Preferred door solutions.®

COOKSON

INSTALLATION INSTRUCTIONS

AND

OPERATION MANUAL

F Series

Rolling Fire Door Operators

U.S. GEAR CORPORATION

01/05

GENERAL NOTES

TO REDUCE THE RISK OF SEVERE INJURY OR DEATH, READ AND FOLLOW ALL INSTALLATION INSTRUCTIONS

- ❖ Install the operator only on a properly operating and balanced door. A poorly operating or improperly balanced door can cause serious injury or death and severely reduce the life of the operator.

- ❖ The door is under extreme spring tension. Have qualified door mechanics make all necessary adjustments and repairs to the door.

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

- ❖ 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.

- ❖ Read and understand this manual before installing the operator.

- ❖ 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.

- ❖ The operator is intended to be installed eight (8) feet or more above the floor. It must be covered or sprockets and roller chains must be guarded when installed less than eight (8) feet above the floor.

- ❖ 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.

- ❖ Always disconnect power whenever installing or servicing the door operator or door.

- ❖ All wiring is to comply with National Electrical Code (NEC) and local code requirements.

- ❖ Any change in mounting position may result in change of operator rotation and consequently in change of control functions. Consult factory for any changes.

SPECIFICATIONS

MOTOR

Type: …… Restricted duty cycle
Horsepower: …… 1-1/2 hp, 2hp, 5hp
Speed: …….. 1700 RPM
Voltage: …… 115, 230 – 1 phase
230, 460 – 3 phase
230 volt 3 phase motor is suitable for use with 208 volts
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: ……. 77:1
Output shaft speed: ……... 22 RPM
Door Speed: ……. 6 - 8” per sec. average (typical)
Brake: …….. Solenoid actuated disc brake

ENTRAPMENT PROTECTION

Sensing Edge*: …… (Optional) Sensing device attached to the bottom edge of the door.

*** Per the requirements of UL Standard 325, the door operator must be provided with an actuating device requiring constant pressure to close the door. As an alternative, the door may be provided with a device that will reverse the door upon contact with an obstruction during closing.**

INSTALLATION INSTRUCTIONS

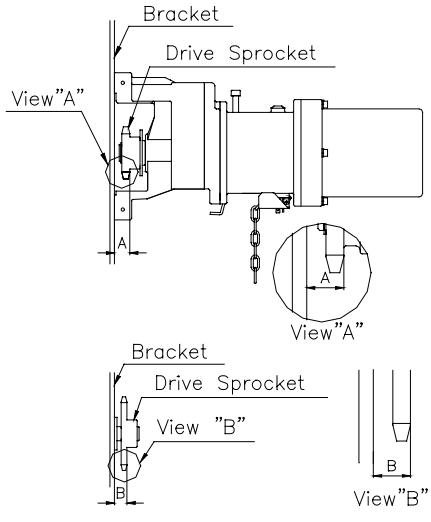
OPERATOR MOUNTING

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

2. Make sure the dimensions of mounting holes on the bracket are correct.

3. When the operator is mounted on the bracket, be sure the door driven sprocket is properly aligned with the operator drive sprocket before securing to the shaft. The clearance (B) must be the same as the height (A). (See Figure 2)

4. The shelf or bracket must provide adequate support for the operator. Prevent play between operator and door shaft. Permit operator to be fastened securely and with the drive shaft parallel to the door shaft. It may be necessary to field brace the operator/bracket



(Figure 2)

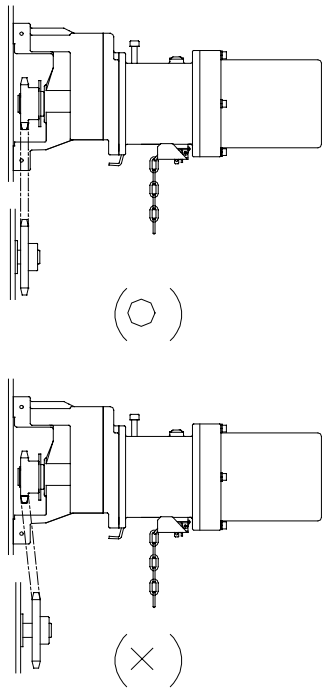
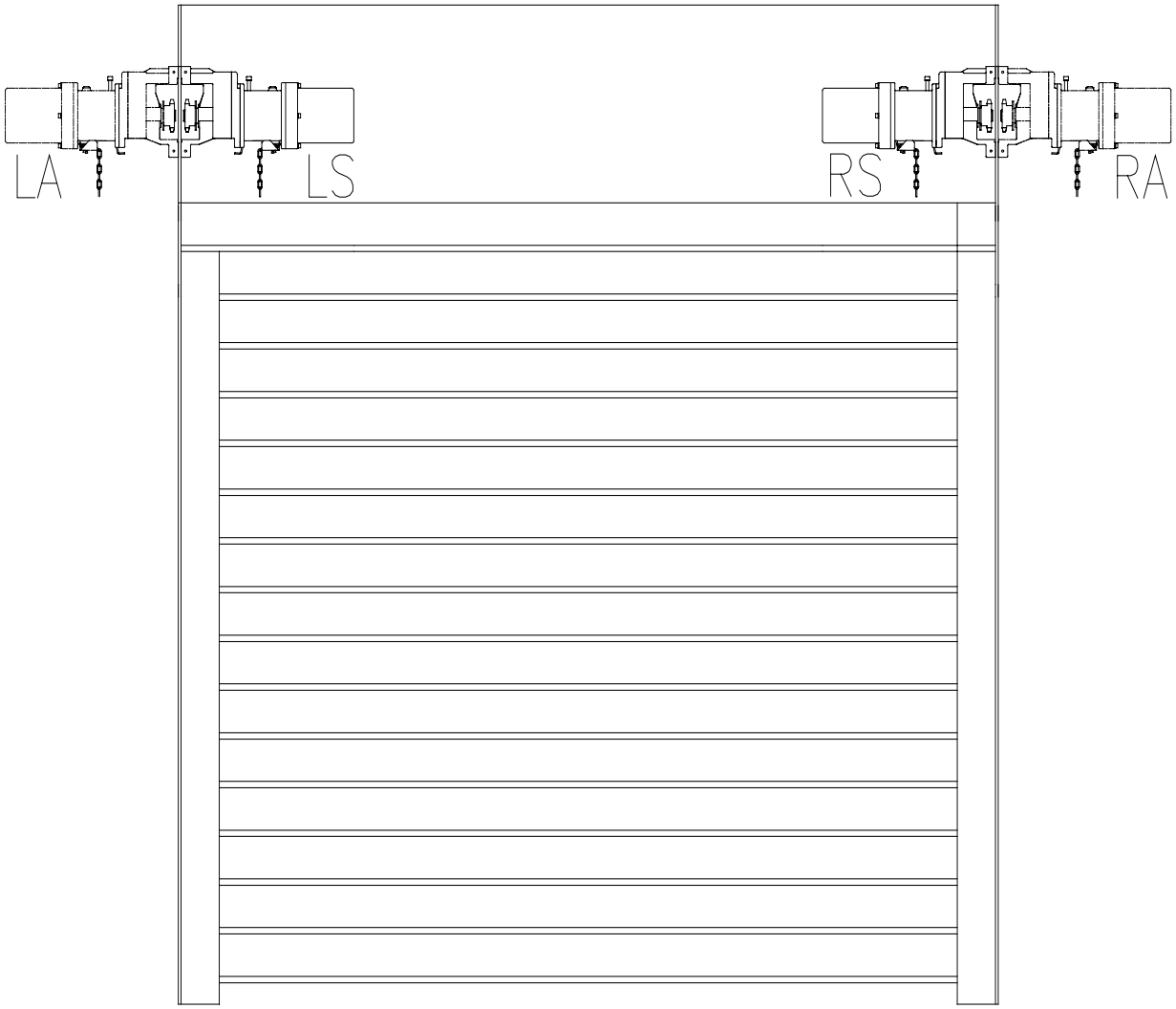


 Illustration only, not drawn to scale. See actual product for correct details.

INSTALLATION POSITIONS



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

Consult factory for changes in installation position.

NOTE: Any change in mounting position may result in change of operator rotation and consequently in 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 a straight mounting plate in lieu of the standard bent plate.

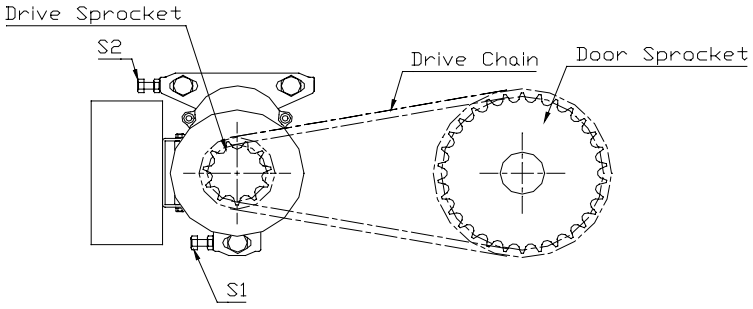
DRIVE CHAIN ADJUSTMENT

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

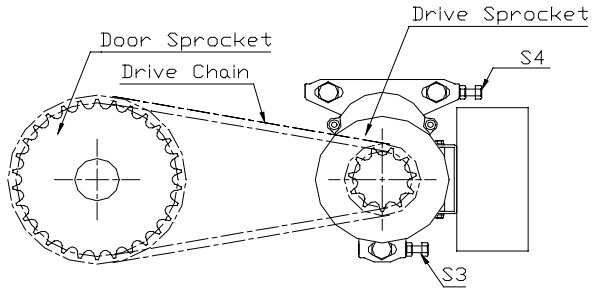
1. A screw is attached to the side of each base leg. Use these screws to adjust the drive chain. As an example, refer to figure 5 for a left hand operated door. To tighten the drive chain, loosen all jam nuts, loosen screws S3 and S4 and tighten screws on opposite side until drive chain is adjusted properly. Re-tighten screws S3 and S4 and re-tighten all jam nuts. To put slack in the drive chain, loosen and tighten the opposite screws. (Refer to figures on next page - figure 4 for right hand door, figure 5 for left hand door.)

