



**INSTALLATION INSTRUCTIONS
AND
OPERATION MANUAL**

HGH200 EP Series
(Back Hoist)

High-Performance Commercial and Industrial Door Operator

Logic Control

Continuous Duty Operators

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 door. A door that is operating improperly could cause death or serious injury. Have trained door systems technicians make all necessary adjustments and repairs to the door before installing the operator.
3. Remove any pull ropes that may be installed on the door.
4. Unless external electrical interlocks are installed, remove or make all door locks inoperative, or secure locks in the unlocked position to prevent operation with the locks engaged.
5. 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.
6. Do not connect the door operator to the source of power until instructed to do so.
7. Locate the control station (open-close-stop push button, key station, or the like):
(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.
8. Install the Entrapment Warning Placard next to the control station in a prominent location.
9. 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.
10. Read and understand the wiring diagram of the operator and the control station and any other equipment to be connected to the operator.
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

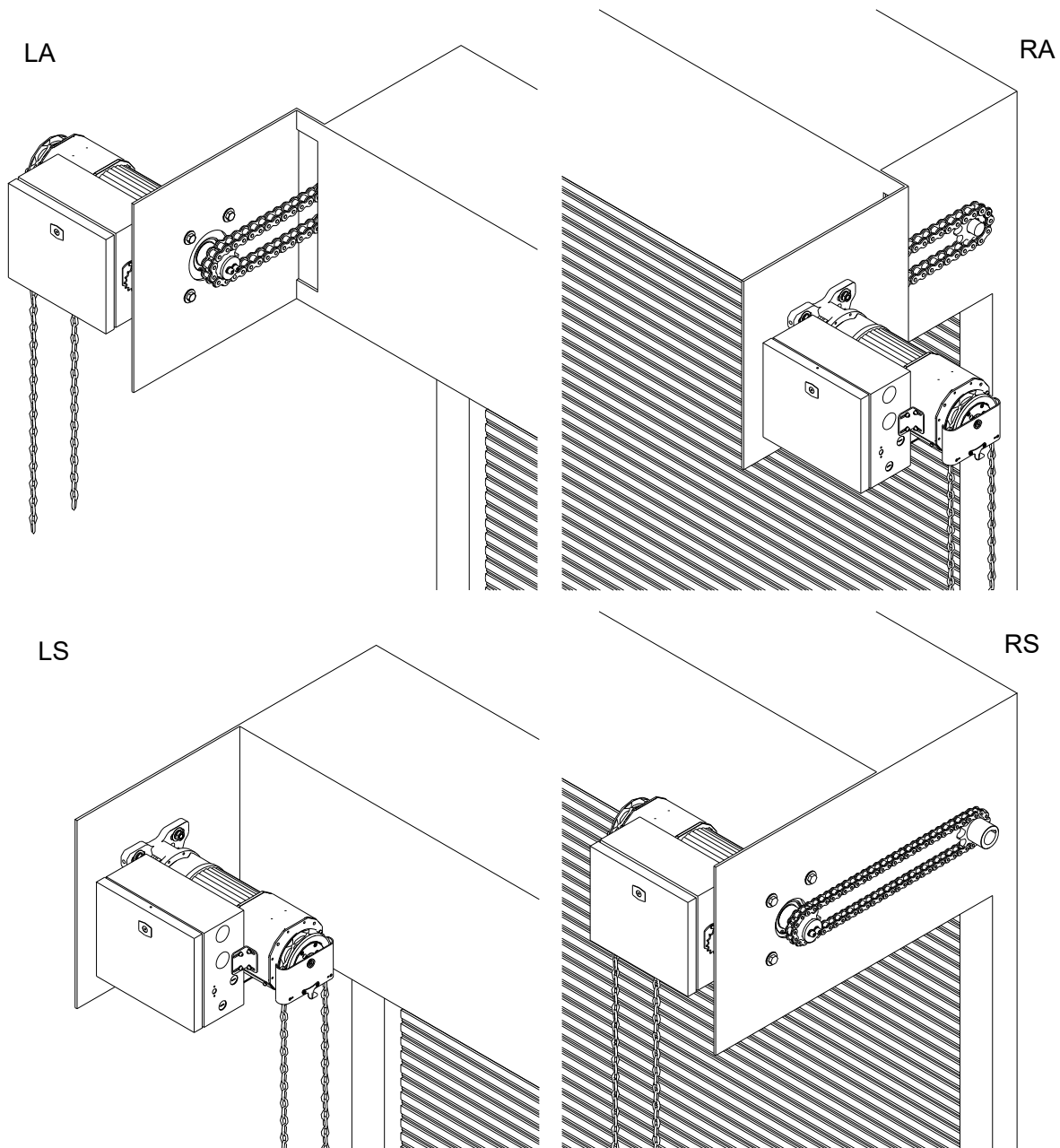
MOTOR	
Type:	Continuous duty
Rating:	400 ft.lb./sec.
Motor RPM:	104~1790 RPM
Voltage:	208/230 – 1 phase 208/230, 460 – 3 phase 230 volt 3 phase motor is suitable for use with 208 volts (see <i>Wiring Diagrams and Appendix 7 for wiring change instructions</i>)
Current:	See motor nameplate
ELECTRICAL	
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.
MECHANICAL	
Drive Reduction:	25:1
Output Shaft Speed:	71 RPM
Output Torque:	640 in.lb.
Brake:	Solenoid actuated brake
Emergency Chain Hoist:	Standard
ENTRAPMENT PROTECTION	
Sensing Edge*:	(Optional) Sensing device attached to the bottom edge of the door.
Non-Contact Device*:	(Optional) Photo eye device.
<p>* 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 at least one <u>monitored</u> sensing device that will reverse the door upon contact with, or upon detecting an obstruction, during closing.</p>	

Notes:

1. A non-contact sensing device (photo eye) can only be used on doors up to 35 ft. wide (or maximum rated range of device if less than 35 ft.). Use a sensing edge to provide entrapment protection on doors over 35 ft. wide.
2. A sensing edge can be used on all doors without size restriction.

INSTALLATION INSTRUCTIONS

INSTALLATION POSITIONS

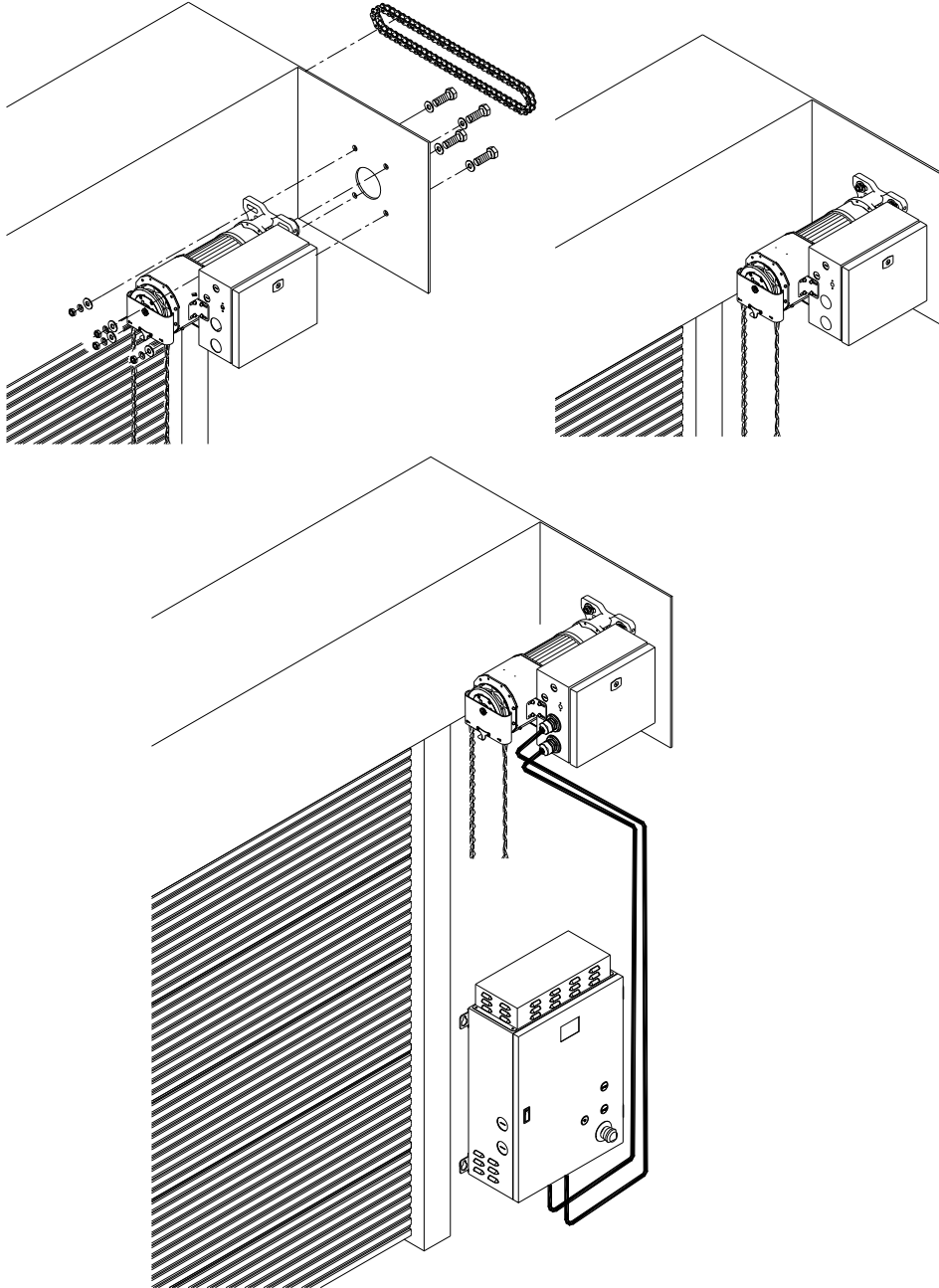


Consult factory for changes in installation positions.

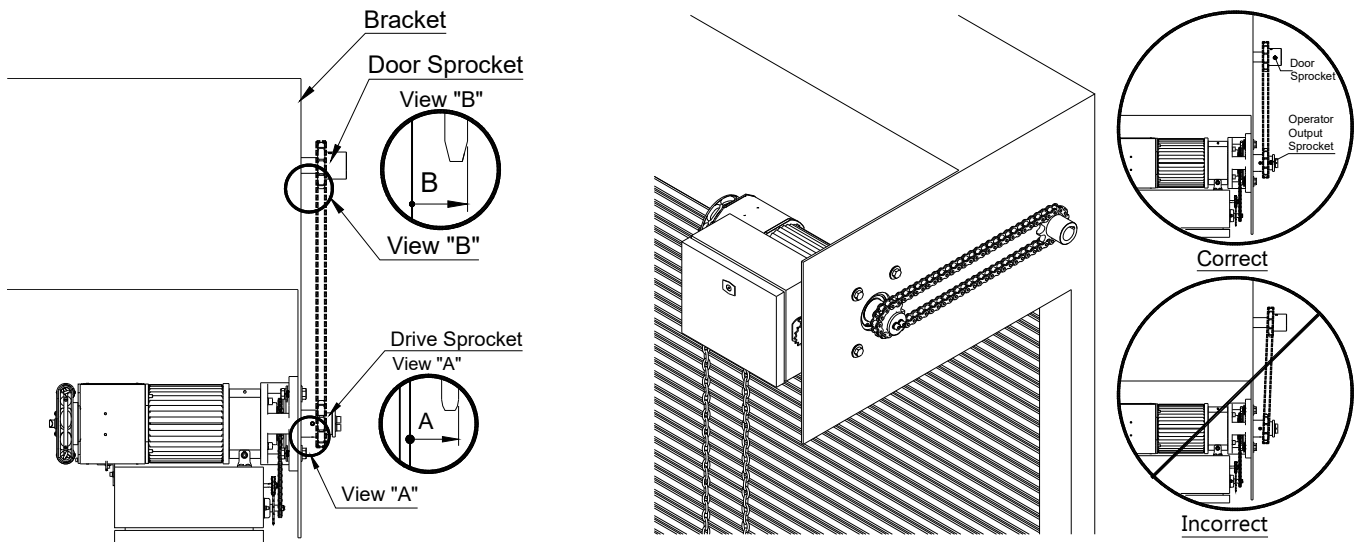
NOTE: Any change in mounting position may result in a change of operator rotation and consequently in a change of control functions. Consult factory for any changes. (LS and RA mounting positions are LH operators, RS and LA positions are RH operators)

OPERATOR MOUNTING

1. Before the operator is installed, verify that the door is properly operating.
2. Make sure the layout of the mounting holes on the bracket is correct.
3. Attach and tighten the mounting hardware to the mounting plate.
4. Tighten the operator mounting plate to the door.



- 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.
- The 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.



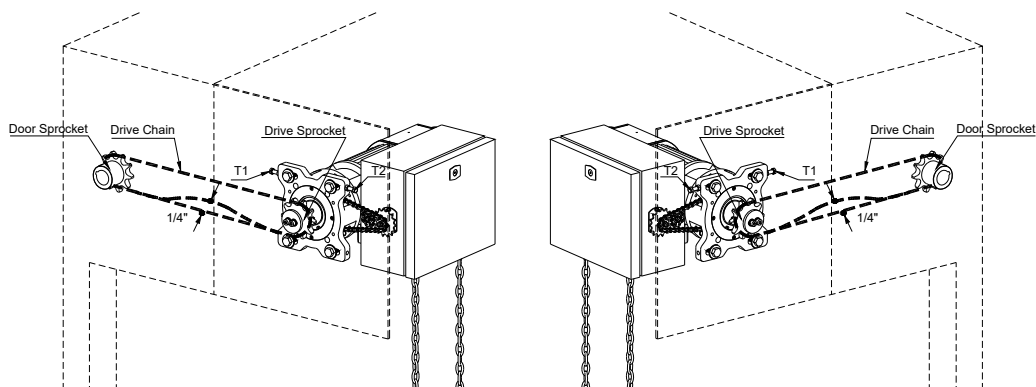
DRIVE CHAIN ADJUSTMENT

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

- 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 screws on the operator base may be used to make the adjustment. (See T1 and T2 location).

