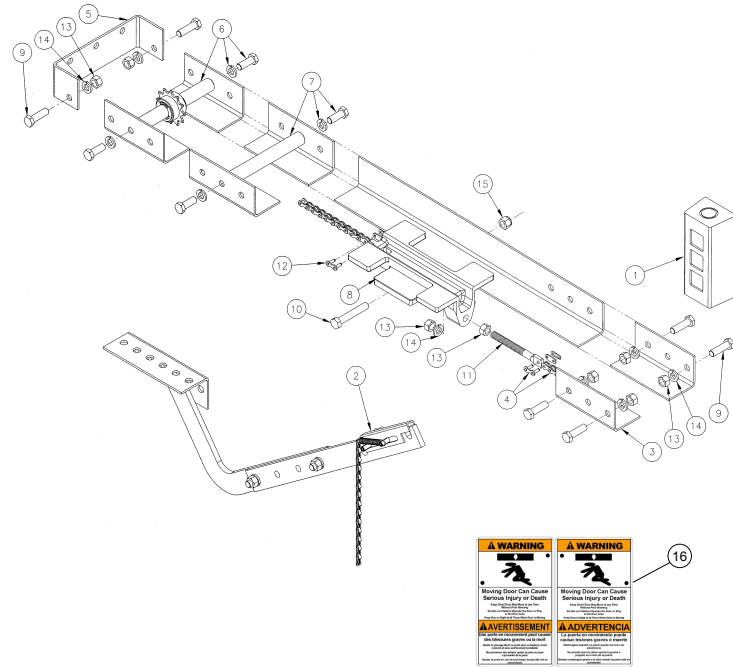


Figure 3 - Standard Trolley Hardware



Figure 4 - Entrapment Warning Placard

**NOTE:** Install the **Entrapment Warning Placard** (shown in Figure 4), next to the control station, visible in the area of the door.

## 4 Operator Installation

### 4.1 Assembly Instructions



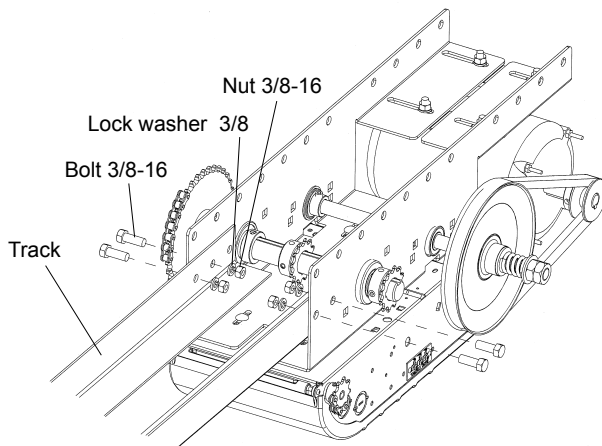
## CAUTION

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.

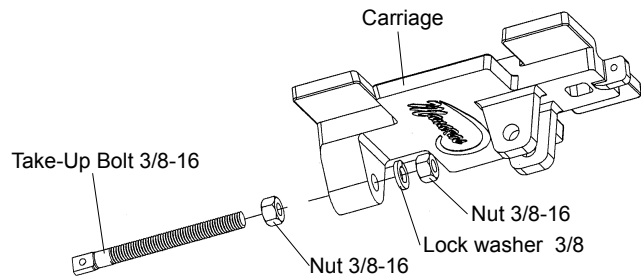
## NOTICE

- 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.

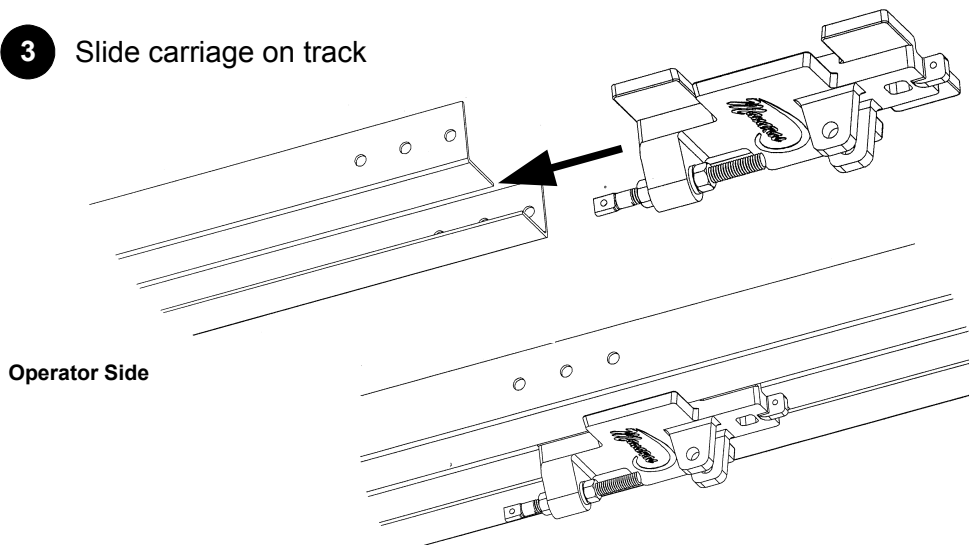
### 1 Attach tracks to operator



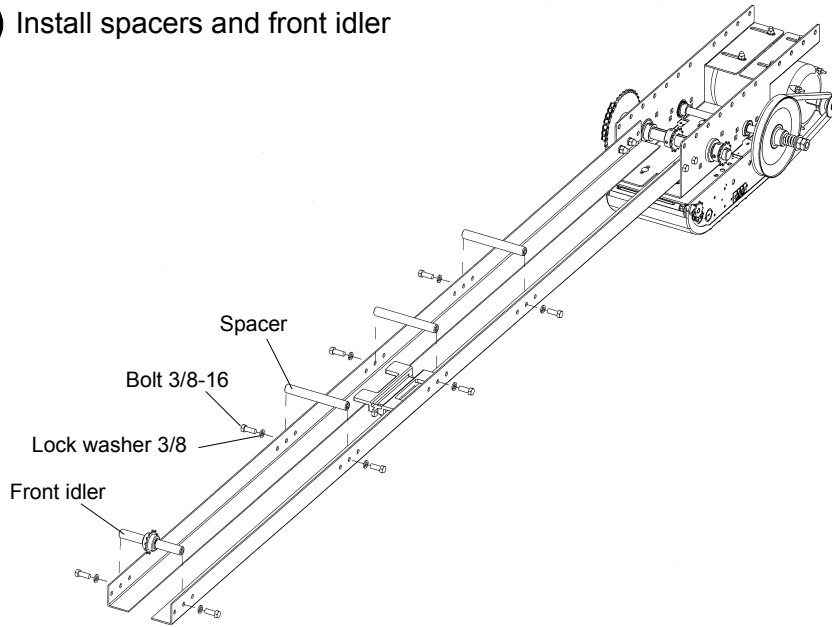
### 2 Assemble carriage



### 3 Slide carriage on track

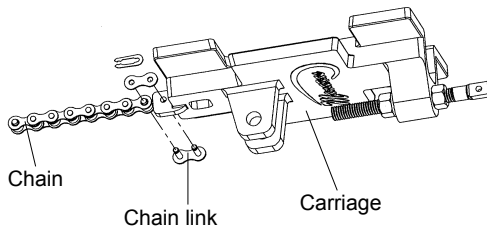


#### 4 Install spacers and front idler

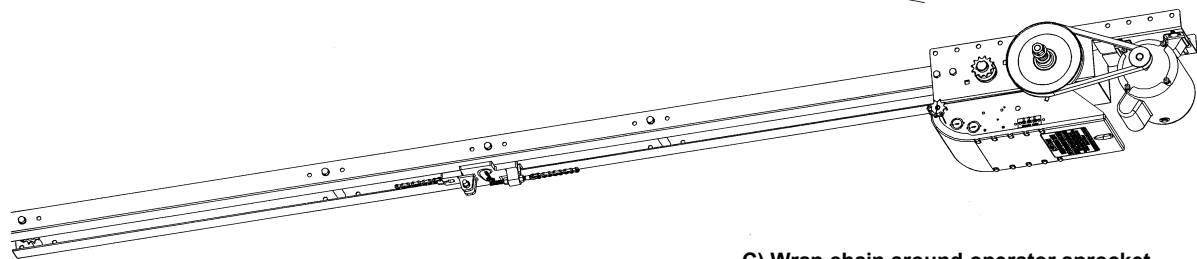
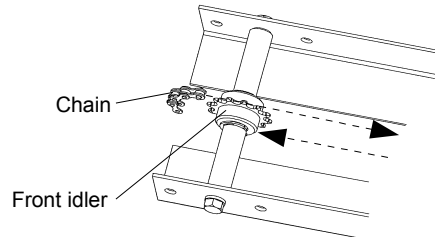


#### 5 Install chain

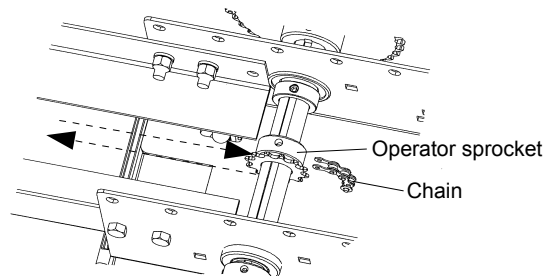
A) Attach chain to front of carriage.



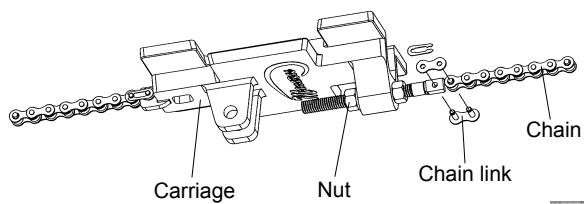
B) Wrap chain around front idler.



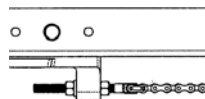
C) Wrap chain around operator sprocket.



D) Attach chain to back of carriage.



E) Adjust the tension on the chain.

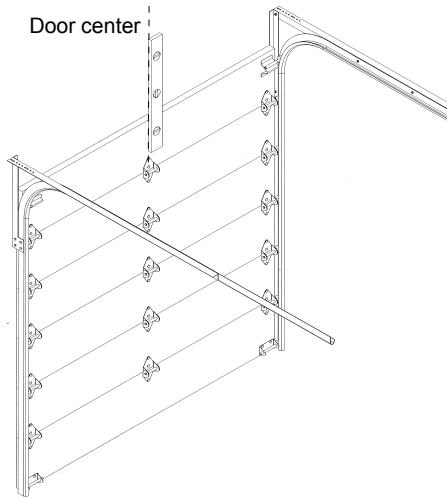




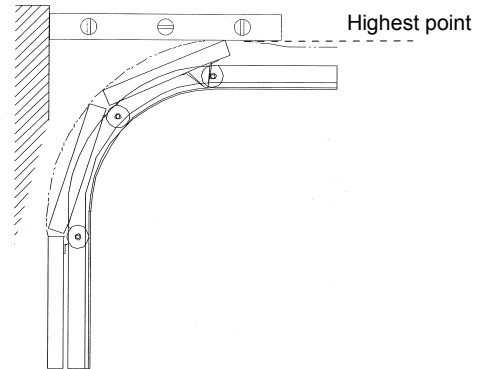
## 4.2 Installation

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.

