CORNELLCOOKSON

The door to building excellence.®

INSTALLATION INSTRUCTIONS

AND

OPERATION MANUAL

AlarmGard® Fire Door Operator

FST-1511EP / FST-5011EP

(v12)

CONTENTS

IMPORTANT INSTALLATION INSTRUCTIONS

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

1. READ AND FOLLOW ALL INSTALLATION INSTRUCTIONS.

   WARNING! – Components under **extreme spring tension** can cause death or serious injury.

2. CAUTION: Review all installation instructions, procedures, cautions and warnings contained within this manual prior to installing and/or servicing this product. As with all releasing device systems, maximum fire protection is provided when installed in accordance with factory specifications.

3. Installation and testing to factory specifications shall be performed by factory authorized personnel for proper operation in accordance with all of the latest National fire Protection Association (NFPA), National electrical Code (NEC), Canadian Electrical Code (CEC), local, state, county, district and/or other applicable building and fire standards, guidelines, regulations and codes including, but not limited to, all appendices and amendments and the requirements of the local authority having jurisdiction (AHJ).

4. To be performed by factory authorized personnel only.

5. Clear fire door opening and prohibit all traffic through door opening during testing of system!

6. The door might be under extreme spring tension. Have qualified door technician make all necessary adjustments and repairs to the operator.

7. The operator must be installed by qualified door mechanics using proper tools and equipment.

8. Install only on a properly operating and balanced door. A door that is operating improperly could cause death or serious injury. Trained door systems technicians make all necessary adjustments and repairs to the door before installing the operator.

   Note: Fire door spring tension must be adjusted per the manufacturer's installation instructions to allow for automatic closing during a drop test, fusible link/alarm activation and/or power failure (Power failure condition only applies to operators capable of fail-safe closing).

9. Remove all pull ropes.

10. Unless the door operator includes an internal lock sensing system, or 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.

11. 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.

12. Do not connect the door operator to the source of power until instructed to do so.

13. 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.

14. Install the Entrapment Warning Placard next to the control station in a prominent location.

15. 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.

16. If a building will be using a backup generator to operate the door at any time, backup generator phasing **must** match normal permanent power phasing of the building. It is critical that this is verified by contractor and subcontractor.
    Failure to do so may cause damage to the door and cause the door not to close in the event of a fire alarm, if fire alarm is applicable.

17. Read and understand the wiring diagram of the operator and the control station and any other equipment to be connected to the operator.

18. Always disconnect power whenever installing or servicing the door operator or door.

19. All wiring must be permanent and comply with National Electrical Code (NEC) and local code requirements.

20. 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.

21. For products having a manual release, instruct the end user on the operation of the manual release.

SYSTEM DESCRIPTION

This device is a motorized mechanism. It is designed for use on fire doors. Inside the device, contact relays receive the alarm signal from the fire alarm control panel. When the device receives the signal, the device releases door and the door closes by gravity. The alarm signal can be a Form C dry contact. The release has a 10 second delay on alarm, 24VDC power output of alarm warning and 24VDC power output for warning prior to and during door closing.

SPECIFICATIONS

MOTOR					
Duty Cycle:	Restricted cycle duty (10 cycles per hour)				
Horsepower:	FST-1511: 50 ft.lb/sec per motor, FST-5011: 150 ft.lb/sec per motor				
Speed:	1560 RPM				
Voltage:	115V, 1 phase				
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:	Electronic limit switch type, limits setting through the 3-button station. The OPEN, CLOSE and STOP buttons on main board can be used for setting limits, when key switch is being used without a STOP button.				
MECHANICAL					
Drive Reduction:	FST6-1511	FST6-5011	FST8-5011	FST13-5011	FST44-5011
	56:1	60:1	88:1	113:1	144:1
Output Shaft Speed:	28 RPM	26 RPM	18 RPM	14 RPM	11 RPM
Door Speed:	6 - 8” per sec. average (typical)				
Brake:	Solenoid actuated brake				
ENTRAPMENT PROTECTION					
Sensing Edge*:	(Optional) Sensing device attached to the bottom edge of the door.				
Non-Contact Device*:	(Optional) Photo eye device.				

*** 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.**

*Notes:

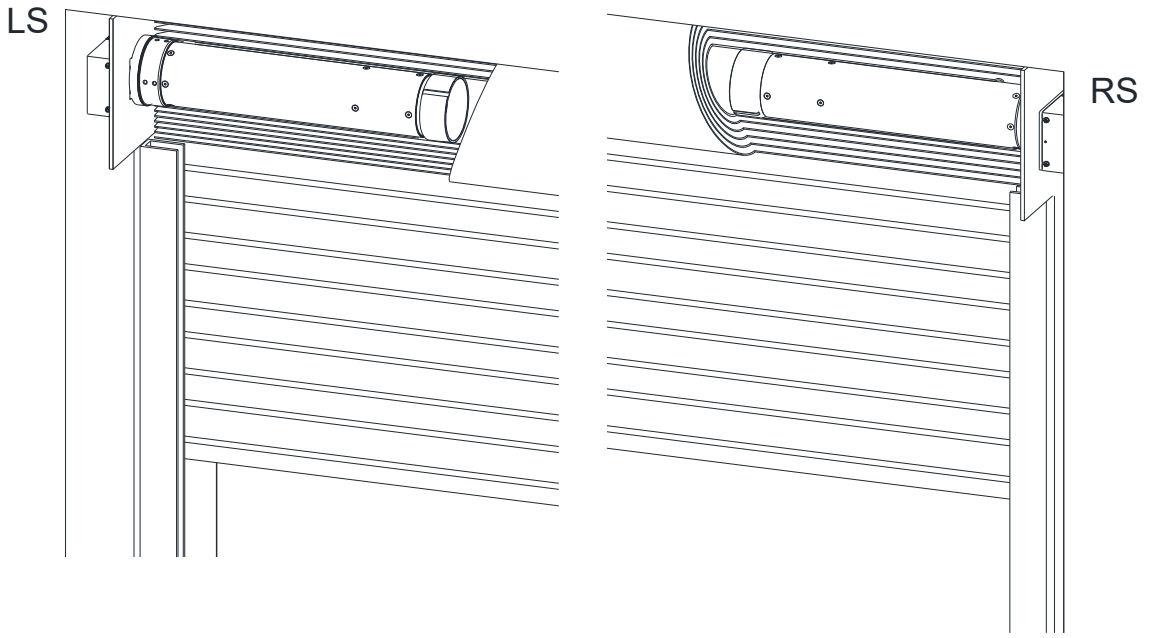
1. Non-contact sensing device (photo eye) can be used on door width up to the maximum rated range of device. Refer to the entrapment device options table in the chapter of entrapment devices wiring.
2. Sensing edge can be used on all doors without size restriction.
3. 115V input power can be from any source including normal building current.
4. 18-gauge wire recommended for all control signals.
5. For “Indoor Dry” location use only.

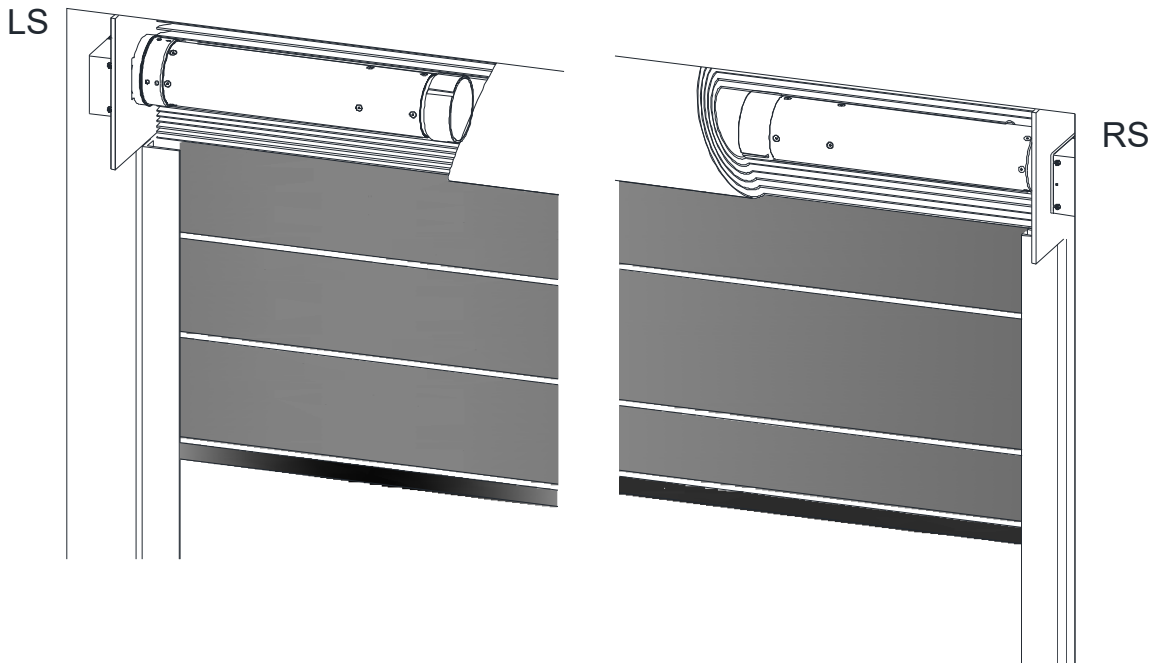
TYPES AND SIZES OF DOORS

Consult factory for details.