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



BRAKE RELEASE

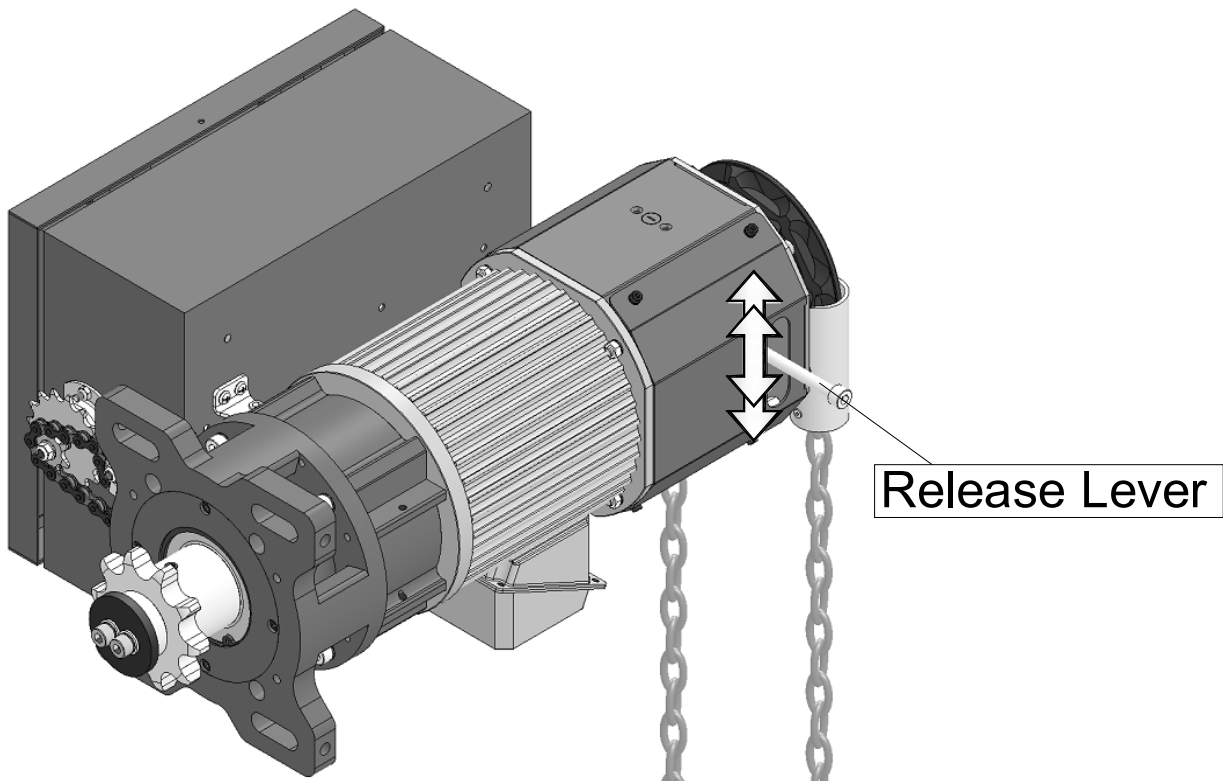
NOTE: Most high-performance doors do not have counterbalance springs. Releasing the brake on the motor operator, or removing any part of the motor operator drive system, can cause the curtain to uncoil and free-fall if open.



WARNING

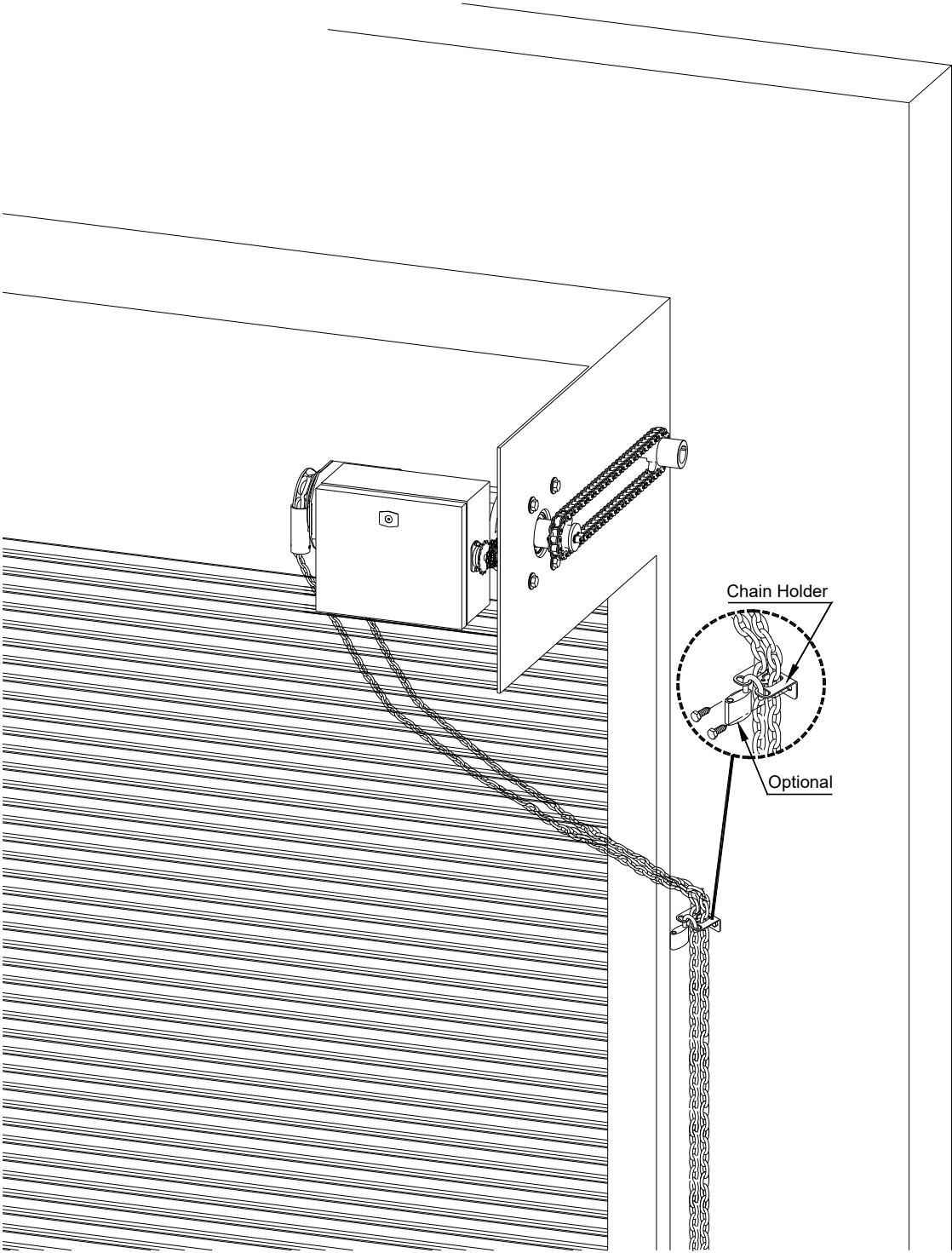
Releasing the door operator brake, or loosening or removing any part of the drive system, can cause the door to close and cause death or serious injury. **Do NOT release the brake, or loosen or remove any part of the drive system,** unless the barrel is secured to prevent rotation.

1. Pressing the brake release lever will release the brake and can cause the door to move uncontrolled.
2. Open-close-stop controls do not function while the brake release lever is pressed.
3. Most high-performance doors do not have counterbalance springs. The curtain can uncoil and free-fall if the brake is released or components of the drive system are loosened or removed.



HAND CHAIN ADJUSTMENT

If the hand chain is too long, cut and reconnect the chain with the different color connecting link provided. Completely close the connecting link so it is properly aligned.



LIMIT SWITCH ADJUSTMENT

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

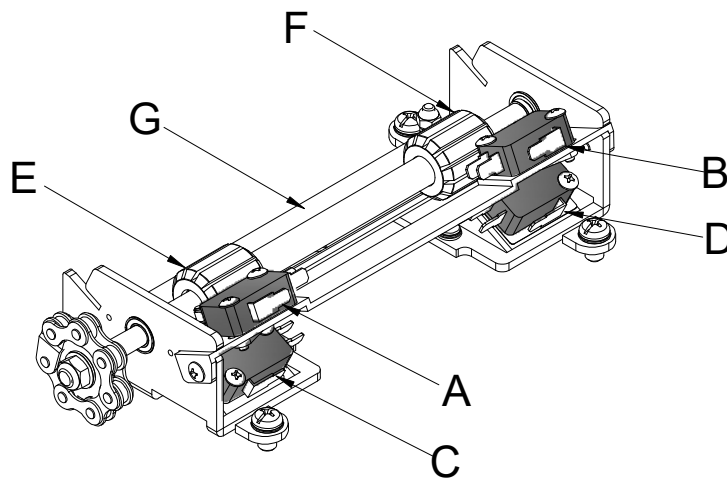
1. Open the control panel cover.
2. Open or close the door part way to determine the direction of travel the limit switch cams.
3. Open or close the door to the desired position.



WARNING

Disconnect power before adjusting limit switch cams.

4. While pressing the spring-loaded plate (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 direction. Adjust close limit cams so that actuator is engaged as door fully closes to the floor.
7. After limit switch cam E and F been settled, Micro switch (A or B) can be adjusted to accommodate sensing edge cut-off position and 2nd speed, slow down when open and close activated positions.



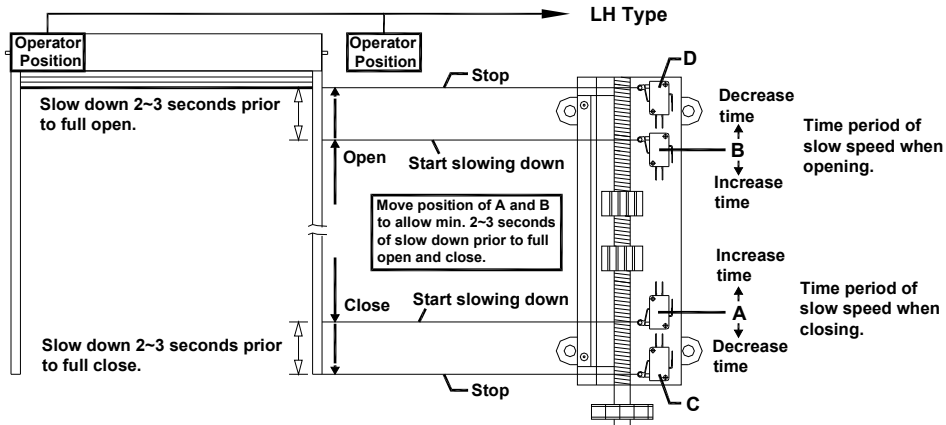
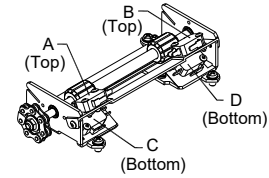
NOTE: "C" is usually the opening side and "D" is usually the closing side.

LIMIT SWITCH ADJUSTMENT FOR SLOW DOWN TIME SETUP

(Operating speed slows down prior to full open and full close positions)

High Performance Operator

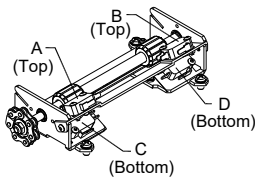
Slow Down Time Setup (LH)



Note :

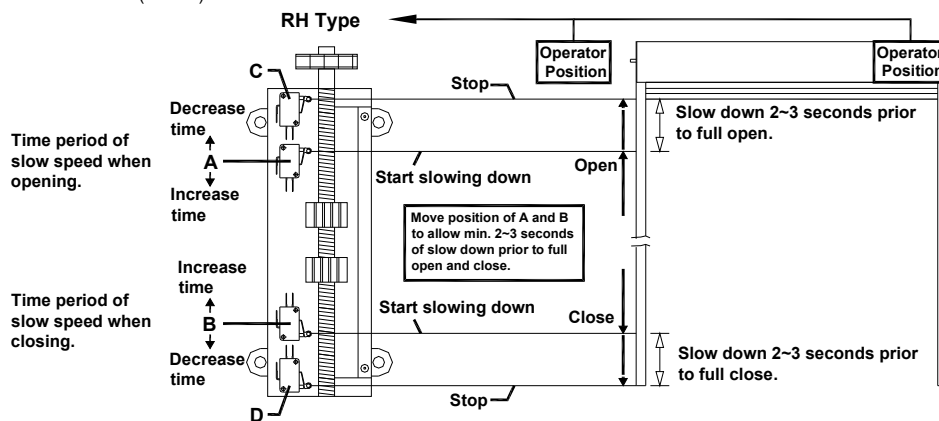
Door must slowdown before complete stop.

Make sure slowdown time is sufficient.



High Performance Operator

Slow Down Time Setup (RH)



Note :

Door must slowdown before complete stop.

Make sure slowdown time is sufficient.

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 fuse line 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 death or serious injury.



WARNING

Unless external electrical interlocks are installed, remove or make all door locks inoperative, or secure locks in the unlocked position. Failure to disable the locks could result in damage to the door or operator.