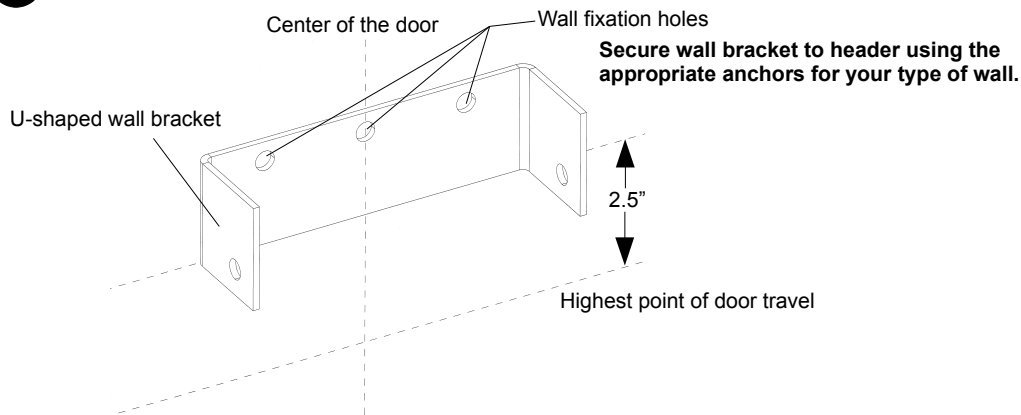
### 1 Establish the center of the door



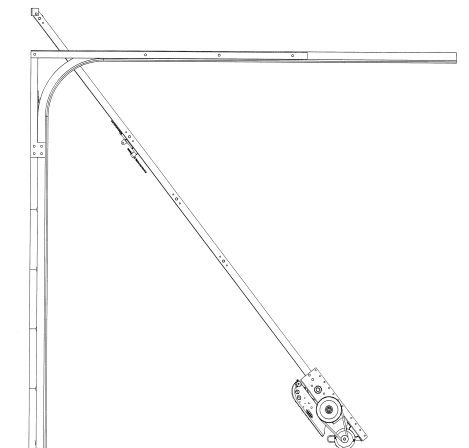
### 2 Establish the highest point of door travel



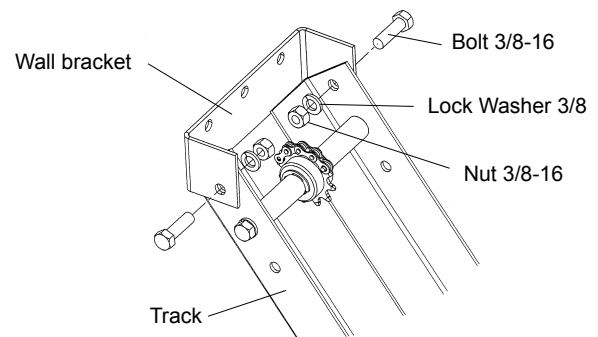
### 3 Position the U-shaped wall bracket



### 4 Attach tracks to U-shaped wall bracket

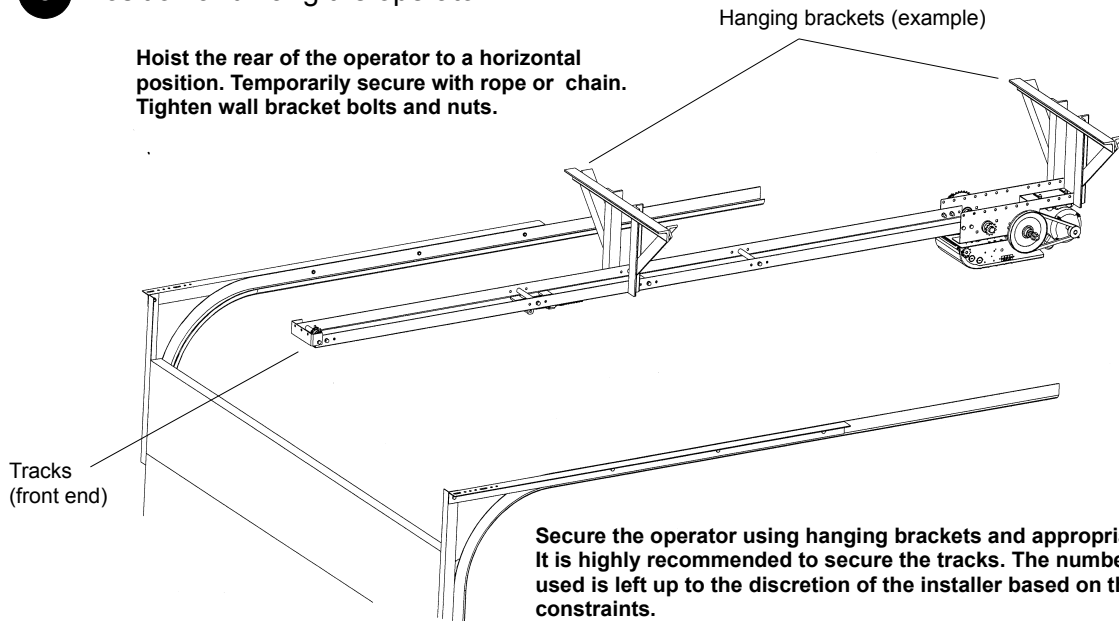


**Allow the motor to rest on the floor and raise the front end of the rails and secure with the bolts and nuts (do not tighten).**



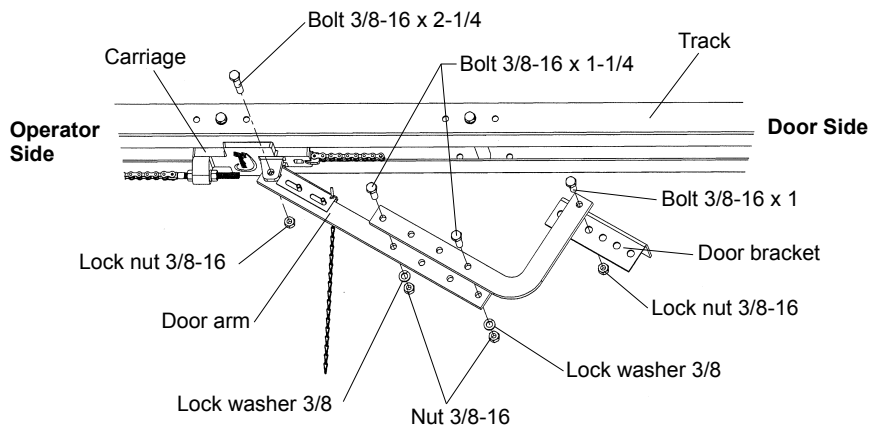
## 5 Position and hang the operator

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



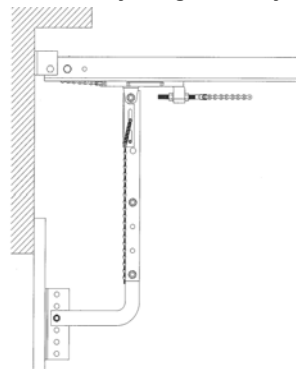
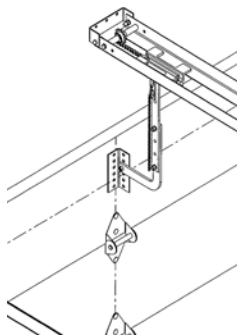
## 6 Attach door arm

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 5.
2. Disconnect trolley arm from carriage, refer to Figure 5.
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.

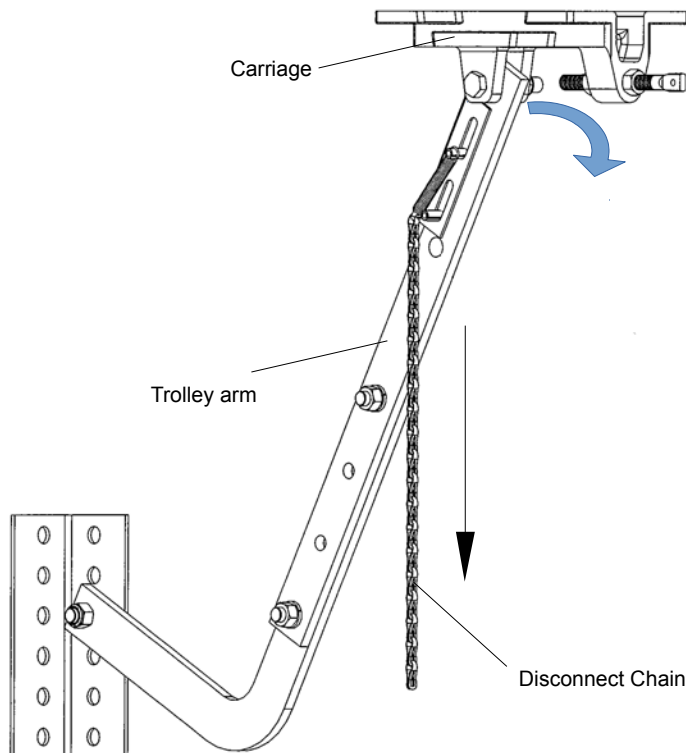


Figure 5 - Disconnect Trolley Arm From Carriage

## 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.

### 6.1 Limit Switch Functionality

#### Open Limit Switch and Advanced 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 opened position. The Advanced Open Limit Switch is used for a radio-control feature and to activate the Timer to Close feature (if used).

#### Close Limit Switch and Advanced Close Limit Switch

When activated, the Close Limit Switch will stop the operator while the door is travelling in the downward direction. Should be adjusted accordingly to stop door in fully closed position. The Advanced Close Limit Switch is used for the operation of a reversing edge or external entrapment protection devices. With this limit switch, the floor is not considered as an obstacle, therefore the door does not reverse its movement once it reaches the floor.

### 6.2 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 6.

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.

### 6.3 Advanced Limit Switch Adjustments

The Advanced Close Limit Switch must be field adjusted in order to deactivate the reversing edge or external entrapment protection device at a **maximum of 6 in (15,2 cm) from the floor**. The adjustment can be performed by changing the position of the Advance Close Limit Switch on its slotted support bracket.

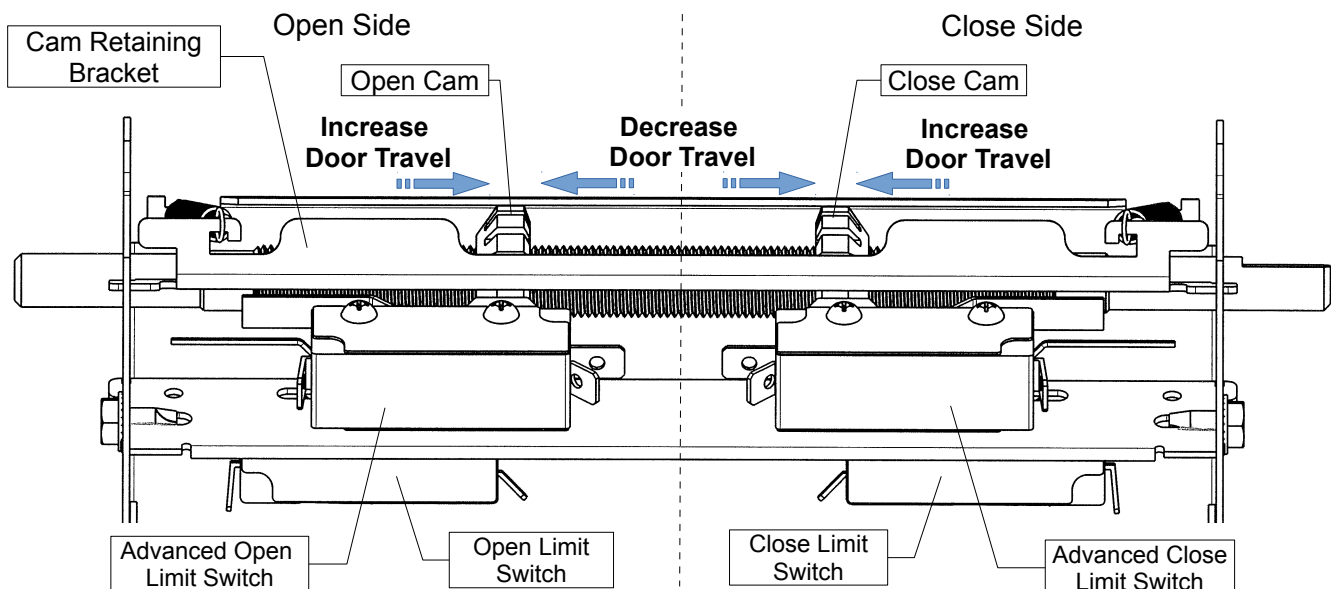


Figure 6 - Limit Switches and Cams Adjustment

## 6.4 Limit Switch Adjustment

Table 4 - Limit Switch Adjustment Procedures

Limit Switch	Adjustment Procedures
Open Limit	<ol style="list-style-type: none"> <li>1. Move the open cam close to the open limit switch and proceed as per described in section Operator Start-up, Table 5, p.21.</li> <li>2. Release cam-retaining bracket and make sure that the bracket <b>engages</b> in the slots of both cams.</li> </ol>
Close Limit	<ol style="list-style-type: none"> <li>1. Pull the disconnect chain for manual operation.</li> <li>2. Manually close the door to the fully closed position.</li> <li>3. Pull the cam-retaining bracket from the Close side, see Figure 6, and rotate Close cam manually until it activates the Close limit switch sufficiently so that a “click” can be heard.</li> <li>4. Release cam-retaining bracket and make sure that the bracket <b>engages</b> in the slots of both cams.</li> </ol>
Limit Switch Fine Adjustment	<ol style="list-style-type: none"> <li>1. Limit switch fine adjustment SHOULD be done after the main power supply is connected to the operator. Refer to section Operator Start-up, Table 5, p.21. Note: One (1) notch on cam is equal (=) to about ½” of the door travel.</li> </ol>

