



## **INSTALLATION INSTRUCTIONS**

**AND**

## **OPERATION MANUAL**

**MGHL/MGRL Series - 1/3, 1/2hp**  
**(230V-1Ph-50Hz)**  
**(230V-3Ph-50Hz)**

**UL325-2010 Compliant**

**Commercial and Industrial Door Operator**

**Logic Control**

**Duty Cycle – 20 Cycles per Hour**

# CONTENTS

<b>IMPORTANT INSTALLATION INSTRUCTIONS</b> .....	<b>2</b>
<b>SPECIFICATIONS</b> .....	<b>3</b>
<b>TYPES AND SIZES OF DOORS</b> .....	<b>4</b>
<b>INSTALLATION INSTRUCTIONS</b> .....	<b>4</b>
OPERATOR MOUNTING POSITIONS .....	4
OPERATOR MOUNTING .....	5
DRIVE CHAIN ADJUSTMENT .....	5
MANUAL RELEASE .....	6
EMERGENCY HAND CHAIN ADJUSTMENT (OPTIONAL) .....	6
BRAKE RELEASE LEVER.....	7
INTERNAL LOCK SENSOR .....	8
<b>WIRING INSTRUCTIONS</b> .....	<b>9</b>
CONTROL WIRING .....	10
ENTRAPMENT DEVICES WIRING .....	11
<b>INPUT POWER CONNECTIONS</b> .....	<b>12</b>
<b>LIMIT SWITCH ADJUSTMENT</b> .....	<b>13</b>
<b>CONTROL SETTINGS</b> .....	<b>14</b>
CONTROL FUNCTION .....	14
AUXILIARY FUNCTION.....	15
<b>LIGHT INDICATION</b> .....	<b>16</b>
<b>WIRING DIAGRAMS</b> .....	<b>17</b>
TERMINAL CONNECTIONS .....	21
<b>IMPORTANT SAFETY INSTRUCTIONS</b> .....	<b>22</b>
<b>TESTING</b> .....	<b>23</b>
PUSH BUTTON STATION TESTING .....	23
EMERGENCY MANUAL OPERATION .....	23
<b>MAINTENANCE INSTRUCTIONS</b> .....	<b>24</b>
<b>APPENDIX 1: Multiple Device Adapter With 2<sup>nd</sup> ELR/IR Instructions</b> .....	<b>25</b>
<b>APPENDIX 2: Reclose Timer Module Instructions</b> .....	<b>26</b>
<b>APPENDIX 3: Control Connections Diagrams</b> .....	<b>27</b>
<b>APPENDIX 4: Control Connections Diagrams</b> .....	<b>28</b>
<b>APPENDIX 5: External Timer Defeat Switch Connection</b> .....	<b>29</b>
<b>APPENDIX 6: Wiring Change Instruction from 230V to 208V 3 Phase Operator</b> .....	<b>30</b>

# **IMPORTANT INSTALLATION INSTRUCTIONS**

## **WARNING – To reduce the risk of death or serious injury 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. Install the door operator at least 8 feet or more above the floor if the operator has exposed moving parts. If the operator must be mounted less 8 ft (2.44 m) above the floor, then exposed moving parts must be protected by covers or guarding. Contact the manufacturer.
5. Do not connect the door operator to the source of power until instructed to do so.
6. Locate the control station: (a) within sight of the door, and (b) at a minimum height of 5 feet above floors, landings, steps, or any other adjacent walking surface and (c) away from all moving parts of the door.
7. Install the Entrapment Warning Placard next to the control station in a prominent location.
8. Make sure the available power supply to be connected to the operator is of the same voltage, frequency, phase and wattage as indicated on the nameplate of the operator.
9. Read and understand the wiring diagram of the operator and the control station (open-close-stop push button), and any other equipment to be connected to the operator.
10. To avoid damage to the door and operator, make all door locks inoperative. Secure locks in the unlocked position, or install external electrical interlocks to prevent operation with the locks engaged.
11. Always disconnect power whenever installing or servicing the door operator or door.
12. All wiring must be permanent and comply with National Electrical Code (NEC) and local code requirements.
13. Any change in mounting position may result in a change of operator rotation and consequently in a change of control functions. Consult factory for any changes.
14. If the operator is provided with an auxiliary chain operator, the hand chain must be kept inside the chain bag when operating electrically.
15. For products having a manual release, instruct the end user on the operation of the manual release.

# SPECIFICATIONS

<b>MOTOR</b>	
Duty Cycle:	20 cycles per hour
Horsepower:	1/3 hp, 1/2 hp
Speed:	1400 RPM
Voltage:	230 – 1 phase, 50Hz 208/230 – 3 phase, 50Hz 230 volt 3 phase motor is suitable for use with 208 volts (see <i>Wiring Diagrams and Appendix 6 for wiring change instruction</i> )
Current:	See motor nameplate
<b>ELECTRICAL</b>	
Transformer:	24VAC
Wiring Type:	Momentary pressure open, stop, constant pressure close (provided standard), with provision for momentary pressure close*
Limit Adjustment:	Linear driven, fully adjustable screw type cams.
<b>MECHANICAL</b>	
Drive Reduction:	43:1
Output Shaft Speed:	39 RPM
Door Speed:	6 - 8" per sec. average (typical)
Brake:	Solenoid actuated brake
Emergency Chain Hoist:	Standard on MGHL
<b>ENTRAPMENT PROTECTION</b>	
Sensing Edge*:	(Optional) Sensing device attached to the bottom edge of the door.
Non-Contact Device*:	(Optional) Photo eye device.
<p><b>* Per the requirements of UL Standard 325, the door operator is setup for constant pressure to close the door. As an alternative, the door may be provided with a monitored entrapment protection device that will reverse the door upon contact with or detection of an obstruction during closing. Adding an entrapment device would enable momentary close operation.</b></p>	

**\*Note:**

1. Non-contact device (photo eye) can be used on doors up to 45 ft. wide (or maximum rated range of device if less than 45 ft.). Use a sensing edge to provide entrapment protection on doors over 45 ft. wide.
2. Sensing edge can be used on all doors.

## TYPES AND SIZES OF DOORS

Consult factory for details.

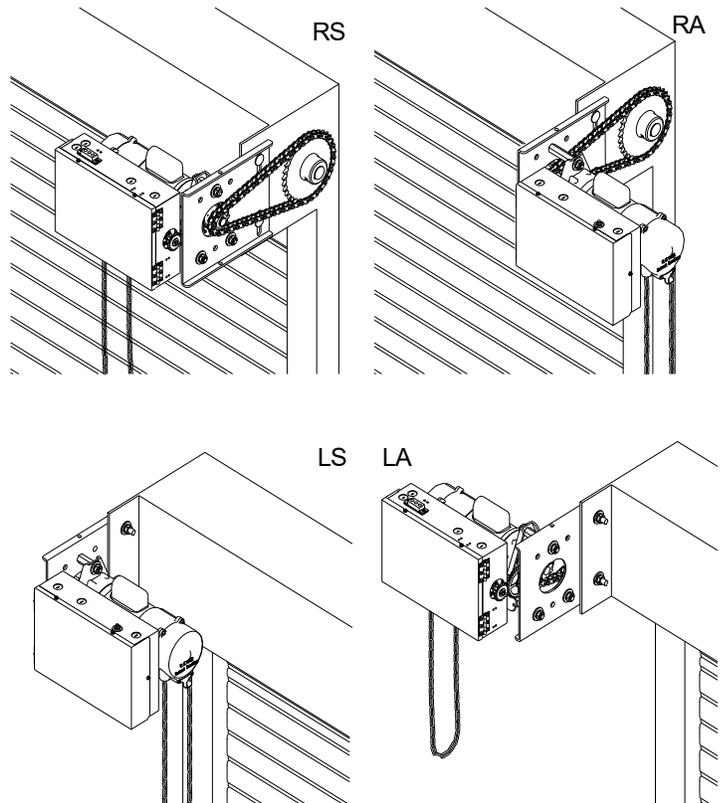
## INSTALLATION INSTRUCTIONS

### OPERATOR MOUNTING POSITIONS

**NOTE:** Any change in mounting position may result in a change of operator rotation and consequently in a change of control functions. Consult factory for any changes. (LH=LS and RA, RH=RS and LA)

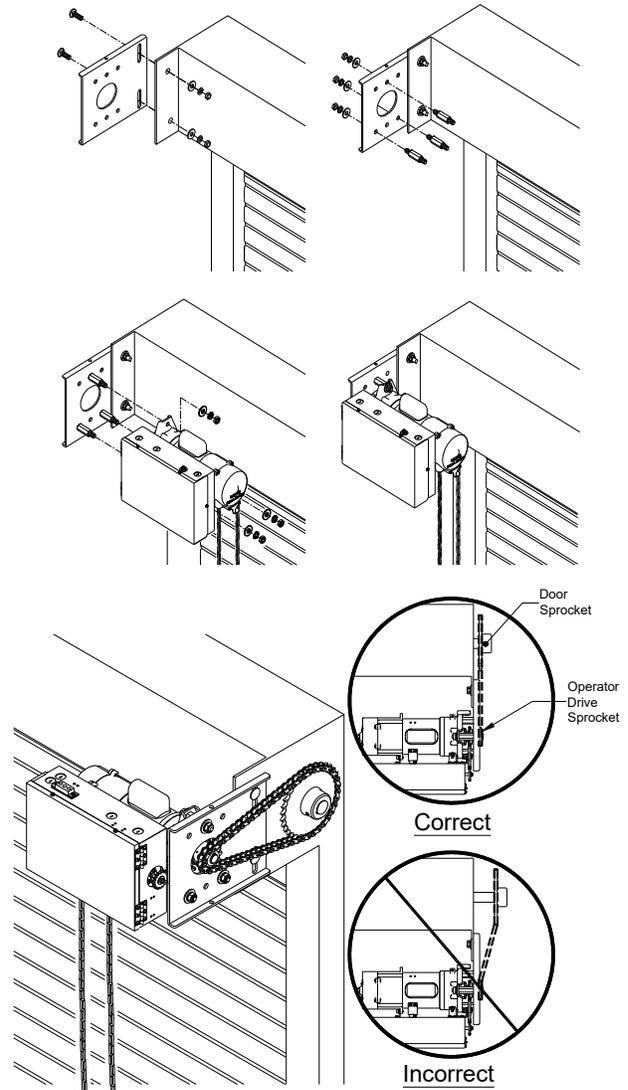
Operators mounted in alternate positions (LA, RA) require the long mounting legs in lieu of the standard short mounting legs.

**Consult factory for changes in mounting positions.**



## OPERATOR MOUNTING

1. Before the operator is installed, verify that the door is properly operating and balanced.
2. Make sure the layout of the mounting holes on the bracket is correct.
3. Bolt the operator mounting plate to the door bracket plate.
4. Attach and tighten the three mounting legs to the mounting plate.
5. Mount the operator to the three legs and tighten.
6. When the operator assembly is attached to the door bracket, be sure the door driven sprocket is properly aligned with the operator drive sprocket before securing the driven sprocket to the shaft.
7. The shelf or bracket must provide adequate support for the operator. Prevent play between the operator and the door shaft. The operator must be securely attached with the drive shaft parallel to the door shaft. It may be necessary to field brace the operator/bracket.