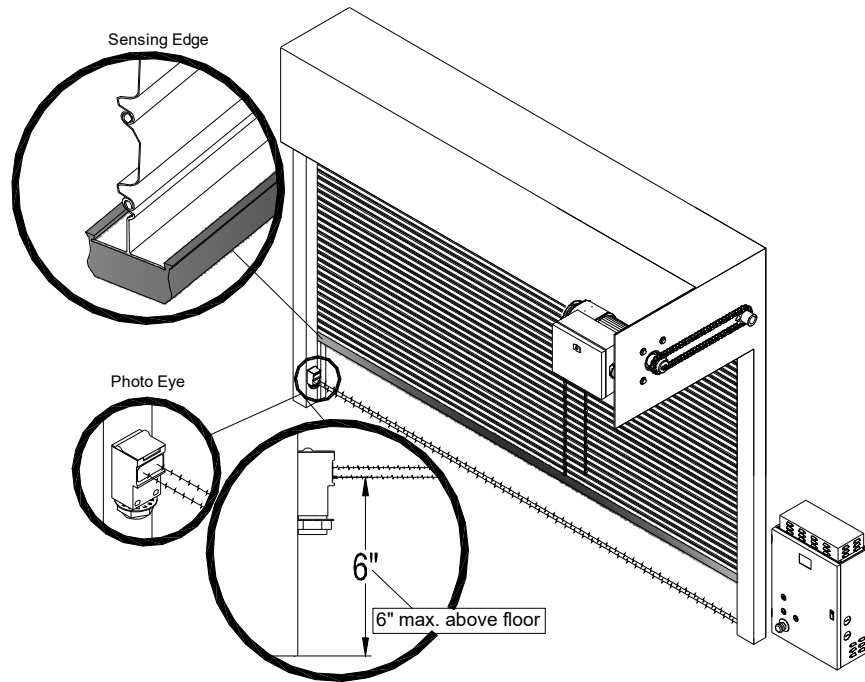
CONTROL WIRING



WARNING

If the door is not visible from the control station, or if any device other than a control station requiring constant pressure to close the door is used, a monitored sensing device must be installed on the door. Failure to do so could 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.



Monitored Sensing Device Options:

Sensing Device Type	Device Manufacturer	Model
ELR 2-wire terminated sensing edge	ASO	25.30TTLL [A2530L-M], 15.25TTL [A1525-M], 30.70TTLa [A3070L-M], GE245, GE F45, GE F50, GE F56, GE F65, GE F85, GE F115
	Miller Edge Inc. * Must have model number with Suffix T2.	ME110*, ME111*, ME120*, ME123*, ME112*, ME113*, ME116*, ME117*
		MT21*, MU21*, MT22*, MU22*, MC22*, MU33*, MC271*, CPT223*
		MEL RB-G-K10
IR Emitter/receiver photo eyes and sensing edge	FRABA Inc.	Optical photo eyes and optical sensing edge, Models OPTOEYE [FOPE], OPTOEDGE; Part Nos. OSE-T, OSE-R, OSE-P, OPE. Reflective Photo Eye, Ray/RT -1004, -2004 [FRPE]
	Martec Access Products Inc.	1266
	Miller Edge Inc.	IG2, MIRM, MLC-K36, MLC-K72 RB-D-K10

Other approved devices may also be available – consult manufacturer for compatibility. [denotes Lawrence reference]

Note: Refer to sensing device manufacturer for specific installation and maintenance requirements.

- If more than one monitored sensing device is to be used, each device must be connected to a separate ELR/IR sensing module to provide separate monitoring functions. Consult factory for a multiple device adapter.



WARNING

Do not use a timer to close the door unless some type of monitored entrapment protection device has been installed. Failure to do so may result in death or serious injury to person(s) trapped beneath the door.

- A standard on-board reclose timer is an included feature. If another type of timer to close is to be used, it must be compatible and not interfere with the monitoring of sensing device functions. Consult factory for the correct timer.



WARNING

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

- Locate the control station at a minimum height of 5 feet above the floor, and where the user can clearly see the operation of the door. Mount the enclosed placard adjacent to 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.

- Do not run control wiring in the same conduit as power wiring.
- Any wires 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 install radio controls (receiver/transmitter) to operate the door unless some type of monitored entrapment protection device has been installed. Failure to do so may result in death or serious injury to person(s) trapped beneath the door.

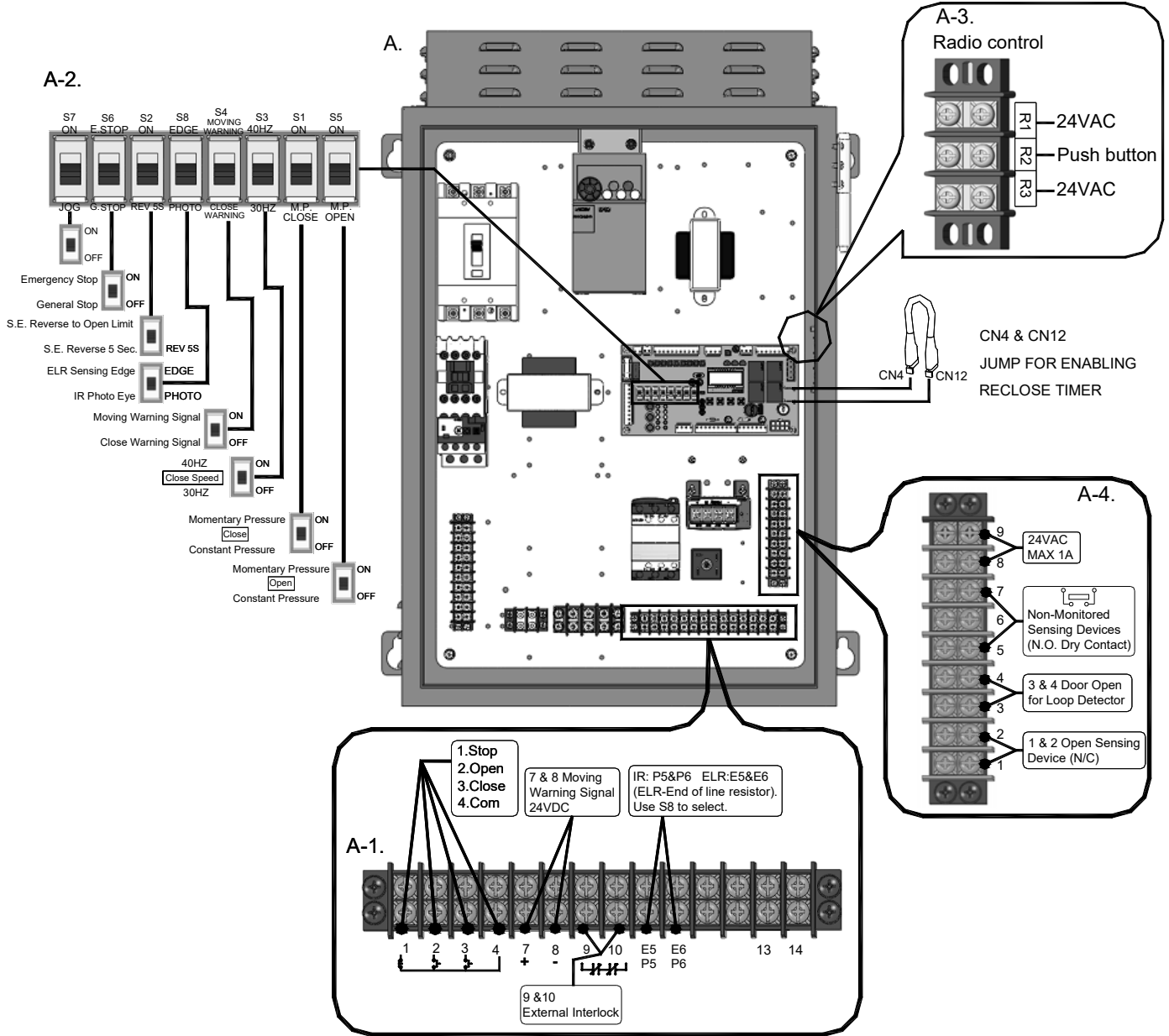


WARNING

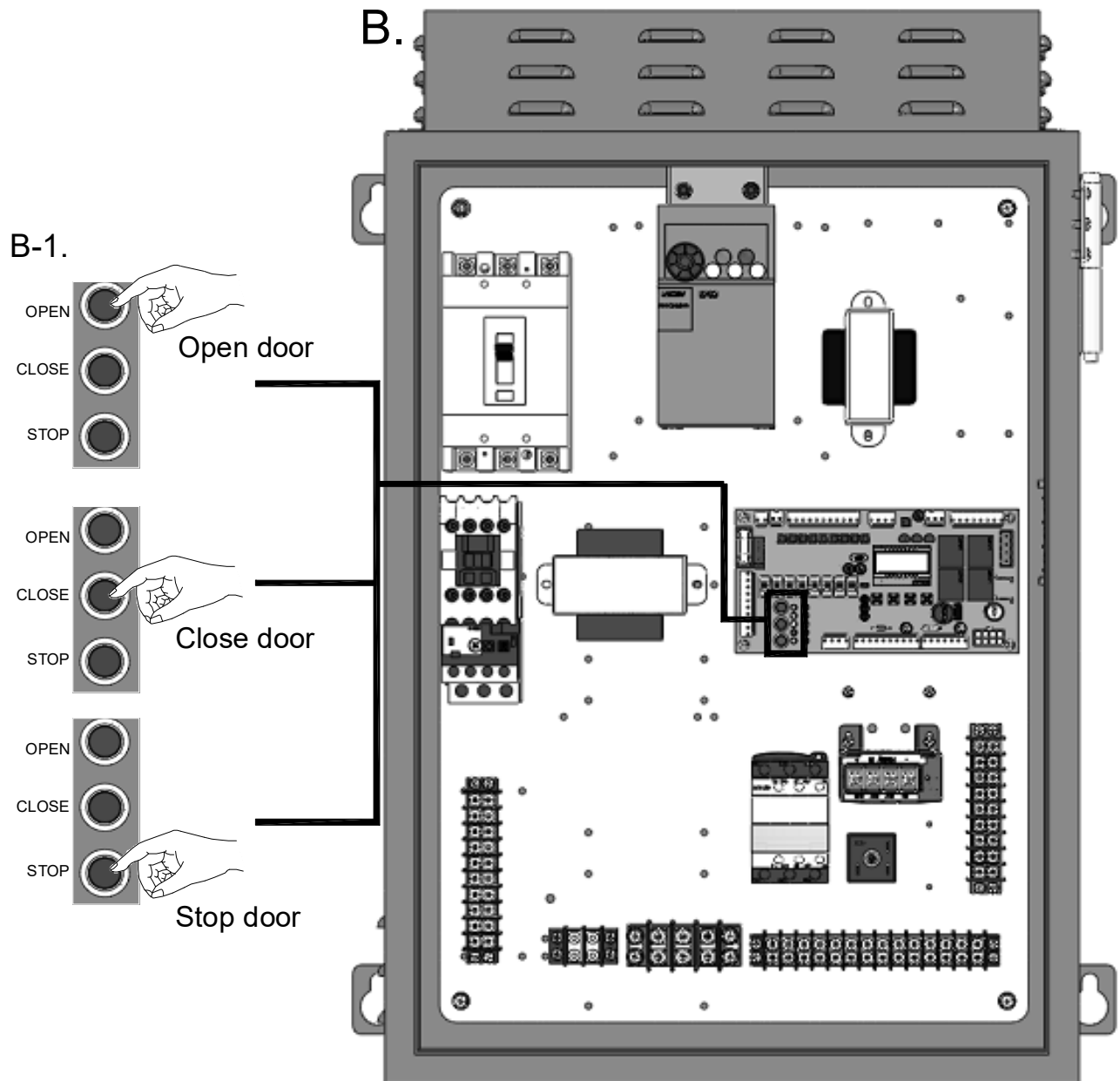
Changing from left hand to right hand or vice versa could result in change of control wiring. Consult factory for details.

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

A. Control Function:

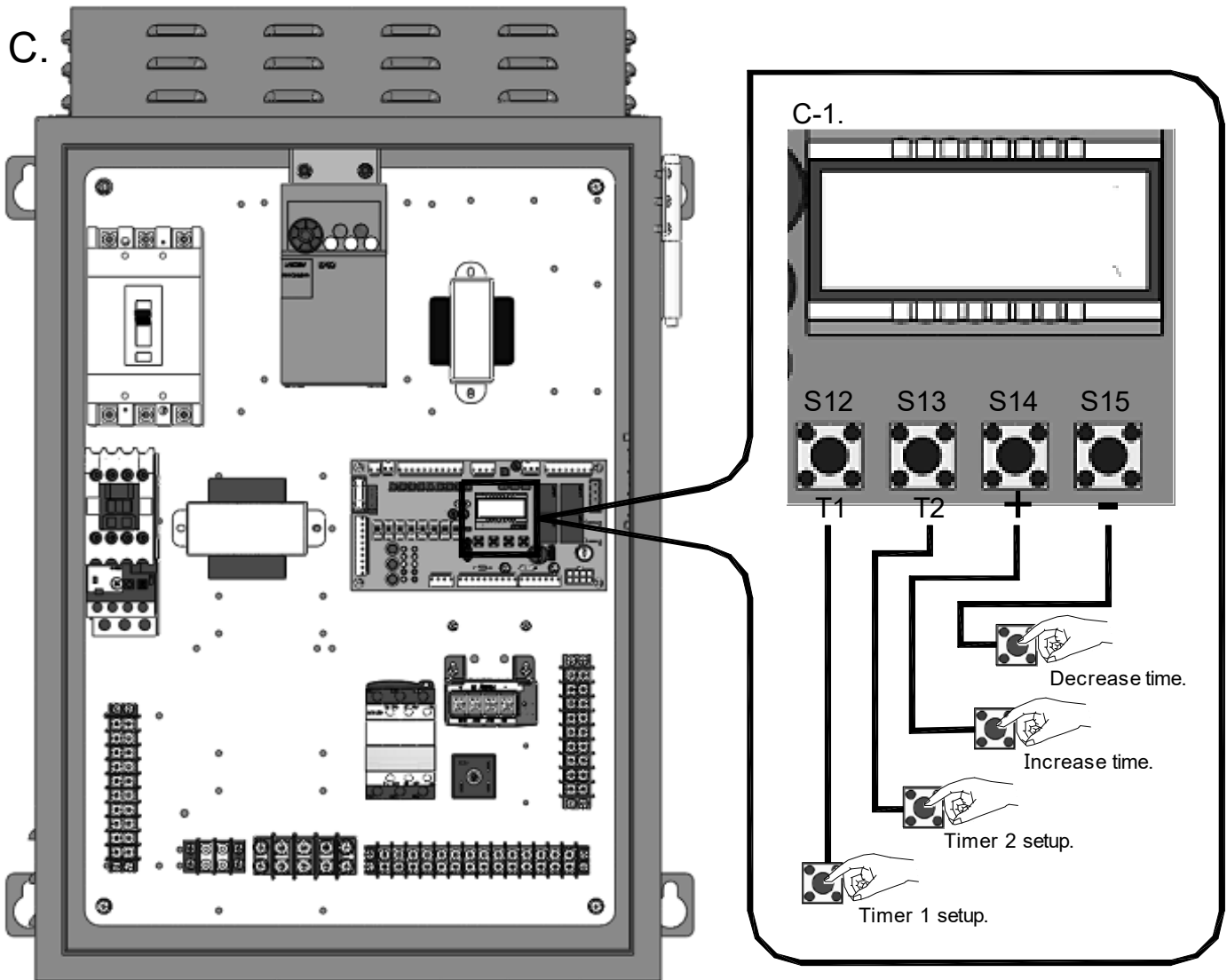


B. Auxiliary Function:



- ❖ Refer to appendix illustration for connection of single and multiple control stations.