## 7 Electrical Wiring

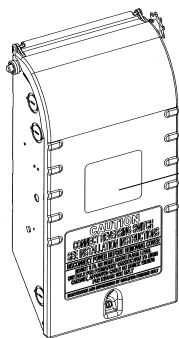
### WARNING



To reduce risk of SEVERE INJURY or DEATH to persons:

- All electrical wiring 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 and 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 #			
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		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	
CAUTION DISCONNECT ELECTRIC POWER BEFORE ADJUSTING DOOR OR OPERATOR ATTENTION COUPEZ LE COURANT ÉLECTRIQUE AVANT DE METTRE AU POINT LA PORTE OU L'OPÉRATEUR					

FLA = Full Load Amp

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

Time Delay Fuse:  $1,75 \times \text{FLA}$

Non-Time Delay Fuse:  $3,0 \times \text{FLA}$

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

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

- Time Delay Fuse:  $1,75 \times 3,8\text{A} = 6,65\text{A} \rightarrow$  Standard fuse to use: 10A
- Non-Time Delay Fuse:  $3,0 \times 3,8\text{A} = 11,4\text{A} \rightarrow$  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 power line wire from the right of the control box, as shown in Figure 7.
2. Route all low voltage control wires from the left of the control box, as shown in Figure 7. **KEEP LOW VOLTAGE WIRES SEPARATE FROM LINE VOLTAGE WIRES.**
3. **USE COPPER CONDUCTORS ONLY.**

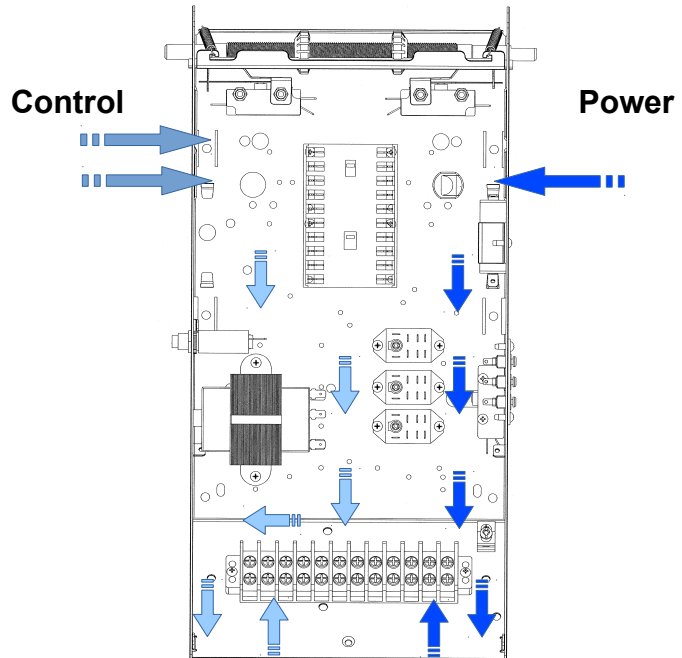


Figure 7 - Low Voltage (Controls) and High Voltage (Power) Connections

### 7.2 Main Power Supply Connection

Single-Phase (115/230V)	Three-Phase (208/230-460-575V)
<p><u>Correct motor rotation:</u> Switch the BLUE and ORANGE motor wires on the contactor.</p>	<p><u>Correct motor rotation:</u> Switch ANY TWO incoming lines (phase) on the power terminal block.</p>

### 7.3 Wall-Button 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.
- Keep low voltage wires separate from line voltage wires.
- Use copper conductors only.

#### Push-Button Station (PBS) Connection

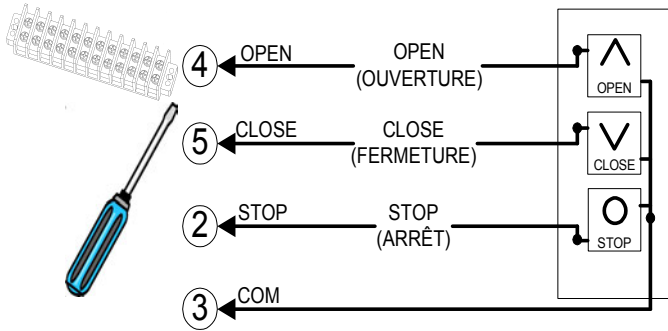


Figure 8 - STATION 020 / 084  
3-PBS Open / Close / Stop

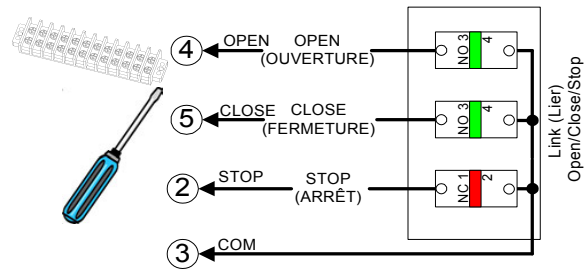


Figure 9 - STATION 041 / 049 / 056 / 076 / 078  
3-PBS Open / Close / Stop

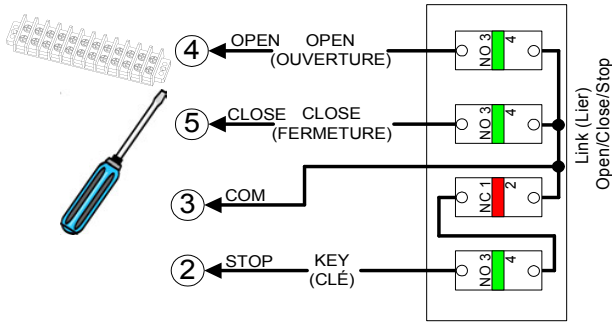


Figure 10 - STATION 079  
3-PBS Open / Close / Stop with Key Lock-out

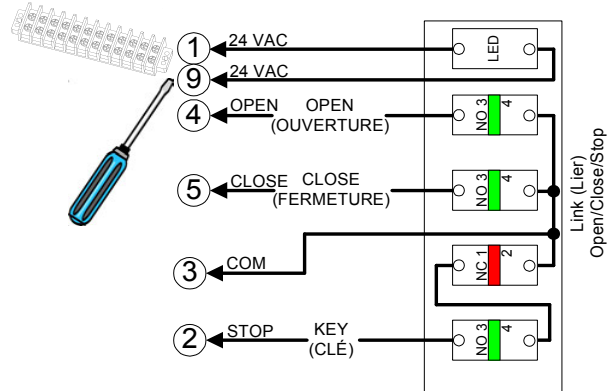


Figure 11 - STATION 080  
3-PBS Open / Close / Stop with Key Lock-out and Light

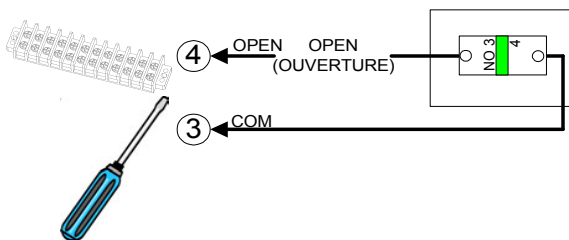


Figure 12 - STATION 001 / 081  
1-PBS Open

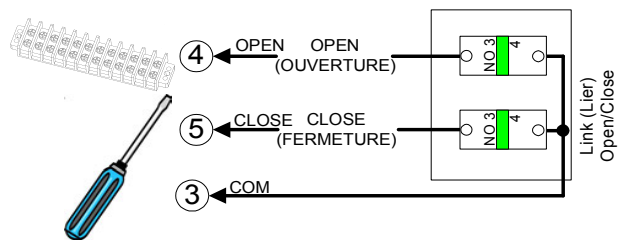


Figure 13 - STATION 010 / 082  
2-PBS Open / Close



## 7.4 Optional Accessory Connections

# NOTICE

- Photo 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.
- Keep low voltage wires separate from line voltage wires.
- Use copper conductors only.

### 7.4.1 Electric Photo Cells / Photo Eyes (Non-Monitored)

#### Through Beam Type

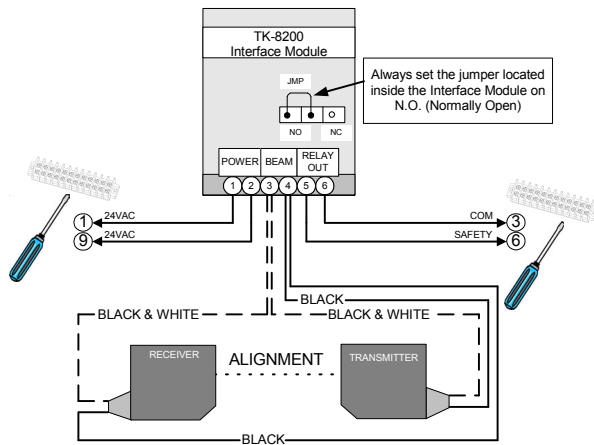


Figure 14 - PHOTO 008

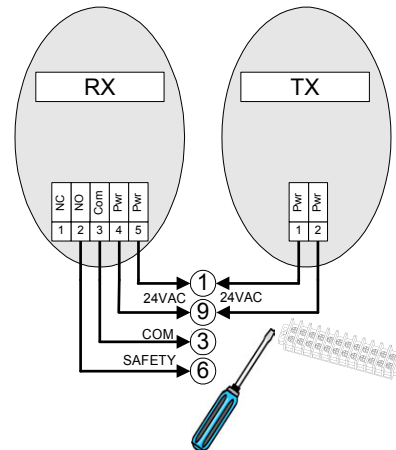


Figure 15 - PHOTO 015 / 016 / 045 / 050 / 051 / 059

#### Reflective Type

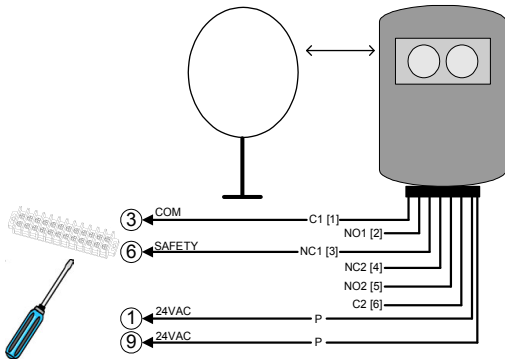


Figure 16 - PHOTO 018

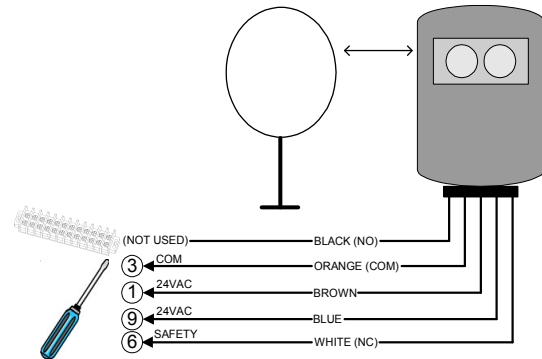


Figure 17 - PHOTO 038

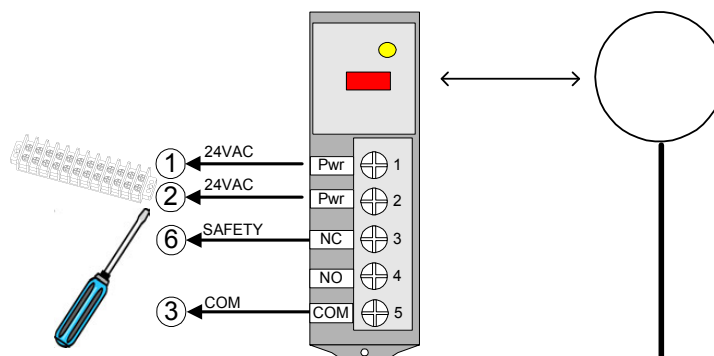


Figure 18 - PHOTO 060

## 7.4.2 Reversing Edge Device (Non-Monitored)

# NOTICE

- If the door is controlled by any device other than a constant pressure push-button station on close, including a timer-to-close, a reversing edge must be connected.