INSTALLATION INSTRUCTIONS

OPERATOR MOUNTING POSITIONS



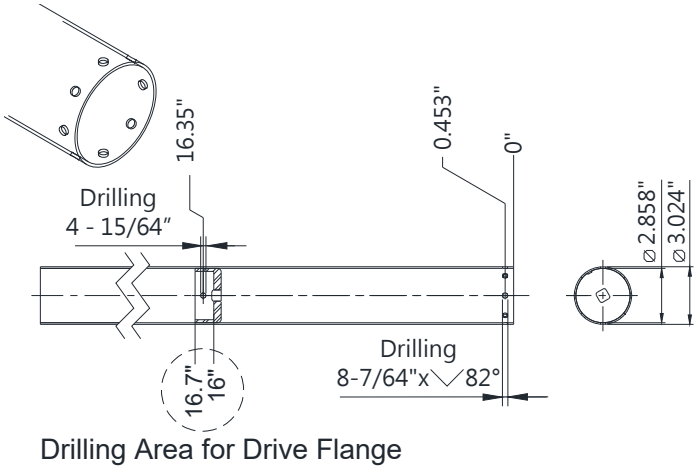


NOTE: Any change in mounting position may result in a change of operator rotation and consequently in a change of control functions. Consult factory for any changes. (LS mounting position is LH operator, RS position is RH operator)

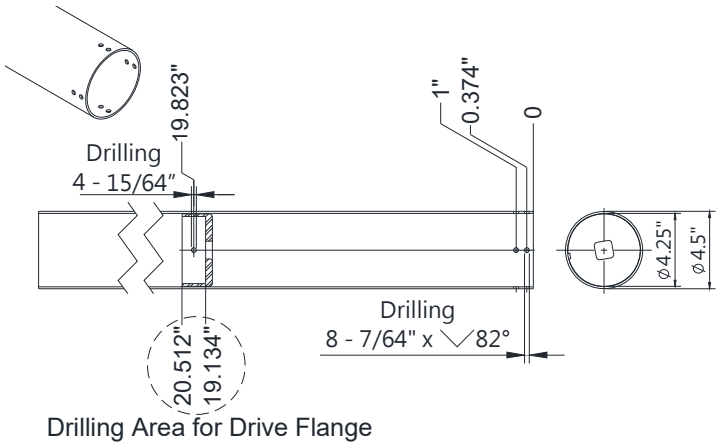
OPERATOR MOUNTING

1. MOTOR MOUNTING TO DOOR PIPE

1.1 Door pipe and mounting holes preparation. (Pipe is not provided with the operator.)

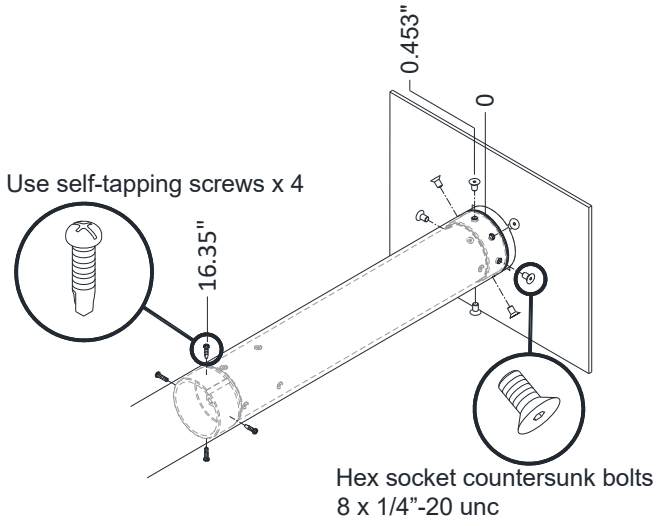


(Figure 1 for FST-1511)

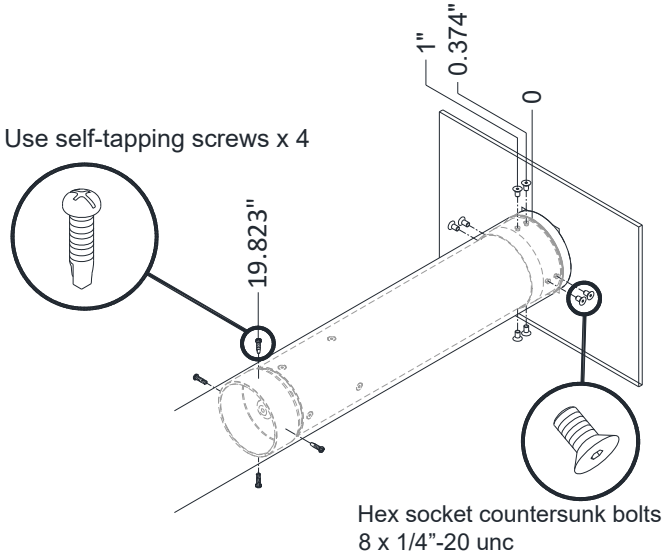


(Figure 2 for FST-5011)

1.2 Pipe end mounting and drive flange mounting illustrations.



(Figure 3 for FST-1511)



(Figure 4 for FST-5011)

2. MOTOR MOUNTING TO BRACKET

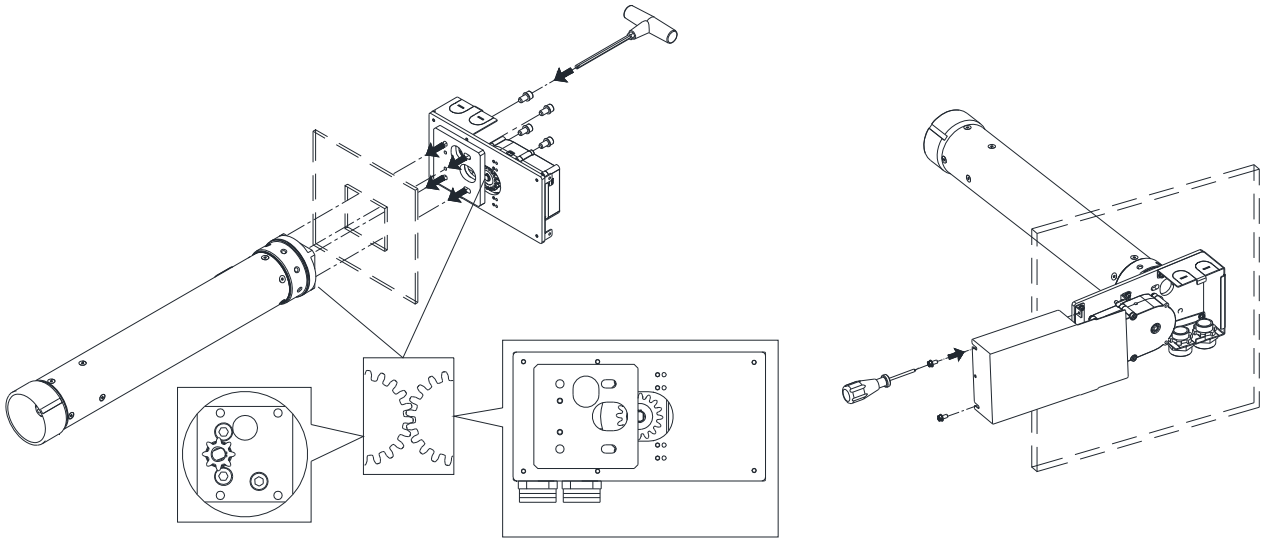
2.1 Before the operator is installed, verify that the door is properly operating and balanced.

2.2 Dismantle the limit switch mechanism before mounting on the bracket if required.

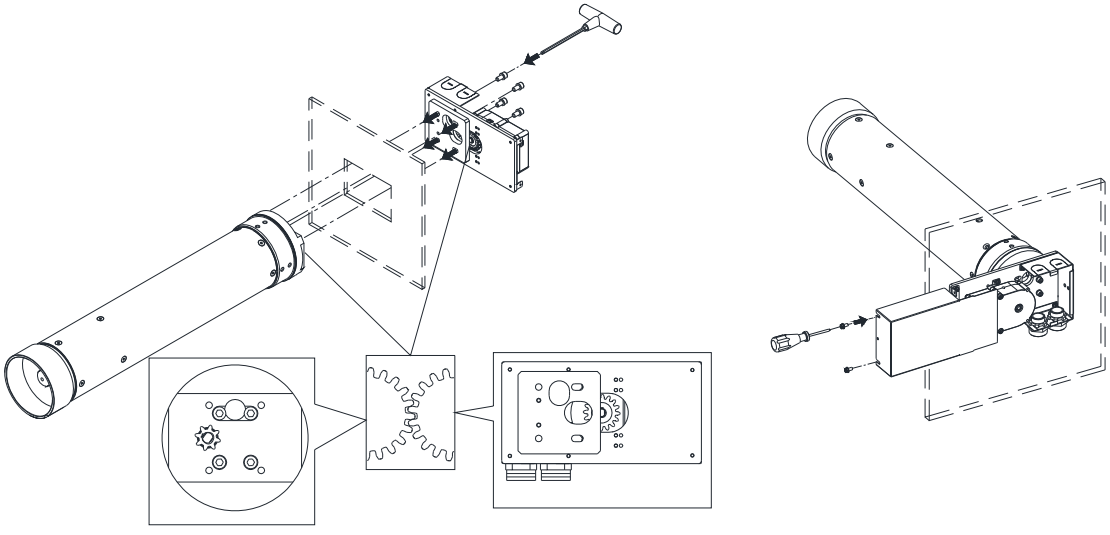
2.3 Make sure the layout of the mounting holes on the bracket is correct.

2.4 Mount the operator to the mounting plate.

2.5 Mounting the limit switch mechanism on operator by fastening screws x 6.



(Figure 1 for FST-1511)



(Figure 2 for FST-5011)

Illustration only, consult door manufacturer for install details.

WIRING INSTRUCTIONS

⚠ WARNING

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

1. ELECTRICAL CONNECTIONS – Installation of all wiring and connections shall be performed in accordance with, but not limited to, the latest NFPA, NEC and CEC standards. In addition, all installations subject to Canadian standards shall be performed in accordance with the Canadian Electrical Code, Part I, with respect to wiring material, wiring gauge related to power capacity requirements and circuit length and wiring methods.

2. Verify voltage rating of power source is compatible with the device.

3. Connect power with min.14 gauge wire and alarm signal with min. 18 gauge wire (not for AC power use) to this device.

4. 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.

5. Do not turn on power until you have finished making all power and control wiring connections.

6. Do not run power and control wiring in the same conduit.

7. Any wire connected to the control panel must be protected by conduit or other means to ensure the safety and permanency of the wiring.