C. Timer Instruction:







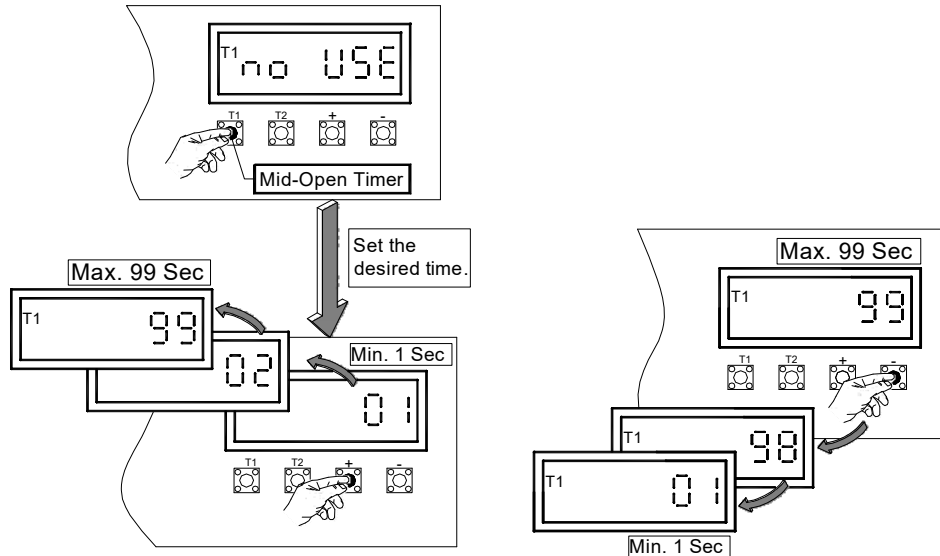
(1) Timer 1 – Mid-open timer: Timer starts counting when door leaves close limit. Door stops after opening for set time. Pressing open again at mid-open position will cause door to open limit.

Timer 2 – Reclose timer: Timer is active when door stops and is not at close limit.





(2) Standard Mode: Cycle counter

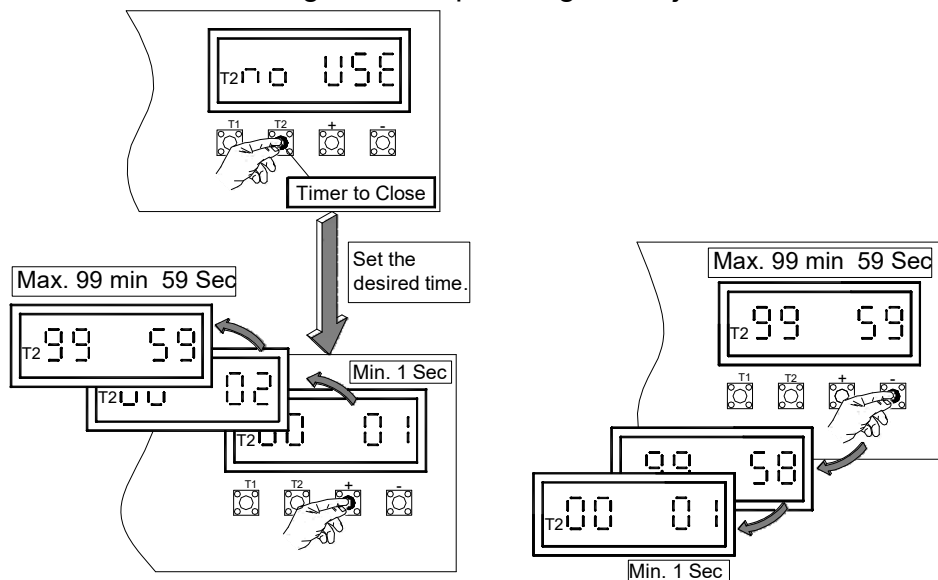
(3) To Set Timer 1 (Mid-open Timer):

- Press  and hold for 5 seconds. Display will flash.
- Use  or  to increase or to decrease time.
- Press  to save setting. Without pressing, no adjustment is saved.



(4) To Set Timer 2 (Reclose Timer):

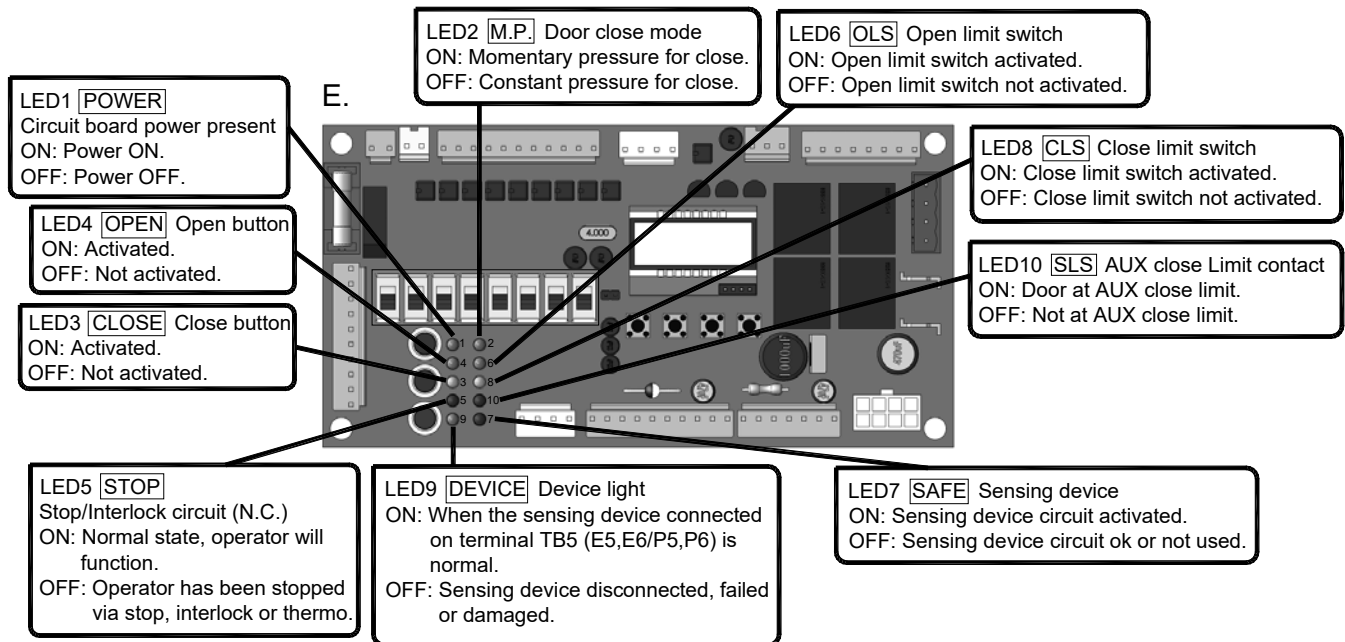
- Press  and hold for 5 seconds. Display will flash.
- Use  or  to increase or to decrease time.
- Press  to save setting. Without pressing, no adjustment is saved.



D. LCD Display Instruction:

Display	Status	Display	Status
	T1 setting		Door closing
	T2 setting		Door opening
	T1 or T2 setting completed		

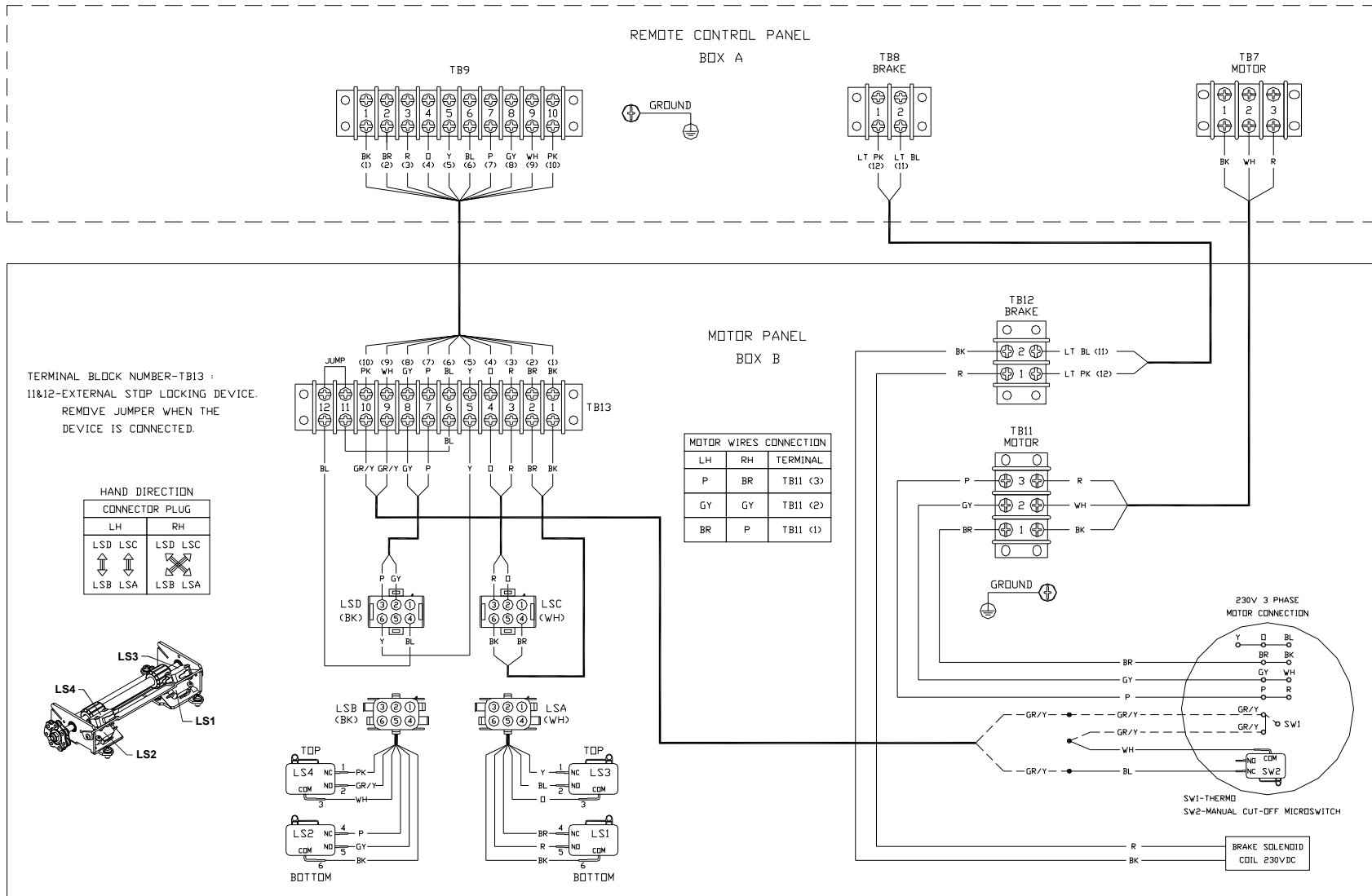
E. Light Indication:



High-Performance Operator
230V 1 Phase 400 ft.lb./sec
(For GHG 20021EP)