### Installation

#### **Pneumatic Sensing Edge**

1. Place the air switch in position, refer to Figure 19.
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 20 or Figure 21.
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 19.
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 22.
4. Connect the sensing edge to the junction box.
5. N/A

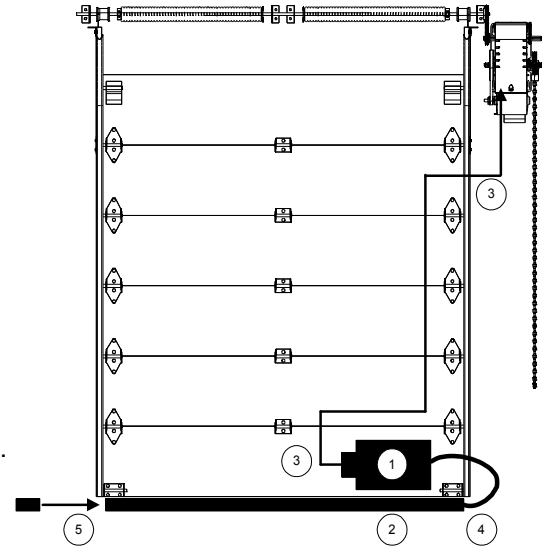


Figure 19 - Reversing Edge

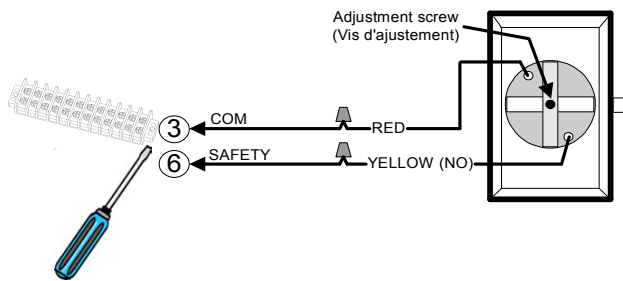


Figure 20 - AIRSWITCH 001 / 007

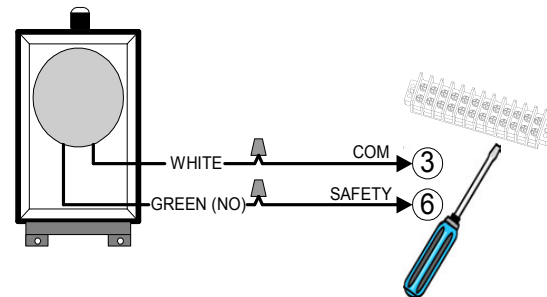


Figure 21 - AIRSWITCH 009

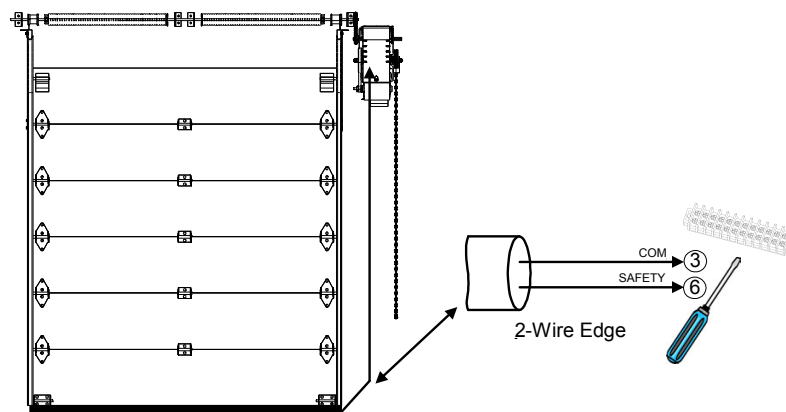


Figure 22 - Electric Reversing Edge

### 7.4.3 Pull Cord & Key Switch

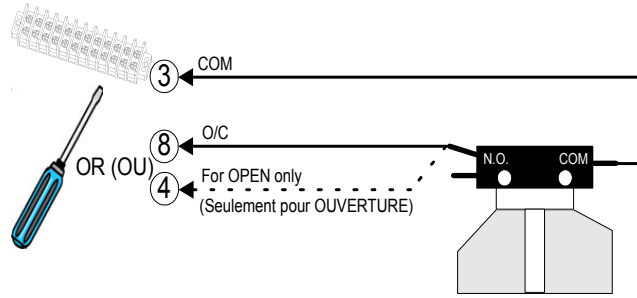


Figure 23 - PULLCORD 001 / 003 / 004 / 007

### 2-Position Key Switch

Recommendation: Put Control Board on C2 or E2 Mode (constant-pressure-to-close)

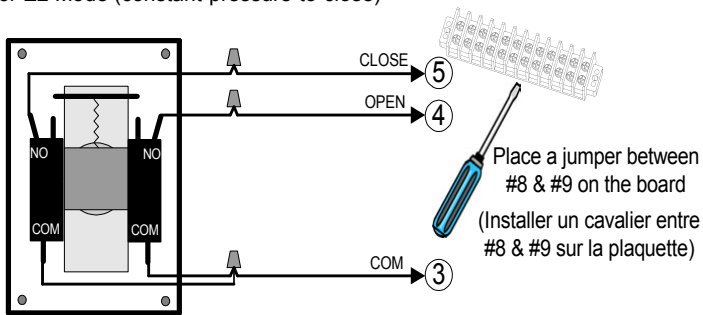


Figure 24 - KEYSWITCH 010 / 015

### 2-Position Key Switch & Stop Button

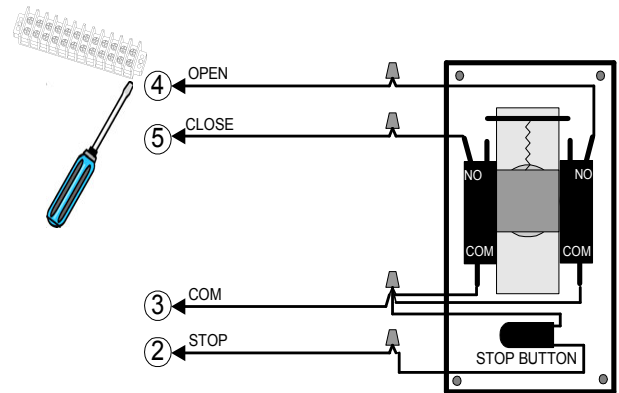


Figure 25 - KEYSWITCH 019

### 7.4.4 External Single-Button Radio Control Receiver

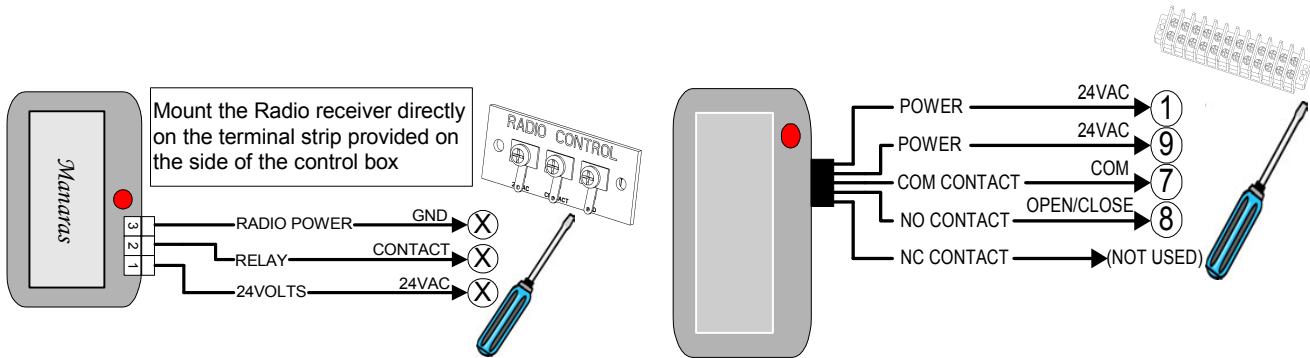


Figure 26 - RADIO 014 or RADIO 015

Figure 27 - Other Radio Receivers with 4 or 5-wires

### 7.4.5 Vehicle Loop Detector

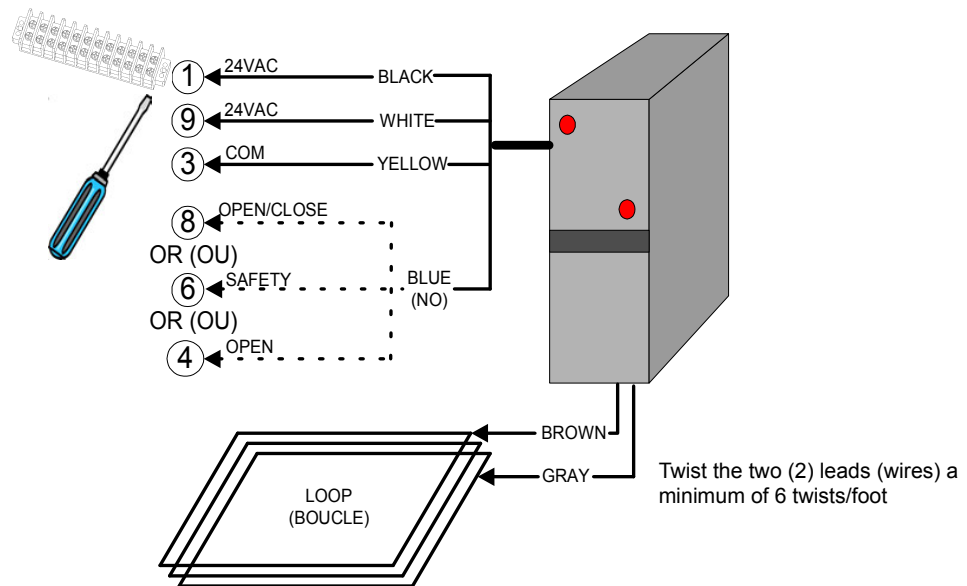


Figure 28 - Vehicle Loop Detector

### 7.4.6 Other Accessories

Additional accessories are available, such as:

- External Mid-Stop Switch
- External Timer Defeat Switch

## 8 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 the wall-button station (Open/Close/Stop), external entrapment device or jumper wires for testing, see Table 5.

Table 5 - Start-up and Testing Guide

Test	Door Position	Action	Door Response
<b>Open</b>	Door at 6" from the closed position	<ol style="list-style-type: none"> <li>1. Press "OPEN" OR Momentarily touch #3 &amp; #4 on the main terminal with a jumper wire.</li> <li>2. Check if door is stopped by Open limit switch.</li> <li>3. If required, re-adjust Open limit, as shown in Figure 6, p.12.</li> </ol>	Door should open instantly.
<b>Close</b>	Door at fully open position	<ol style="list-style-type: none"> <li>1. Press "CLOSE" OR Momentarily touch #3 &amp; #5 on the main terminal with a jumper wire.</li> <li>2. Check if door is stopped by Close limit switch.</li> <li>3. If required, re-adjust Close limit, as shown in Figure 6, p.12.</li> </ol>	<p>- <b>C2 mode:</b> Door should close as long as the close button is activated.</p> <p>- <b>B2 mode:</b> Door should close instantly.</p>
<b>Sense Edge</b>	A) Door at fully closed position	Activate external entrapment device OR	Door should stay at closed position.
	B) Door is closing (movement)	Momentarily touch #3 & #6 on the main terminal with a jumper wire.	Door should stop and then reverse to fully opened position.
<b>Open &amp; Close</b> (single-button radio)	A) Door at fully opened position	Activate the single-button transmitter OR	Door should close.
	B) Door at fully closed position	Momentarily touch #7 & #8 on the main terminal with a jumper wire.	Door should open.
	C) Door is closing (movement)		Door should reverse to fully opened position.

## 9 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.

#### 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.

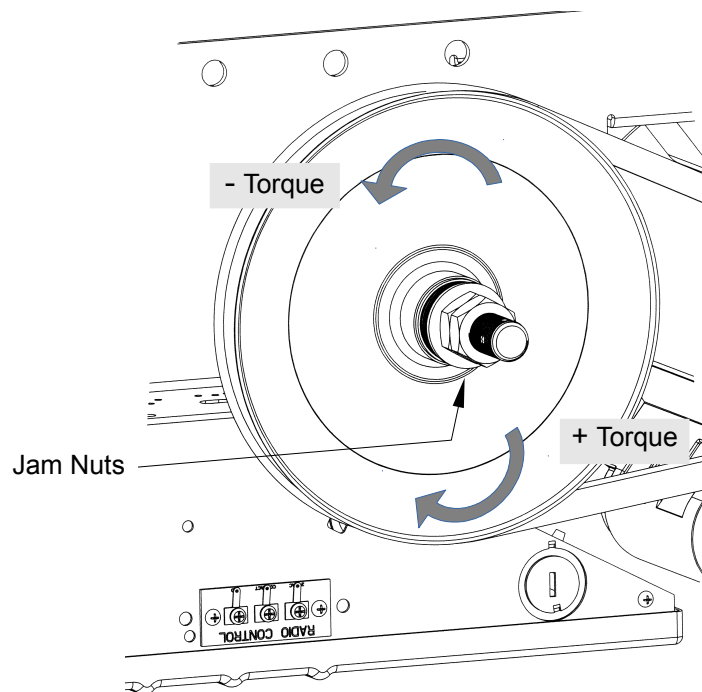


Figure 29 - Clutch Adjustment

To adjust the clutch:

1. Unlock the jam nuts with two (2) 7/8" keys, refer to Figure 29.
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.