2. Adjust the drive chain so that there is about 1/4" of slack when the chain is depressed.

3. Once the drive chain has been tightened and the base leg screws have been set, and then tighten the operator screws to the end plate.



(Figure 4)



(Figure 5)

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

LIMIT SWITCH ADJUSTMENT

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

1. Remove the control panel cover.

2. Open or close door to determine the moving direction of the limit switch cams.

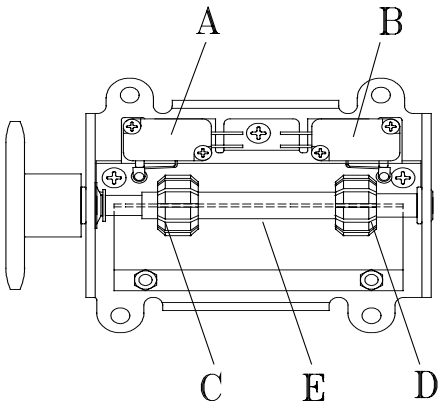
3. Open or close door to the desired position.

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 (E), which holds the limit switch cams in place, adjust the limit switch cam (C or D) until the micro switch (A or B) 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.



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

NOTE: "A" is usually the opening side and "B" is usually the closing side.

WIRING INSTRUCTIONS

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

1. Do not install any wiring or attempt to run this operator without checking with the wiring diagram. The wiring diagram is 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 connecting 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.

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

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 to the 3-button control station.

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, a sensing edge must be installed on the bottom of the door. Failure to install a sensing edge may result in serious injury or death to person(s) trapped beneath the door.

Complete limit switch adjustments before making any sensing edge wiring connections to the operator.

2. Do not run control wiring in the same conduit as power wiring.

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

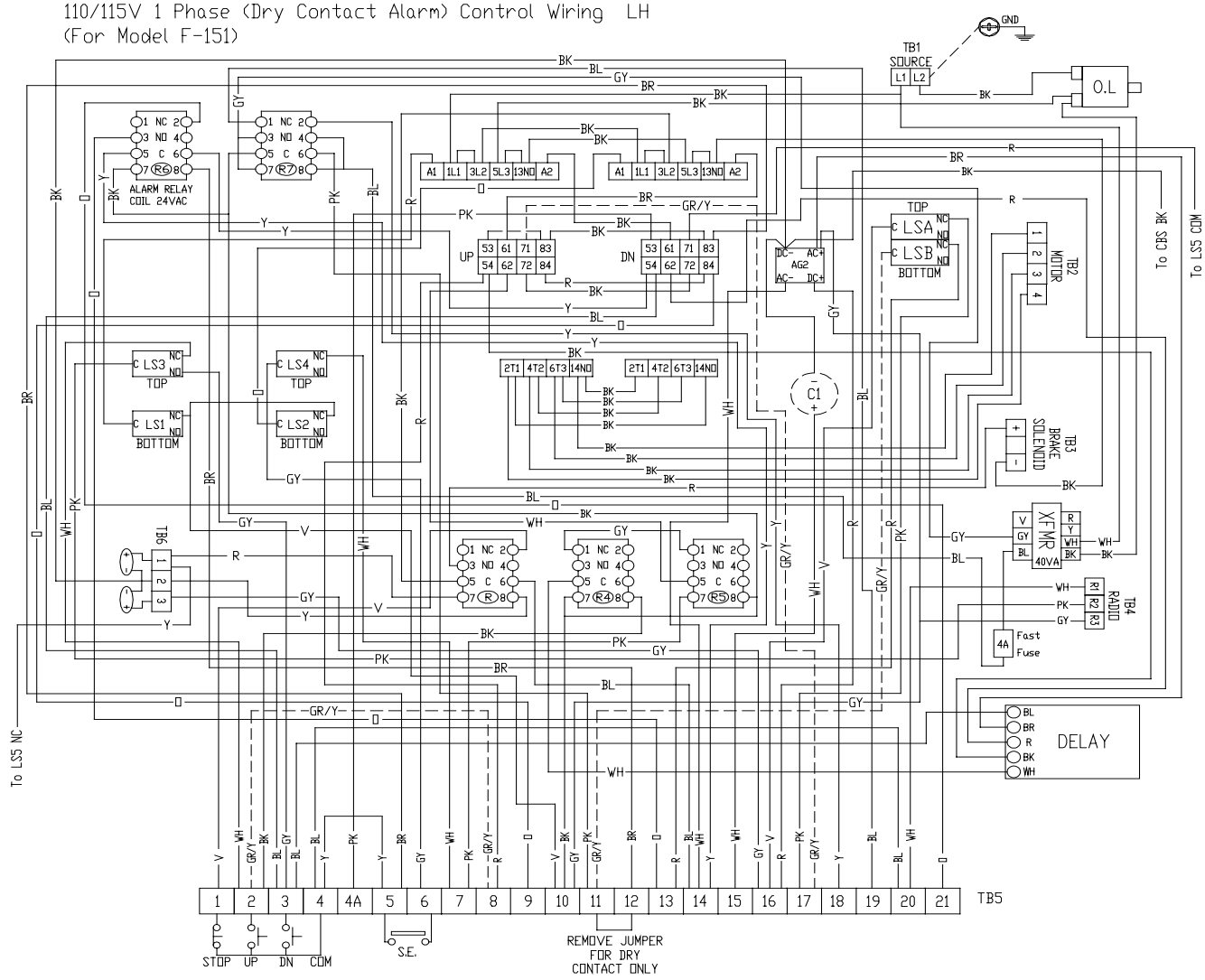
Do not use radio controls with your operator unless some type of entrapment protection device has been installed. Failure to do so may result in serious injury or death to person(s) trapped beneath the door.

Do not change closing control from constant pressure to momentary pressure without installing sensing edge. This could 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. Please consult factory for details.

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

110/115V 1 Phase (Dry Contact Alarm) Control Wiring LH
(For Model F-151)



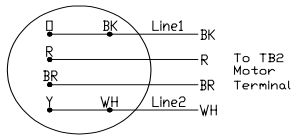
EC501 L

NOTES:
R-OPEN RELAY (COIL 24VDC)
R4-FORCE OPEN RELAY (COIL 24VAC)
R5-SENSING-EDGE RELAY (COIL 24VAC)
R6-ALARM RELAY (COIL 24VAC)
R7-EXTERNAL POWER SOURCE RELAY
(COIL 24VAC)

LS1-OPEN MICROSWITCH
LS2-CLOSE MICROSWITCH
LS3-RADIO CONTROL MICROSWITCH
LS4-SENSING-EDGE MICROSWITCH
LSA-FUSIBLE LINK MICRO (TOP)
LSB-FUSIBLE LINK MICRO (BOTTOM)

TERMINAL NUMBER:
1 CONTROL STATION-STOP
2 CONTROL STATION-UP
3 CONTROL STATION-DN
4 CONTROL STATION-COMMON
4&4A JUMP FOR MOMENTARY CONTACT DOWN
5&6 SENSING EDGE (S.E.) CONNECTION
7&8 JUMP FOR S.E. TO REVERSE
9&10 DOOR MOVING WARNING SIGNAL AC 24V
15&16 JUMP FOR ALARM AND POWER FAILURE
10 SEC DELAY
16&17 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
18&19 EXTERNAL POWER INPUT AC 24V

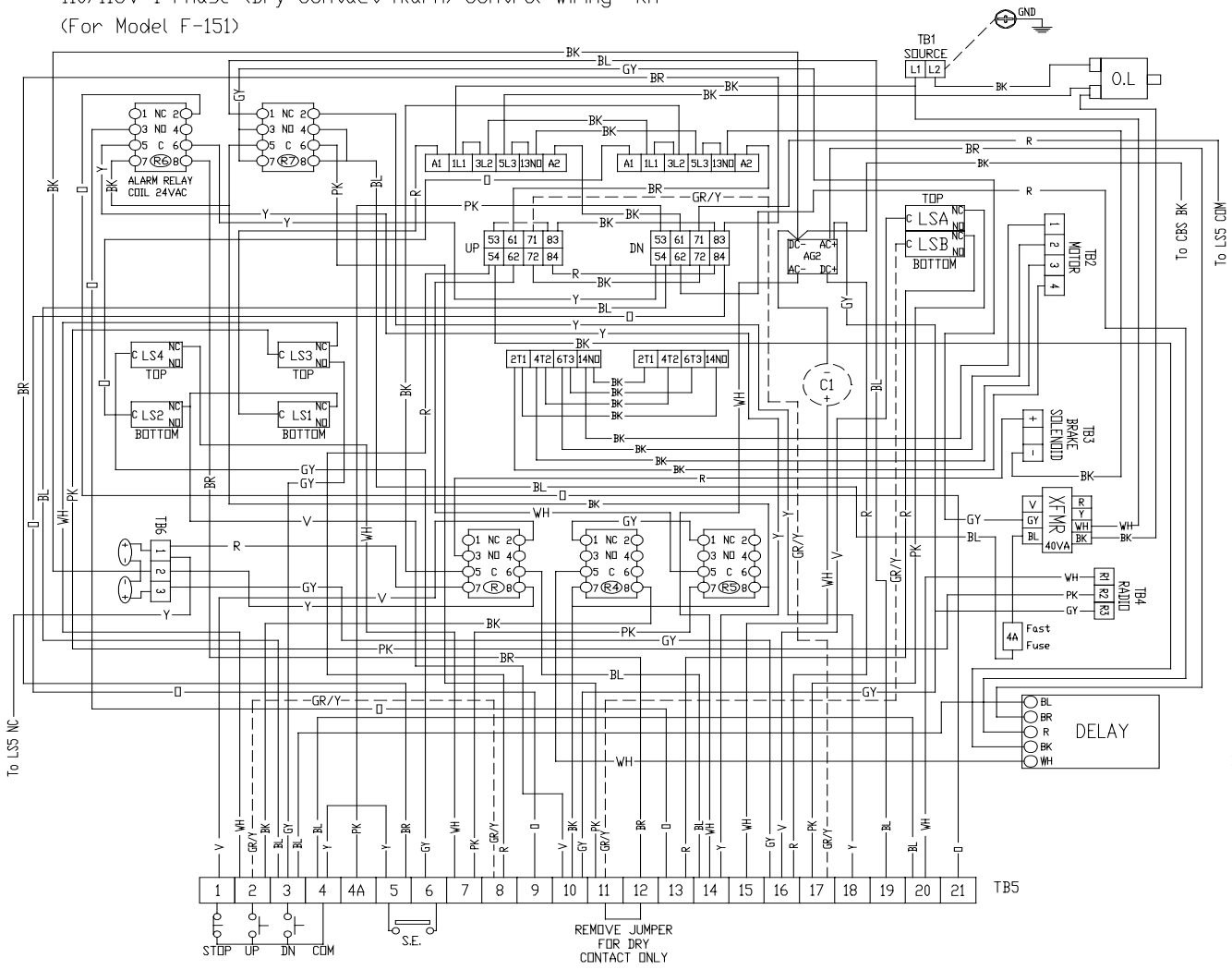
ALARM FUNCTION	11&12	13&14	20&21
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV.DN)	DRY CONTACT	OPEN	OPEN
ALARM (PW.DN)	DRY CONTACT	JUMP	JUMP