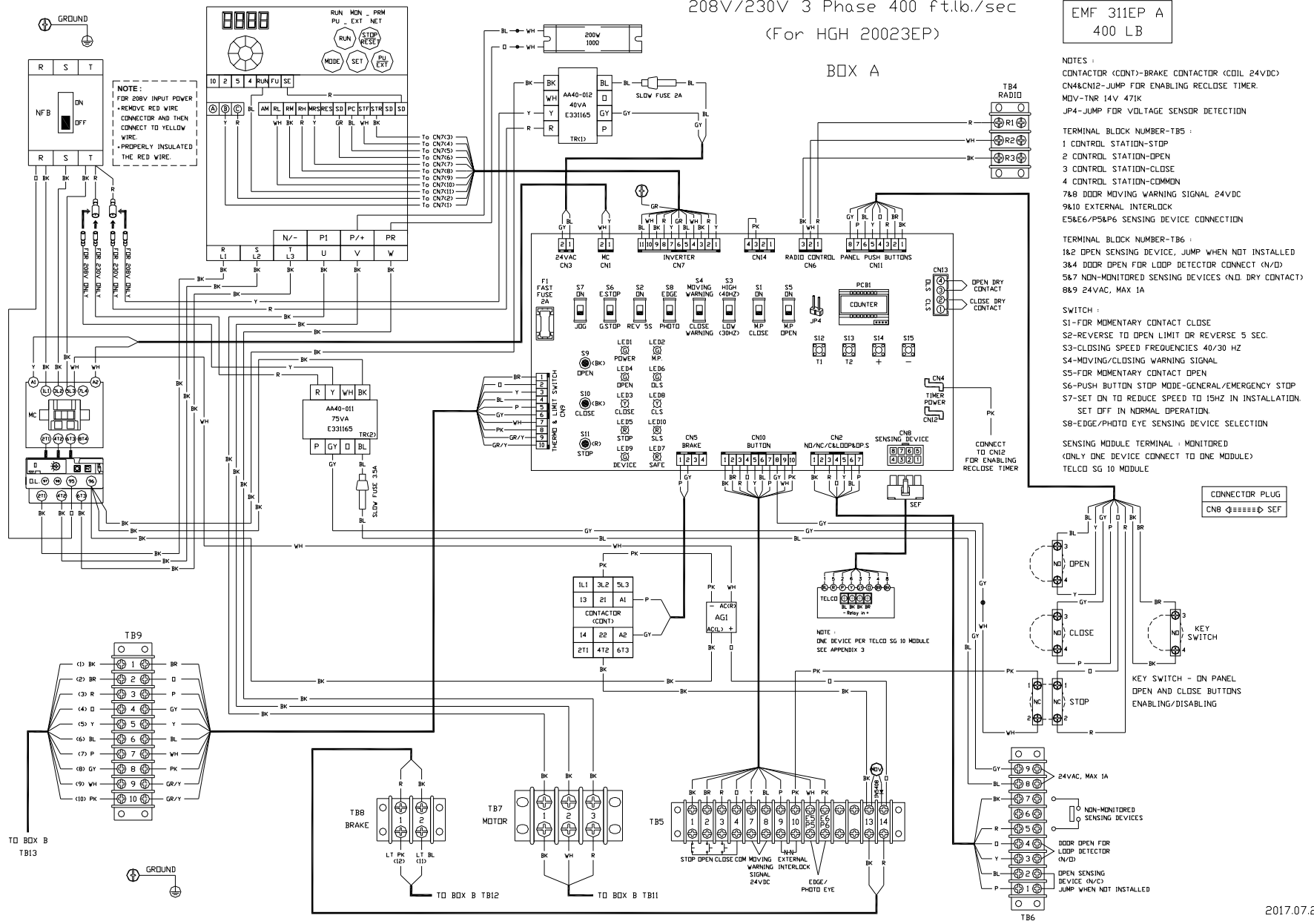
BOX B

EMF 211EP B
400 LB



High-Performance Operator
208V/230V 3 Phase 400 ft.lb./sec
(For GHG 20023EP)

EMF 311EP A
400 LB

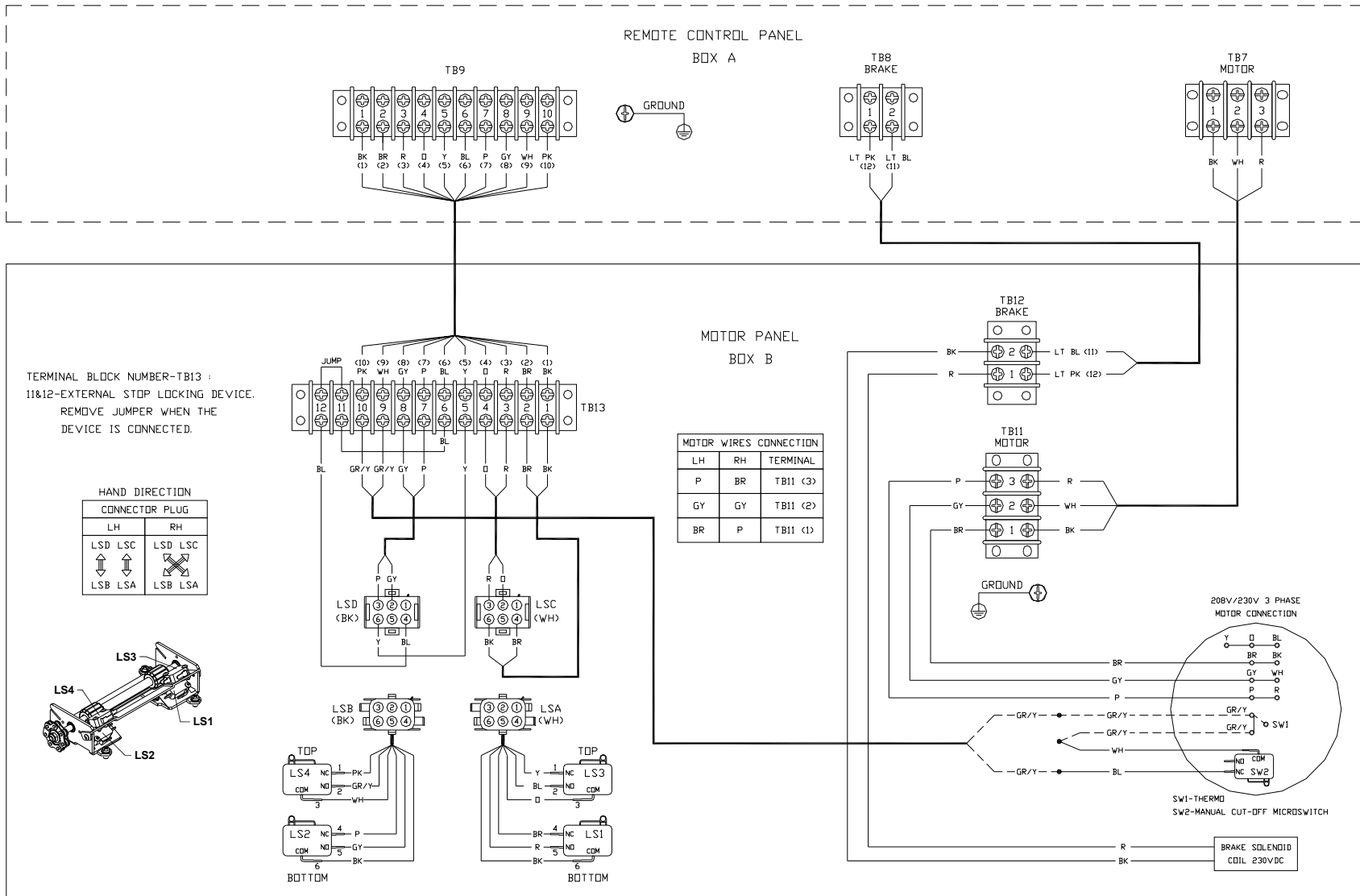


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High-Performance Operator
 208V/230V 3 Phase 400 ft.lb./sec
 (For GHG 20023EP)

EMF 311EP B
 400 LB

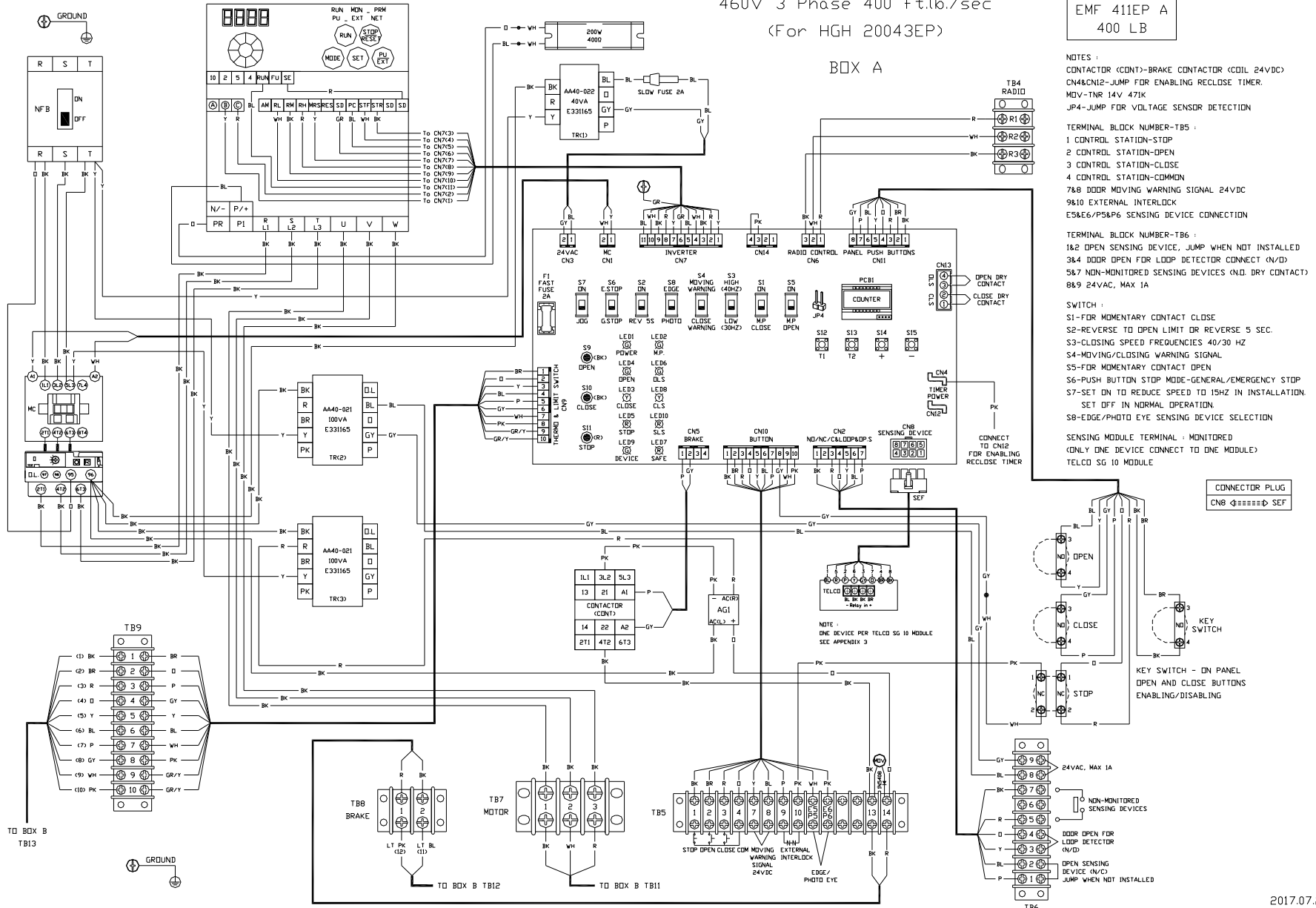
BOX B



2017.07.25

High-Performance Operator
 460V 3 Phase 400 ft.lb./sec
 (For GHG 20043EP)

EMF 411EP A
 400 LB



BOX A

- NOTES :
- CONTACTOR (CNT)-BRAKE CONTACTOR (COIL 24VDC)
 - CN4&CN12-JUMP FOR ENABLING RECLOSE TIMER.
 - MOV-TNR 14V 47K
 - JP4-JUMP FOR VOLTAGE SENSOR DETECTION
- TERMINAL BLOCK NUMBER-TB5 :
- 1 CONTROL STATION-STOP
 - 2 CONTROL STATION-OPEN
 - 3 CONTROL STATION-CLOSE
 - 4 CONTROL STATION-COMMON
- 7&8 DDDR MOVING WARNING SIGNAL 24VDC
 9&10 EXTERNAL INTERLOCK
 ES&E6/P5&P6 SENSING DEVICE CONNECTION
- TERMINAL BLOCK NUMBER-TB6 :
- 1&2 OPEN SENSING DEVICE, JUMP WHEN NOT INSTALLED
 - 3&4 DDDR OPEN FOR LOOP DETECTOR CONNECT (N/D)
 - 5&7 NON-MONITORED SENSING DEVICES (N.D. DRY CONTACT)
 - 8&9 24VAC, MAX 1A
- SWITCH :
- S1-FOR MOMENTARY CONTACT CLOSE
 - S2-REVERSE TO OPEN LIMIT OR REVERSE 5 SEC.
 - S3-CLOSING SPEED FREQUENCIES 40/30 HZ
 - S4-MOVING/CLOSING WARNING SIGNAL
 - S5-FOR MOMENTARY CONTACT OPEN
 - S6-PUSH BUTTON STOP MODE-GENERAL/EMERGENCY STOP
 - S7-SET ON TO REDUCE SPEED TO 15HZ IN INSTALLATION.
 - SET OFF IN NORMAL OPERATION.
 - S8-EDGE/PHOTO EYE SENSING DEVICE SELECTION
- SENSING MODULE TERMINAL : MONITORED
 (ONLY ONE DEVICE CONNECT TO ONE MODULE)
 TELCD SG 10 MODULE