## 10 Electromechanical Circuit Programming (Contactor Circuit)

### WARNING

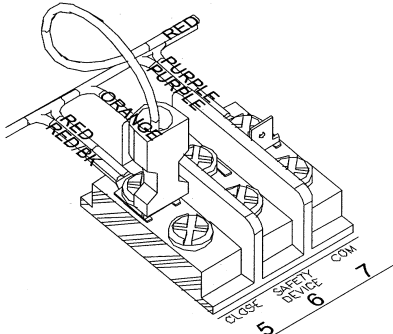
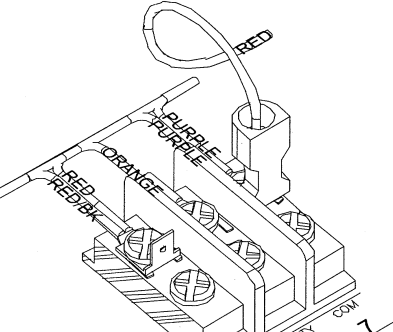
To reduce risk of SEVERE INJURY or DEATH to persons:

- Manaras-Opera strongly recommends the use of external entrapment protection devices, especially in the case of momentary contact to close (B2 wiring or Timer to Close).

### 10.1 Run Mode Settings

### NOTICE

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

Mode	Functions	Operations
<p><b>C2</b></p> 	<ul style="list-style-type: none"> <li>• Momentary contact to open and stop, constant-pressure-to-close with 3-button station.</li> <li>• Activation of safety devices will reverse the door while closing.</li> <li>• Auxiliary devices function as an Open control and will reverse the door while closing.</li> </ul>	<p><b>B2 Mode → C2 Mode</b></p> <p>Move <b>RED</b> wire from terminal #7 → #5.</p>
<p><b>B2</b></p> 	<ul style="list-style-type: none"> <li>• Momentary contact to open, close and stop with 3-button station.</li> <li>• Activation of safety devices will reverse the door while closing.</li> <li>• Auxiliary devices function as an Open/Close control and will reverse the door while closing.</li> </ul>	<p><b>C2 Mode → B2 Mode</b></p> <p>Move <b>RED</b> wire from terminal #5 → #7.</p>

## 10.2 On Site Modifications

Option	Operations
<b>Constant Pressure to Open</b>	1. Move <b>GREY</b> wire from terminal #3 → #4.
<b>Wiring for Instant Stop</b> (on safety edge or device)	1. Remove <b>YELLOW</b> wire from Adv. Open Limit Switch and cap it. 2. Remove <b>BLUE</b> wire from pin #4 on the Reversing Relay (RR) and cap it.
<b>Adding a Time Delay on Reverse</b> (refer to Figure 30 below)	1. Remove <b>YELLOW</b> wire from Adv. Open Limit Switch. 2. Connect the <b>YELLOW</b> wire to one end of the Time Delay Module. 3. From the other end of the Time Delay Module, reconnect <b>YELLOW</b> wire to the Adv. Open Limit Switch.
<b>Constant Pressure to Open and Close – D1 Mode</b>	1. B2 Mode → C2 Mode: <ul style="list-style-type: none"> <li>○ Move <b>RED</b> wire from terminal #7 → #5.</li> </ul> 2. Constant Pressure to Open: <ul style="list-style-type: none"> <li>○ Move <b>GREY</b> wire from terminal #3 → #4.</li> </ul> 3. Wiring for Instant Stop: <ul style="list-style-type: none"> <li>○ Remove <b>YELLOW</b> wire from Adv. Open Limit Switch and cap it.</li> <li>○ Remove <b>BLUE</b> wire from pin #4 on Reversing Relay (RR) and cap it.</li> </ul>

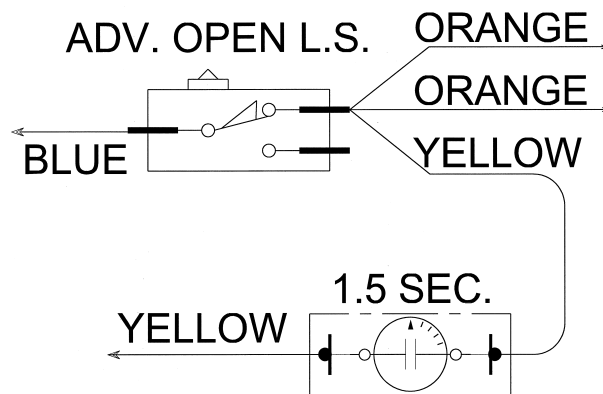


Figure 30 - Time Delay on Reverse



## **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.**

### **IMPORTANT**

For more information or for immediate assistance, please contact your local dealer.

### **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.

For instructions regarding the Manual Release, refer to the Installation Instructions found in section 5, p.11.

# 1 Quick Fix Instructions

Table 6 - Basic Troubleshooting Guide ~ from floor level

Symptom	Suggested Action	Fix Problem
Door doesn't respond to any command	<ul style="list-style-type: none"> <li>◆ "Stop" button is stuck.</li> <li>◆ No power supply.</li> </ul>	<ul style="list-style-type: none"> <li>➔ Press and release any "Stop" button.</li> <li>➔ Verify the incoming power line from the main breaker, making sure it has not tripped or blown a fuse.</li> </ul>
Door doesn't respond to "Close" or radio commands	<ul style="list-style-type: none"> <li>◆ Photo cells are not properly aligned or are obstructed.</li> <li>◆ Loop is obstructed (presence of metal).</li> </ul>	<ul style="list-style-type: none"> <li>➔ Clear the obstruction or re-align photo cells.</li> <li>➔ Clear the obstruction.</li> </ul>
Door doesn't respond to any radio command	<ul style="list-style-type: none"> <li>◆ No power supply. (transmitter light is OFF)</li> <li>◆ Poor radio control range.</li> <li>◆ Photo cells are not properly aligned or are obstructed.</li> </ul>	<ul style="list-style-type: none"> <li>➔ Replace transmitter's battery.</li> <li>➔ Bring the radio transmitter closer to the operator.</li> <li>➔ Clear the obstruction or re-align photo cells.</li> </ul>

## **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.

## **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 7 and Table 8.

*Table 7 - Mechanical Inspection Schedule (Part 1)*

Time Frame	Inspection
<b>Every Month</b>	<ul style="list-style-type: none"> <li>• Test the door's safety features.</li> <li>• Verify the brake function (if applicable).</li> <li>• After adjusting either the clutch or the limit's travel, retest the operator's safety features.</li> <li>• Verify gear reducer's oil level (if applicable).</li> </ul>
<b>Every 3 Months</b>	<ul style="list-style-type: none"> <li>• Verify and adjust the clutch if necessary.</li> </ul>
<b>Every 6 Months</b>	<ul style="list-style-type: none"> <li>• Lubricate all moving parts. Bushings are oil impregnated and are lubricated for life.</li> <li>• Verify that all mechanical parts function properly.</li> <li>• Inspect the V-belt and adjust or replace if necessary.</li> <li>• Manually operate the door. If the door does not open or close freely, correct the cause of the malfunction.</li> </ul>

Table 8 - Mechanical Inspection Schedule (Part 2)

Time Frame	Inspection
<b>Once a Year</b>	<ul style="list-style-type: none"> <li>• Run the operator a few cycles:               <ul style="list-style-type: none"> <li>◦ Make sure that the door rollers are rolling smoothly on the track.</li> <li>◦ Listen to the motor: The motor should hum quietly and smoothly.</li> <li>◦ Verify that the limits operate quietly and smoothly: investigate any unusual noise.</li> </ul> </li> <li>• Verify that the mounting bolts are holding the unit securely.</li> <li>• Inspect the unit for evidence of corrosion.</li> <li>• Change the gear reducer's oil, at the very least, after every <b>2500 hours</b> of operation or once a year (if applicable).</li> </ul>

## 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
<b>Every Month</b>	<ul style="list-style-type: none"> <li>• Inspect the unit for evidence of corrosion on electrical wires and connectors.</li> <li>• Inspect the wiring compartment and remove any dirt from the control units.</li> <li>• Verify all the grounding wires and terminals for corrosion. Be particularly careful to verify the ground wires.</li> <li>• Verify the terminal strips to insure that all the screws are tightened.</li> <li>• Verify that the pneumatic edge or other entrapment protection devices installed on the operator are fully operational.</li> <li>• 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.</li> <li>• Verify the current consumption of the unit with an amp-meter. The current value should be consistent with the nameplate specifications. Investigate any anomaly.</li> </ul>

## 1.3 Band Brake Maintenance

### WARNING

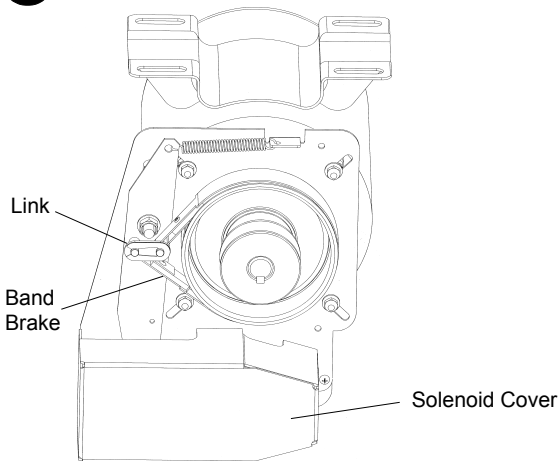
To reduce the risk of SEVERE INJURY or DEATH to persons:

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

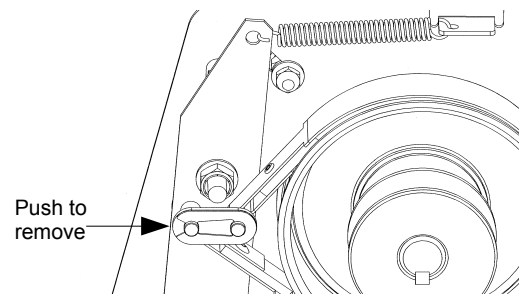
### 1.3.1 Changing a Brake Band

The brake band is preformed at the factory. Please insert the brake band carefully around the brake drum.