110V/115V 1 Phase
MOTOR CONNECTION

Rev:2004.09.24

110/115V 1 Phase (Dry Contact Alarm) Control Wiring RH
(For Model F-151)

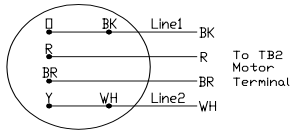


NOTES:
R-OPEN RELAY (COIL 24VDC)
R4-FORCE OPEN RELAY (COIL 24VAC)
R5-SENSING-EDGE RELAY (COIL 24VAC)
R6-ALARM RELAY (COIL 24VAC)
R7-EXTERNAL POWER SOURCE RELAY (COIL 24VAC)

LS1-OPEN MICROSWITCH
LS2-CLOSE MICROSWITCH
LS3-RADIO CONTROL MICROSWITCH
LS4-SENSING-EDGE MICROSWITCH
LSA-FUSIBLE LINK MICRO (TOP)
LSB-FUSIBLE LINK MICRO (BOTTOM)

TERMINAL NUMBER:
1 CONTROL STATION-STOP
2 CONTROL STATION-UP
3 CONTROL STATION-DN
4 CONTROL STATION-COMMON
4&4A JUMP FOR MOMENTARY CONTACT DOWN
5&6 SENSING EDGE (S.E.) CONNECTION
7&8 JUMP FOR S.E. TO REVERSE
9&10 DOOR MOVING WARNING SIGNAL AC 24V
15&16 JUMP FOR ALARM AND POWER FAILURE 10 SEC DELAY
16&17 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
18&19 EXTERNAL POWER INPUT AC 24V

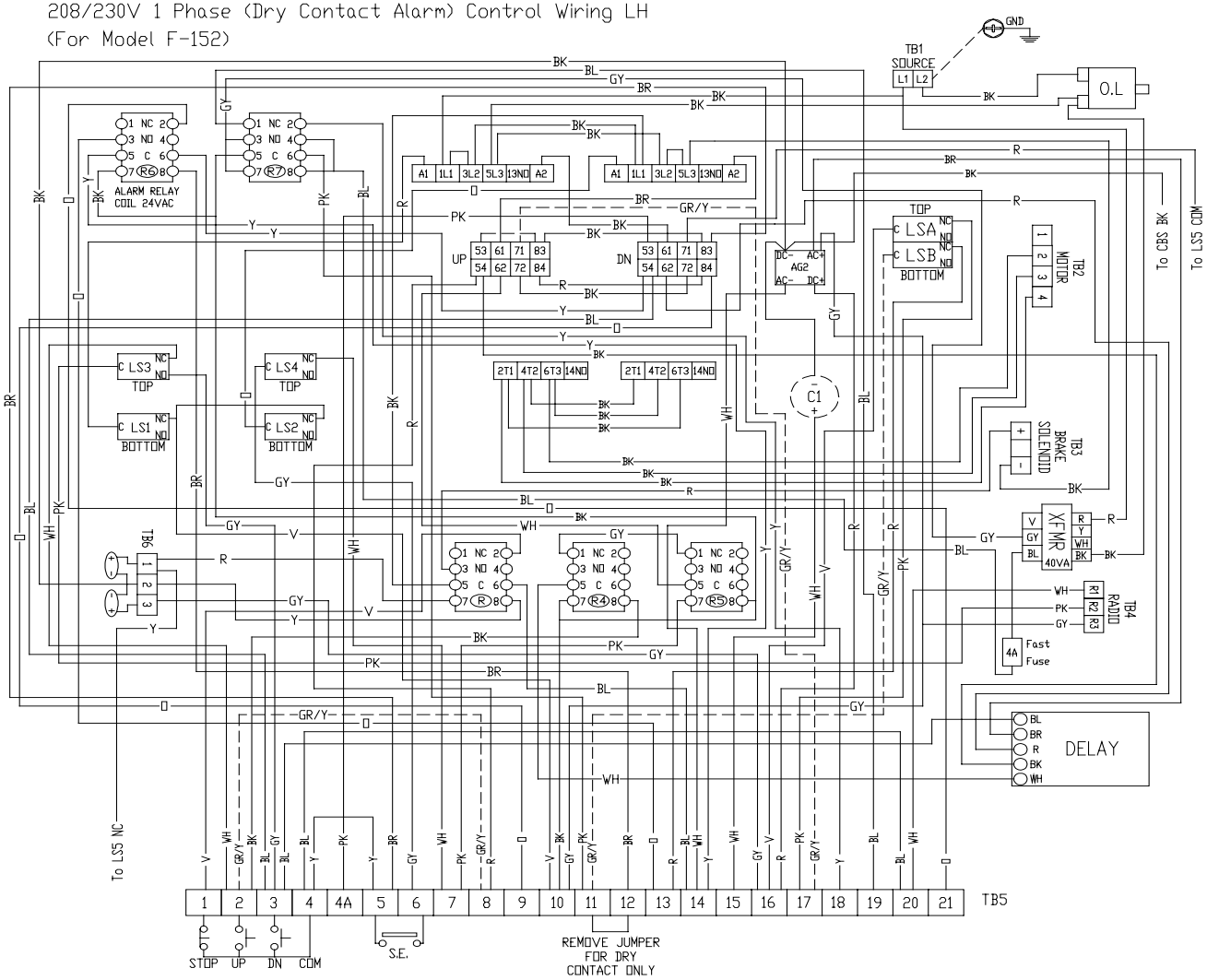
ALARM FUNCTION	11&12	13&14	20&21
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV.DN)	DRY CONTACT	OPEN	OPEN
ALARM (PW.DN)	DRY CONTACT	JUMP	JUMP



110V/115V 1 Phase
MOTOR CONNECTION

Rev:2004.09.24

208/230V 1 Phase (Dry Contact Alarm) Control Wiring LH
(For Model F-152)



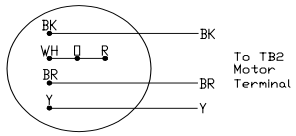
EC601 L

NOTES:
R-OPEN RELAY (COIL 24VDC)
R4-FORCE OPEN RELAY (COIL 24VAC)
R5-SENSING-EDGE RELAY (COIL 24VAC)
R6-ALARM RELAY (COIL 24VAC)
R7-EXTERNAL POWER SOURCE RELAY
(COIL 24VAC)

LS1-OPEN MICROSWITCH
LS2-CLOSE MICROSWITCH
LS3-RADIO CONTROL MICROSWITCH
LS4-SENSING-EDGE MICROSWITCH
LSA-FUSIBLE LINK MICRO (TOP)
LSB-FUSIBLE LINK MICRO (BOTTOM)

TERMINAL NUMBER:
1 CONTROL STATION-STOP
2 CONTROL STATION-UP
3 CONTROL STATION-DN
4 CONTROL STATION-COMMON
4&4A JUMP FOR MOMENTARY CONTACT DOWN
5&6 SENSING EDGE (S.E.) CONNECTION
7&8 JUMP FOR S.E. TO REVERSE
9&10 DOOR MOVING WARNING SIGNAL AC 24V
15&16 JUMP FOR ALARM AND POWER FAILURE
10 SEC DELAY
16&17 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
18&19 EXTERNAL POWER INPUT AC 24V