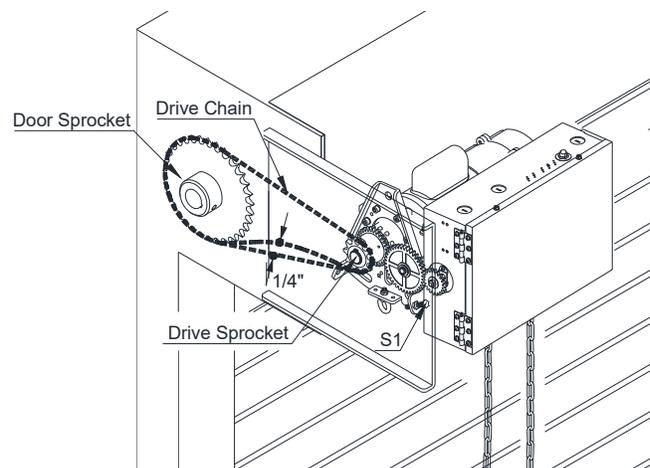
## DRIVE CHAIN ADJUSTMENT

**NOTE:** Use correct type, size and proper length of roller chain.

1. Adjust the drive chain by tilting or move the operator so that there is about 1/4" of slack when the chain is depressed.

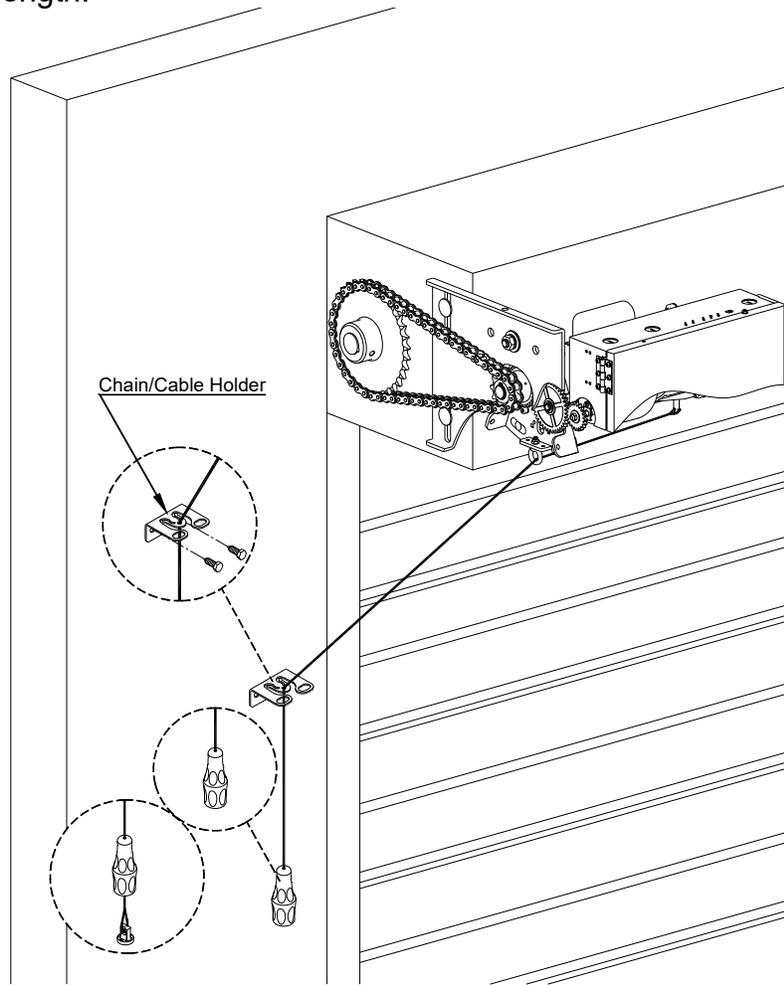
Note: The set screw included in the operator may be used for adjustment.

2. Once the drive chain has been tightened and the base leg screws have been set, and then tighten the operator screws.



## MANUAL RELEASE

Cut and adjust cable length.



## EMERGENCY HAND CHAIN ADJUSTMENT (OPTIONAL)

Cut and reconnect chain with different color link provided.

**WARNING:** When using hand chain, a dis/engagement cable is not required and should not be used. Use cable only on operators without an auxiliary hand chain (MGRL) or when a pull handle egress device is used in conjunction with an auxiliary hand chain on the MGHL.

**Note:** Chain hoist module can be added in the field. Consult factory for details.

### **WARNING**

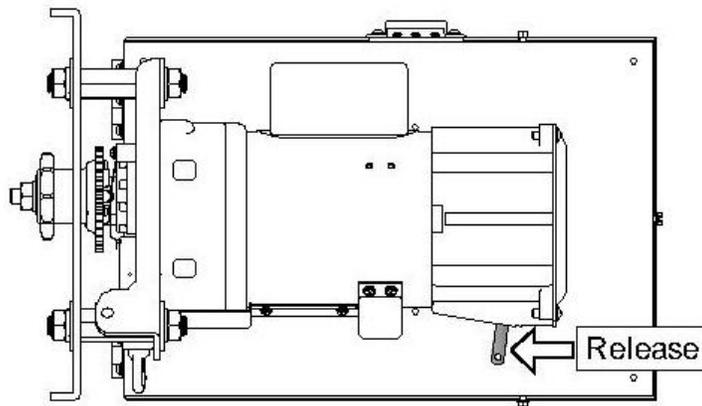
The equipped chain hoist is for emergency use only **NOT** for daily operation.  
Over use will cause damage, which is not covered under the manufacturer's warranty.

## BRAKE RELEASE LEVER

### **⚠ WARNING**

Releasing the door operator brake, or loosening or removing any part of the door operator drive system, can cause the door to close and cause death or serious injury. **Do NOT release the brake, or loosen or remove any part of the door operator drive system**, unless the door is closed, or the curtain is secured in the open position to prevent uncoiling.

1. Pressing the brake release lever will release the motor brake and can cause the door to move uncontrolled.
2. Microswitch SW2 is activated when the brake release lever is pressed – see wiring diagrams for details.
3. Open-close-stop controls do not function while the brake release lever is pressed.



**NOTE: A door sprung for emergency egress can open when the brake release lever is pressed.**

# INTERNAL LOCK SENSOR

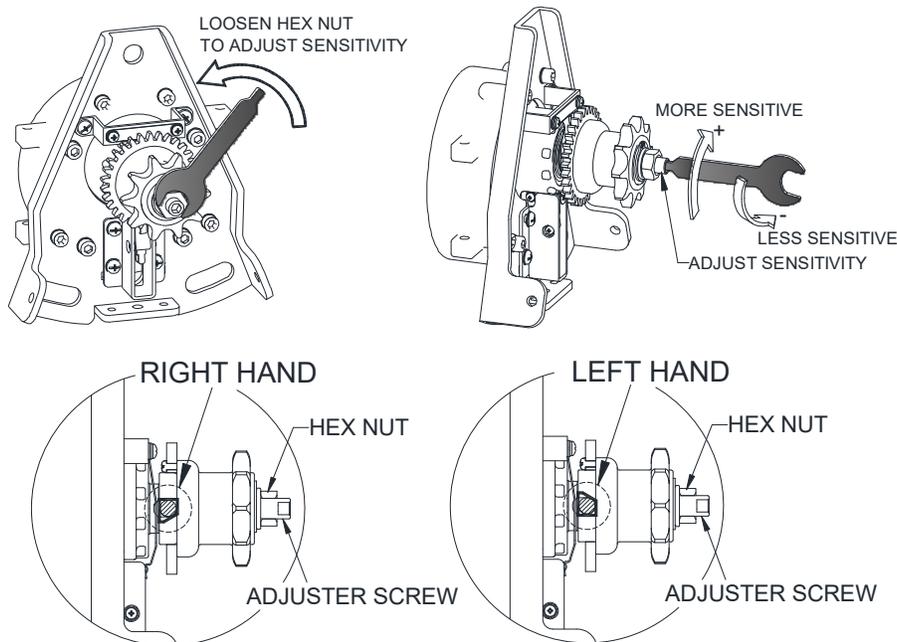
**NOTE:** All units are factory adjusted to the most sensitive level. A RED paint seal is applied on the hex nut and the shaft. Once the seal has been broken, interlock sensitivity has been changed. Door and/or door lock may be damaged.

## ⚠ WARNING

Adjust door spring tension before adjusting lock sensor. Door must be balanced and function properly. Consult door manufacturer for details.

To adjust sensitivity of lock sensor.

1. Loosen Hex Nut.
2. Adjust screw at the drive shaft for sensitivity. Adjustment range: 0~6 turns. More than 6 turns of adjustment is not recommended; part(s) might fall out. Greater sensitivity results in less pull against the locking device, but less capacity to lift the door. Less sensitivity results in more pull against the locking device, but increased door lift capacity. Use included tool to make adjustment.
3. Tighten Hex Nut.



**NOTE:** 6 turns of the lock sensor adjustment will result in the lock sensor in the least possible sensitivity, which means the greatest amount of pull against the locking device. If the door is still not functioning properly, check spring tension, overall door installation and consult door manufacturer.

**NOTE:** Lock sensor is hand sensitive. See illustration for reference. Consult factory for hand changes and other details.

## WIRING INSTRUCTIONS

### **WARNING**

**Disconnect power at the fuse box before proceeding with any wiring.**

1. Do not install any wiring or attempt to run this operator without checking the wiring diagram located on the inside of the control box cover.
2. Do not turn on power until you have finished making all power and control wiring connections.
3. Do not run power and control wiring in the same conduit.
4. Any wire connected to the control panel must be protected by conduit or other means to ensure the safety and permanency of the wiring.
5. Use copper wire inside the control panel.
6. A separate circuit of adequate capacity is needed for the operator.
7. The operator must be properly grounded. The ground screw, painted green, is located inside the control panel.
8. For an operator, system, or external device requiring field installed wiring between a Class 2 output of an operator and an external device, the type of wiring shall be R/C (AVLV2/8), AWM, min. 22 AWG, rated 60°C, with VW-1/FT2.

### **WARNING**

- **Failure to properly ground the operator could result in electric shock and serious injury or death.**
- **To avoid damage to door and operator, make all door locks inoperative. Secure lock(s) in the unlocked position, or install electrical interlocks to prevent operation with the lock engaged.**

## CONTROL WIRING

### **⚠ WARNING**

**Disconnect power at the fuse box before proceeding with any wiring.**

1. Locate the control station where the user can clearly see the operation of the door. Mount the enclosed placard adjacent or near the door.



### **⚠ WARNING**

**Controls shall be located far enough away from the door, or positioned such that the user is prevented from coming in contact with the door, while operating the controls.**

2. Do not run control wiring in the same conduit as power wiring.
3. Any wire connected to the control panel must be protected by conduit or other means to ensure the safety and permanency of the wiring.