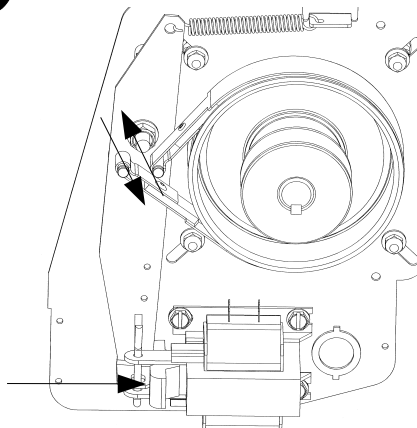
#### 1 Remove solenoid cover



#### 2 Remove link and used band brake

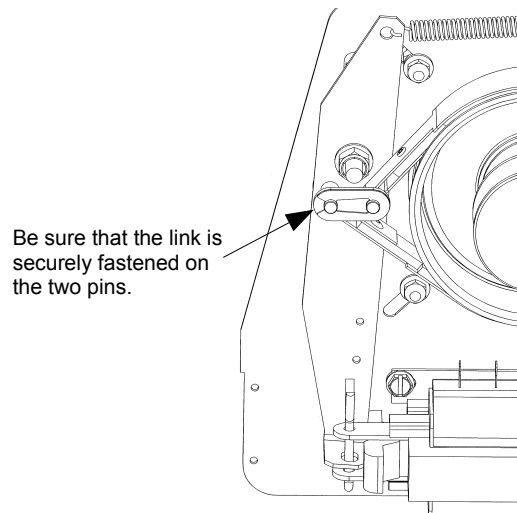


#### 3 Replace band brake



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

#### 4 Place the link

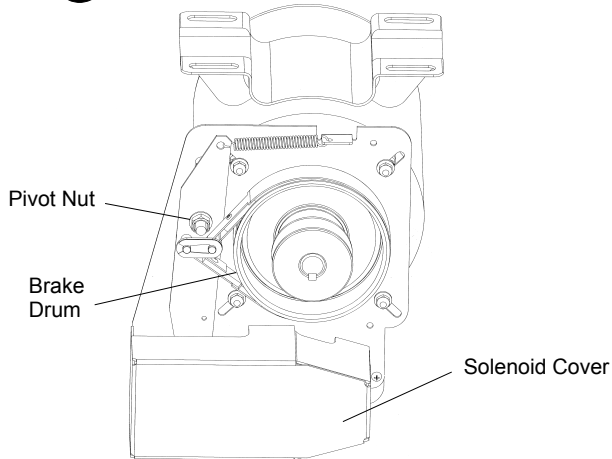


#### 5 See brake adjustment on next page

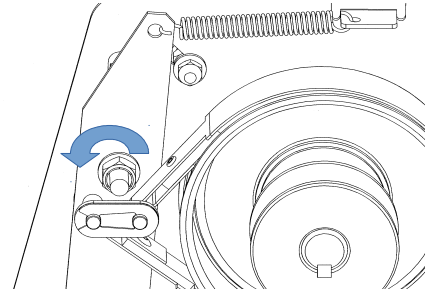
### 1.3.2 Brake Adjustment

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

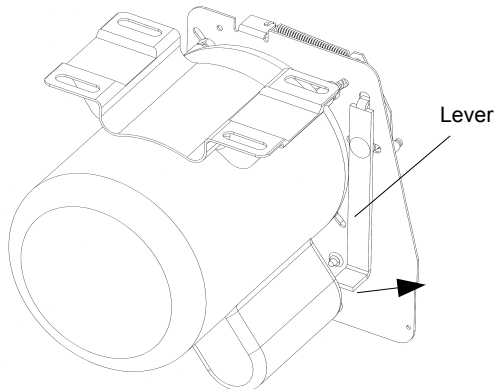
#### 1 Remove solenoid cover



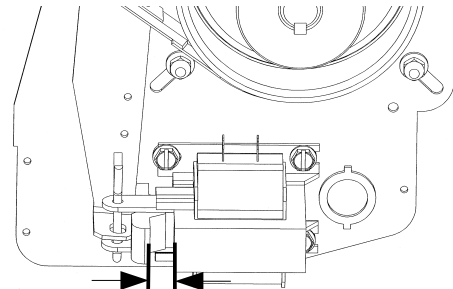
#### 2 Loosen pivot nut



#### 3 Adjust solenoid gap

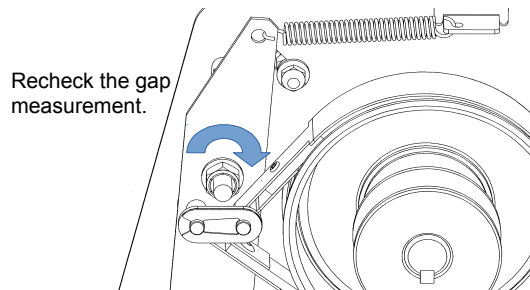


Pull the lever to adjust the gap between the plunger and solenoid body.



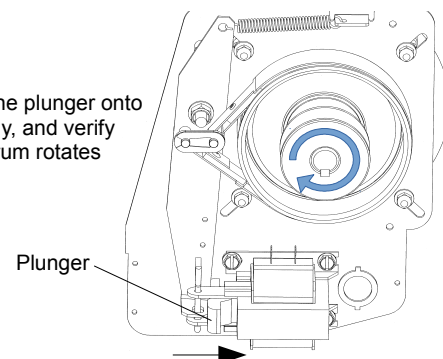
Gap must be between 1/4" and 3/8".

#### 4 Tighten pivot nut



#### 5 Check brake adjustment

Manually push the plunger onto the solenoid body, and verify that the brake drum rotates easily by hand.

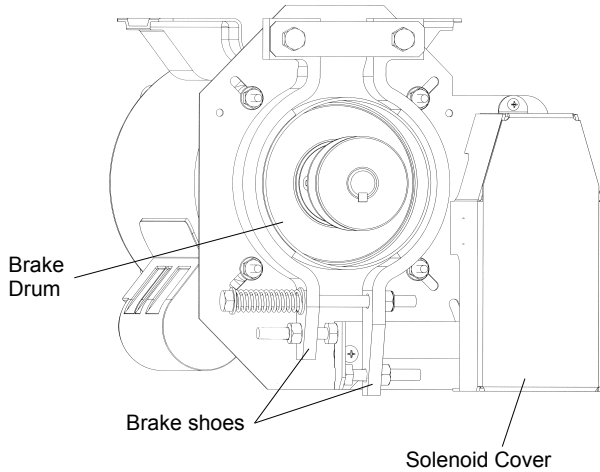


#### 6 Re-install solenoid cover

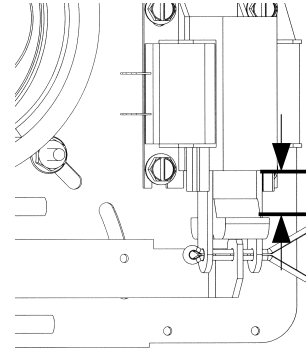
## 1.4 Drum Brake Adjustment (Premium Apartment Trolley or BRAKE014/015)

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

### 1 Remove solenoid cover

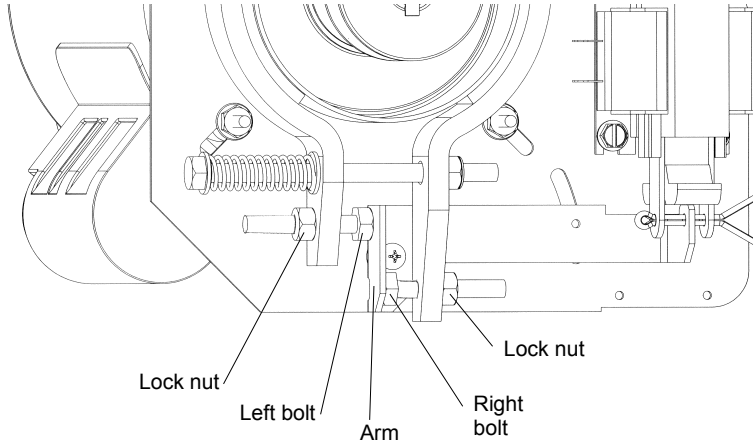


### 2 Adjust solenoid gap



Gap must be between 1/4" and 3/8".

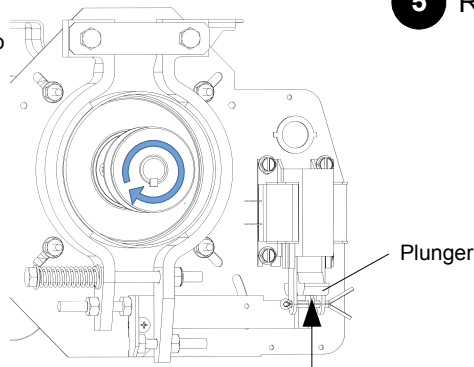
### 3 Adjust the right and left holding bolt



- A) Set the proper gap on the solenoid and hold it with one hand.
- B) Adjust the right holding bolt until it touches the arm.
- C) Adjust the left holding bolt until it touches the arm.
- D) Manually push the plunger onto the solenoid body, and verify the gap between the brake shoes and the brake drum. If the gap is not the same on both side re-adjust the brake.
- E) Tighten the lock nut.

### 4 Check brake adjustment

Manually push the plunger onto the solenoid body, and verify that the brake drum rotates easily by hand.



### 5 Re-install solenoid cover

## 2 Troubleshooting Guide

Table 10 - Troubleshooting Guide – Part 1

Symptom	Probable Cause	Suggested Action
<b>Door doesn't respond to any command</b>	<ul style="list-style-type: none"> <li>◆ “Stop” button is stuck.</li> <li>◆ Control station is not connected or is wired incorrectly.</li> <li>◆ No power supply.</li> <li>◆ Overload thermal protection has been tripped.</li> <li>◆ Defective transformer.</li> </ul>	<ul style="list-style-type: none"> <li>➔ Press and release any “Stop” button.</li> <li>➔ Verify and correct wiring.</li> <li>➔ Verify the incoming power line from the main breaker, making sure it has not tripped or blown a fuse.</li> <li>➔ Reset overload protection:               <ol style="list-style-type: none"> <li>1. Press reset button on side of unit for 1-phase or let the motor cool down for 3-phase.</li> <li>2. Verify manual operation of the door.</li> </ol> </li> <li>➔ Verify and replace transformer.</li> </ul>
<b>Door closes by itself, operator doesn't shut off after door is closed</b>	<ul style="list-style-type: none"> <li>◆ Defective contactor.</li> <li>◆ Defective “Close” limit switch.</li> </ul>	<ul style="list-style-type: none"> <li>➔ Verify and replace contactor.</li> <li>➔ Replace limit switch.</li> </ul>
<b>Door opens by itself, operator doesn't shut off after door is open</b>	<ul style="list-style-type: none"> <li>◆ Defective contactor.</li> <li>◆ Defective “Open” limit switch.</li> </ul>	<ul style="list-style-type: none"> <li>➔ Verify and replace the contactor.</li> <li>➔ Replace limit switch.</li> </ul>
<b>Door doesn't respond to “Open” command, but does respond to “Close” command</b>	<ul style="list-style-type: none"> <li>◆ Defective “Open” push-button or “Open” limit switch.</li> <li>◆ Loose wire on “Open” push-button or “Open” limit switch.</li> </ul>	<ul style="list-style-type: none"> <li>➔ Replace push-button or limit switch.</li> <li>➔ Verify and correct wiring.</li> </ul>
<b>Door doesn't respond to “Close” command, but does respond to “Open” command</b>	<ul style="list-style-type: none"> <li>◆ Defective “Close” push-button or “Close” limit switch.</li> <li>◆ Loose wire on “Close” push-button or “Close” limit switch.</li> </ul>	<ul style="list-style-type: none"> <li>➔ Replace push-button or limit switch.</li> <li>➔ Verify and correct wiring.</li> </ul>