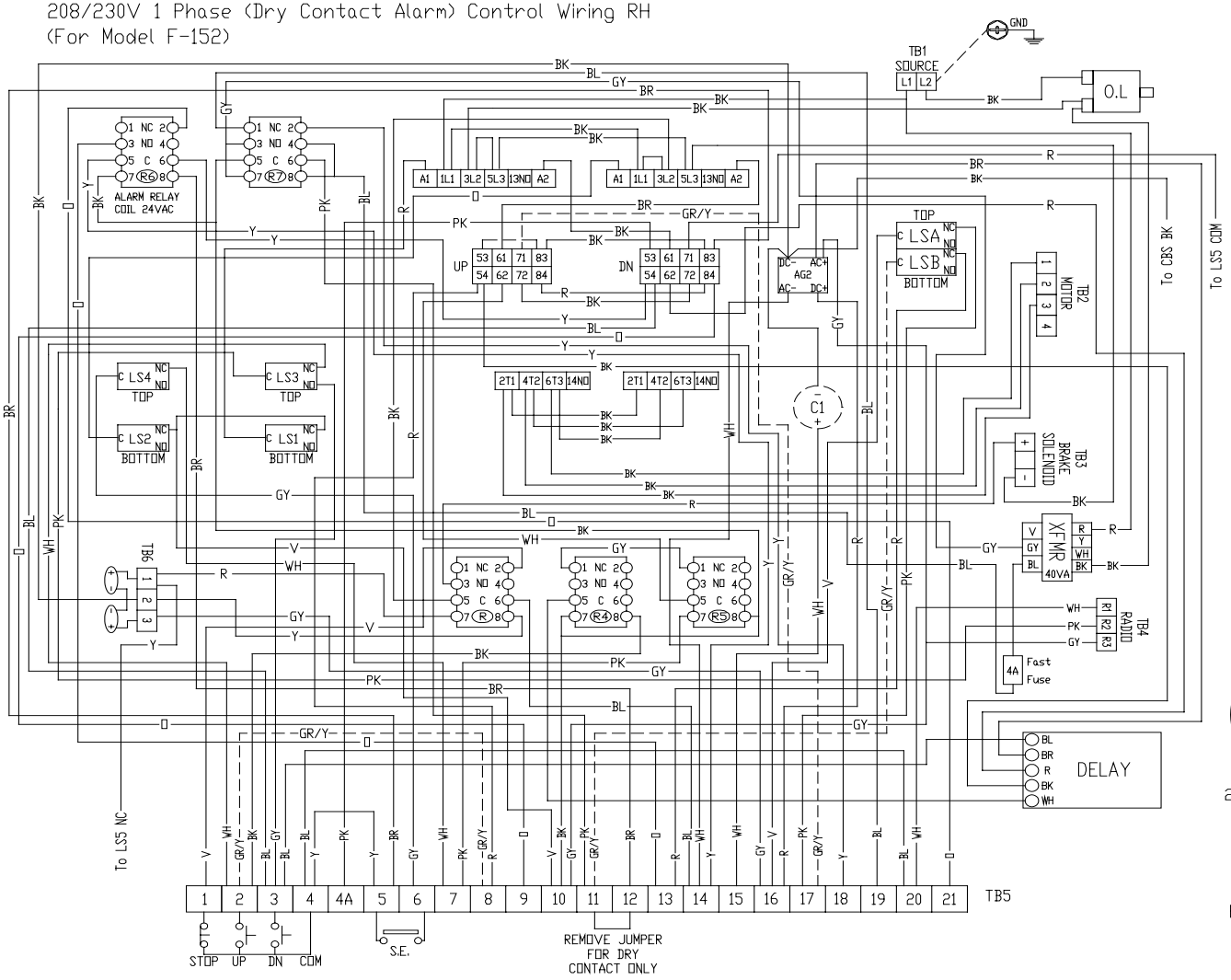
ALARM FUNCTION	11&12	13&14	20&21
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV.DN)	DRY CONTACT	OPEN	OPEN
ALARM (PW.DN)	DRY CONTACT	JUMP	JUMP



208V/230V 1 Phase
MOTOR CONNECTION

Rev:2004.09.24

208/230V 1 Phase (Dry Contact Alarm) Control Wiring RH
(For Model F-152)



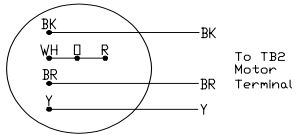
EC601 R

NOTES:
R-OPEN RELAY (COIL 24VDC)
R4-FORCE OPEN RELAY (COIL 24VAC)
R5-SENSING-EDGE RELAY (COIL 24VAC)
R6-ALARM RELAY (COIL 24VAC)
R7-EXTERNAL POWER SOURCE RELAY
(COIL 24VAC)

LS1-OPEN MICROSWITCH
LS2-CLOSE MICROSWITCH
LS3-RADIO CONTROL MICROSWITCH
LS4-SENSING-EDGE MICROSWITCH
LSA-FUSIBLE LINK MICRO (TOP)
LSB-FUSIBLE LINK MICRO (BOTTOM)

TERMINAL NUMBER:
1 CONTROL STATION-STOP
2 CONTROL STATION-UP
3 CONTROL STATION-DN
4 CONTROL STATION-COMMON
4&4A JUMP FOR MOMENTARY CONTACT DOWN
5&6 SENSING EDGE (S.E.) CONNECTION
7&8 JUMP FOR S.E. TO REVERSE
9&10 DOOR MOVING WARNING SIGNAL AC 24V
15&16 JUMP FOR ALARM AND POWER FAILURE
10 SEC. DELAY
16&17 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
18&19 EXTERNAL POWER INPUT AC 24V

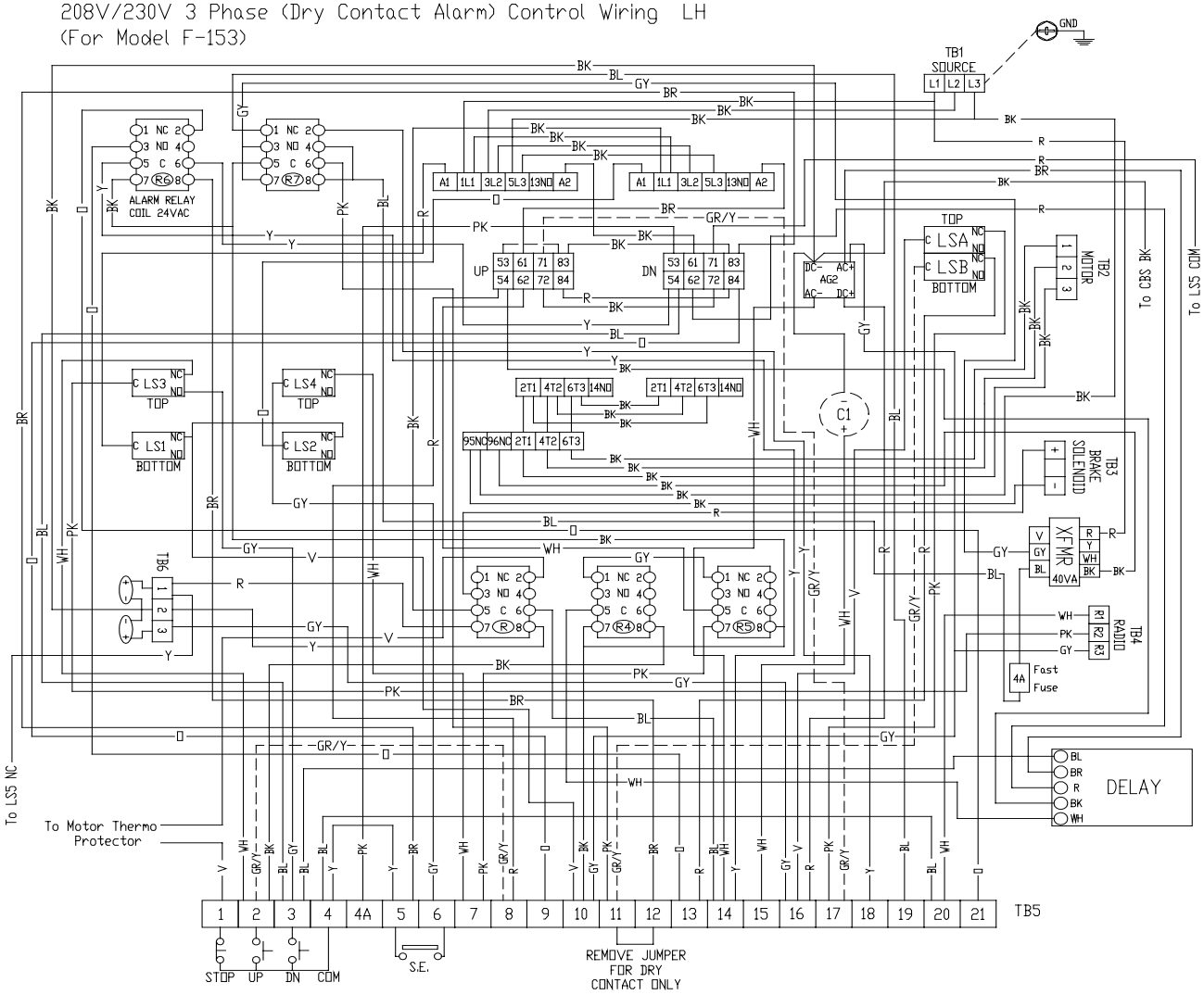
ALARM FUNCTION	11&12	13&14	20&21
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV.DN)	DRY CONTACT	OPEN	OPEN
ALARM (PW.DN)	DRY CONTACT	JUMP	JUMP



208V/230V 1 Phase
MOTOR CONNECTION

Rev:2004.09.24

208V/230V 3 Phase (Dry Contact Alarm) Control Wiring LH
(For Model F-153)



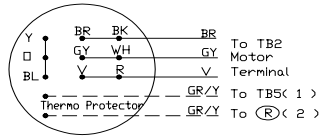
EC701 L

NOTES:
R-OPEN RELAY (COIL 24VDC)
R4-FORCE OPEN RELAY (COIL 24VAC)
R5-SENSING-EDGE RELAY (COIL 24VAC)
R6-ALARM RELAY (COIL 24VAC)
R7-EXTERNAL POWER SOURCE RELAY
(COIL 24VAC)

LS1-OPEN MICROSWITCH
LS2-CLOSE MICROSWITCH
LS3-RADIO CONTROL MICROSWITCH
LS4-SENSING-EDGE MICROSWITCH
LSA-FUSIBLE LINK MICRO (TOP)
LSB-FUSIBLE LINK MICRO (BOTTOM)

TERMINAL NUMBER:
1 CONTROL STATION-STOP
2 CONTROL STATION-UP
3 CONTROL STATION-DN
4 CONTROL STATION-COMMON
4&4A JUMP FOR MOMENTARY CONTACT DOWN
5&6 SENSING EDGE (S.E.) CONNECTION
7&8 JUMP FOR S.E. TO REVERSE
9&10 DOOR MOVING WARNING SIGNAL AC 24V
15&16 JUMP FOR ALARM AND POWER FAILURE
10 SEC DELAY
16&17 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
18&19 EXTERNAL POWER INPUT AC 24V