8. Use copper wire inside the control panel.

9. A separate fuse line of adequate capacity is needed for the operator.

10. The operator must be properly grounded. The ground screw, painted green, is located inside the control panel.

11. 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.**
- **Unless the operator includes an internal lock sensing system, or 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

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

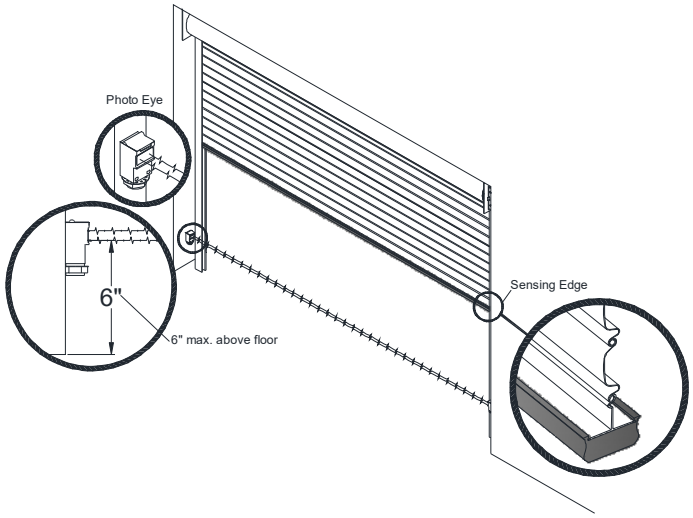
- **Do not use radio controls with your operator unless some type of entrapment protection device has been installed. Failure to do so may result in serious injury or death to person(s) trapped beneath the door.**
- **Changing from left hand to right hand or vice versa could result in change of control 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 sensing edge or non-contact sensing device wiring connections to the operator before making limit switch adjustments.



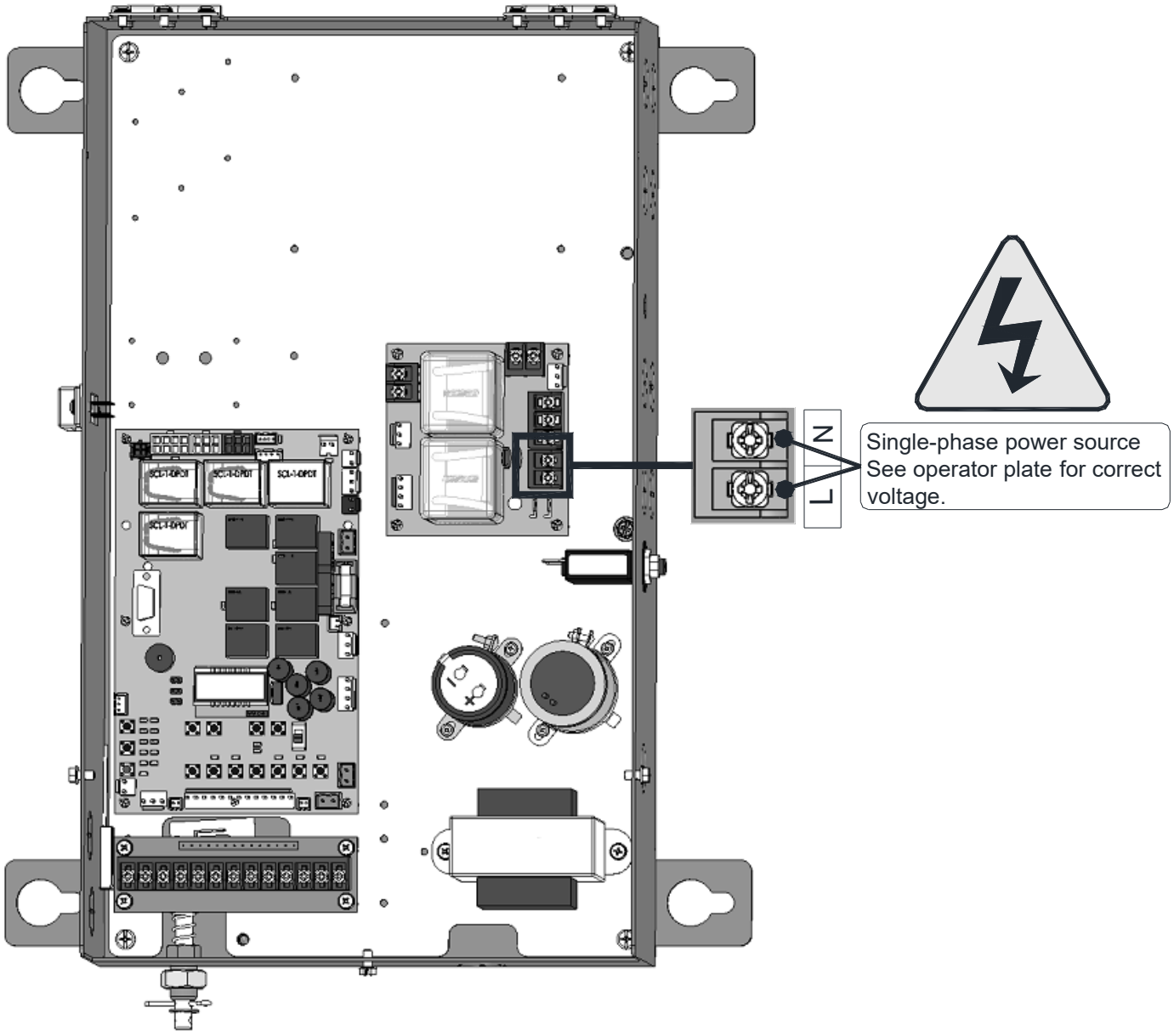
Entrapment Device Options:

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 GmbH	15.25, 25.30, 25.45, 35.55, 35.85, 45.30, 30.70, 45, 65, 85 up to 115
IR Monitored photo eye	CEDES AG	Optical Edge Sensors and Photo Eyes: OPTOEDGE, OPTOEYE, OSE, RAY-N, Ray/RT-2004
	Mars International Inc	1266
	Miller Edge Inc.	IG2, MIRM, OG-T
		RB-D-K10
	EMX Industries Inc	IRB-MON2

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.

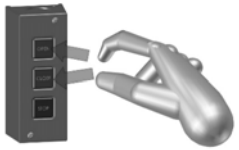
INPUT POWER CONNECTIONS



Door Limit Positions Setting

NOTE: 1. The motor is operable in constant pressure open/close mode with audible warning prior to the limits set.
2. Setting of limits will determine motor direction.

1. Set Up Mode



Enter the Set Up Mode

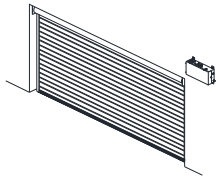
1-1 Press & hold both "Open" & "Close" buttons for 5 secs.
1-2 A beeping sound means entering the setup mode.

★Note:
When a warning sound (B.B.B.B.B.B) be heard after entering the set up mode, **MUST** move the door through OPEN/ CLOSE button to clear this warning sound.

Active the Set Up Mode

1-3 Press "Stop" button for 5 secs as a confirmation and a beeping sound shall be heard.

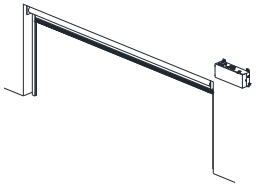
2. Close Limit Position Setting



2-1 Pressing either "Open" or "Close" button to bring door to close limit position.

2-2 Press "Stop" button for 5 secs as a confirmation and a beeping sound shall be heard.
2-3 Close limit position is saved.

3. Open Limit Position Setting



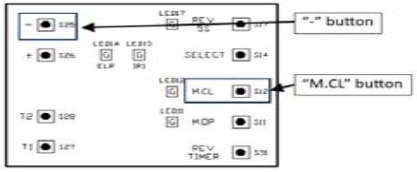
3-1 Pressing either "Open" or "Close" button to bring door to open limit position.

3-2 Press "Stop" button for 5 secs as a confirmation and a beeping sound shall be heard.
3-3 Open limit position is saved.

4. Confirmed Open/Close Limit Position

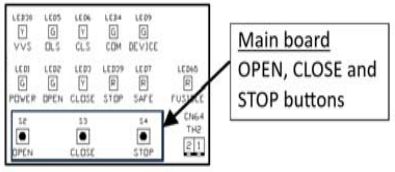
4-1 After the limit positions been set, system will change itself to have "Open" button to open door, and vice versa to "Close" button.
4-2 Run the door to open & close limit positions 2 times to have better self-turning performance.

5. Limit Positions Reset to Factory Default



5-1 Disconnect power.
5-2 Press & hold both "-" & "M.CL" buttons and then power ON the operator. After system booting up completed, the limit positions will be reset to factory default automatically.
LCD shown [ForCE-] means no limits saved, constant pressure operation only.

6. Using Control Buttons on Board for Limits Setting



6-1 The OPEN, CLOSE and STOP buttons on main board can be used for setting limits, when key switch is being used without a STOP button.

★Note: Constant pressure during limit setting mode. Short pressing Stop button will end the setting.
★Note: When open & close limits setting are not completed and the sensing edge is continuously engaged, the door travels max. 3 seconds in both open and close directions.

FST-EP Series
REVISION # 0000
DATE: 02/21/2025

Fine Tuning the Open & Close Limits Positions After Settings

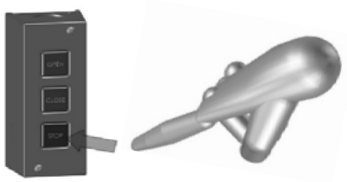
(The fine tuning range should be within 50% of the door height)

1. Enter Open Limit Position Fine Tuning Set Up Mode

Enter the Fine Tuning Set Up Mode

1-1 After door reaching the Open Limit position, press “Open” button for 5 secs.

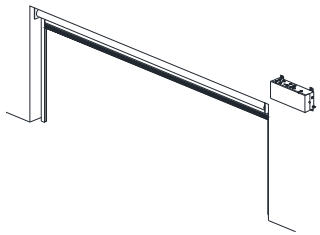
1-2 A beeping sound means entering the fine tuning set up mode.



Active the Fine Tuning Set Up Mode

1-3 Press “Stop” button for 5 secs as a confirmation and a beeping sound shall be heard.

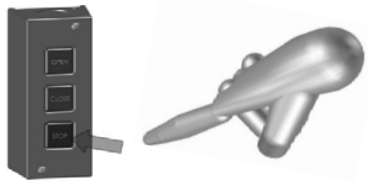
2. Open Limit Position Fine Tuning Setting



2-1 Pressing either “Open” or “Close” button for fine tuning the Open Limit position.

2-2 Bi Bi----Bi Bi----Bi Bi----Bi Bi continuous sound means in the fine tuning set up mode.

★Note: Constant pressure during limit setting mode. Short pressing Stop button will end the setting.



2-4 Press “Stop” button for 5 secs as a confirmation and a beeping sound shall be heard.

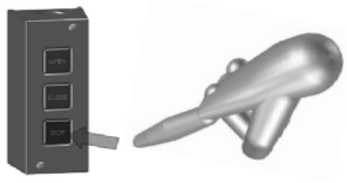
2-5 Open Limit position fine tuning is saved.