CONNECTOR PLUG
 CNB ⚡====⇒ SEF

TO BOX B
 TB13

TB8
 BRAKE

TB7
 MOTOR

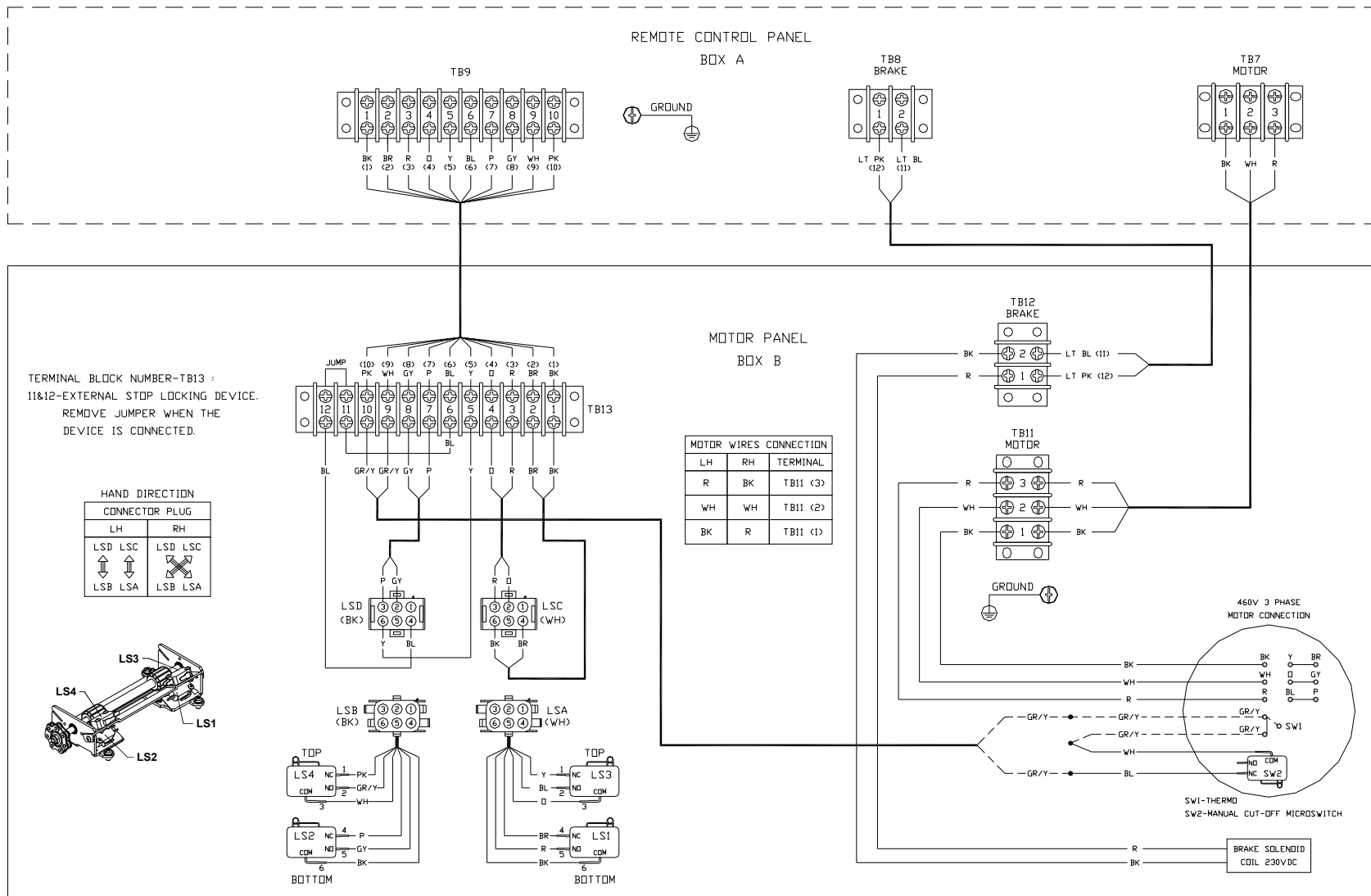
TO BOX B TB12

TO BOX B TB11

High-Performance Operator
460V 3 Phase 400 ft.lb./sec
(For GHG 20043EP)

EMF 411EP B
400 LB

BOX B



Reference

HGH series terminal connections

TB5

1	2	3	4	7	8	9	10	E5	E6
Control Station				Door moving warning signal 24VDC		External Interlock		P5	P6
Stop	Open	Close	Common			Jump when no external interlock is connected.		ELR sensing device or Photo eyes (IR) sensing device connection (Use switch S8 to select)	

- ❖ Control panel is wired with momentary pressure open and constant pressure close. With switching S1 on, the push button will be momentary pressure open and close. With switching S1 off, the radio control and time to close will **NOT** be functional.
- ❖ 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.

TB6

1	2	3	4	5	6	7	8	9
Open sensing device (N/C)		Loop Detector Connection		5 & 7 Non Monitored Sensing Devices (N.O. Dry Contact)			Power output 24 VAC/1A Max.	

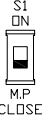
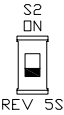


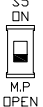



- ❖ Remove Jumper on 1&2 when opening sensing device is installed. Door stopped when open sensing device is activated. NOTE: Open sensing devices are mandatory on grilles with optional high-speed operation.
- ❖ Door opens when loop detector is activated.
- ❖ 24 VAC power supply on 8&9 limited to max. 1A.

TB13

1	2	3	4	5	6	7	8	9	10	11	12
Connect to Box A TB9 (1~10)										For external stop locking device. (N/C)	

Remove jumper on 11&12 when the device is connected.

Switch Indication:

	S1: For momentary contact close and reclose timer		S2: For sensing edge to reverse		S3: Frequency switch (30Hz/40Hz)		S4: Moving/Closing warning signal
	S5: For momentary contact open		S6: Push button stop mode		S7: For reducing speed to 15Hz		S8: For sensing device selection

Notes for S1 Switch:

1. ON setting will only allow momentary contact close and the reclose timer to close the door if at least one monitored sensing device is connected and functioning properly.

Notes for S2 Switch:

1. REV sets door to reverse to open limit.
2. REV 5'S sets door to reverse 5 seconds.

Notes for S3 Switch:

1. 40Hz setting will make the closing speed 2/3 of the opening speed (closing speed will be 8" per second if opening speed is 12" per second with normal speed operation).
2. 30Hz setting will make the closing speed 1/2 of the opening speed (closing speed will be 12" per second if opening speed is 24" per second with high speed operation).

Notes for S4 Switch:

1. MOVING WARNING setting for door moving warning signal, both open and close.
2. CLOSE WARNING setting for door closing warning signal, only close.

Notes for S5 Switch:

1. ON setting will allow momentary contact open.
2. M.P. OPEN setting will allow constant contact open.

Notes for S6 Switch:

1. G STOP setting for door general stop when pushing stop button.
2. E STOP setting for door emergency stop when pushing stop button.

Notes for S7 Switch:

1. ON setting will reduce speed to 15Hz.
2. OFF setting is in normal operation.

Notes for S8 Switch:

1. EDGE setting for ELR sensing device connection.
2. PHOTO setting for photo eyes sensing device connection.

IMPORTANT SAFETY INSTRUCTIONS

NOTE: Most high-performance doors do not have counterbalance springs. Releasing the brake on the motor operator, or removing any part of the motor operator drive system, can cause the curtain to uncoil and free-fall if open.



Releasing the brake or removing any part of the motor drive system could result in **curtain to free-fall** and cause death or serious injury.

WARNING

Do NOT release the brake or remove any part of the motor drive system unless the curtain is closed, or secured to prevent uncoiling and closing if open.

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

1. **READ AND FOLLOW ALL INSTRUCTIONS.**
2. Never let children operate or play with door controls. Keep the remote control (when 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 sensing devices at least once a month. Also test sensing devices after making any adjustments to the close limit. Failure to adjust the operator properly may cause death or serious injury. (Doors with optional high-speed operation have sensing devices at the top and the bottom of the door.)
5. **KEEP DOORS PROPERLY OPERATING.** See door manufacturer's Operation and Maintenance Instructions. An improperly operating door could cause death or serious injury. Have trained door systems technicians make all necessary adjustments and repairs.
6. **SAVE THESE INSTRUCTIONS.**

OPERATING INSTRUCTIONS

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. With constant pressure close operation, removing pressure from the “CLOSE” button will also 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. With constant pressure close operation, removing pressure from the “CLOSE” key position will cause the door to stop.
3. Door may also be operated by remote devices.

IMPORTANT NOTE: If one or more monitored sensing devices are installed, and determined by the operator to be not functioning properly, the door will either stay open, or re-open if closing. If this occurs, contact a trained door systems technician to make repairs. Until repairs can be made, the door can be opened and closed from the 3-button or key switch control station, but will require constant pressure on the close control to close the door.

EMERGENCY MANUAL OPERATION

This operator has provisions for manually operating the door in case of emergency or power failure. This operator is equipped with an auxiliary chain hoist.

To operate the auxiliary chain 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.



WARNING

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.



Disconnect power supply to the operator before servicing.

WARNING

Check the following items at the intervals listed:

CHECK LIST	DESCRIPTION	EVERY 3 MONTHS	EVERY 6 MONTHS	EVERY 24 MONTHS
Drive Chain	Check for excessive slack. Check & adjust as required Lubricate.	●		
Drive Chain	Replace roller chain and connecting links			●
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.

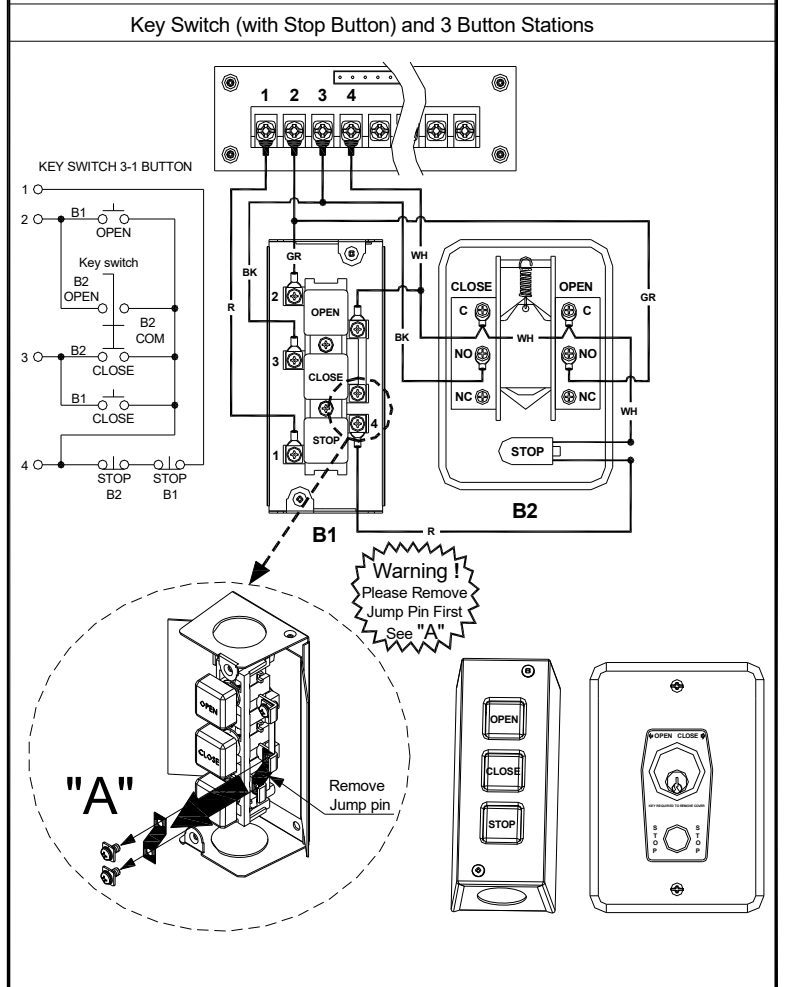
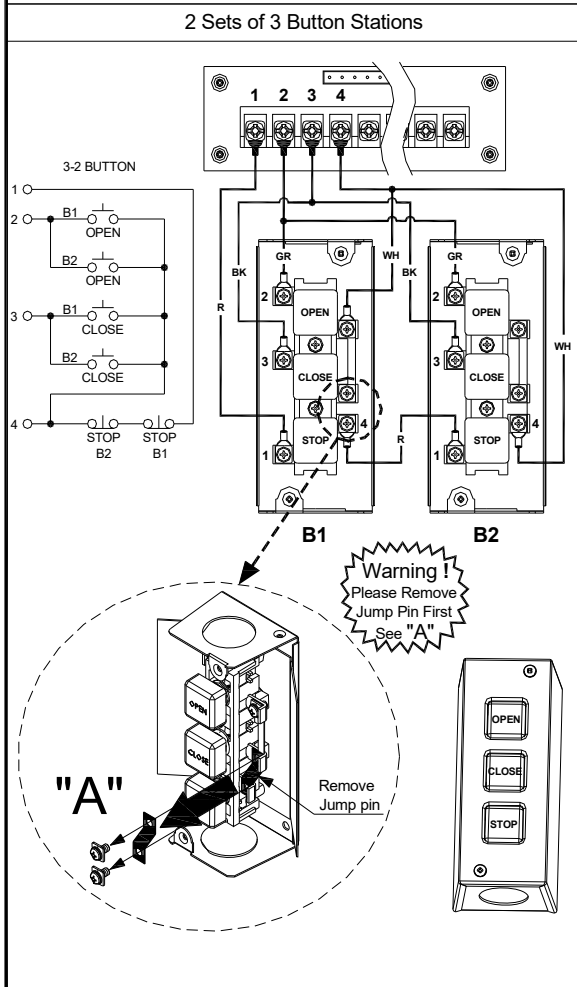
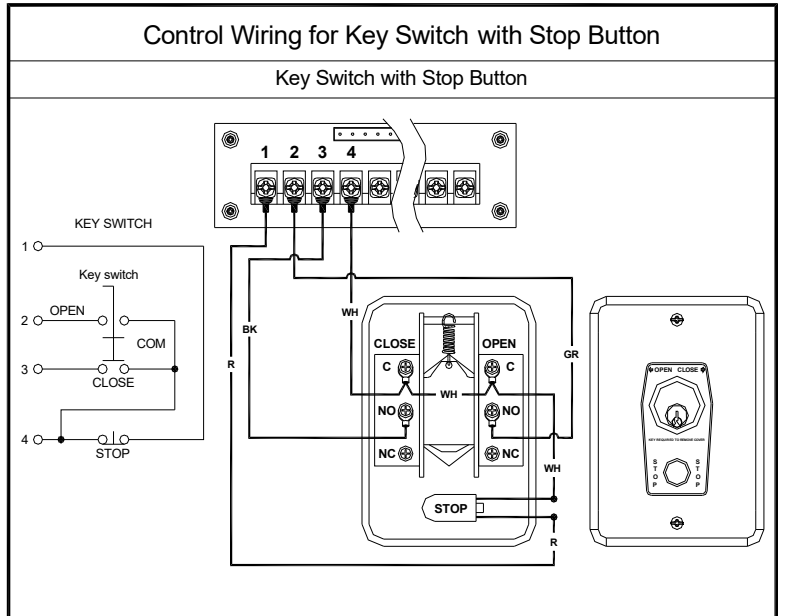
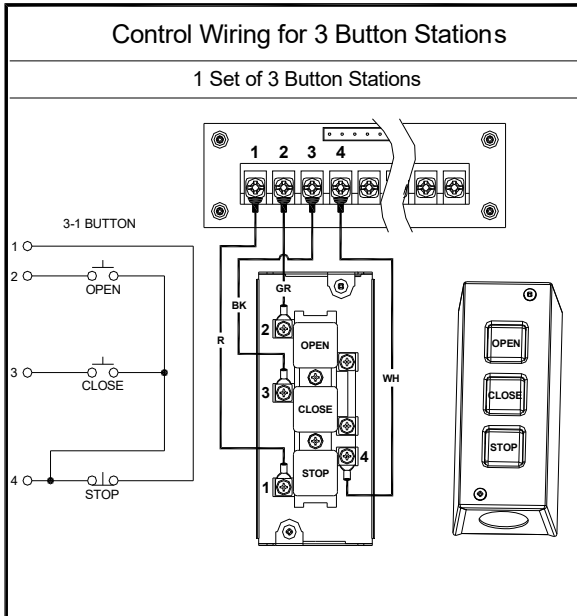
U.S. GEAR

Covered under US Pat. #6,055,885, #6,900,602 and additional patents pending.