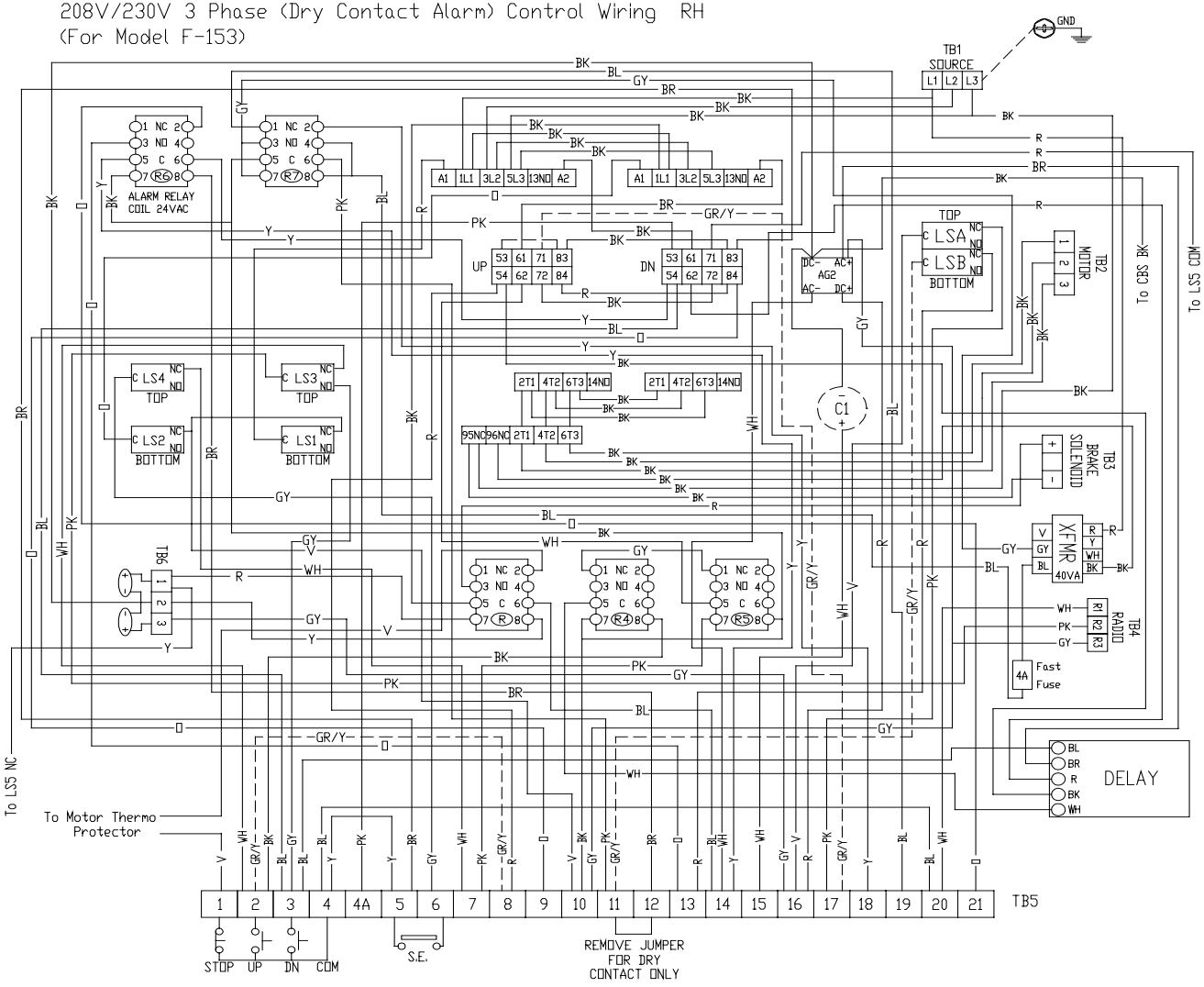
ALARM FUNCTION	11&12	13&14	20&21
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV.DN)	DRY CONTACT	OPEN	OPEN
ALARM (P.W.DN)	DRY CONTACT	JUMP	JUMP



208V/230V 3 Phase
MOTOR CONNECTION

Rev:2004.09.24

208V/230V 3 Phase (Dry Contact Alarm) Control Wiring RH
(For Model F-153)



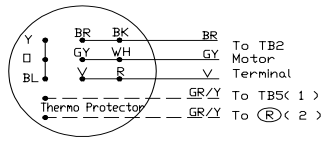
EC701 R

NOTES:
R-OPEN RELAY (COIL 24VDC)
R4-FORCE OPEN RELAY (COIL 24VAC)
R5-SENSING-EDGE RELAY (COIL 24VAC)
R6-ALARM RELAY (COIL 24VAC)
R7-EXTERNAL POWER SOURCE RELAY
(COIL 24VAC)

LS1-OPEN MICROSWITCH
LS2-CLOSE MICROSWITCH
LS3-RADIO CONTROL MICROSWITCH
LS4-SENSING-EDGE MICROSWITCH
LSA-FUSIBLE LINK MICRO (TOP)
LSB-FUSIBLE LINK MICRO (BOTTOM)

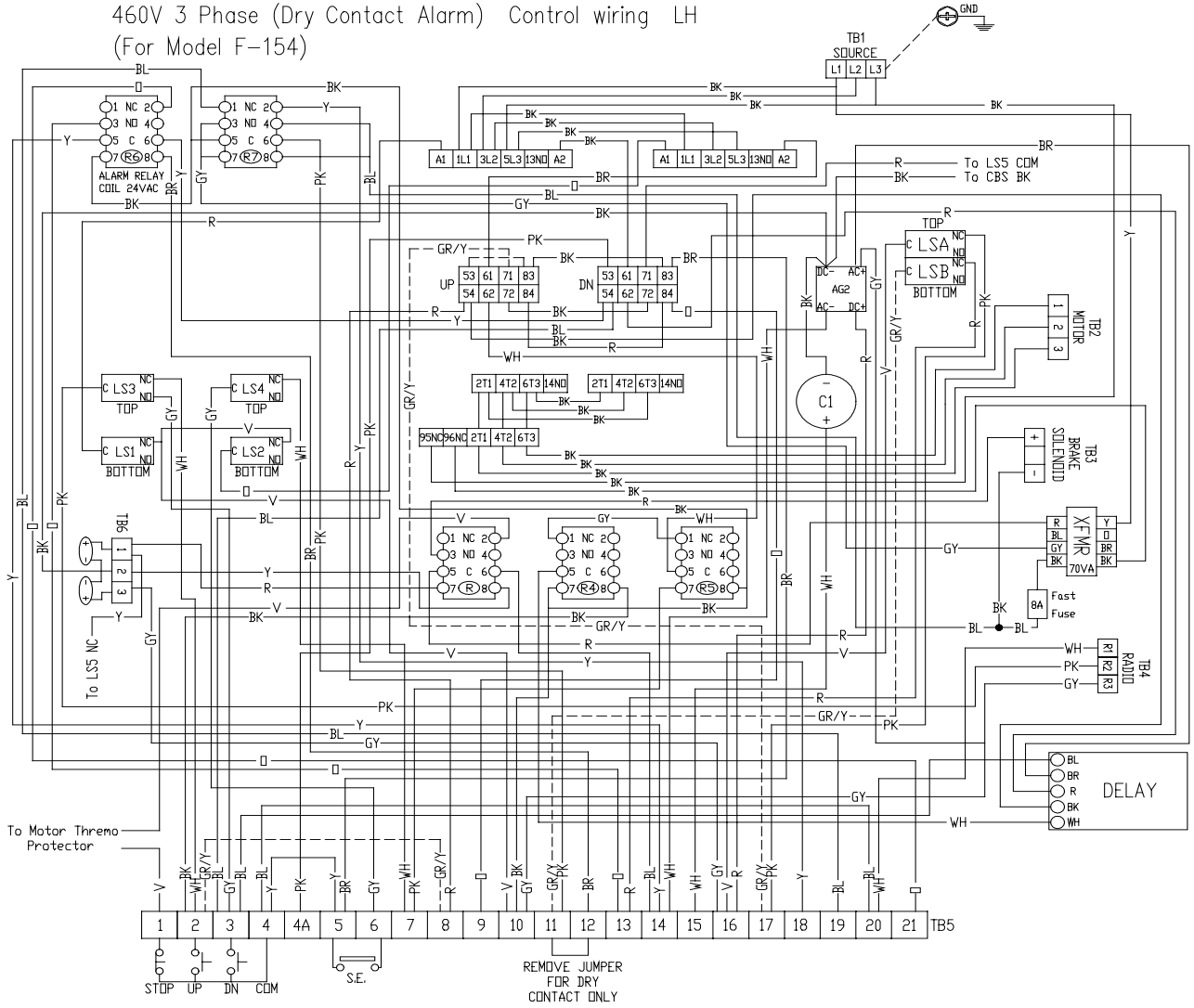
TERMINAL NUMBER:
1 CONTROL STATION-STOP
2 CONTROL STATION-UP
3 CONTROL STATION-DN
4 CONTROL STATION-COMMON
4&4A JUMP FOR MOMENTARY CONTACT DOWN
5&6 SENSING EDGE (S.E.) CONNECTION
7&8 JUMP FOR S.E. TO REVERSE
9&10 DOOR MOVING WARNING SIGNAL AC 24V
15&16 JUMP FOR ALARM AND POWER FAILURE
10 SEC DELAY
16&17 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
18&19 EXTERNAL POWER INPUT AC 24V

ALARM FUNCTION	11&12	13&14	20&21
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV.DN)	DRY CONTACT	OPEN	OPEN
ALARM (PW.DN)	DRY CONTACT	JUMP	JUMP