3. Enter Close Limit Position Fine Tuning Set Up Mode

Enter the Fine Tuning Set Up Mode

3-1 After door reaching the Close Limit position, press “Close” button for 5 secs.

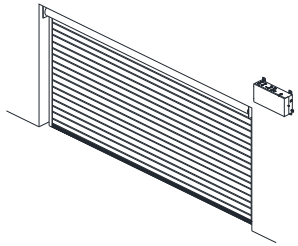
3-2 A beeping sound means entering the fine tuning set up mode.



Active the Fine Tuning Set Up Mode

3-3 Press “Stop” button for 5 secs as a confirmation and a beeping sound shall be heard.

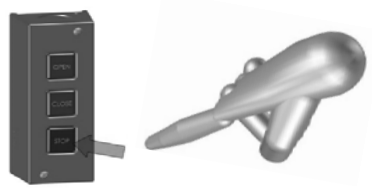
4. Close Limit Position Fine Tuning Setting



4-1 Pressing either “Open” or “Close” button for fine tuning the Close Limit position.

4-2 Bi Bi----Bi Bi----Bi Bi----Bi Bi continuous sound means in the fine tuning set up mode.

★Note: Constant pressure during limit setting mode. Short pressing Stop button will end the setting.



4-3 Press “Stop” button for 5 secs as a confirmation and a beeping sound shall be heard.

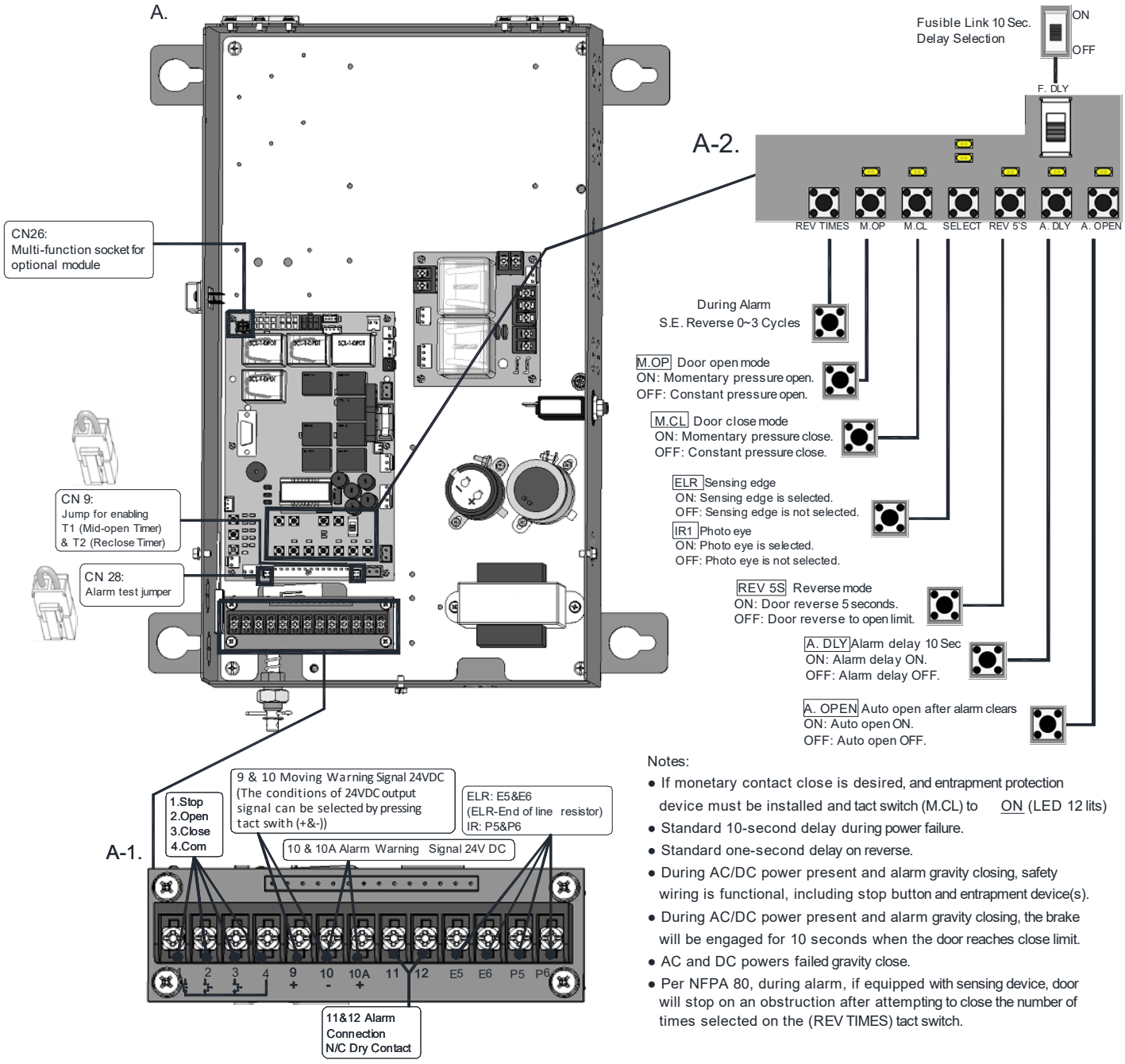
4-4 Close Limit position fine tuning is saved.

Remarks:

- **★ Press Stop button once in any step to end the setting.**
- **★ Setting will be ended after three minutes of inactivity.**

CONTROL SETTINGS

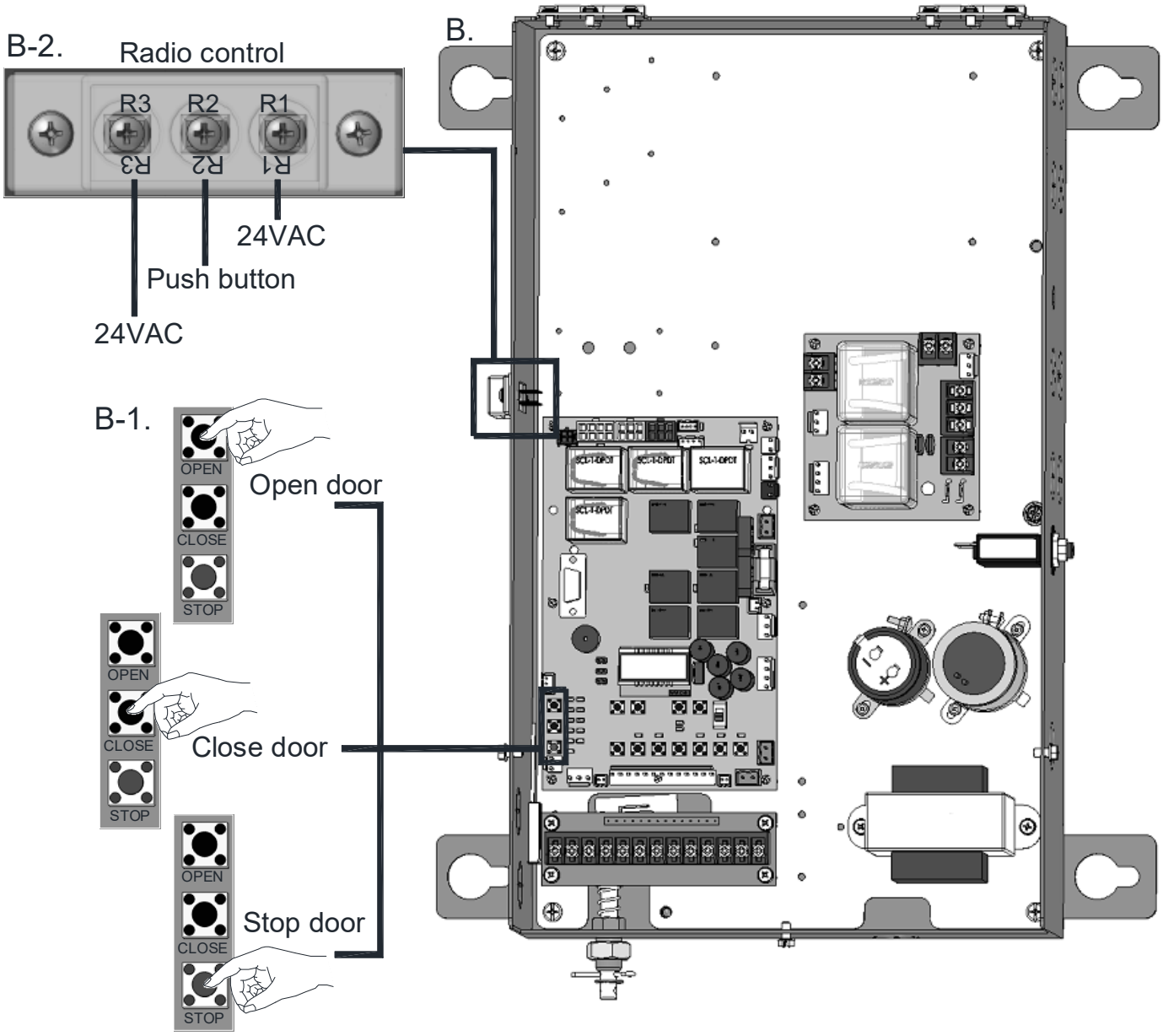
CONTROL FUNCTION



Notes:

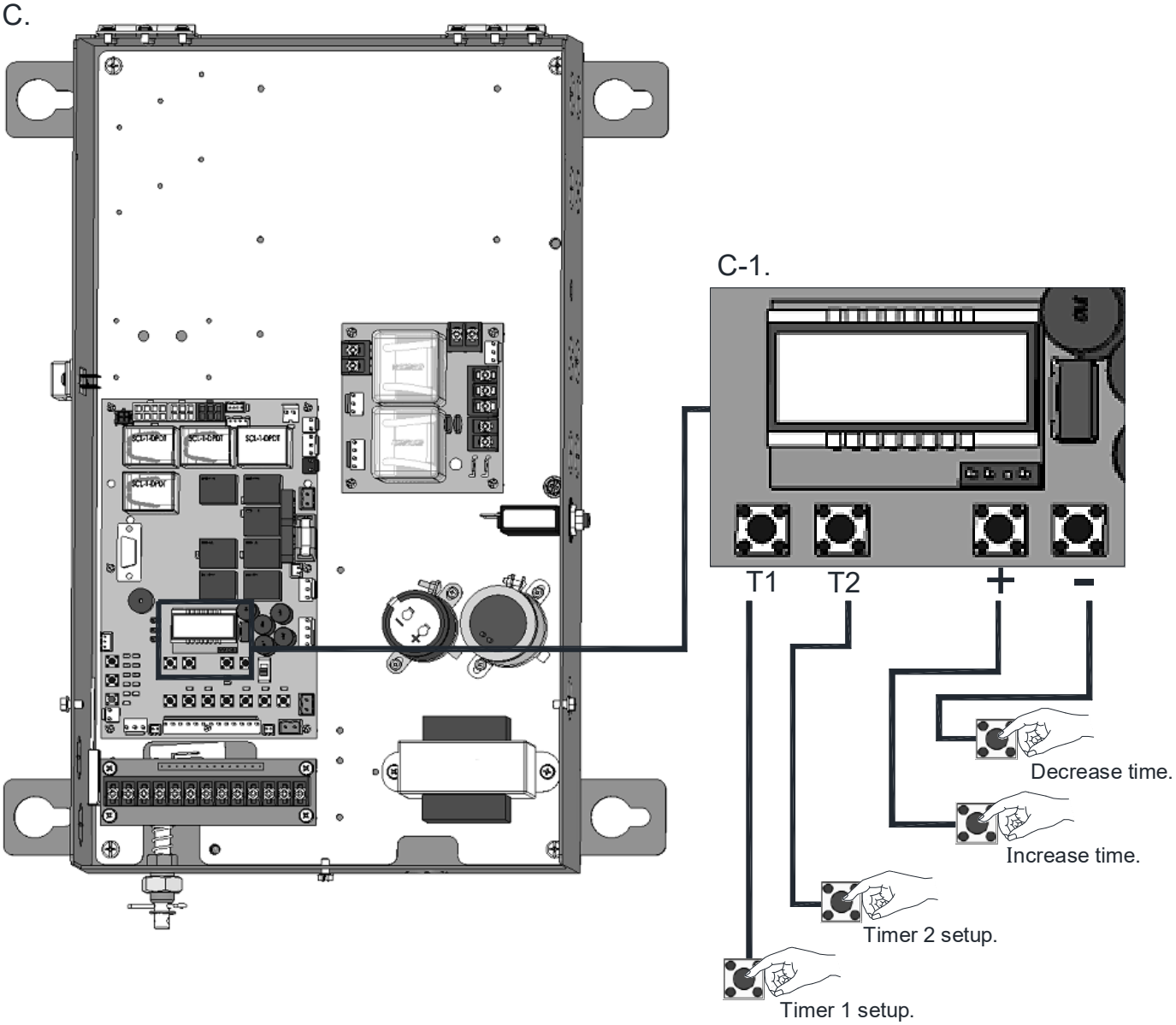
- If monetary contact close is desired, and entrapment protection device must be installed and tact switch (M.CL) to ON (LED 12 lits)
- Standard 10-second delay during power failure.
- Standard one-second delay on reverse.
- During AC/DC power present and alarm gravity closing, safety wiring is functional, including stop button and entrapment device(s).
- During AC/DC power present and alarm gravity closing, the brake will be engaged for 10 seconds when the door reaches close limit.
- AC and DC powers failed gravity close.
- Per NFPA 80, during alarm, if equipped with sensing device, door will stop on an obstruction after attempting to close the number of times selected on the (REV TIMES) tact switch.

AUXILIARY FUNCTION



TIMER INSTRUCTION

C.



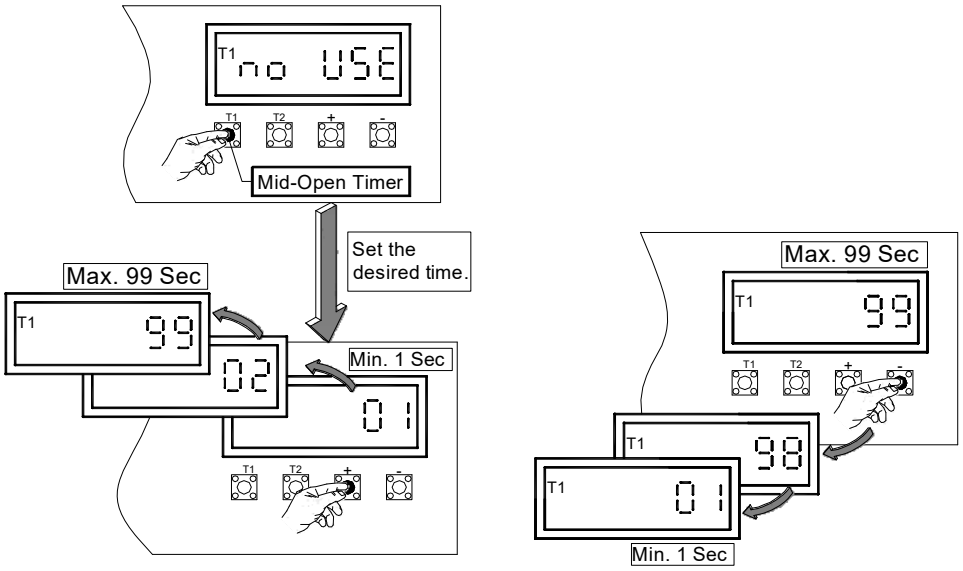
1. Time 1 – Mid-open timer : Timer starts counting when door leaves close limit. Door stops after opening for set time. Pressing open again at mid-open position will cause door to open limit.

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

2. Standard Mode: Cycle counter

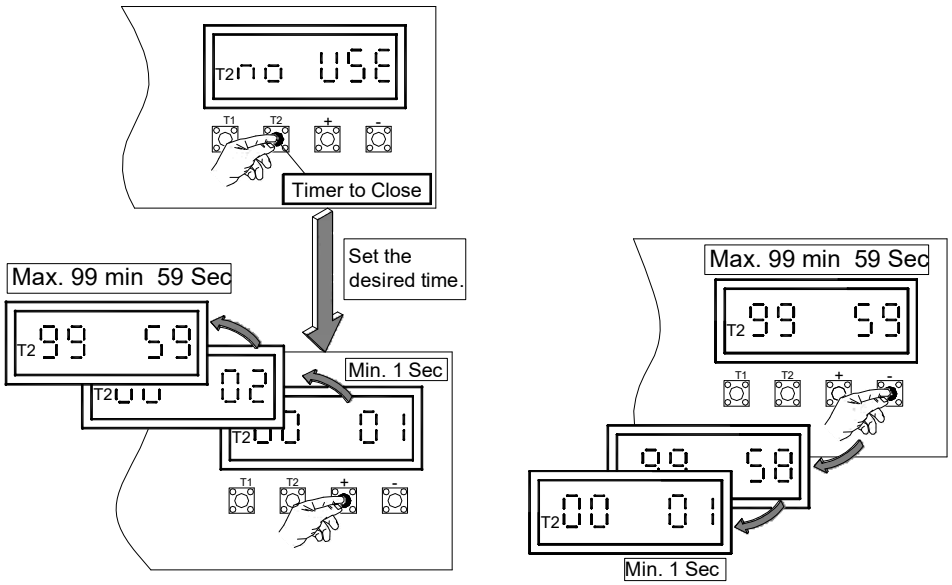
3. To Set Timer 1 (Mid-open Timer)

- Press T1 and hold for 5 seconds. Display will flash.
- Use + or - to increase or to decrease time.
- Press T1 to save setting. Without pressing, no adjustment is saved.



4. To Set Timer 2 (Reclose Timer)

- Press T2 and hold for 5 seconds. Display will flash.
- Use + or - to increase or to decrease time.
- Press T2 to save setting. Without pressing, no adjustment is saved.



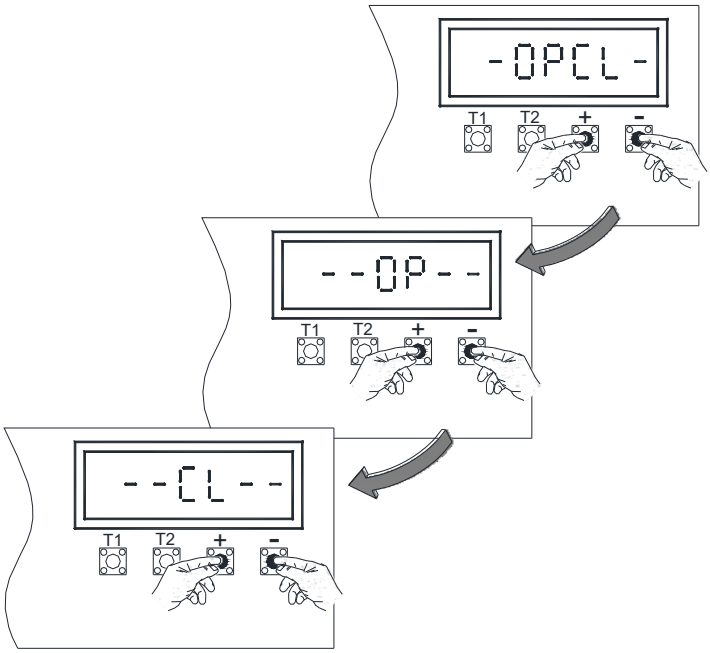
WARNING OUTPUT SIGNAL SELECTION

The conditions of 24VDC output signal at terminal CN2 (9, 10) can be selected by pressing + and -, and hold for 5 seconds.