### **⚠ WARNING**

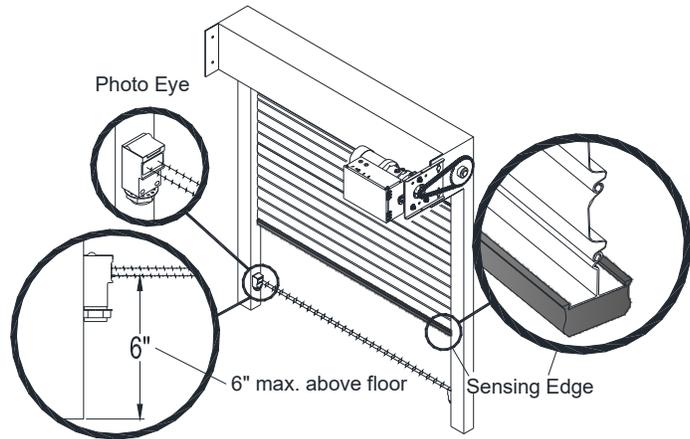
- Do not use radio controls with your operator unless some type of entrapment protection device has been installed. Failure to do so may result in serious injury or death to person(s) trapped beneath the door.
- Changing from left hand to right hand or vice versa could result in change of control wiring. Consult factory for details.

## ENTRAPMENT DEVICES WIRING

### **⚠ WARNING**

If the door is not visible from the control station, or if any device other than the control station is used to activate the door, an entrapment protection device must be installed on the door. Failure to install an entrapment protection device may result in serious injury or death to person(s) trapped beneath the door.

1. Complete limit switch adjustments before making any sensing edge/non-contact device wiring connections to the operator.



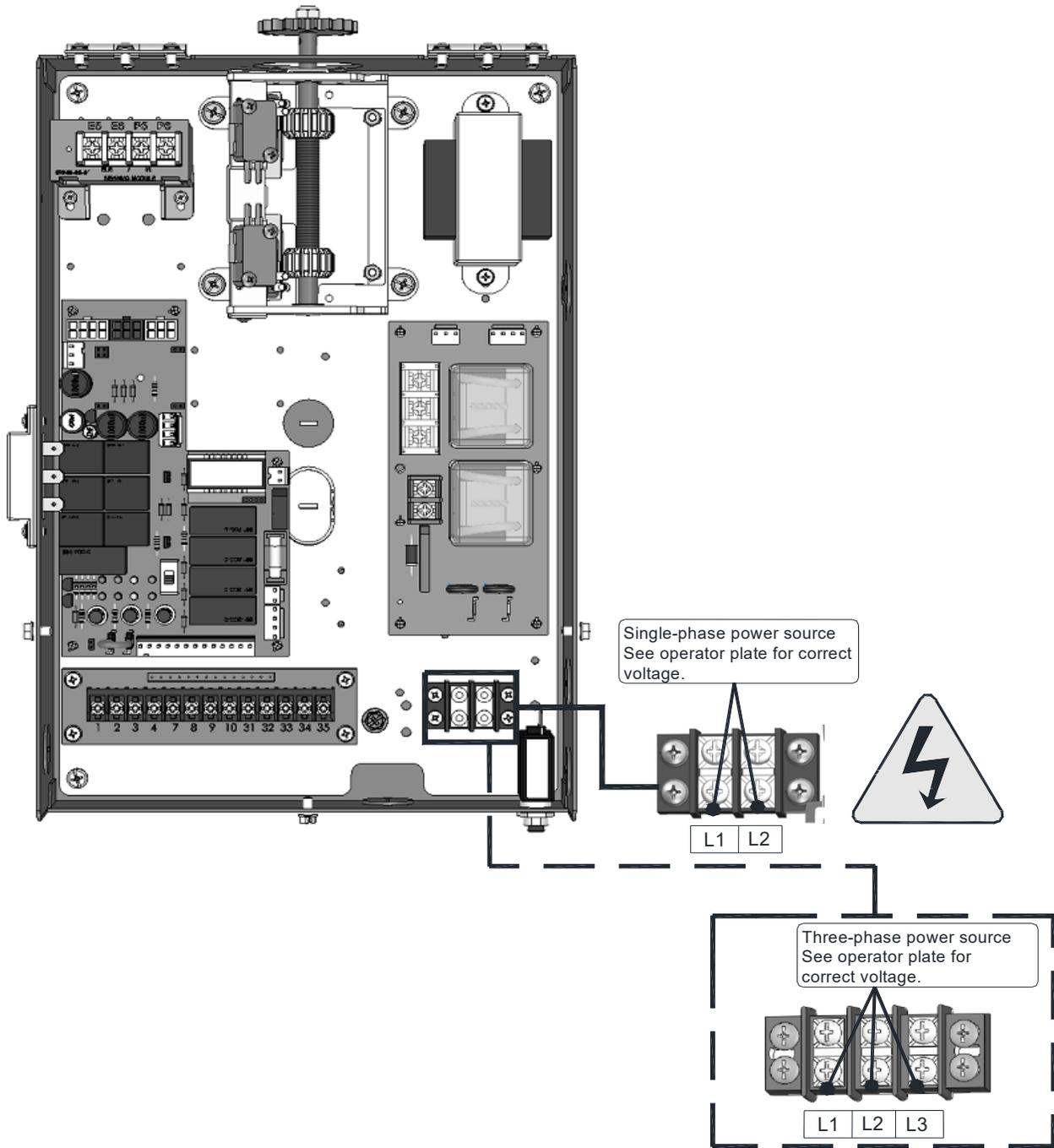
### Entrapment Device Options:

Sensing Module	Device Manufacturer	Model
ELR 2-wire resistive sensing edge	Miller Edge Inc. * End of Line resistor type edge must have model number with Suffix T2.	ME110*, ME111*, ME120*, ME123*, ME112*, ME113*, ME116*, ME117*
		MT21*, MU21*, MT22*, MU22*, MC22*, MU33*, MC271*, CPT223*
		MEL-TXYY, MEL-RXYY RB-G-K10
	ASO	GE225, GE125, GE245, GE F45, GE F50, GE F56, GE F65, GE F85, GE F115
IR Monitored photo eye	FRABA Inc.	Optical Edge Sensors and Photo Eyes, Models OPTOEDGE, OPTOEYE, OSE, OPE, OSE-P, OSE-R, OSE-T, RAY-N Reflective Photo Eye, Models Ray/RT -1004, -2004
	Martec Access Products Inc.	1266
	Miller Edge Inc.	IG2, MIRM RB-D-K10

**Note:** Please refer to sensing device manufacturer for specific installation and maintenance requirements.

2. After installation, be sure that the operator, controls, and sensing edge or other entrapment protection devices have been tested and function properly.

# INPUT POWER CONNECTIONS



## LIMIT SWITCH ADJUSTMENT

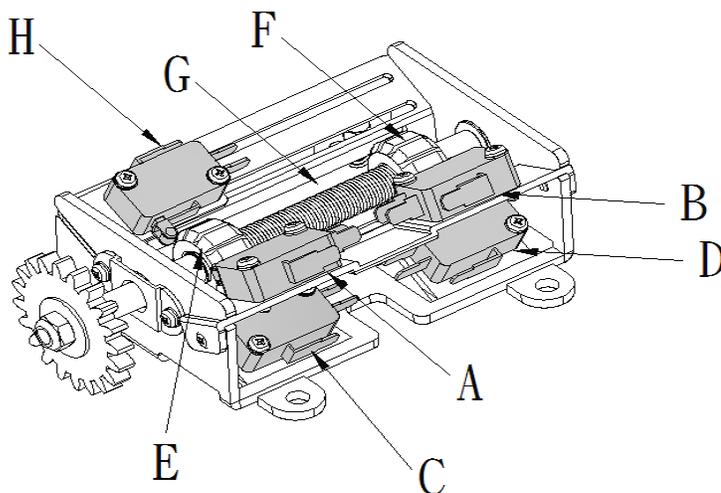
**Make sure the limit cams are positioned between the limit switch actuators before proceeding with adjustments.**

1. Open / Remove the control panel cover.
2. Open or close door to determine the moving direction of the limit switch cams.
3. Open or close door to the desired position.

### **⚠ WARNING**

**If the door is opened or closed electrically, to avoid serious injury or death, disconnect power before manually moving limit switch cams.**

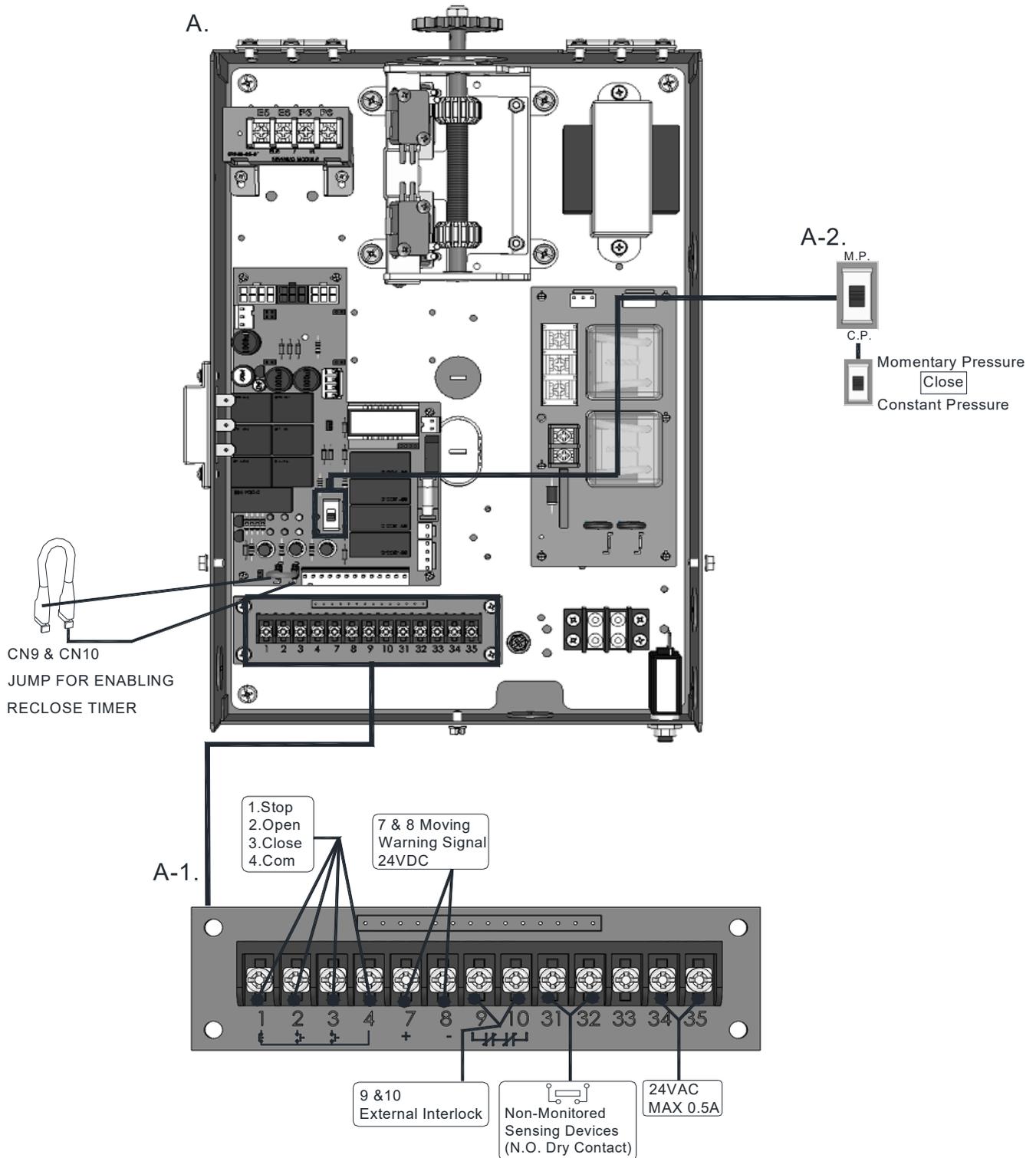
4. While pressing the spring-loaded lever (G), which holds the limit switch cams in place, adjust the limit switch cam (E or F) until the micro switch (C or D) clicking sound is heard.
5. If the limit switch cam cannot be rotated to its desired position, release the lever and move the door away from the desired position, then adjust the limit switch cam to its desired position. It may be necessary to repeat this step until the exact position has been reached.
6. Repeat step 3 and 4 for the opposite position. Adjust close limit cams so that actuator is engaged as door fully seats at the floor.
7. Micro switch (A or B) can be adjusted to accommodate sensing edge cut-off position.
8. Micro switch (H) can be adjusted to lengthen or shorten lock sensor distance.