APPENDIX 1

Control Connections Diagrams

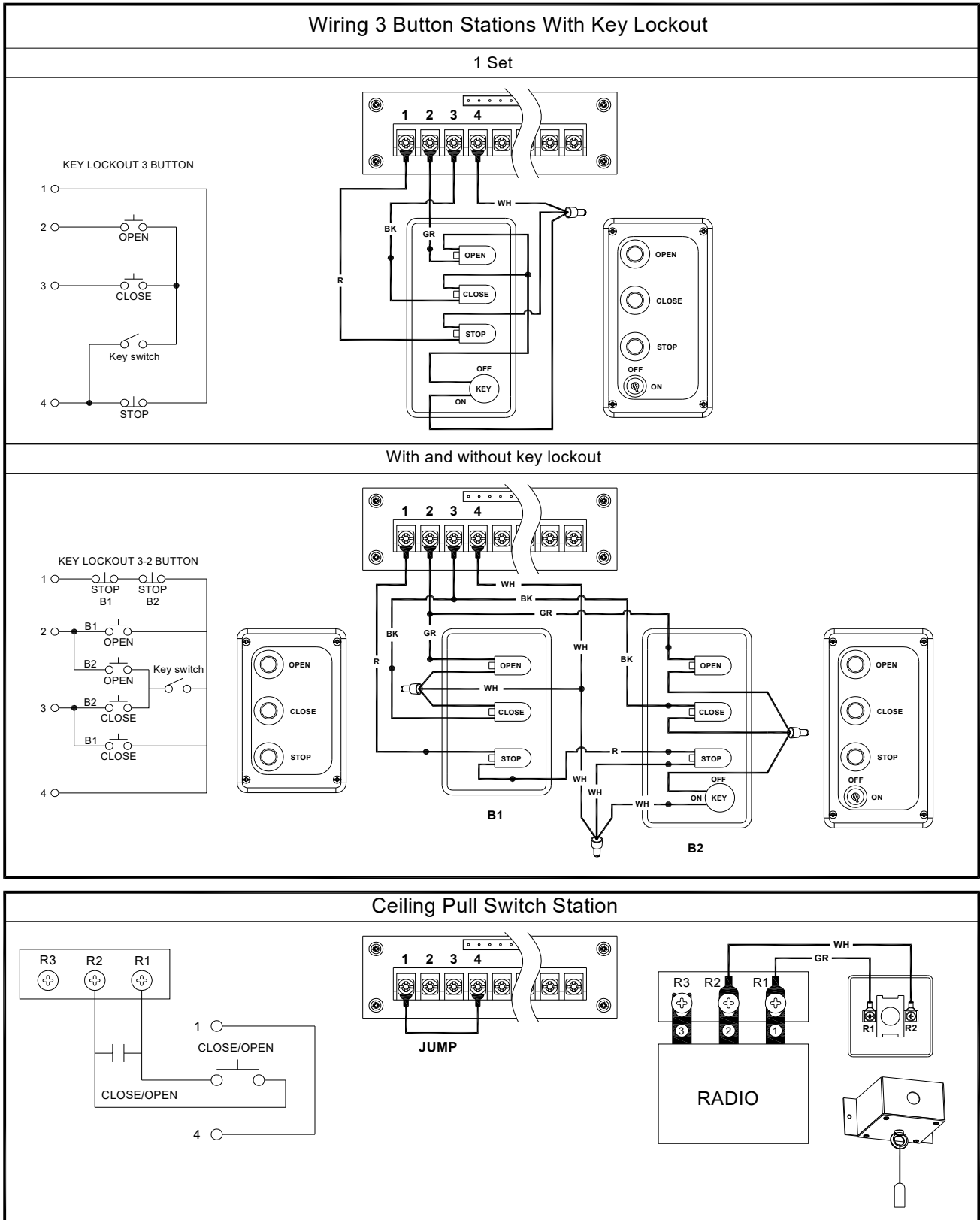
CCD-PCB-A01



APPENDIX 2

Control Connections Diagrams

CCD-PCB-B02

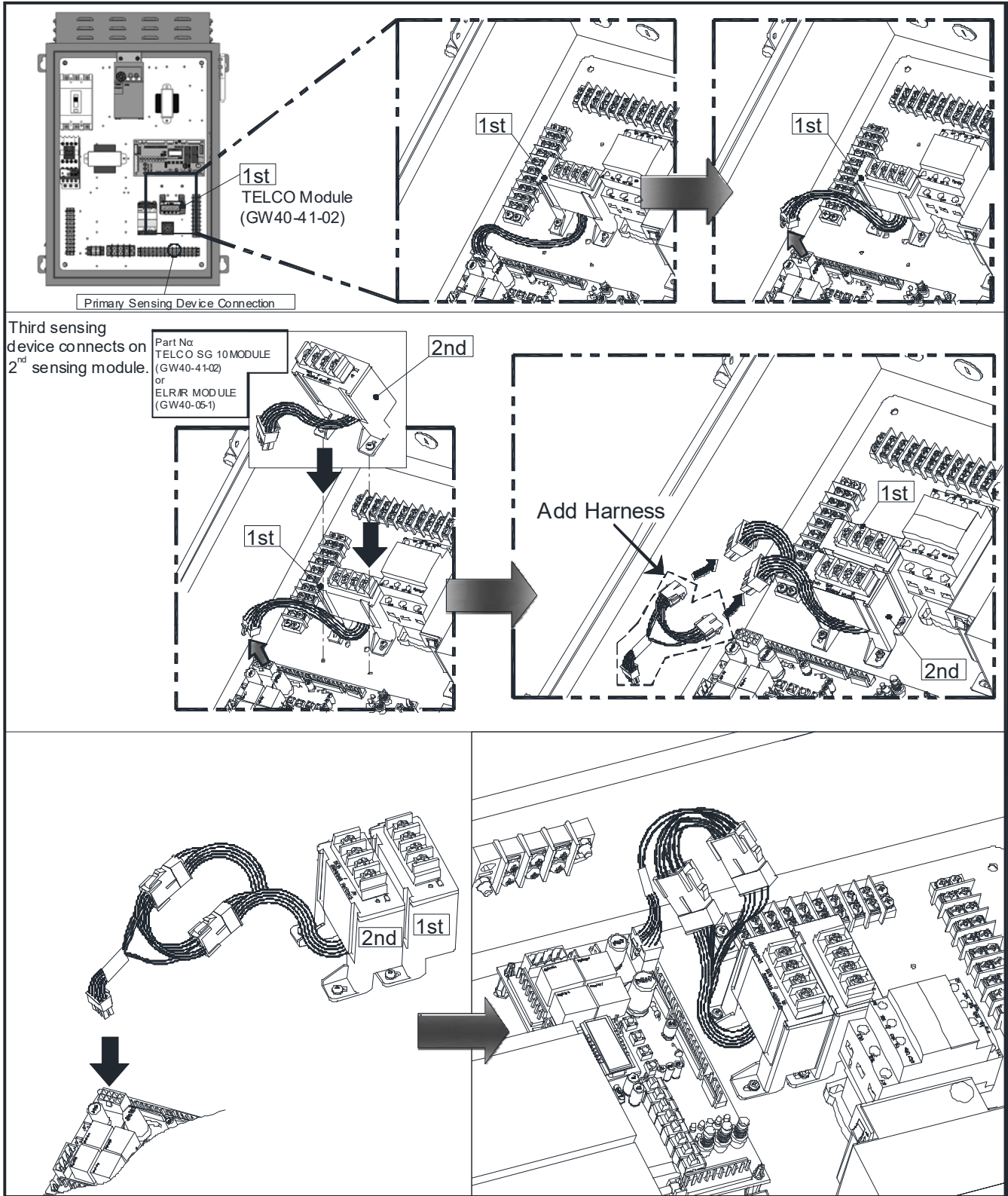


APPENDIX 3

Multiple Devices Adapter with 3rd Sensing Device Instructions

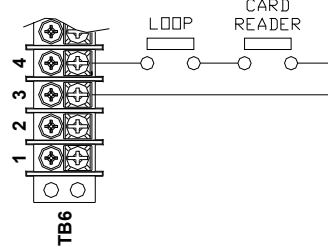
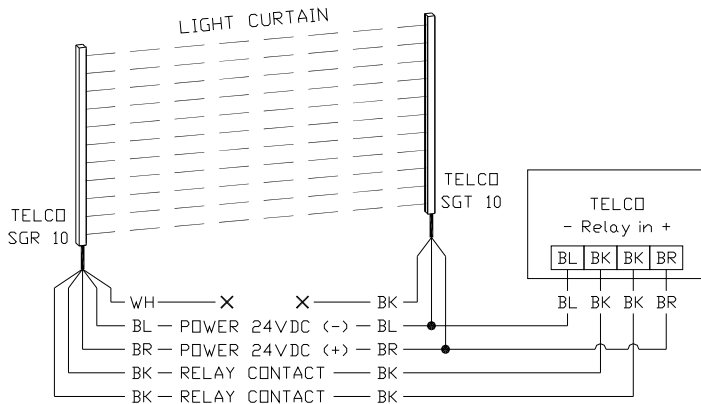
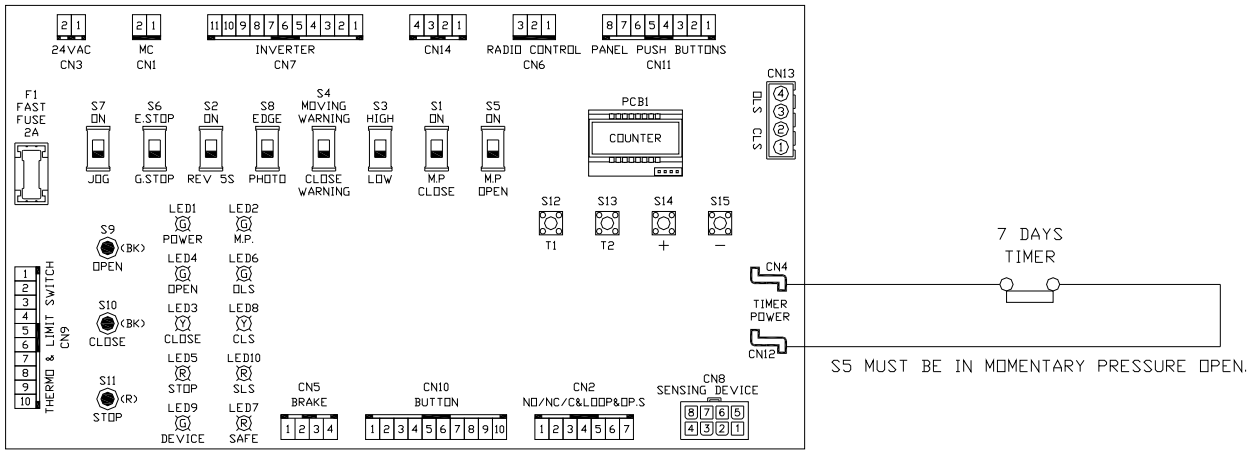
Warning: Power OFF When Connecting.