- - OPCL - (Default setting)
Moving (opening, closing) warning output signal

- - - OP - -
Opening warning output signal

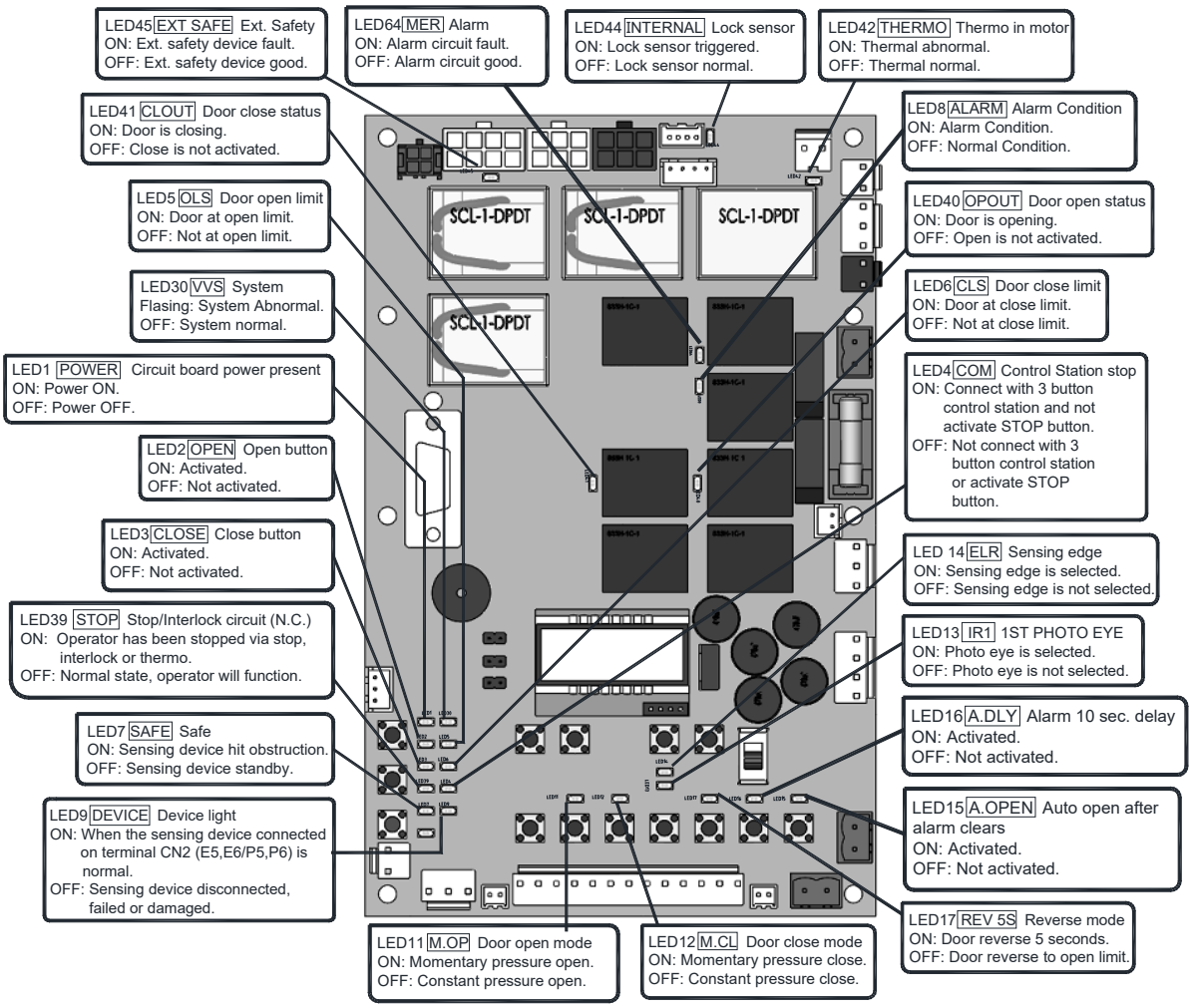
- - - CL - -
Closing warning output signal



LCD DISPLAY INSTRUCTION

Display	Status	Display	Status
T1 no USE	T1 setting	CLo	Door closing
T2 no USE	T2 setting	OPn	Door opening
SEt	T1 or T2 setting completed	ALA	Alarm condition
Err -1	No signal from encoder since power ON	Err -2	Encoder reading error
Err -3	No signal from encoder during operation	Err -4	Motor running in the reverse direction
Err -5	Motor doesn't run during opening or closing.	tH-Err	No community at CN3 thermal circuit.
St-Err	No community at CN2 (1,4) circuit or stop button depressed on main board.	ForCE-	No limits saved, constant pressure operation only.

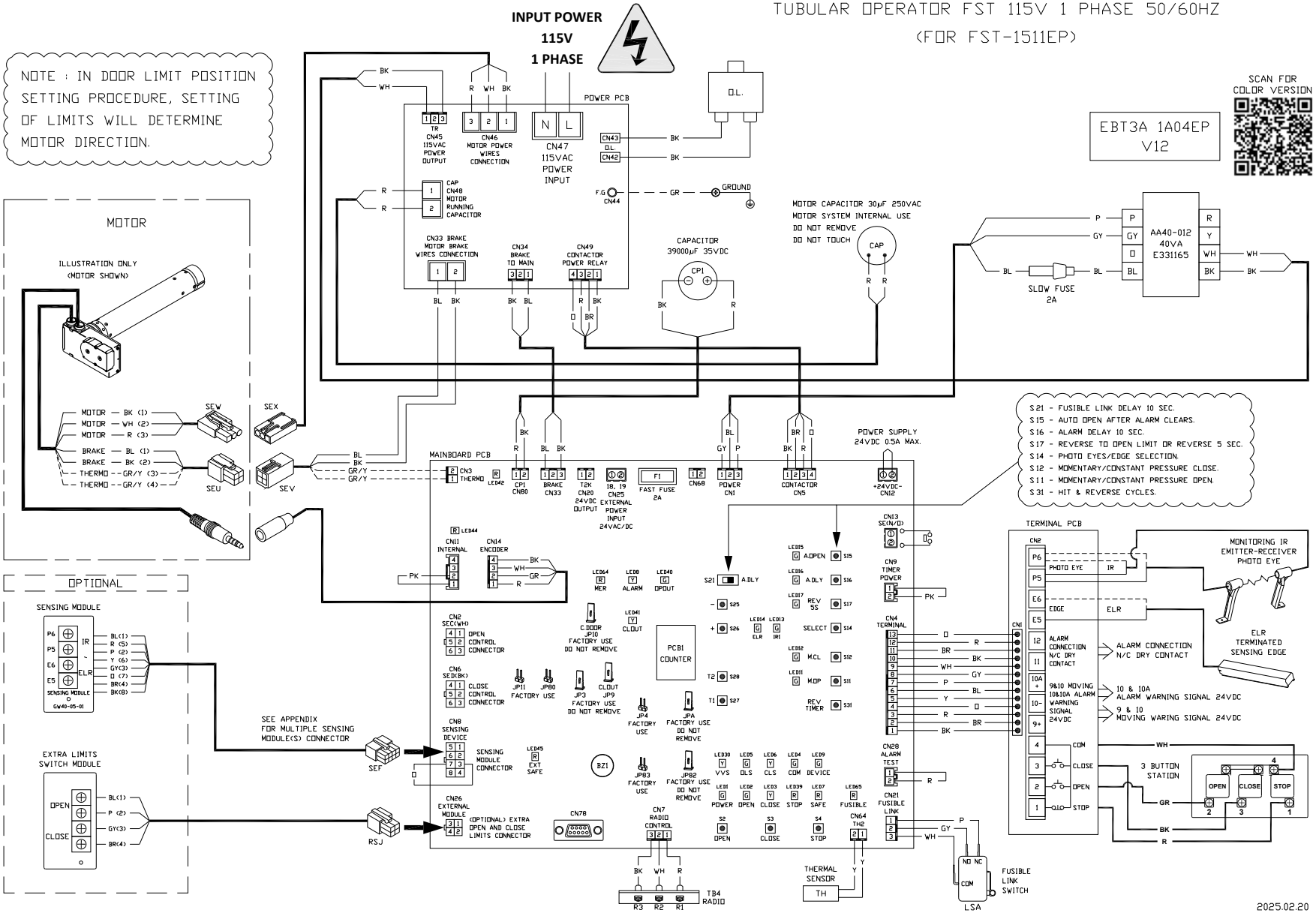
LIGHT INDICATION

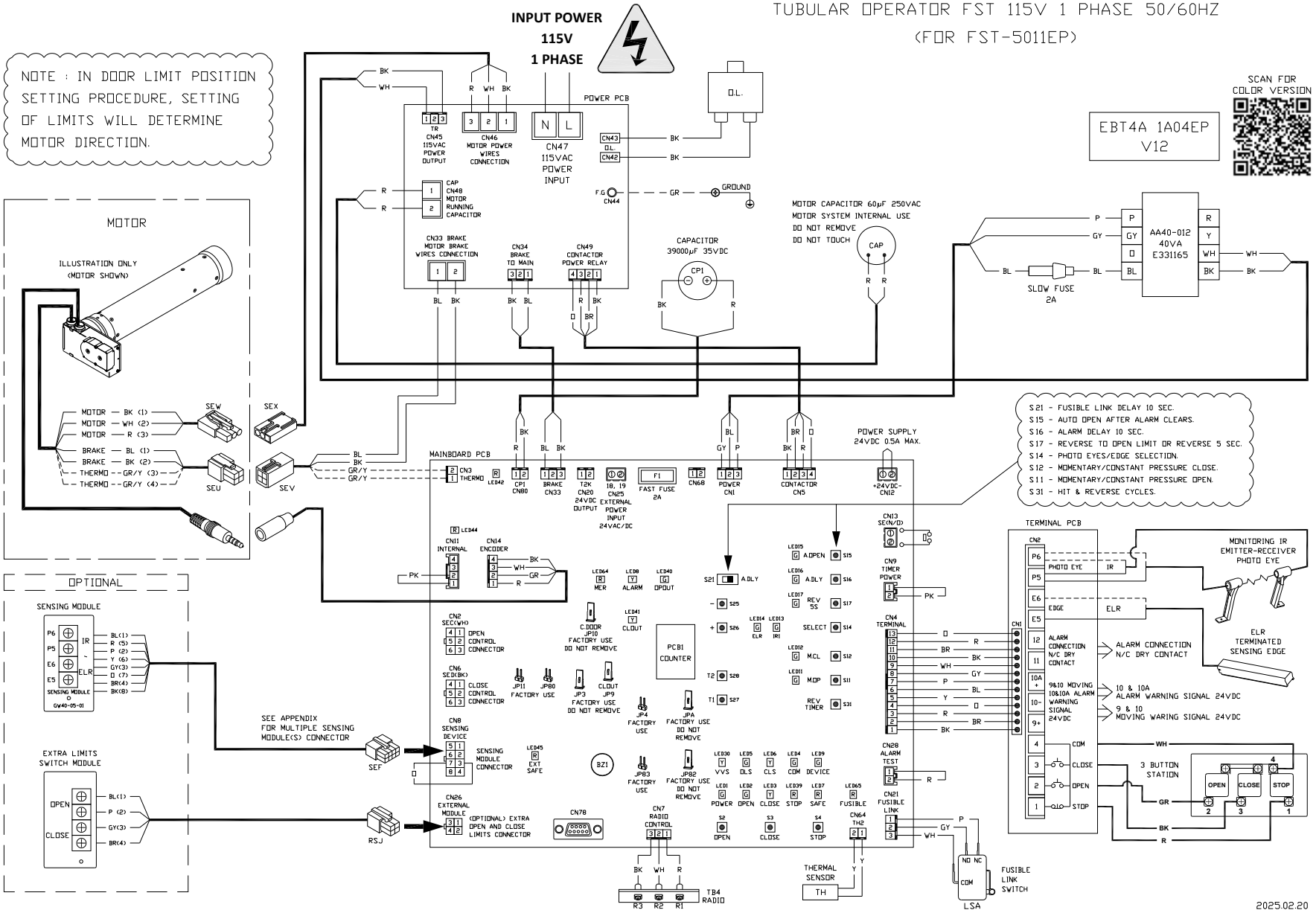


SOUND WARNINGS

Item	Description	Sound
1	Alarm warning signal	B_____ B_____ B_____ B_____ ……
2	Terminal CN2 (1,4) not connected	B.B.B.B. B.B.B.B. B.B.B.B. ….
3	Thermo protection CN3 – no continuity	B___ B.B., B___ B.B., B___ B.B……
4	Encoder error (Err-1、2、3、4、5)	B___ B.B., B___ B.B., B___ B.B……

WIRING DIAGRAMS





FST-EP Series
REVISION # 0000
DATE: 02/21/2025

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.