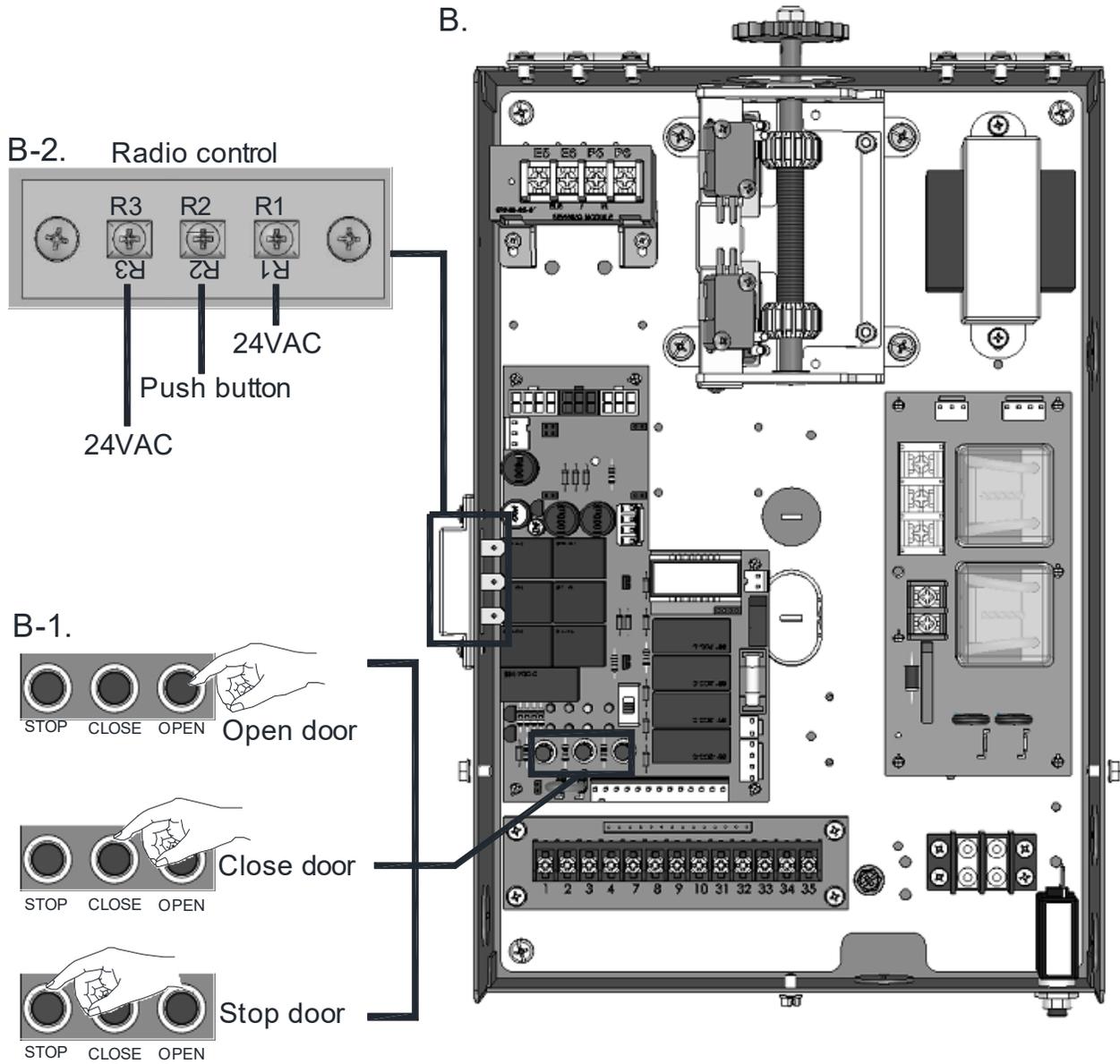
**NOTE: "C" is usually the open limit switch and "D" is usually the close limit switch.**