208V/230V 3 Phase
MOTOR CONNECTION

Rev:2004.09.24



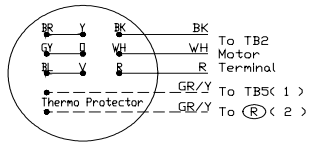
EC801 L

NOTES:
R-OPEN RELAY (COIL 24VDC)
R4-FORCE OPEN RELAY (COIL 24VAC)
R5-SENSING-EDGE RELAY (COIL 24VAC)
R6-ALARM RELAY (COIL 24VAC)
R7-EXTERNAL POWER SOURCE RELAY (COIL 24VAC)

LS1-OPEN MICROSWITCH
LS2-CLOSE MICROSWITCH
LS3-RADIO CONTROL MICROSWITCH
LS4-SENSING-EDGE MICROSWITCH
LSA-FUSIBLE LINK MICRO (TOP)
LSB-FUSIBLE LINK MICRO (BOTTOM)

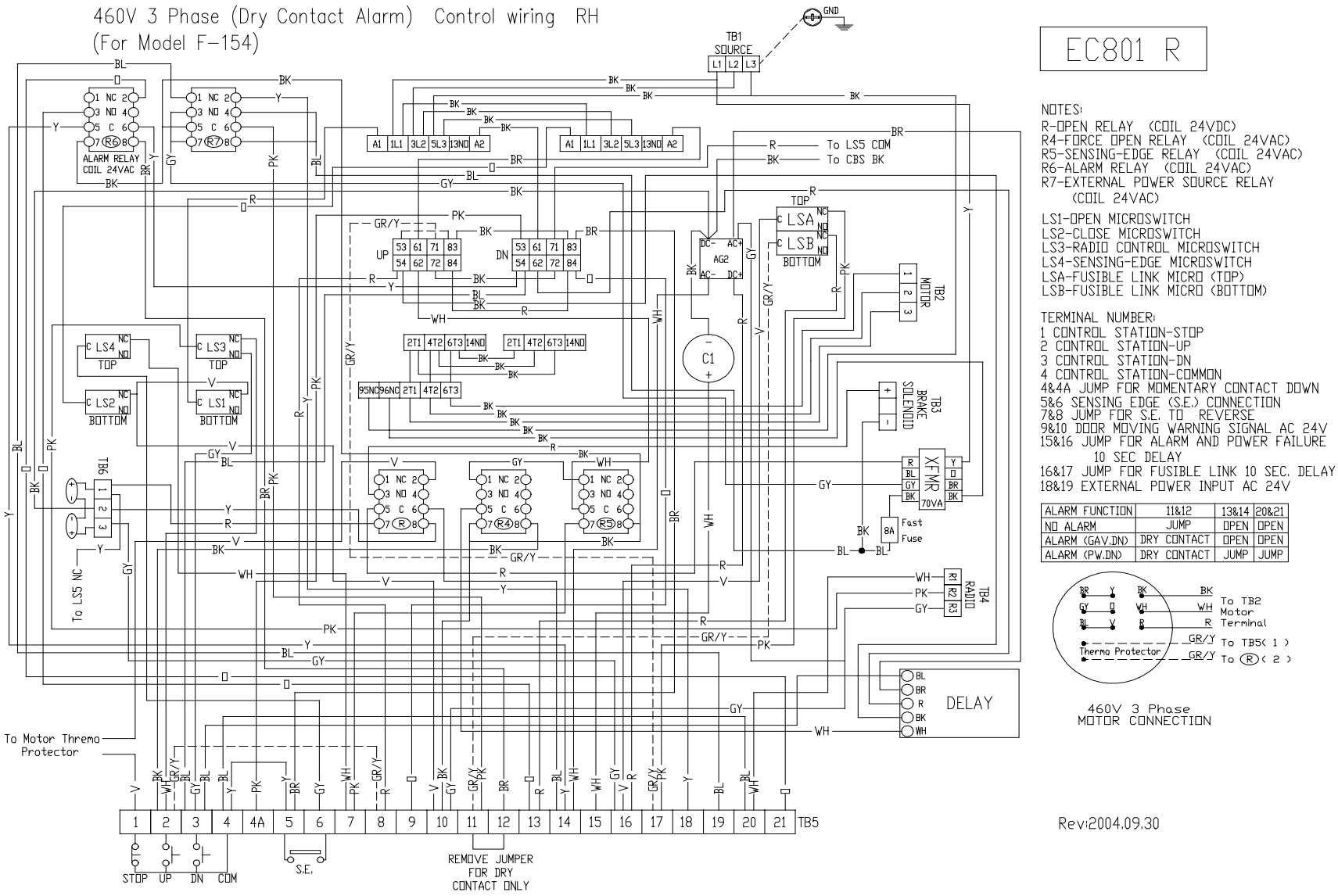
TERMINAL NUMBER:
1 CONTROL STATION-STOP
2 CONTROL STATION-UP
3 CONTROL STATION-DN
4 CONTROL STATION-COMMON
4&4A JUMP FOR MOMENTARY CONTACT DOWN
5&6 SENSING EDGE (S.E.) CONNECTION
7&8 JUMP FOR S.E. TO REVERSE
9&10 DOOR MOVING WARNING SIGNAL AC 24V
15&16 JUMP FOR ALARM AND POWER FAILURE 10 SEC DELAY
16&17 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
18&19 EXTERNAL POWER INPUT AC 24V

ALARM FUNCTION	11&12	13&14	20&21
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV.DN)	DRY CONTACT	OPEN	OPEN
ALARM (PW.DN)	DRY CONTACT	JUMP	JUMP