QST-HGH-ADAPTER-11

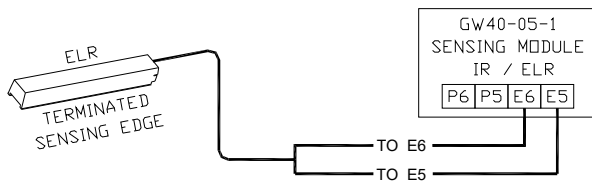


APPENDIX 4

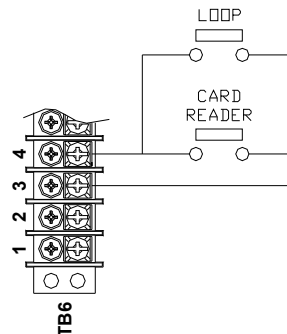
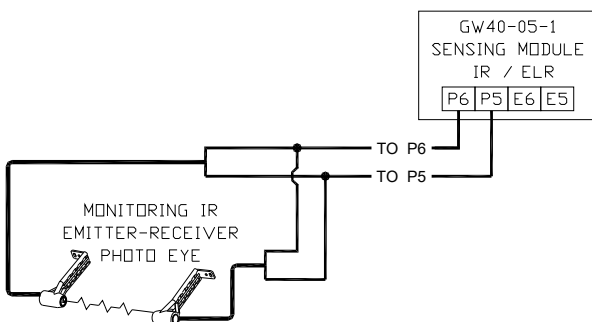
ELR, MONITORING IR, LIGHT CURTAIN, CARD READER AND LOOP DETECTOR CONNECTION ON HIGH-PERFORMANCE OPERATOR



OR

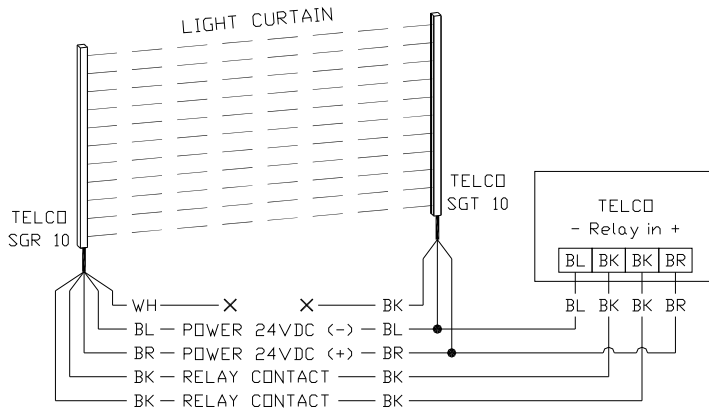
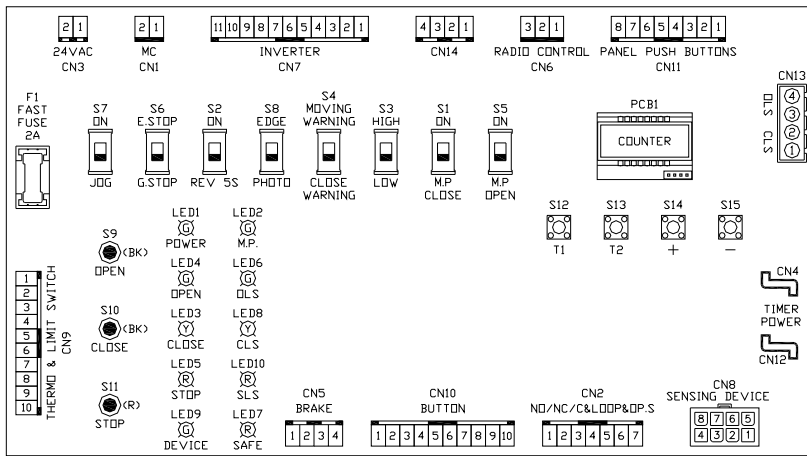


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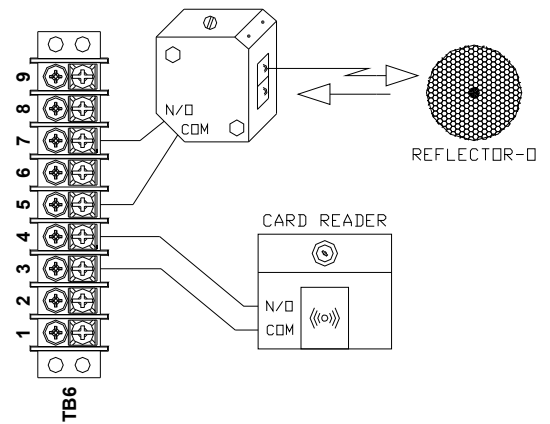


APPENDIX 5

ELR, MONITORING IR, LIGHT CURTAIN, N/O TYPE IR, CARD READER AND LOOP DETECTOR CONNECTION ON HIGH-PERFORMANCE OPERATOR

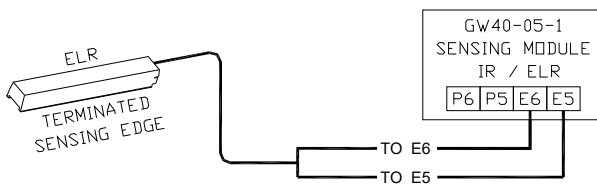
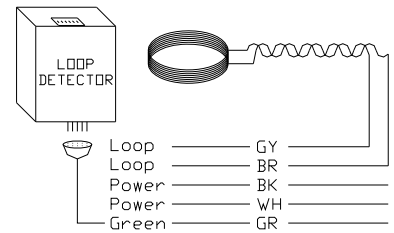


N/O TYPE IR (DRY CONTACT) - REFLECTIVE

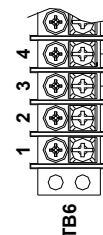
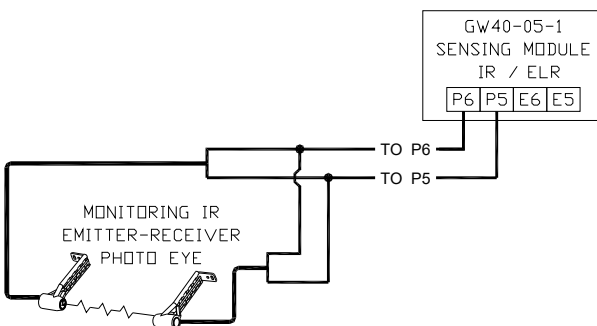


OR

LOOP DETECTOR CONNECTIONS - USING DETECTOR TO OPEN



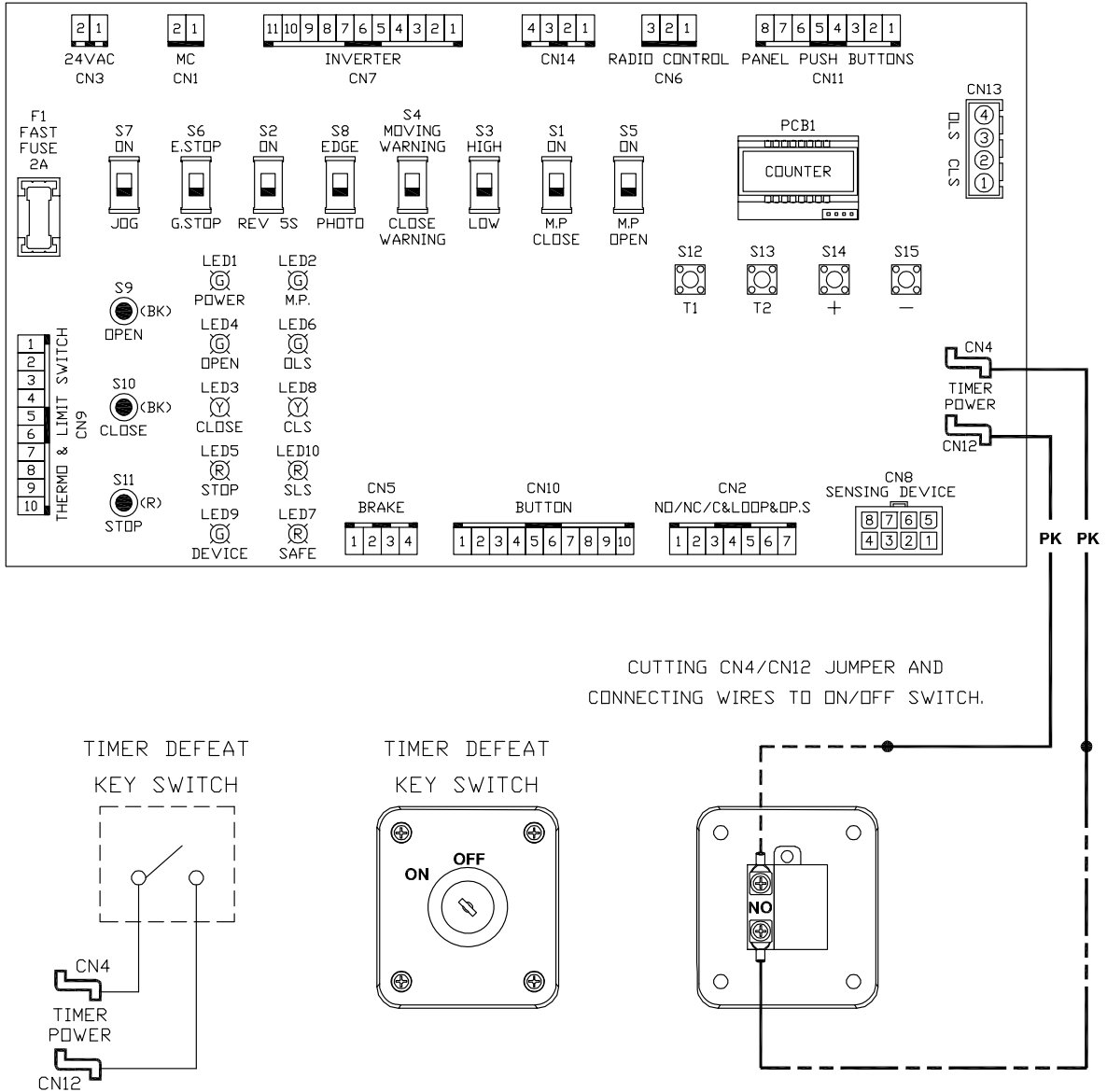
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APPENDIX 6

EXTERNAL TIMER DEFEAT SWITCH CONNECTION-HGH BOARD

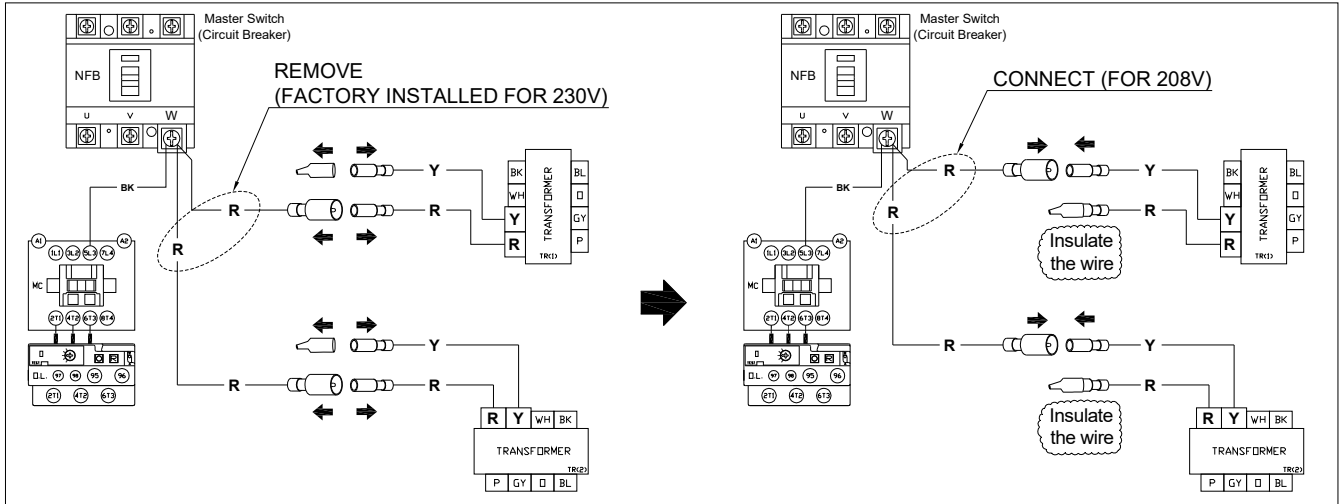
ETDS-HGH002



APPENDIX 7

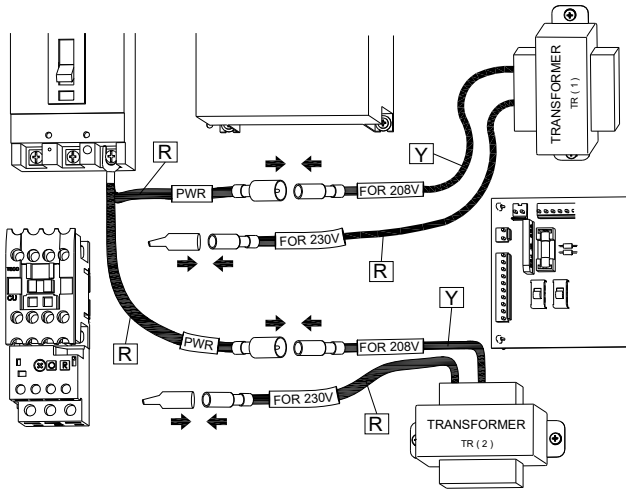
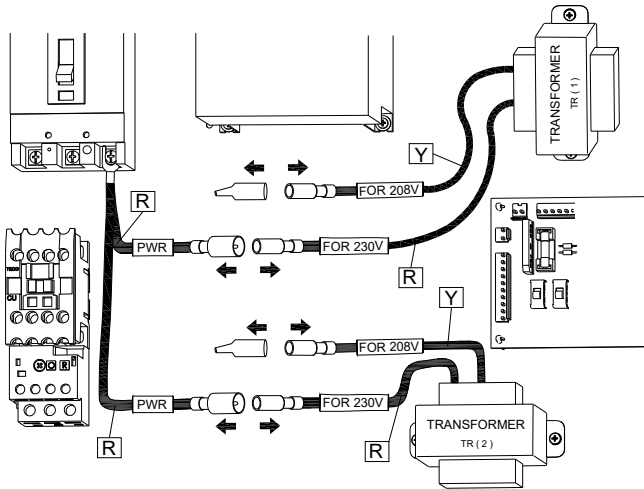
Wiring Change Instruction from 230V to 208V 3 Phase Operator HGH Series

HGH-3P-V03



1. Unplug the red "230V" wire connector from the red "PWR" wire connector.
Remove the insulating cap from the yellow "208V" wire connector.

2. Put the insulating cap on the red "230V" wire connector.
Plug the yellow "208V" wire connector into the red "PWR" wire connector.



3. Completed.