# CONTROL SETTINGS

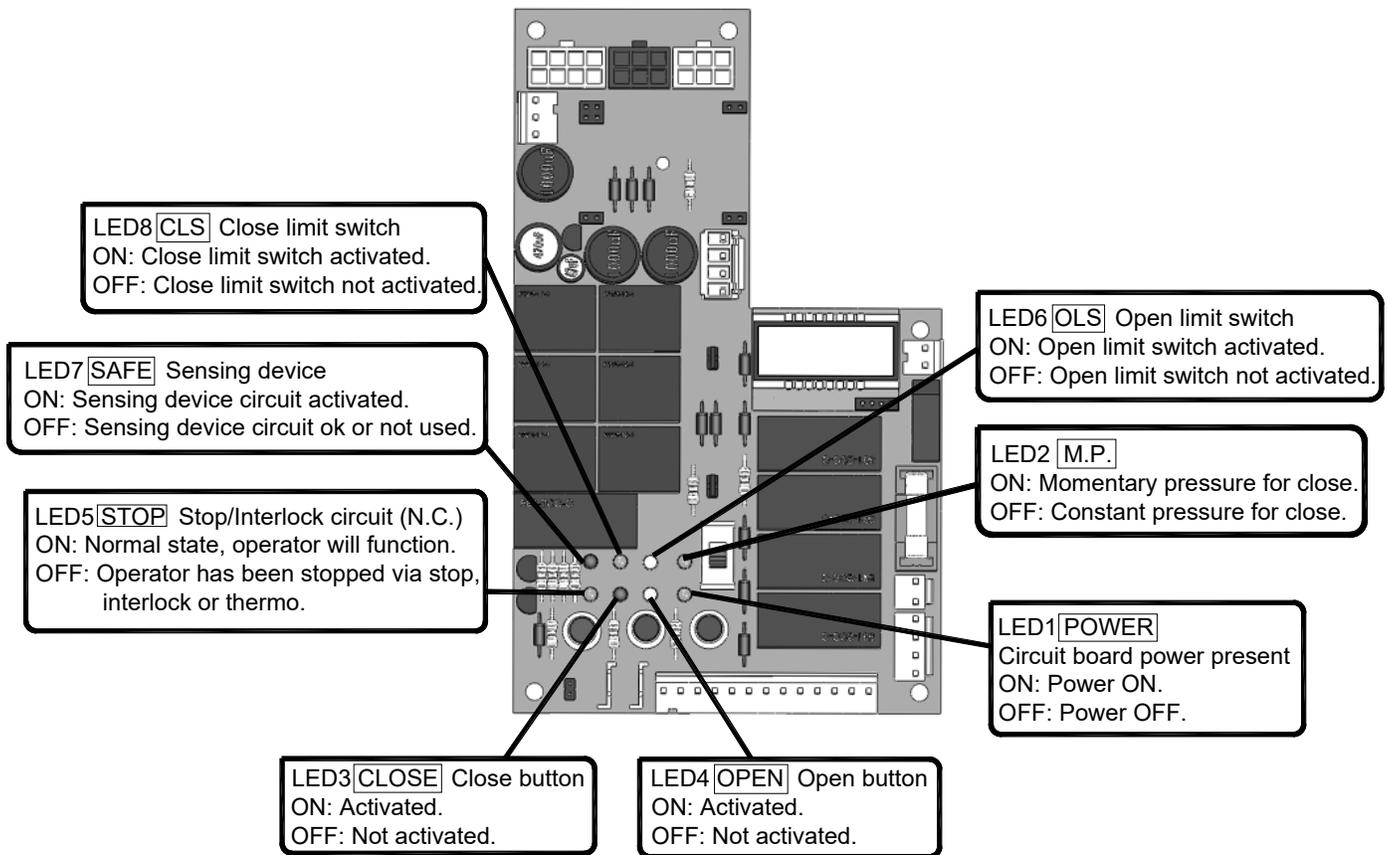
## CONTROL FUNCTION



# AUXILIARY FUNCTION



# LIGHT INDICATION

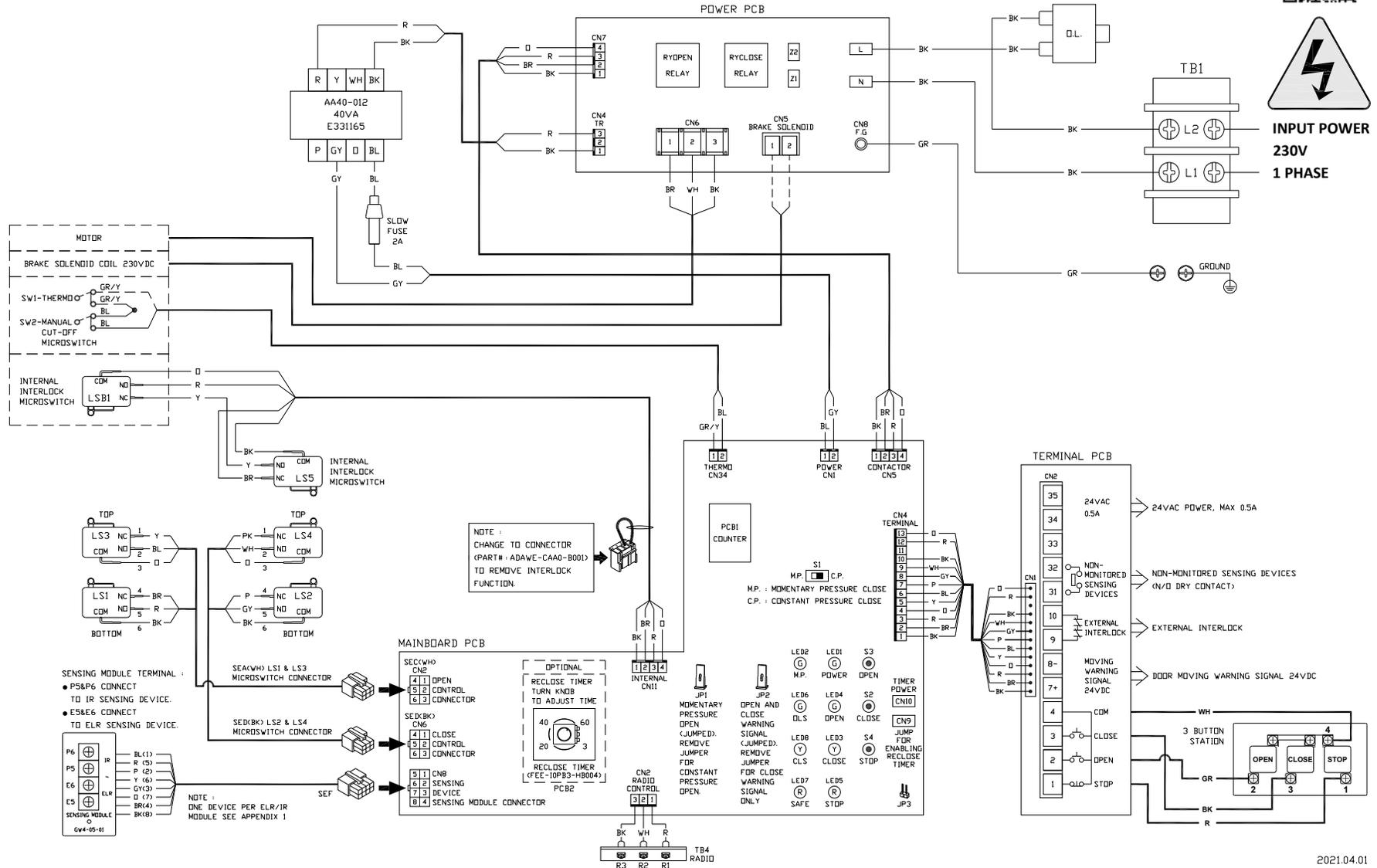


# WIRING DIAGRAMS

MGRL and MGHL 230V 1 PHASE 50/60HZ LH (HYBRID BOARD)  
 (60HZ FOR MGRL and MGHL 3321E, 5021E)  
 (50HZ FOR MGRL and MGHL 3325E, 5025E)



**INPUT POWER  
230V  
1 PHASE**

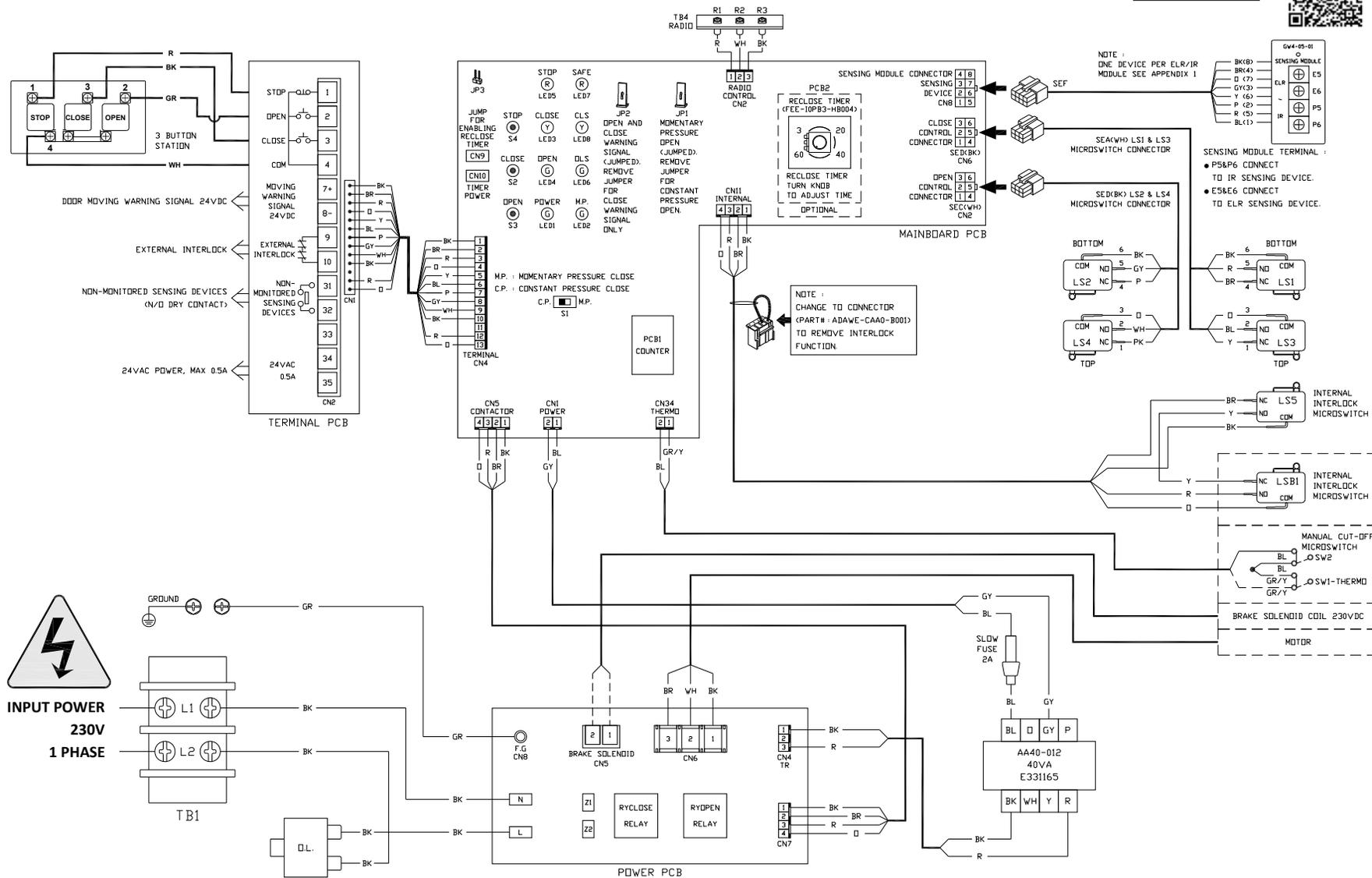


2021.04.01

MGHL/MGRL Series  
230V,50HZ  
REVISION # 0001  
DATE: 04/01/2021

MGRL and MGHL 230V 1 PHASE 50/60HZ RH (HYBRID BOARD)  
 (60HZ FOR MGRL and MGHL 3321E, 5021E)  
 (50HZ FOR MGRL and MGHL 3325E, 5025E)

EN 208EH R  
 V1.29-01



2021.04.01

MGRL and MGHL 208V/230V 3 PHASE 50/60HZ LH (HYBRID BOARD)  
(FOR MGRL and MGHL 3323E, 5023E)