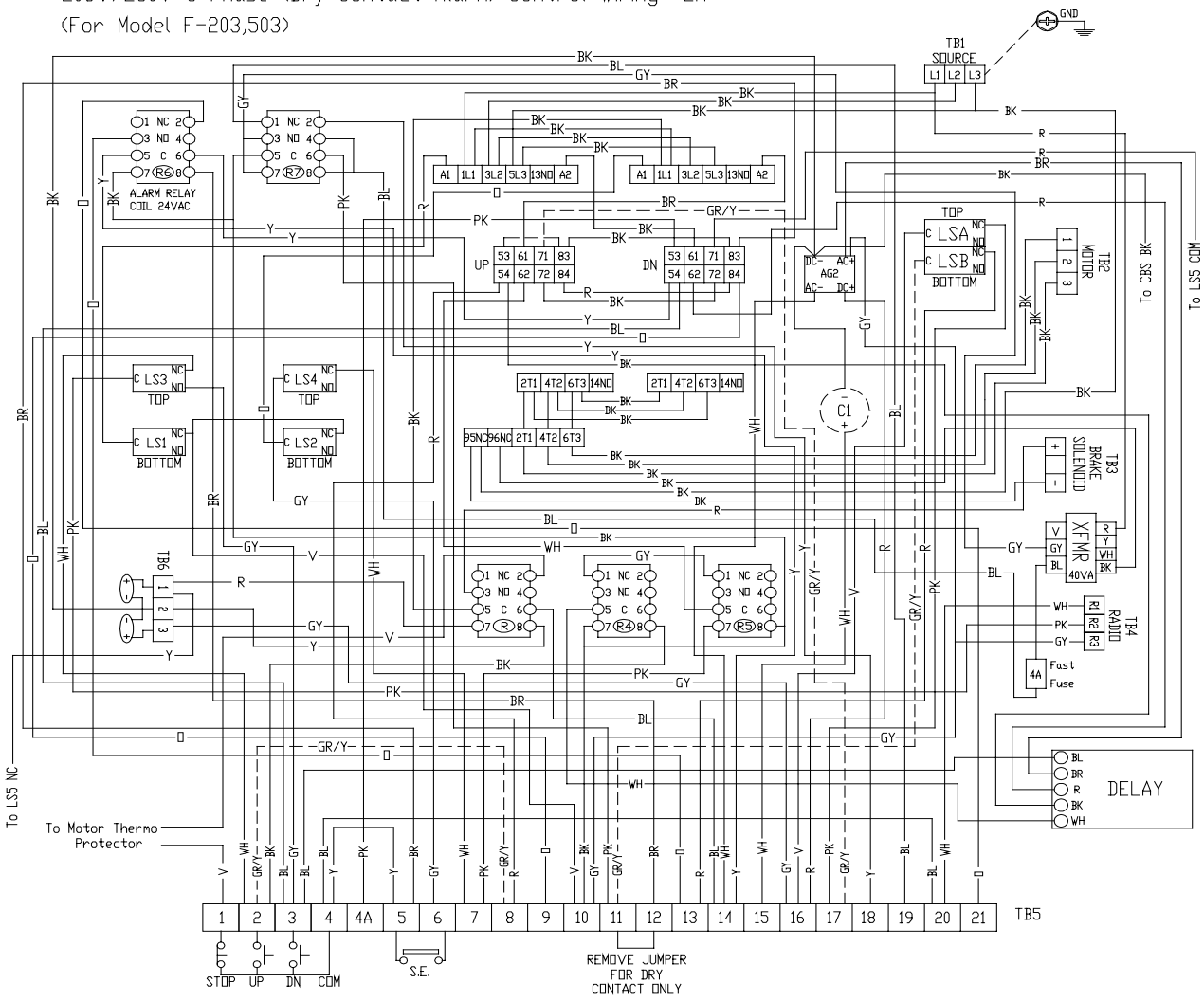


460V 3 Phase
MOTOR CONNECTION

Rev:2004.09.30


460V 3 Phase (Dry Contact Alarm) Control wiring RH
(For Model F-154)
EC801 R
NOTES:
R-OPEN RELAY (COIL 24VDC)
R4-FORCE OPEN RELAY (COIL 24VAC)
R5-SENSING-EDGE RELAY (COIL 24VAC)
R6-ALARM RELAY (COIL 24VAC)
R7-EXTERNAL POWER SOURCE RELAY (COIL 24VAC)
LS1-OPEN MICROSWITCH
LS2-CLOSE MICROSWITCH
LS3-RADIO CONTROL MICROSWITCH
LS4-SENSING-EDGE MICROSWITCH
LSA-FUSIBLE LINK MICRO (TOP)
LSB-FUSIBLE LINK MICRO (BOTTOM)
TERMINAL NUMBER:
1 CONTROL STATION-STOP
2 CONTROL STATION-UP
3 CONTROL STATION-DN
4 CONTROL STATION-COMMON
4&4A JUMP FOR MOMENTARY CONTACT DOWN
5&6 SENSING EDGE (S.E.) CONNECTION
7&8 JUMP FOR S.E. TO REVERSE
9&10 DOOR MOVING WARNING SIGNAL AC 24V
15&16 JUMP FOR ALARM AND POWER FAILURE 10 SEC DELAY
16&17 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
18&19 EXTERNAL POWER INPUT AC 24V
ALARM FUNCTION | 11&12 | 13&14 | 20&21
NO ALARM | JUMP | OPEN | OPEN
ALARM (GAV.DN) | DRY CONTACT | OPEN | OPEN
ALARM (PW.DN) | DRY CONTACT | JUMP | JUMP
To TB2 Motor Terminal
To TB5(1)
To R(2)
Thermo Protector
460V 3 Phase
MOTOR CONNECTION
Rev:2004.09.30
TB1 SOURCE
TB2 MOTOR
TB3 BRAKE SOLENOID
TB4 RADIO
TB5
TB6
ALARM RELAY COIL 24VAC
TOP
BOTTOM
UP
DN
AG2
XFMR 70VA
8A Fast Fuse
DELAY
To LS5 COM
To CBS BK
To LS5 NC
To Motor Thermo Protector
STOP UP DN COM
S.E.
REMOVE JUMPER FOR DRY CONTACT ONLY

208V/230V 3 Phase (Dry Contact Alarm) Control Wiring LH
(For Model F-203,503)



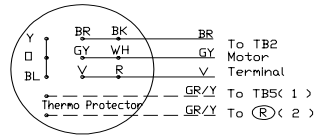
EC103 L

NOTES:
R-OPEN RELAY (COIL 24VDC)
R4-FORCE OPEN RELAY (COIL 24VAC)
R5-SENSING-EDGE RELAY (COIL 24VAC)
R6-ALARM RELAY (COIL 24VAC)
R7-EXTERNAL POWER SOURCE RELAY (COIL 24VAC)

LS1-OPEN MICROSWITCH
LS2-CLOSE MICROSWITCH
LS3-RADIO CONTROL MICROSWITCH
LS4-SENSING-EDGE MICROSWITCH
LSA-FUSIBLE LINK MICRO (TOP)
LSB-FUSIBLE LINK MICRO (BOTTOM)

TERMINAL NUMBER:
1 CONTROL STATION-STOP
2 CONTROL STATION-UP
3 CONTROL STATION-DN
4 CONTROL STATION-COMMON
4&4A JUMP FOR MOMENTARY CONTACT DOWN
5&6 SENSING EDGE (S.E.) CONNECTION
7&8 JUMP FOR S.E. TO REVERSE
9&10 DOOR MOVING WARNING SIGNAL AC 24V
15&16 JUMP FOR ALARM AND POWER FAILURE 10 SEC DELAY
16&17 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
18&19 EXTERNAL POWER INPUT AC 24V

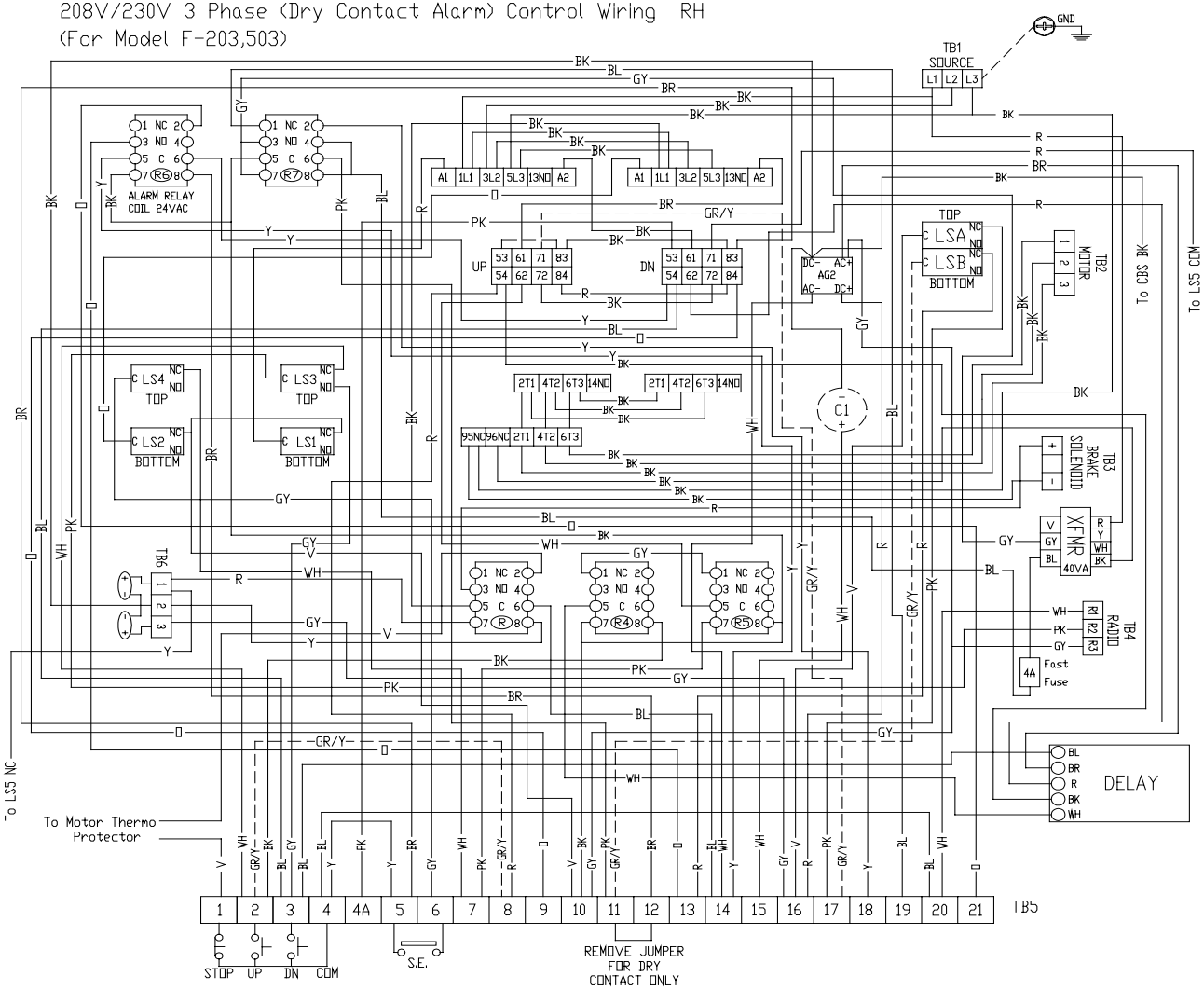
ALARM FUNCTION	11&12	13&14	20&21
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV.DN)	DRY CONTACT	OPEN	OPEN
ALARM (PW.DN)	DRY CONTACT	JUMP	JUMP



208V/230V 3 Phase MOTOR CONNECTION

Rev:2004.10.01

208V/230V 3 Phase (Dry Contact Alarm) Control Wiring RH
(For Model F-203,503)



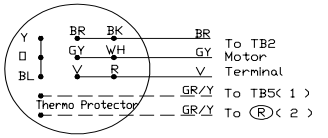
EC103 R

NOTES:
R-OPEN RELAY (COIL 24VDC)
R4-FORCE OPEN RELAY (COIL 24VAC)
R5-SENSING-EDGE RELAY (COIL 24VAC)
R6-ALARM RELAY (COIL 24VAC)
R7-EXTERNAL POWER SOURCE RELAY (COIL 24VAC)

LS1-OPEN MICROSWITCH
LS2-CLOSE MICROSWITCH
LS3-RADIO CONTROL MICROSWITCH
LS4-SENSING-EDGE MICROSWITCH
LSA-FUSIBLE LINK MICRO (TOP)
LSB-FUSIBLE LINK MICRO (BOTTOM)