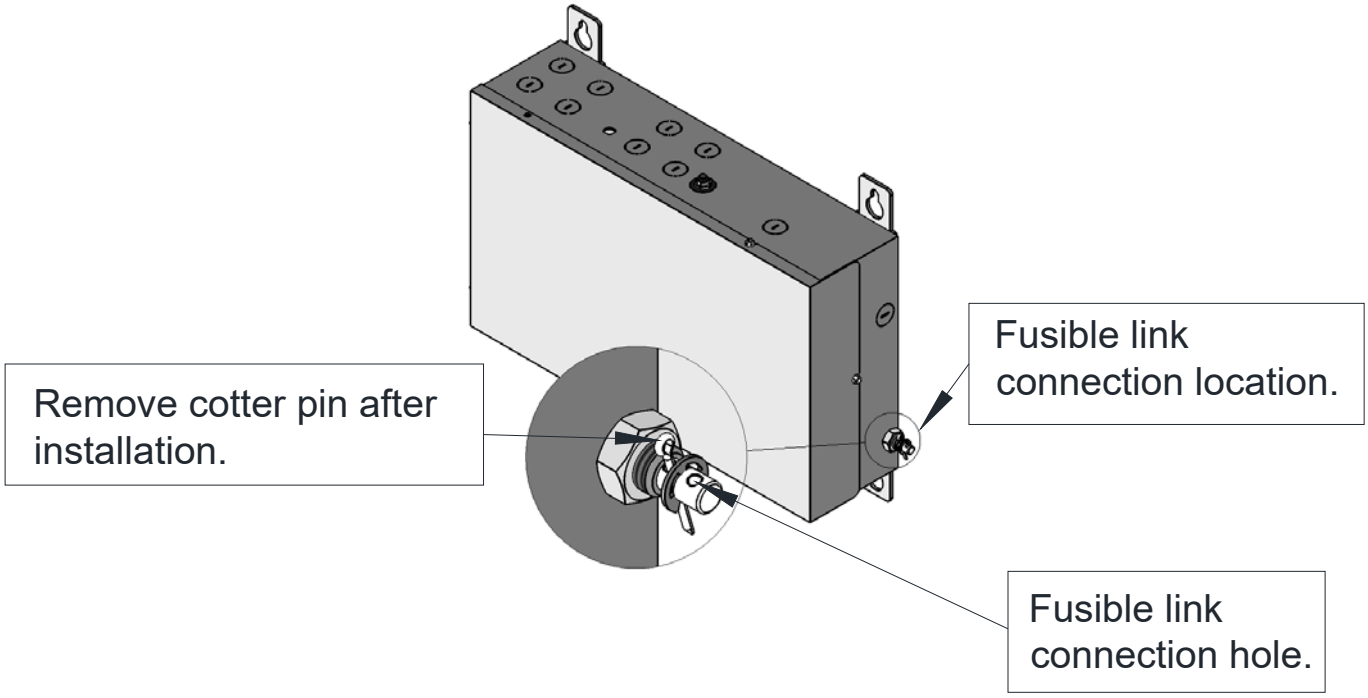
6. KEEP DOORS PROPERLY OPERATING AND BALANCED. See Door Manufacturer's Owner's Manual. An improperly operating or balanced door could cause severe injury or death. Have trained door systems technician make repairs to cables, spring assemblies, and other hardware.

7. SAVE THESE INSTRUCTIONS.

FUSIBLE LINK CONNECTIONS

- ***REMOVE COTTER PIN FROM RELEASE ASSEMBLY AFTER INSTALLATION IS COMPLETE.***

Refer to the fire door installation instructions for connection of the release assembly or consult NFPA-80 and the authority having jurisdiction for fusible link location(s) and method.



* Illustration only, not drawn to scale. See product for actual details.

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.

⚠ WARNING

If a sensing edge is not installed on the bottom of the door, and removing pressure from the “CLOSE” button or key switch position does not cause the door to stop, this condition must be corrected immediately. Improper operation could result in serious injury or death to person(s) trapped beneath the door.

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
Fasteners	Check & tighten as required		●	
Bearings & Shafts	Check for wear & lubricate	●		
Drop-test	Inspect door, drop-test for proper operation and full closure per NFPA-80			●

- ❖ Do not lubricate motor. Motor bearings are rated for continuous operation.
- ❖ 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 obtained from the door manufacturer per NFPA-80.

⚠ WARNING

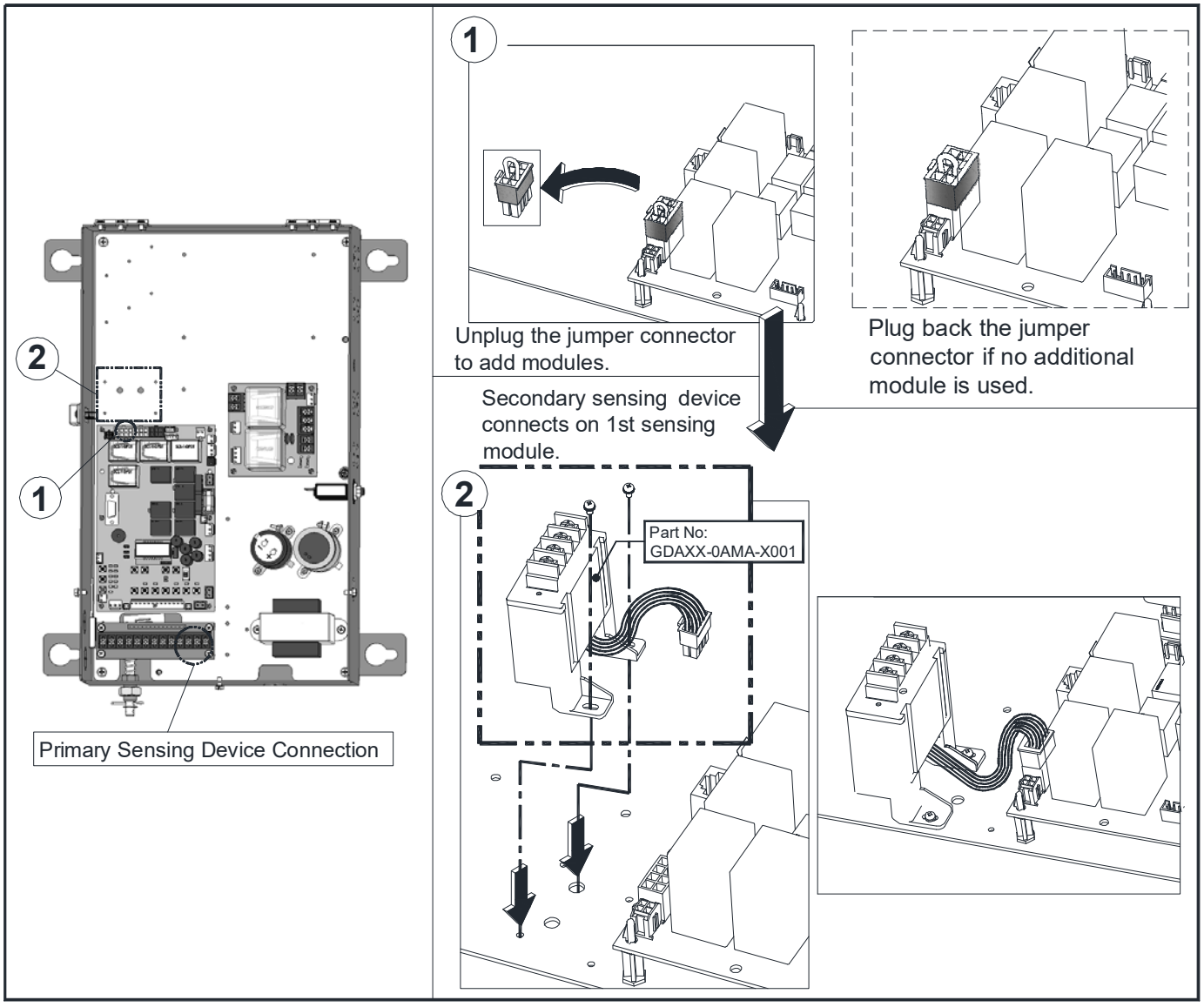
Do not place hands or tools in or near the operator when the power is connected or when testing control or sensing devices. Always disconnect power before servicing or adjusting the operator.

APPENDIX 1: Multiple Sensing Devices Connection Instruction

Multiple Sensing Devices Connection Instruction

Warning: Power OFF When Connecting.