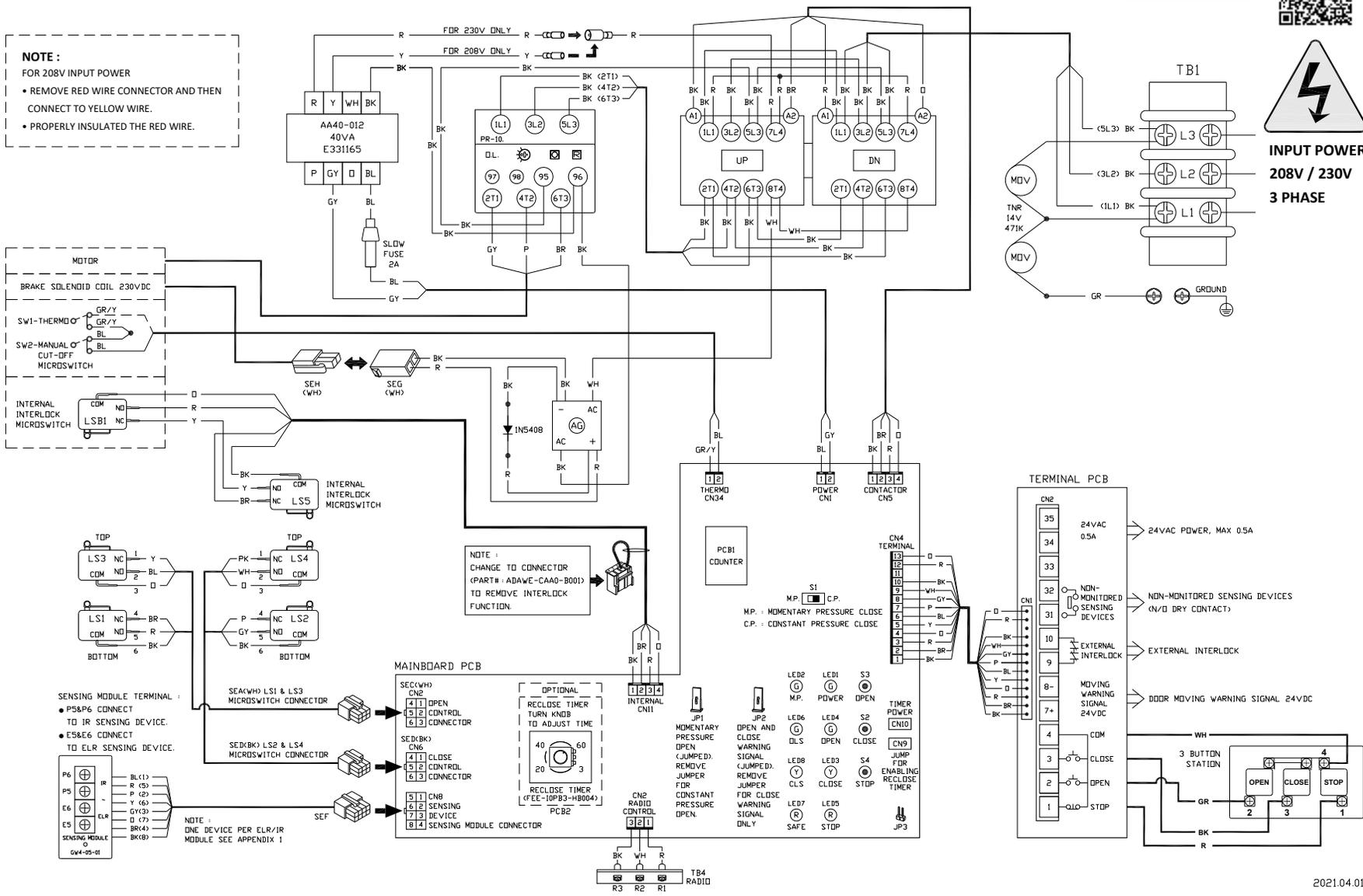
EN 308EH L  
V1.29-CON

SCAN FOR  
COLOR VERSION



**INPUT POWER**  
**208V / 230V**  
**3 PHASE**

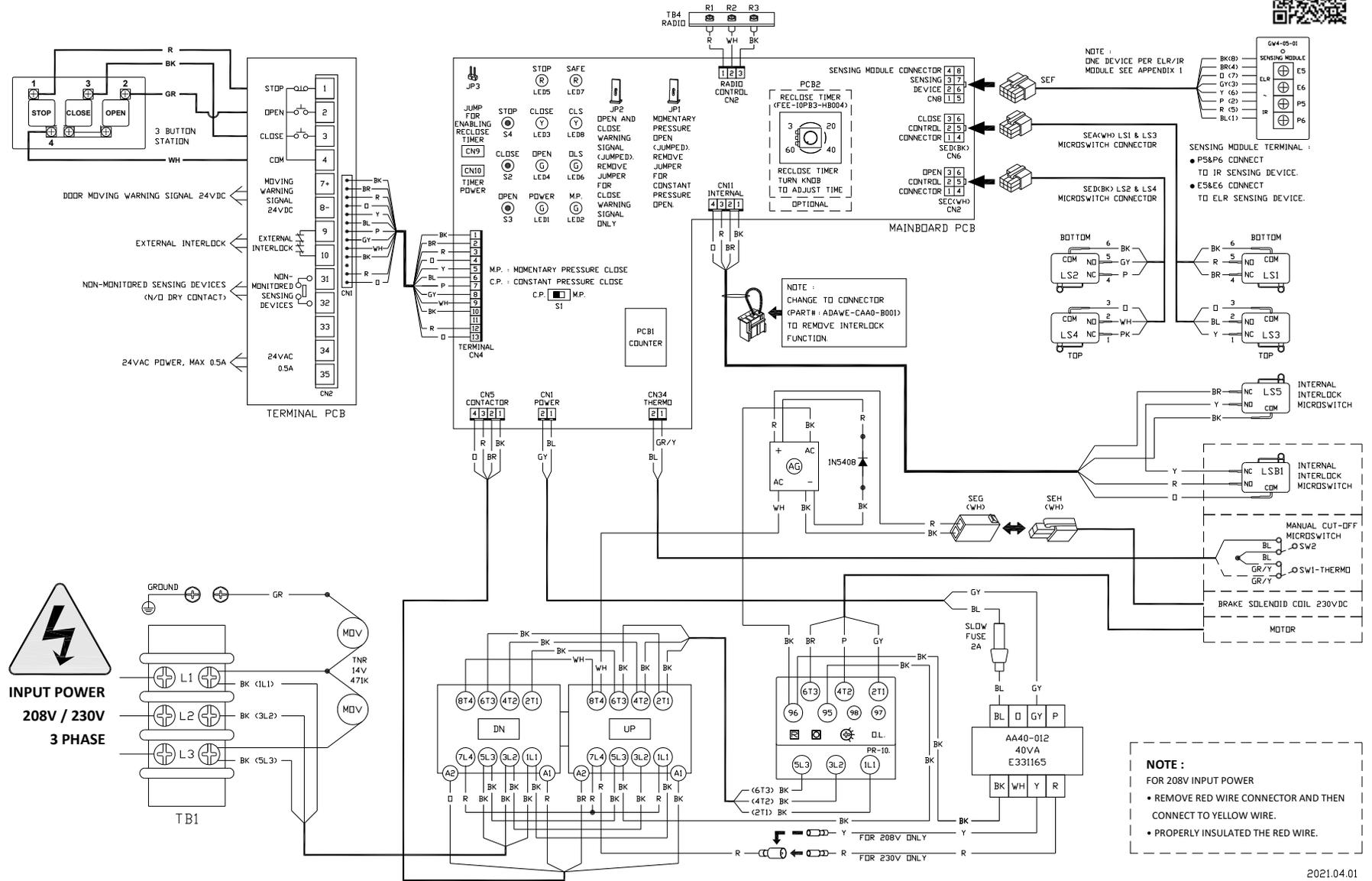
**NOTE :**  
FOR 208V INPUT POWER  
• REMOVE RED WIRE CONNECTOR AND THEN  
CONNECT TO YELLOW WIRE.  
• PROPERLY INSULATED THE RED WIRE.



2021.04.01

MGRL and MGHL 208V/230V 3 PHASE 50/60HZ RH (HYBRID BOARD)  
 (FOR MGRL and MGHL 3323E, 5023E)

EN 308EH R  
 V1.29-CON



2021.04.01

## TERMINAL CONNECTIONS

1	2	3	4	7	8	9	10	31	32	33	34	35
Control Station				+	-	External Interlock		Non Monitored Sensing Devices (N.O. Dry Contact)			24VAC, 0.5A max.	
Stop	Open	Close	Com	Door moving warning signal 24VDC		Jump when no external interlock is connected.						

- ❖ A one-second delay on reverse is standard.
- ❖ When the door is closing, pushing the “Open” or “Stop” button will stop the door from moving.
- ❖ When the door is closing, the radio control transmitter can stop and reverse the door at anytime.

### \* Jump Pin Connections (Hybrid Main Board)

JP1	Factory Default:	Momentary pressure open (Jumped). Remove jumper for constant pressure open.
JP2	Factory Default:	Open and close warning signal (Jumped). Remove jumper for close warning signal only.

### Sensing Module connections

(Only 1 Entrapment device can be connected to a single sensing module)

	E5 & E6 – Connect with ELR sensing edge
	P5 & P6 – Connect with Photo eyes or IR sensing edge

### Control and Accessory connections

Refer to appendix illustrations for connection of:

- ❖ Multiple device adapter for secondary monitored sensing device
- ❖ Reclose timer module
- ❖ Single and multiple control stations
- ❖ External timer defeat switch
- ❖ Wiring change from 230V to 208V 3 phase operator

# **IMPORTANT SAFETY INSTRUCTIONS**

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

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 when the door is 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's 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.**

## **TESTING**

### **PUSH BUTTON STATION TESTING**

1. If a 3-button control station is used to operate the door, push the “OPEN” button to open the door, push the “CLOSE” button to close the door, push the “STOP” button to stop movement of the door while opening or closing. Removing pressure from the “CLOSE” button will cause the door to stop.
2. If a key switch control station is used to operate the door, turn the key to the “OPEN” position to open the door, turn the key to the “CLOSE” position to close the door, push the “STOP” button to stop movement of the door while opening or closing. Removing pressure from the “CLOSE” key position will cause the door to stop.
3. Door may also be operated by remote devices.

### **EMERGENCY MANUAL OPERATION**

This operator has provisions for manually operating the door in case of emergency or power failure.

#### **WARNING**

**The equipped chain hoist is for emergency use only NOT for daily operation.  
Over use will cause damage, which is not covered under the manufacturer’s warranty.**

#### **MANUAL RELEASE:**

Pull cable to release brake; then push the door open or pull it closed.

#### **CHAIN HOIST (OPTIONAL on MGRL):**

**Note: Chain hoist can be added in the field. Consult factory for details.**

To operate the hoist:

1. Remove the hand chain from the chain bag.
2. Pull the hand chain to operate the door in the desired direction. (No clutch to engage)

Put the hand chain back into the chain bag, before operating the door again electrically.

#### **WARNING**

- **Turn off power to the operator before manually operating the door.**
- **Hand chain must be kept inside chain bag when operating electrically.**

## **MAINTENANCE INSTRUCTIONS**

The brake is a self-adjusting brake. It is maintenance free. The brake assembly requires no additional adjustments for its lifetime.

If an entrapment protection device is used, i.e. sensing edge or photoelectric sensors, please consult the manufacturer for maintenance instruction.

### **⚠ WARNING**

**Disconnect power supply to the operator before servicing.**

Check the following items at the intervals listed:

CHECK LIST	DESCRIPTION	EVERY 3 MONTHS	EVERY 6 MONTHS	EVERY 12 MONTHS
Drive Chain	Check for excessive slack. Check & adjust as required Lubricate.	●		
Sprockets	Check set screw tightness	●		
Fasteners	Check & tighten as required		●	
Bearings & Shafts	Check for wear & lubricate	●		

- ❖ Do not lubricate motor. Lubrication could cause damage.
- ❖ Inspect and service whenever a malfunction either door or operator is observed or suspected.
- ❖ Before servicing, always disconnect power supply to the operator.
- ❖ Replace fuses only with those of the same type and rating.
- ❖ All replacement parts must be compatible with those originally provided. Consult manufacturer for replacement parts.

### **⚠ WARNING**

**Do not place hands or tools in or near the operator when the power is connected or when testing control or sensing devices. Always disconnect power before servicing or adjusting the operator.**

## **U.S. GEAR**

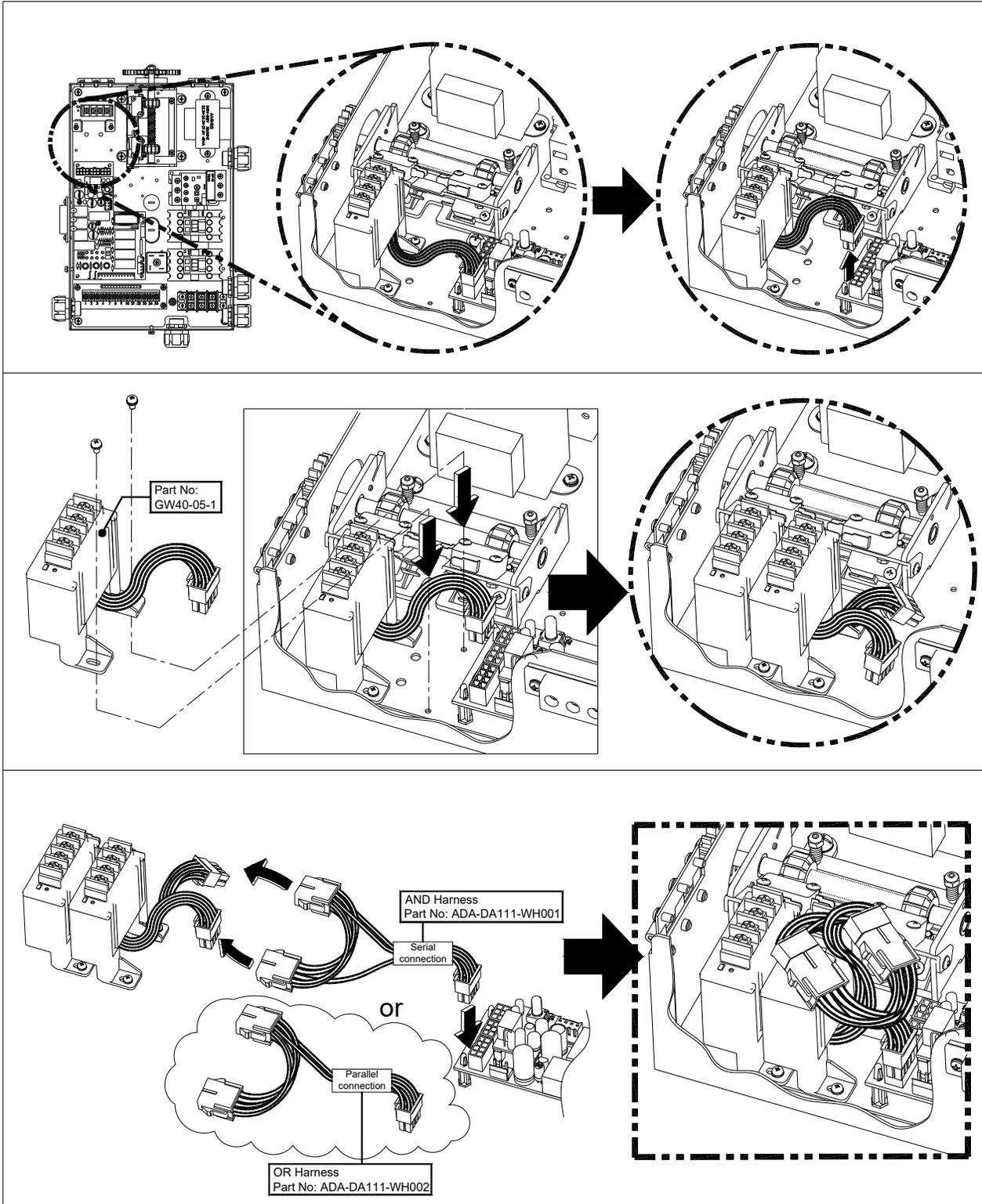
**Covered under US Pat. #6,900,602, #7,055,283, #7,341,129, #7,564,202 and additional patents pending.**

# APPENDIX 1: Multiple Device Adapter With 2<sup>nd</sup> ELR/IR Instructions

## Multiple Device Adapter With 2<sup>ND</sup> ELR/IR Instructions

Warning: Power OFF When Connecting.