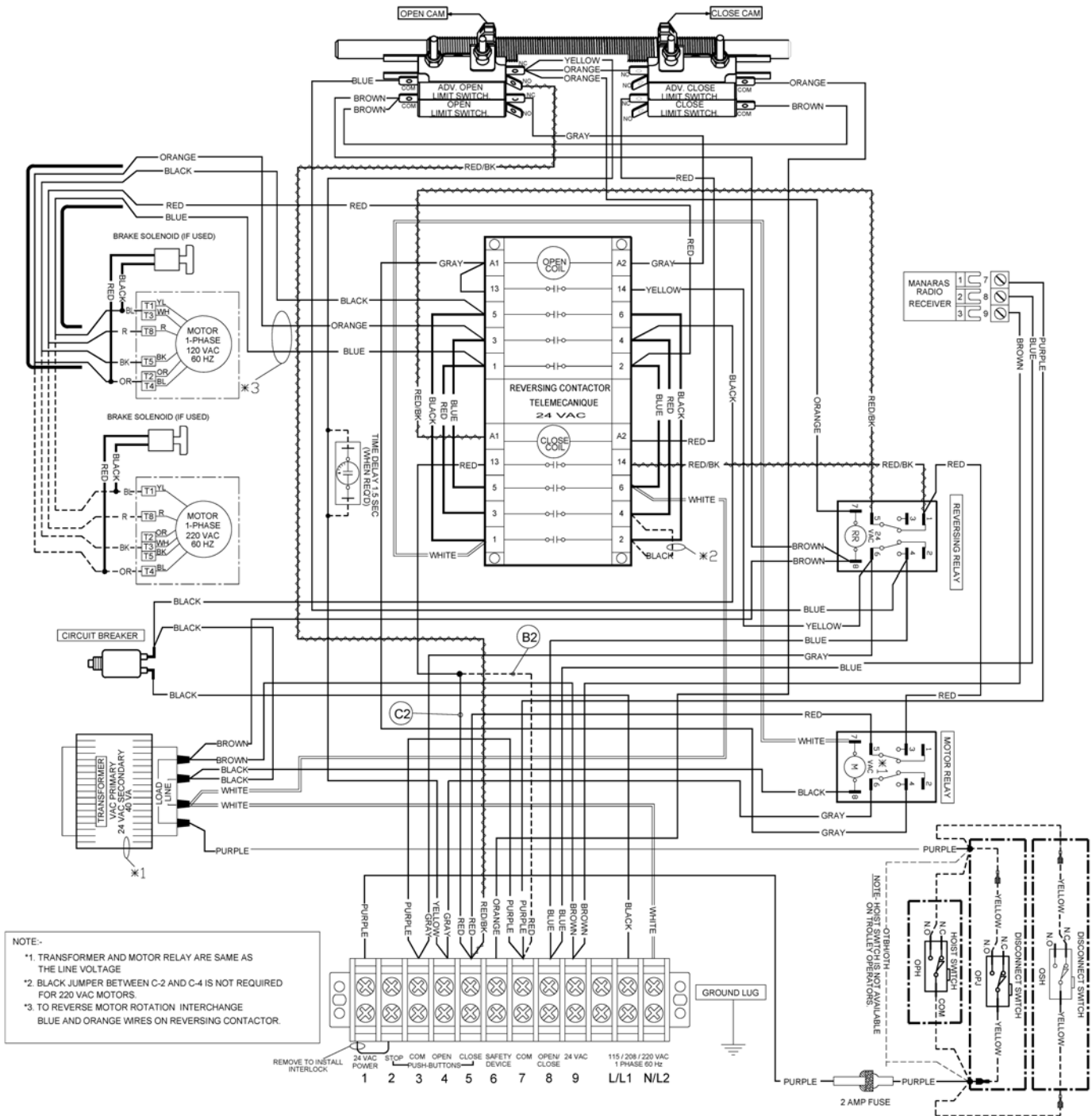


Table 11 - Troubleshooting Guide – Part 2

Symptom	Probable Cause	Suggested Action
<b>“Stop” button doesn’t stop the door</b>	◆ Two 3-push button stations (or more) are connected in parallel.	➔ Verify and correct wiring (Stop buttons in series, only Open & Close in parallel).
<b>Door reverses to fully open position after the door closes and reaches the floor</b>	◆ Defective “Advanced Close” limit switch. ◆ A “Open” command is being given.	➔ Verify and replace the limit switch.  ➔ Verify “Open” push-button or any closing device for short-circuit.
<b>Door doesn't open or close, motor hums or blows the main breaker</b>	◆ Mechanical door lock is engaged. ◆ Door is jammed. ◆ Brake doesn't release, if applicable. ◆ Loose wire on solenoid brake, if applicable. ◆ Defective solenoid brake, if applicable	➔ Release the door lock. ➔ Verify manual operation of door. ➔ Verify and adjust brake tension. ➔ Verify and correct wiring.  ➔ Replace.
<b>Motor hums when “Open” or “Close” buttons are pressed</b>	◆ Loose motor wires. ◆ Defective capacitor.	➔ Verify and correct wiring. ➔ Replace.
<b>Motor fails to shut off at fully closed or fully opened positions</b>	◆ Defective limit switch.  ◆ Limit cams are not adjusted. ◆ Limit drive chain is broken. ◆ Loose sprocket on limit shaft. ◆ Limit shaft does not rotate.	➔ 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.
<b>Motor turns but door does not move</b>	◆ Sprocket key is missing. ◆ Drive chain is broken. ◆ Clutch is slipping.	➔ Replace. ➔ Replace. ➔ Adjust clutch to proper tension.
<b>Limit switches do not hold their settings</b>	◆ 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”.	➔ 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.
<b>Door doesn't respond to any radio command</b>	◆ No power supply. (Transmitter light is OFF) ◆ Radio antenna is not properly positioned. ◆ Ambient radio, environmental or building structure interference.	➔ Replace transmitter's 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 Operator – Hardwired Wiring