QST-FTS-ADAPTER-2



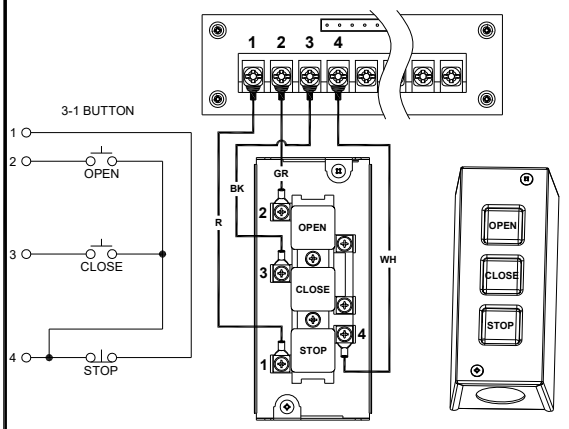
APPENDIX 2: Control Connections Diagrams

Control Connections Diagrams

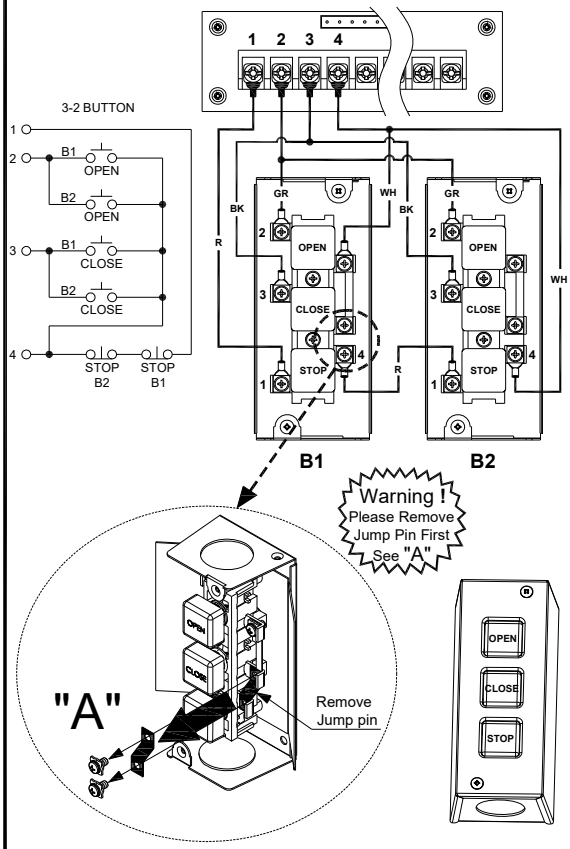
CCD-PCB-A01

Control Wiring for 3 Button Stations

1 Set of 3 Button Stations

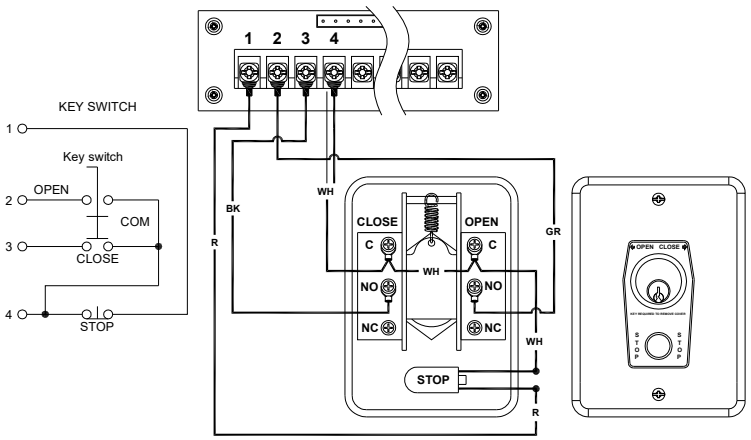


2 Sets of 3 Button Stations

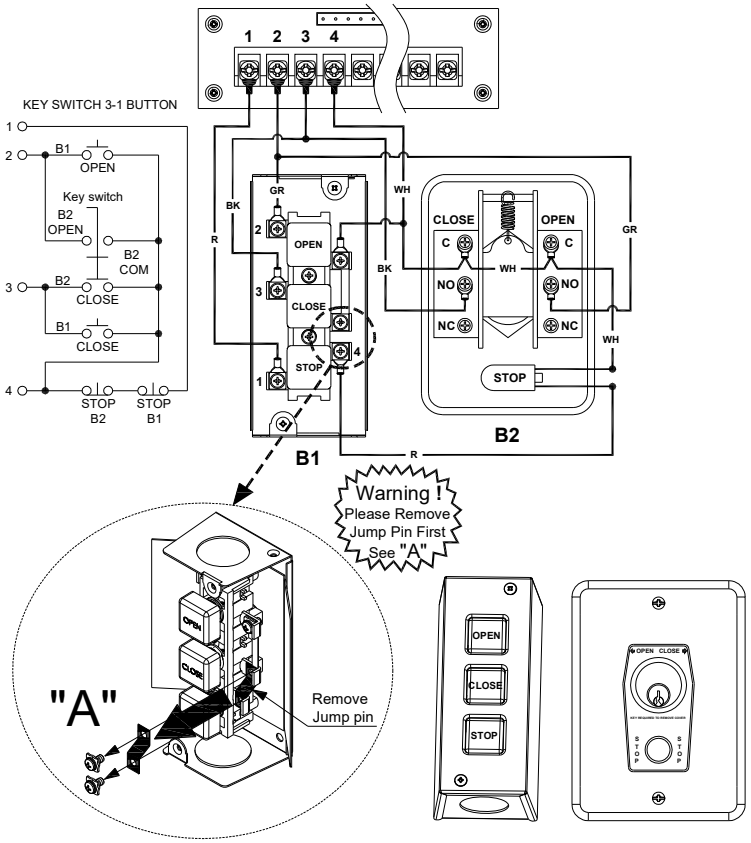


Control Wiring for Key Switch with Stop Button

Key Switch with Stop Button



Key Switch (with Stop Button) and 3 Button Stations



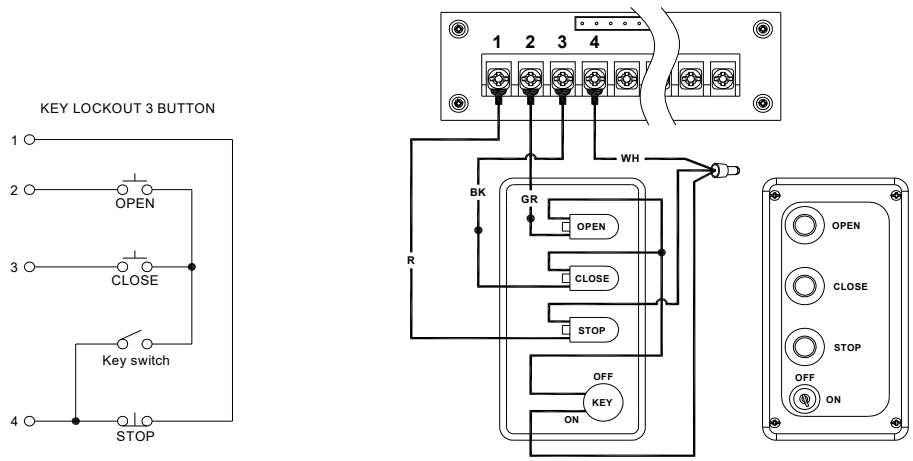
APPENDIX 3: Control Connections Diagrams

Control Connections Diagrams

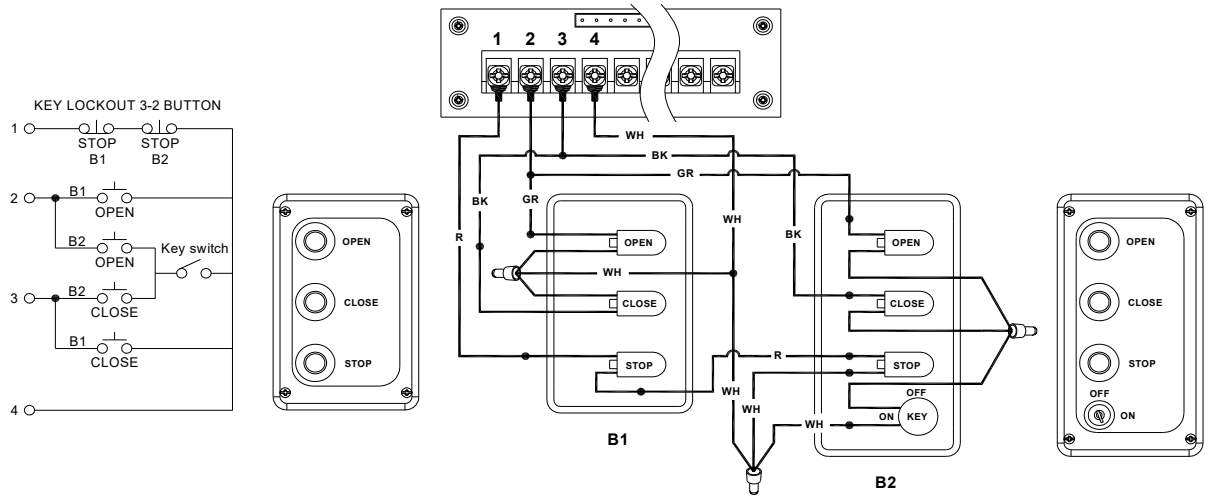
CCD-PCB-B02

Wiring 3 Button Stations With Key Lockout

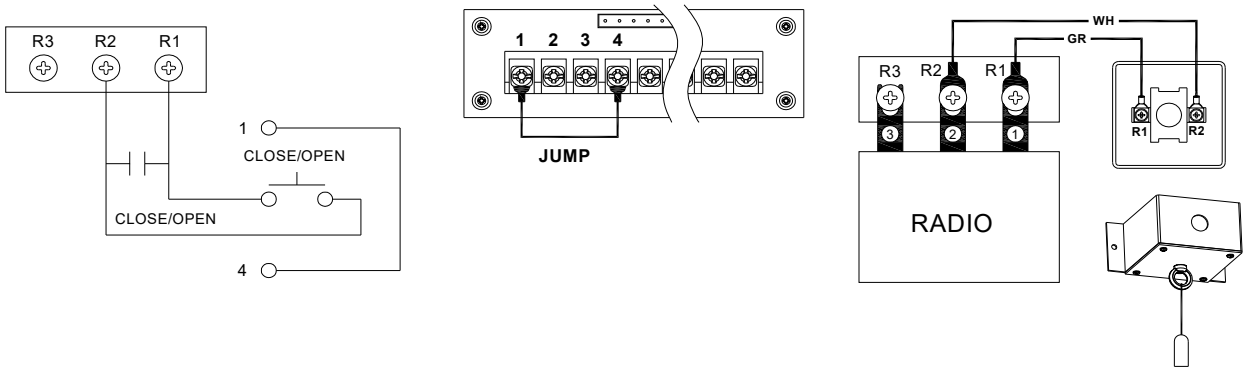
1 Set



With and without key lockout



Ceiling Pull Switch Station



APPENDIX 4: External Timer Defeat Switch Connection