QST-HB-ADAPTER-1



# APPENDIX 2: Reclose Timer Module Instructions

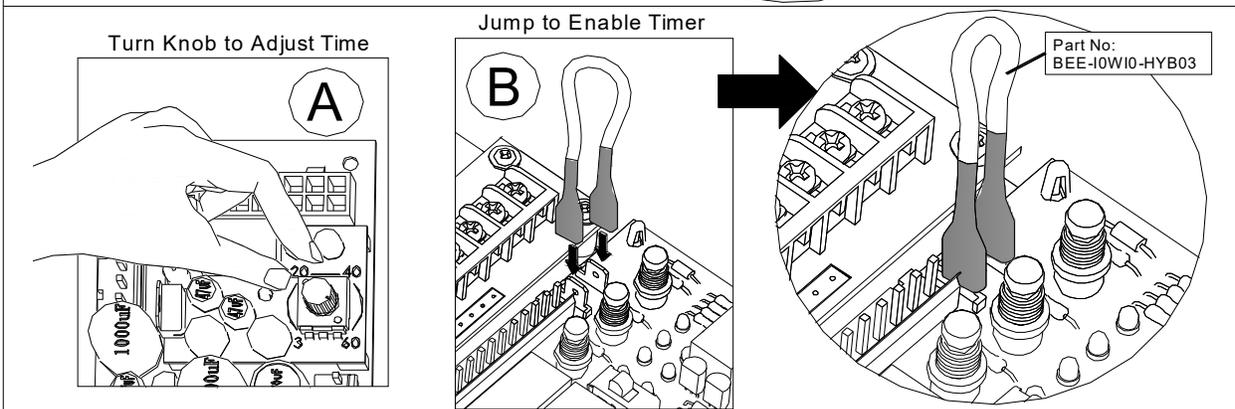
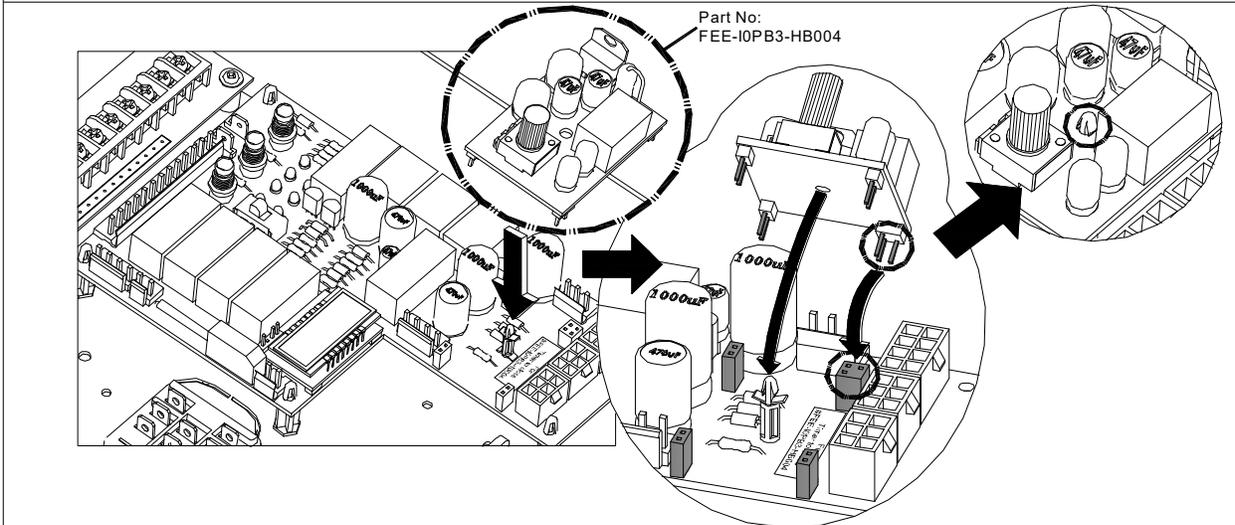
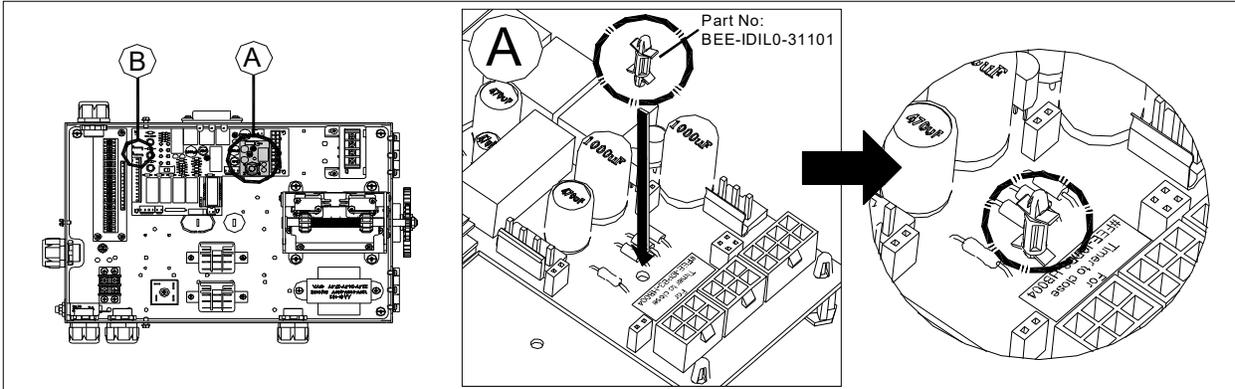
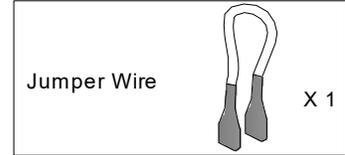
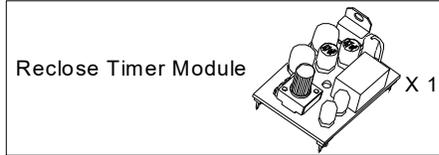
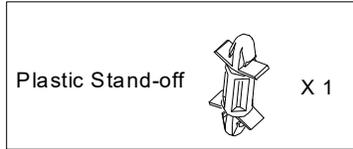
GW40-10

Warning: Power OFF When Connecting.

## Reclose Timer Module Instructions

QST-HB-TIMER-4

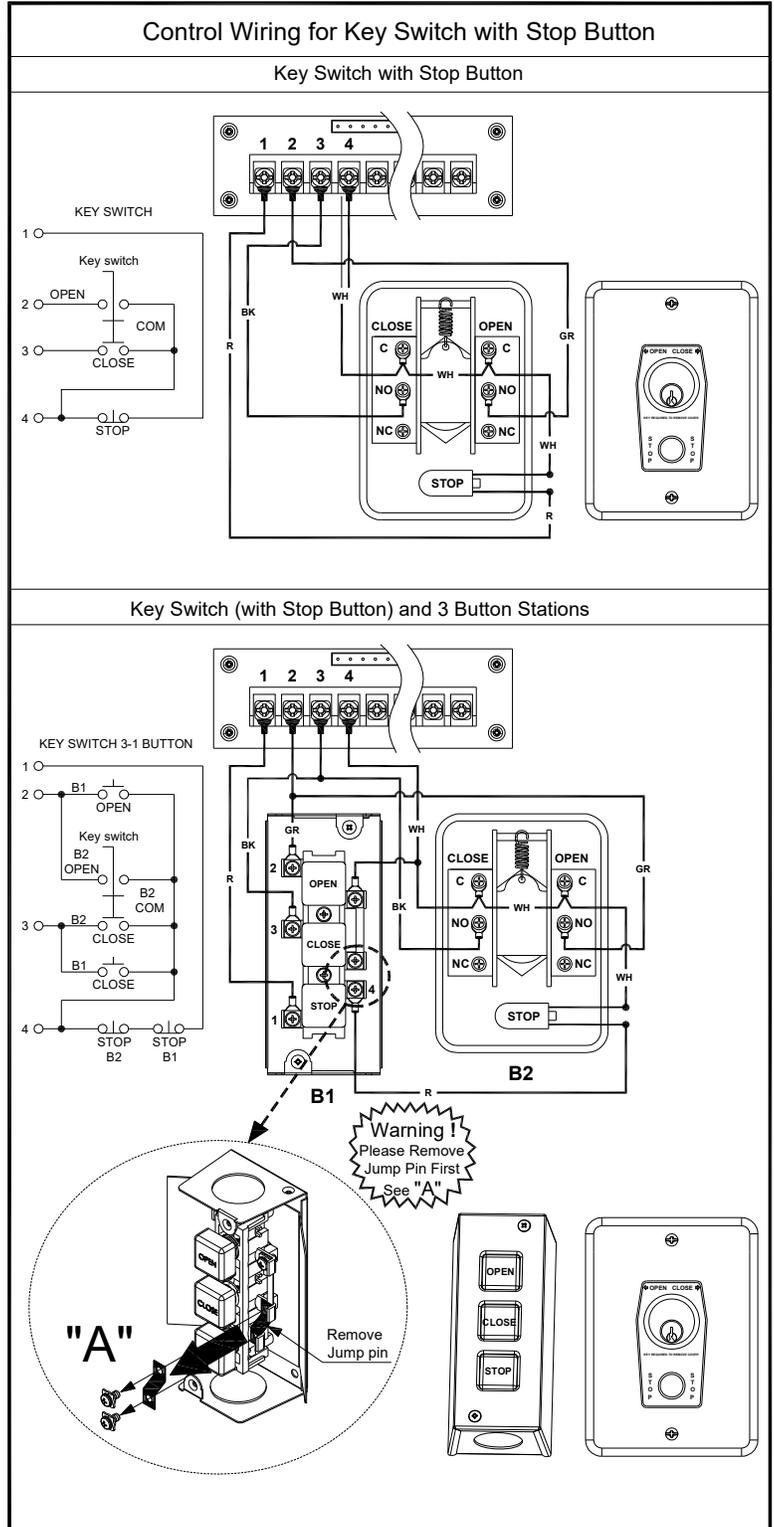
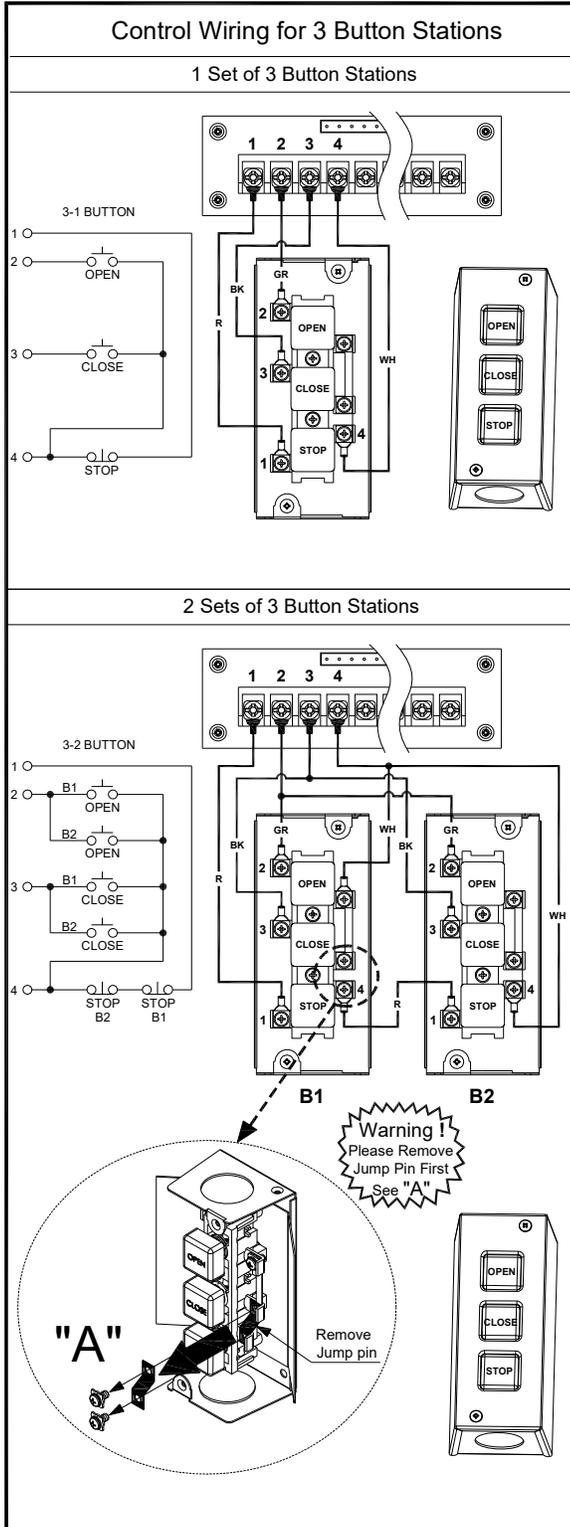
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# APPENDIX 3: Control Connections Diagrams