### 3.2 3 Phase Operator – Hardwired Wiring

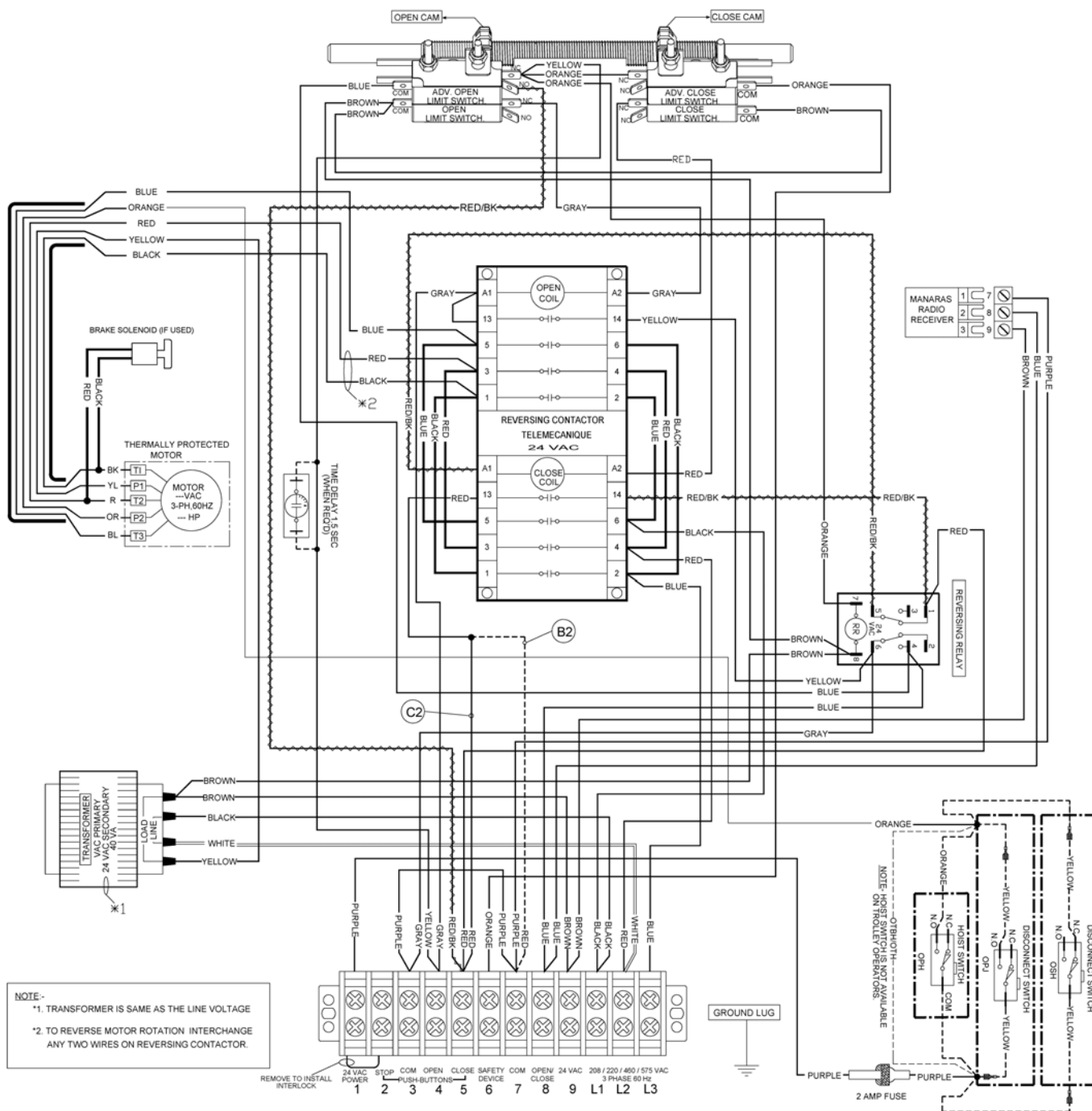


Figure 32 - EDWG13HWLC4401

### 3.3 External Wiring – Hardwired

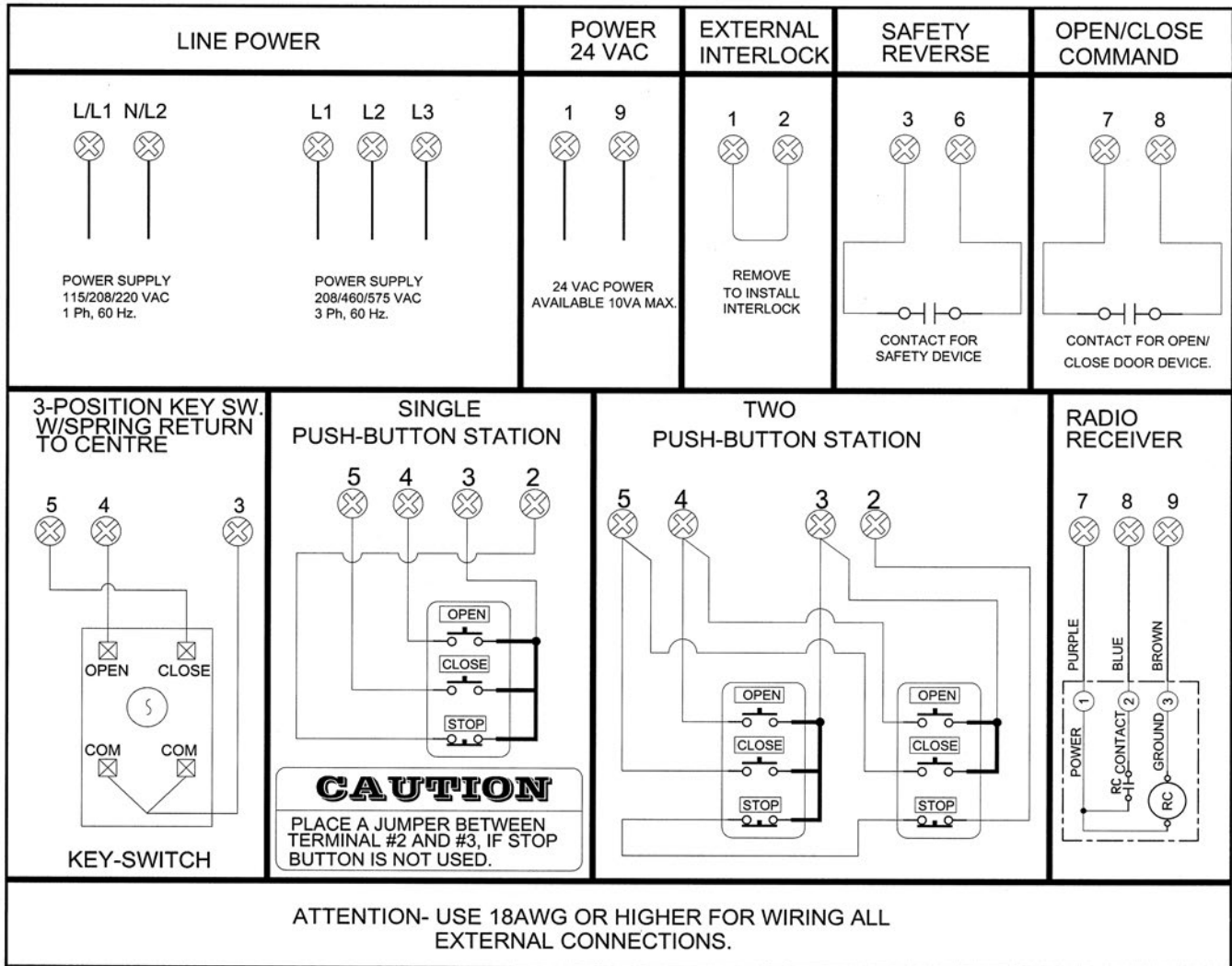


Figure 33 - External Wiring

## 4 Mechanical Exploded Views and Replacement Components

### 4.1 OTH / OTBH

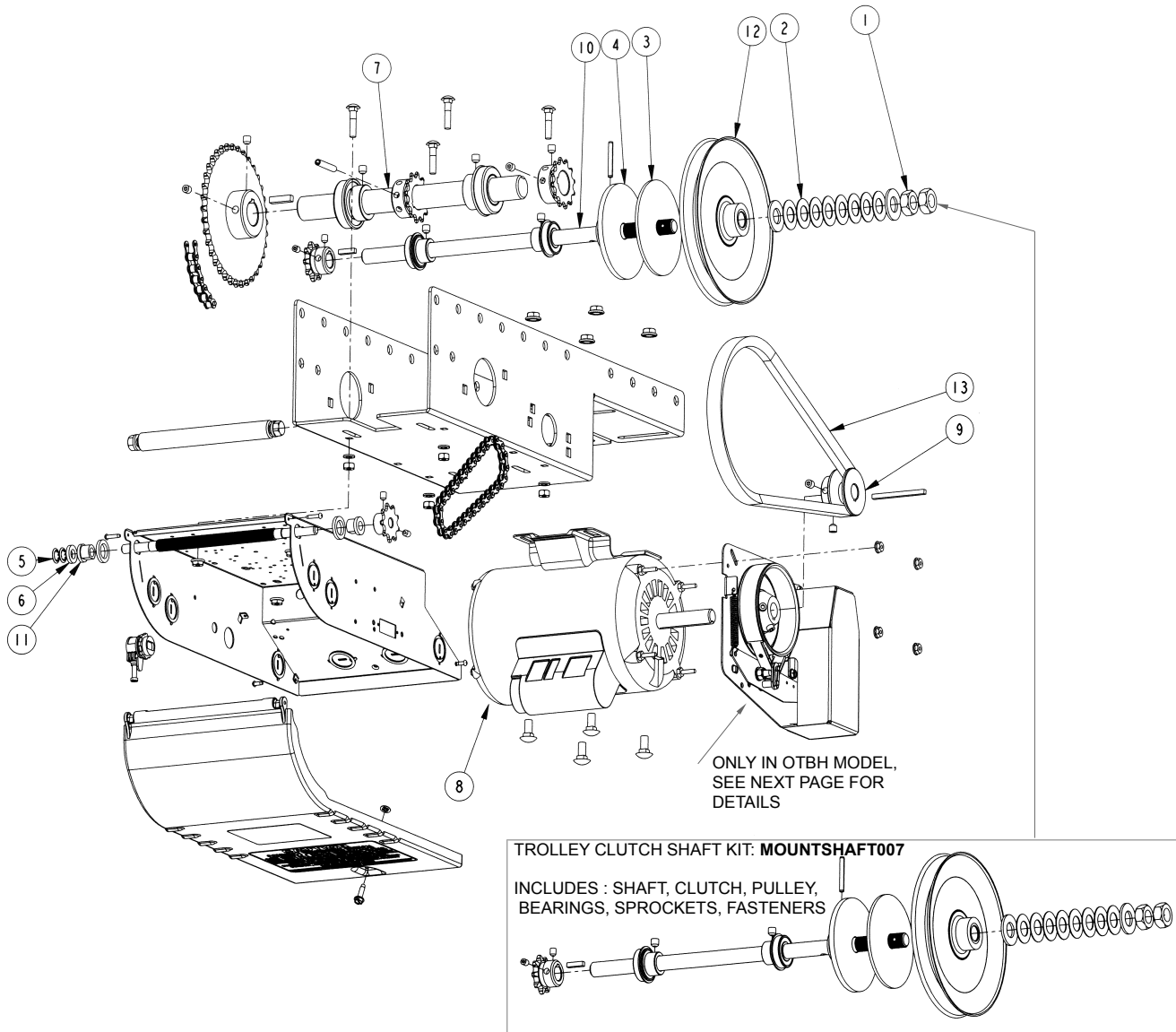


Figure 34 - OTH / OTBH Mechanical Exploded View

Table 12 - OTH / OTBH 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	SEE Table 15
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 OTBH Brake

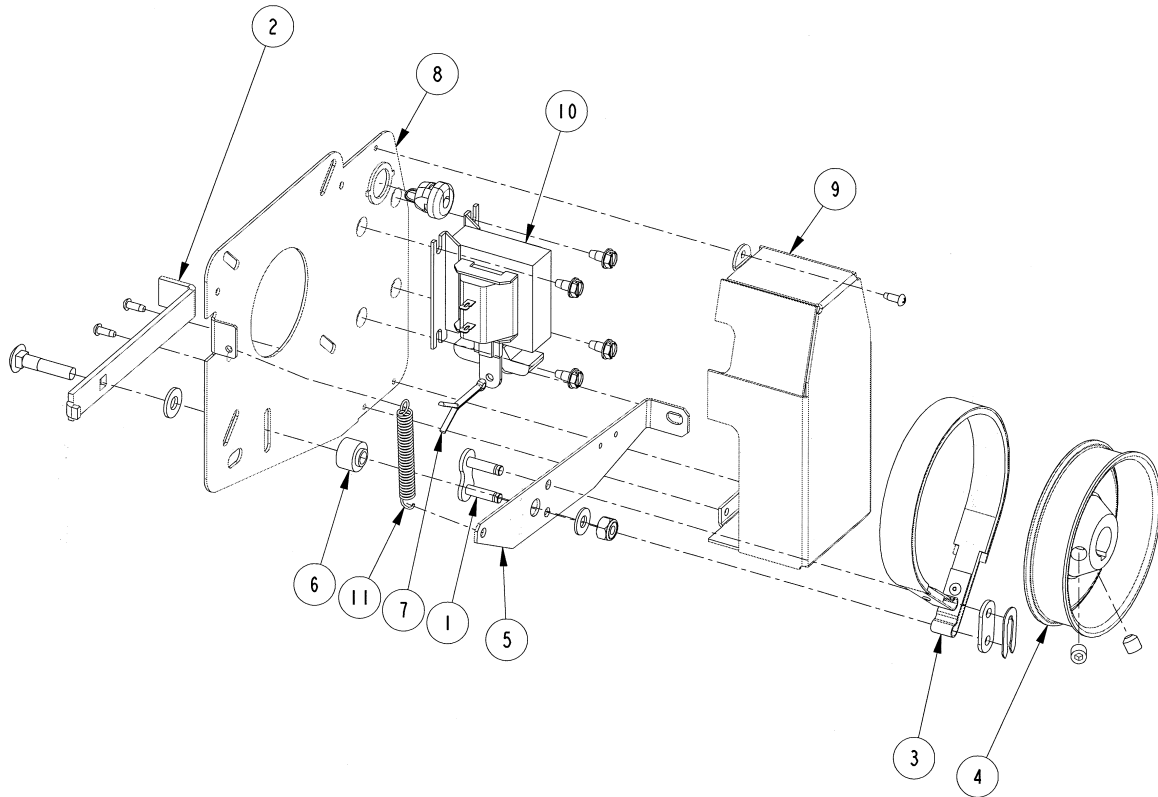


Figure 35 - BRAKE 011 Mechanical Exploded View

Table 13 - BRAKE 011 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 BRAKE PLATE	PLATE084
3	1	BRAKE BAND ASSEMBLY HEAVY DUTY	BRAKEPART019	9	1	PLATED SOLENOID COVER	COVER048
4	1	BRAKE DRUM	DRUM005	10	1	SOLENOID	SEE Table 15
5	1	BRAKE LEVER	LEVER065	11	1	TROLLEY ARM DISCONNECT SPRING	SPRING026
6	1	BRAKE LEVER PIVOT	BUSHING053				

### 4.3 OTH / OTBH Control Box - Hardwired

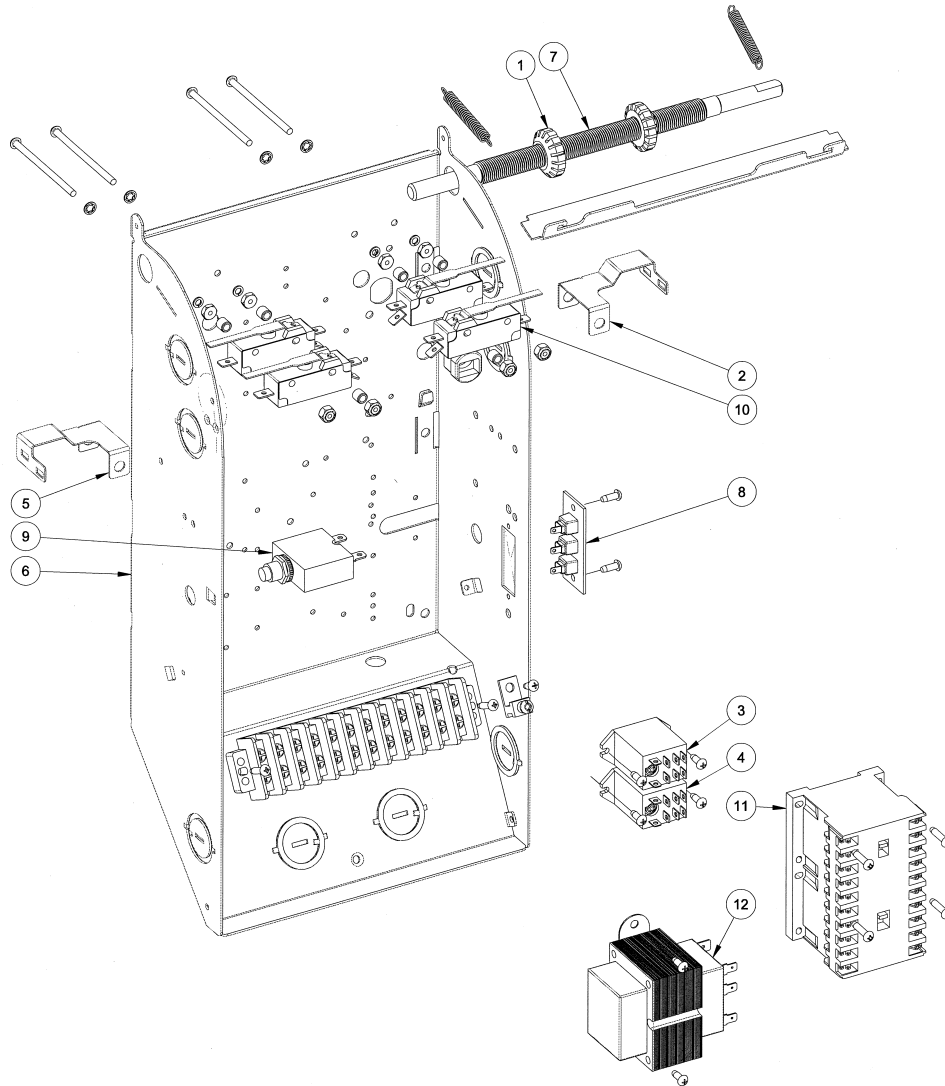


Figure 36 - OTH / OTBH Control Box Hardwired

Table 14 - Control Box Replacement Components (CBOX030)

No	Qty	Description	Manaras-Opera Part #
1	2	CAM LIMIT OPERA	CAM011
2	1	CLOSE LIMIT ACTUATOR	LEVER092
3	1	DPDT 24V RELAY	RELAY024
4	1	DPDT RELAY	SEE Table 15
5	1	OPEN LIMIT ACTUATOR	LEVER091
6	1	OPERA CONTROL BOX "D" HOLES	CBOX030
7	1	OPERA LIMIT SHAFT	SHAFT103
8	1	RADIO CONTROL TERM STRIP	TSTRIP005
9	1	RESET	SEE Table 15
10	4	SNAP-ACT. SW.SPDT-LEVER FLAT 1"	LIMIT021
11	1	TELEM. REVERS. CONT. 24V	CONTACTOR044
12	1	TRANSFO TO 24V	SEE Table 15

## 4.4 Replacement Motors, Transformers, Relays, Solenoids and Resets

Table 15 - OTH / OTBH Replacement Motors, Transformers, Relays, Solenoids and Resets According to Voltage/Phase and HP

V-PH	HP	Transfo.	Motor Relay	Solenoid	Description	Manaras-Opera Part #
120V - 1PH	1/2HP	TRANSF143	RELAY026	SOLENOID001	MOTOR 1/2HP - 120V/230V - 1PH	MOTOR254
					1PH - 10 AMPS RESET	RESET007
	3/4HP				MOTOR 3/4HP - 120V/230V - 1PH	MOTOR255
					1PH - 15 AMPS RESET	RESET012
	1HP				MOTOR 1HP - 120V/230V - 1PH	MOTOR256
					1PH - 17 AMPS RESET	RESET014
230V - 1PH	1/2HP	TRANSF143	RELAY027	SOLENOID002	MOTOR 1/2HP - 120V/230V - 1PH	MOTOR254
					1PH - 5 AMPS RESET	RESET002
	3/4HP				MOTOR 3/4HP - 120V/230V - 1PH	MOTOR255
					1PH - 87AMPS RESET	RESET004
	1HP				MOTOR 1HP - 120V/230V - 1PH	MOTOR256
					1PH - 9 AMPS RESET	RESET006
208V - 3PH	1/2HP	TRANSF037	N/A	SOLENOID003	MOTOR 1/2HP - 208V/460V - 3PH	MOTOR271
	3/4HP				MOTOR 3/4HP - 208V/460V - 3PH	MOTOR273
	1HP				MOTOR 1HP - 208V/460V - 3PH	MOTOR275
460V - 3PH	1/2HP	TRANSF088	N/A	SOLENOID003	MOTOR 1/2HP - 208V/460V - 3PH	MOTOR271
	3/4HP				MOTOR 3/4HP - 208V/460V - 3PH	MOTOR273
	1HP				MOTOR 1HP - 208V/460V - 3PH	MOTOR275
575V - 3PH	1/2HP	TRANSF142	N/A	SOLENOID004	MOTOR 1/2HP - 575V - 3PH	MOTOR272
	3/4HP				MOTOR 3/4HP - 575V - 3PH	MOTOR274
	1HP				MOTOR 1HP - 575V - 3PH	MOTOR276



**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 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, 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.

***HOW TO ORDER  
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**DEVANCO CANADA**

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- ✓ DESCRIPTION**
- ✓ MODEL NUMBER**