## Control Connections Diagrams

CCD-PCB-A01



# APPENDIX 4: Control Connections Diagrams

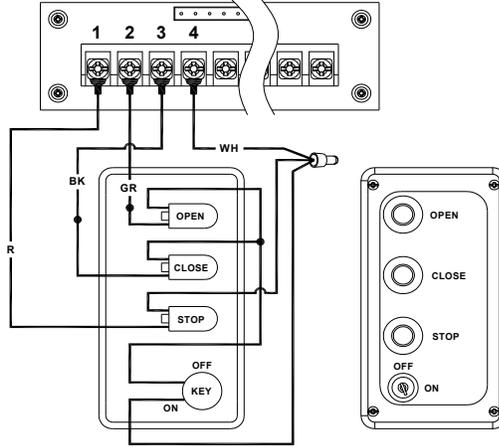
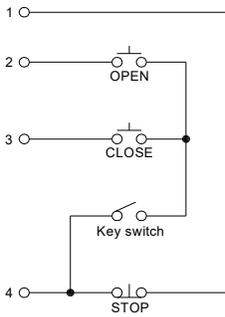
## Control Connections Diagrams

CCD-PCB-B02

### Wiring 3 Button Stations With Key Lockout

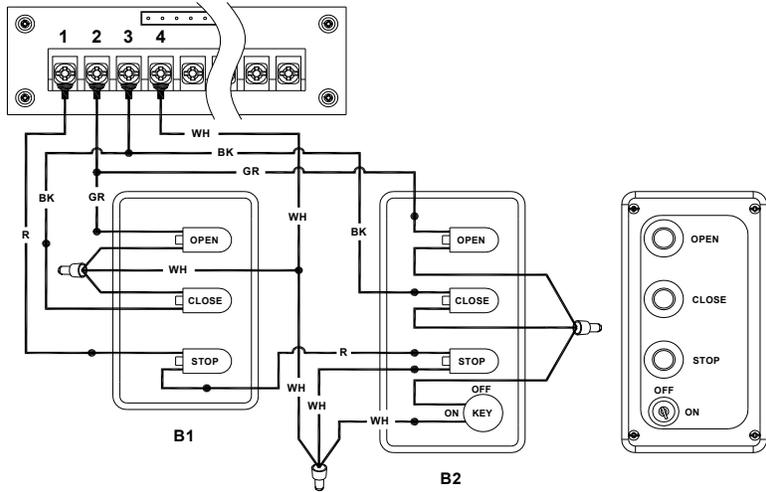
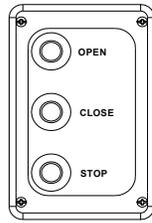
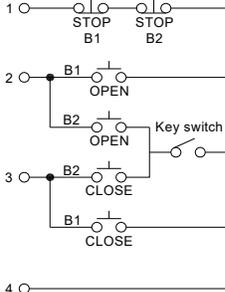
1 Set

KEY LOCKOUT 3 BUTTON

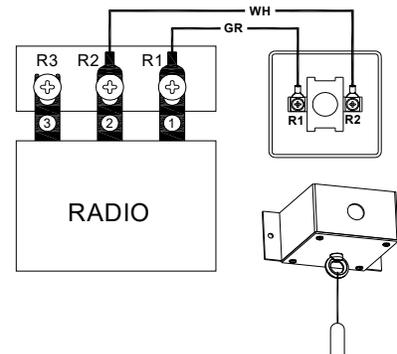
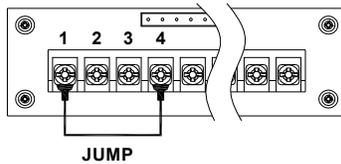
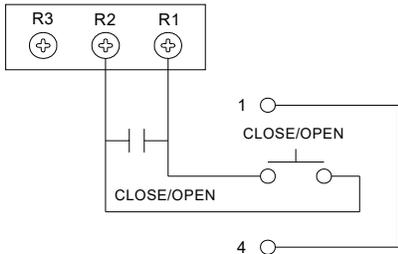


### With and without key lockout

KEY LOCKOUT 3-2 BUTTON

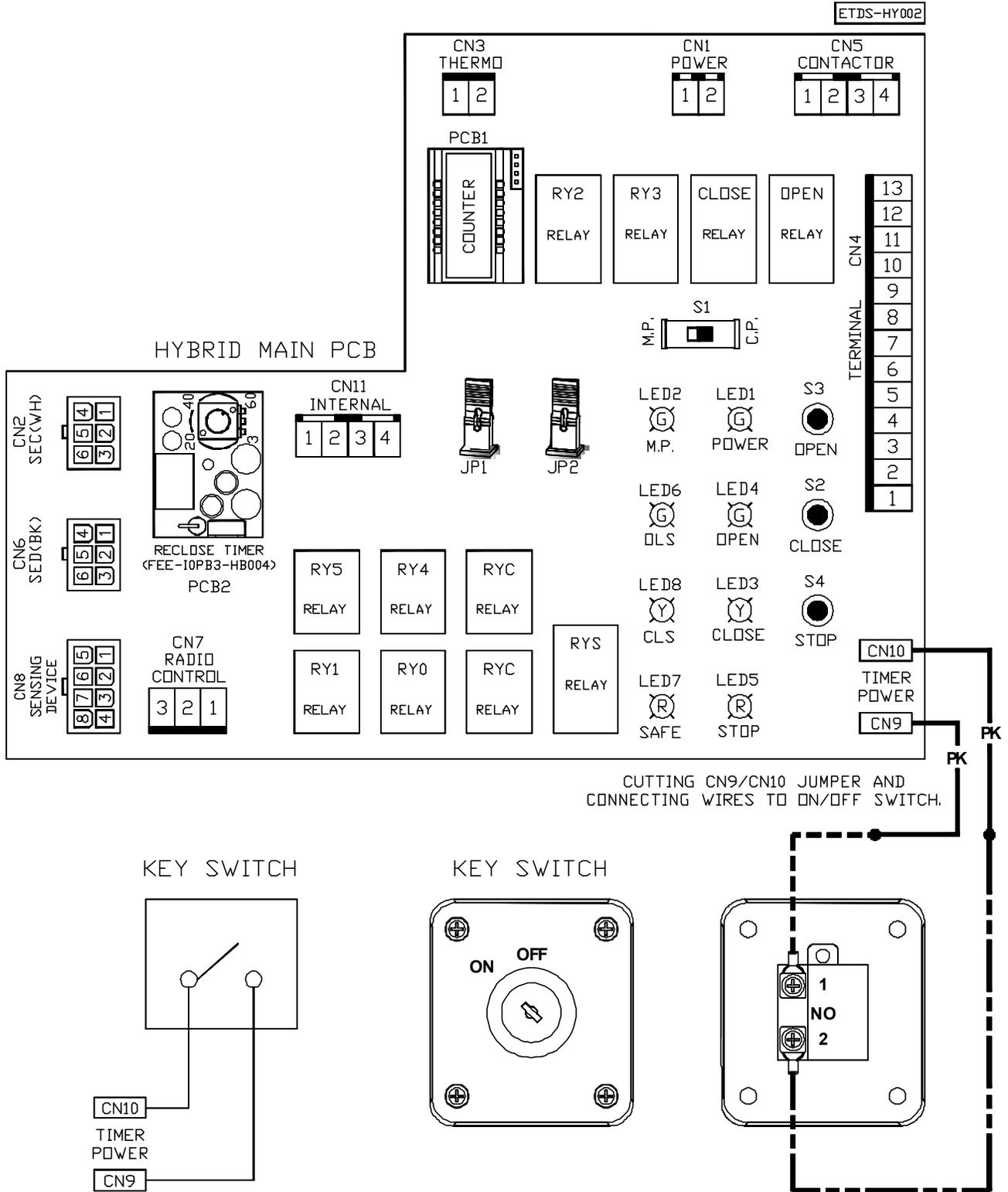


### Ceiling Pull Switch Station



# APPENDIX 5: External Timer Defeat Switch Connection

## EXTERNAL TIMER DEFEAT SWITCH CONNECTION-HYBRID BOARD



# APPENDIX 6: Wiring Change Instruction from 230V to 208V 3 Phase Operator

## Wiring Change Instruction from 230V to 208V 3 Phase Operator Hybrid MG E Series

MG-HB-3P-V02