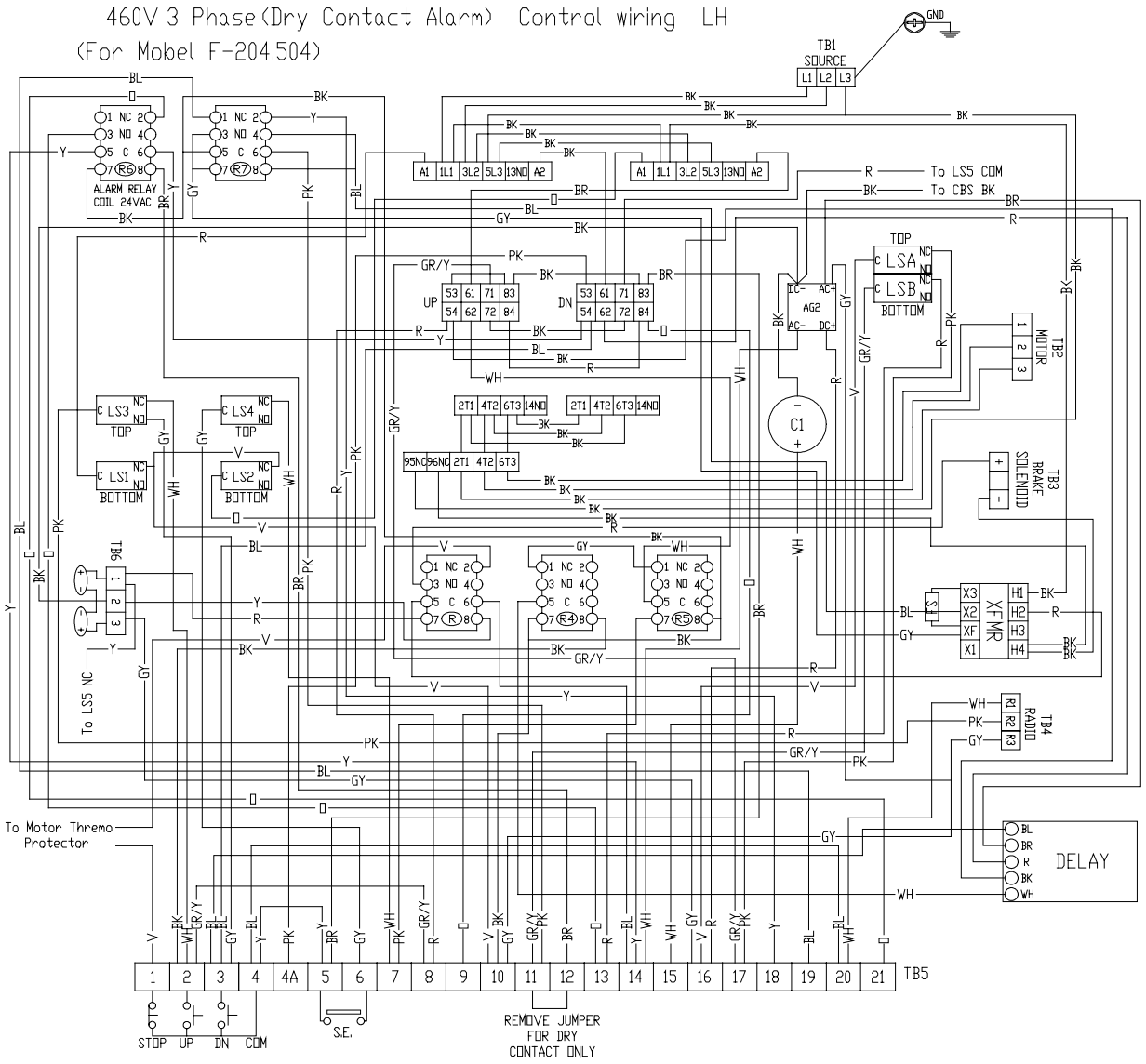
TERMINAL NUMBER:
1 CONTROL STATION-STOP
2 CONTROL STATION-UP
3 CONTROL STATION-DN
4 CONTROL STATION-COMMON
4&4A JUMP FOR MOMENTARY CONTACT DOWN
5&6 SENSING EDGE (S.E.) CONNECTION
7&8 JUMP FOR S.E. TO REVERSE
9&10 DOOR MOVING WARNING SIGNAL AC 24V
15&16 JUMP FOR ALARM AND POWER FAILURE 10 SEC DELAY
16&17 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
18&19 EXTERNAL POWER INPUT AC 24V

ALARM FUNCTION	11&12	13&14	20&21
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV.DN)	DRY CONTACT	OPEN	OPEN
ALARM (PW.DN)	DRY CONTACT	JUMP	JUMP



208V/230V 3 Phase
MOTOR CONNECTION

Rev:2004.10.01



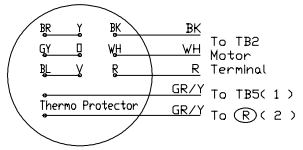
EC203 L

NOTES:
R-OPEN RELAY (COIL 24VDC)
R4-FORCE OPEN RELAY (COIL 24VAC)
R5-SENSING-EDGE RELAY (COIL 24VAC)
R6-ALARM RELAY (COIL 24VAC)
R7-EXTERNAL POWER SOURCE RELAY
(COIL 24VAC)

LS1-OPEN MICROSWITCH
LS2-CLOSE MICROSWITCH
LS3-RADIO CONTROL MICROSWITCH
LS4-SENSING-EDGE MICROSWITCH
LSA-FUSIBLE LINK MICRO (TOP)
LSB-FUSIBLE LINK MICRO (BOTTOM)

TERMINAL NUMBER:
1 CONTROL STATION-STOP
2 CONTROL STATION-UP
3 CONTROL STATION-DN
4 CONTROL STATION-COMMON
4&4A JUMP FOR MOMENTARY CONTACT DOWN
5&6 SENSING EDGE (S.E.) CONNECTION
7&8 JUMP FOR S.E. TO REVERSE
9&10 DOOR MOVING WARNING SIGNAL AC 24V
15&16 JUMP FOR ALARM AND POWER FAILURE
10 SEC DELAY
16&17 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
18&19 EXTERNAL POWER INPUT AC 24V

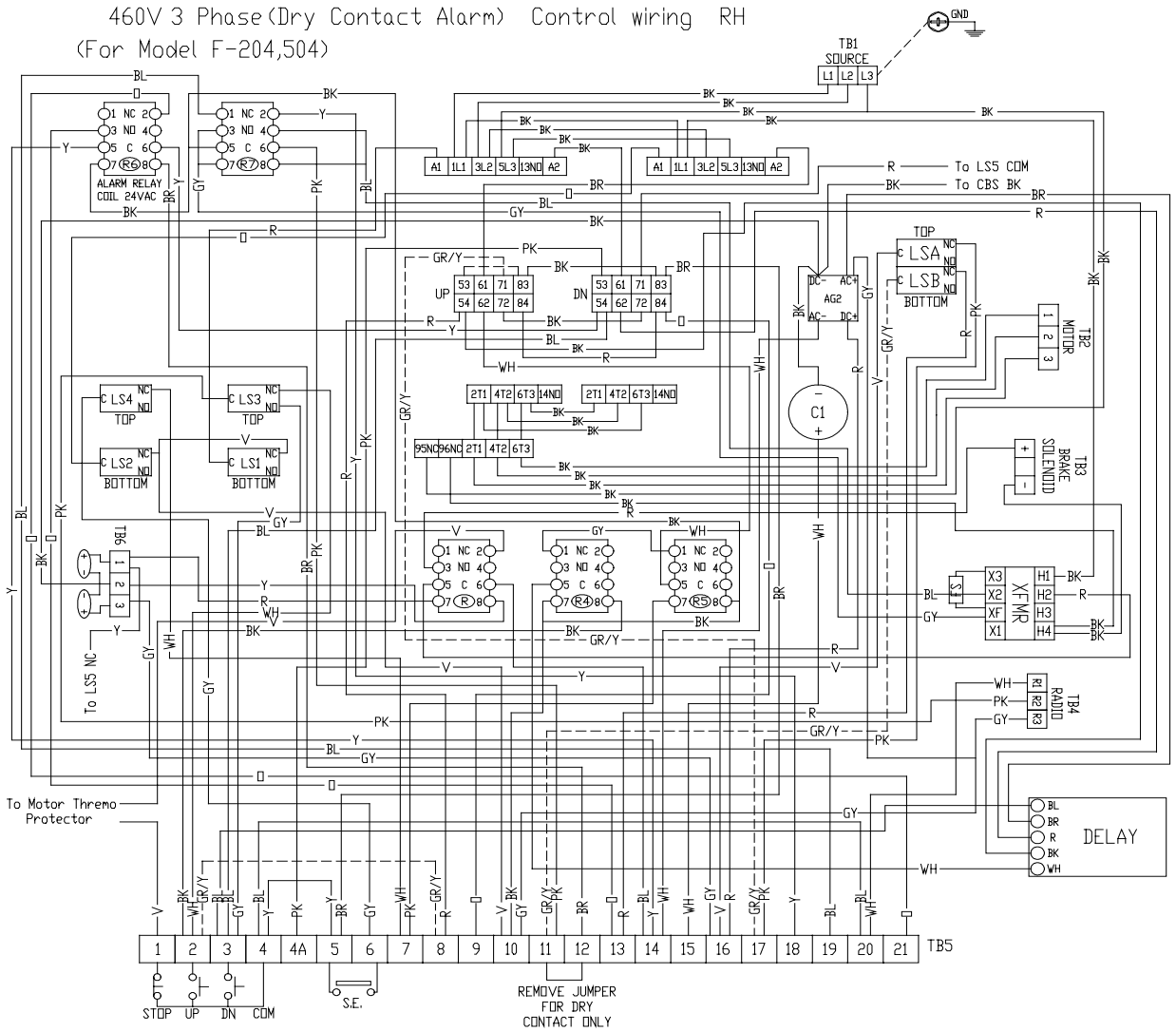
ALARM FUNCTION	11&12	13&14	20&21
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV.DN)	DRY CONTACT	OPEN	OPEN
ALARM (PW.DN)	DRY CONTACT	JUMP	JUMP



460V 3 Phase
MOTOR CONNECTION

(This drawing must be used in conjunction with :
F-200 and F-500 series Brake solenoid connections)

Rev:2004.10.01



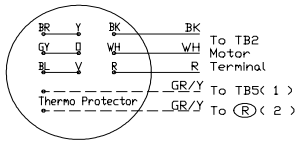
EC203 R

NOTES:
R-OPEN RELAY (COIL 24VDC)
R4-FORCE OPEN RELAY (COIL 24VAC)
R5-SENSING-EDGE RELAY (COIL 24VAC)
R6-ALARM RELAY (COIL 24VAC)
R7-EXTERNAL POWER SOURCE RELAY (COIL 24VAC)

LS1-OPEN MICROSWITCH
LS2-CLOSE MICROSWITCH
LS3-RADIO CONTROL MICROSWITCH
LS4-SENSING-EDGE MICROSWITCH
LSA-FUSIBLE LINK MICRO (TOP)
LSB-FUSIBLE LINK MICRO (BOTTOM)

TERMINAL NUMBER:
1 CONTROL STATION-STOP
2 CONTROL STATION-UP
3 CONTROL STATION-DN
4 CONTROL STATION-COMMON
4&4A JUMP FOR MOMENTARY CONTACT DOWN
5&6 SENSING EDGE (S.E.) CONNECTION
7&8 JUMP FOR S.E. TO REVERSE
9&10 DOOR MOVING WARNING SIGNAL AC 24V
15&16 JUMP FOR ALARM AND POWER FAILURE 10 SEC DELAY
16&17 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
18&19 EXTERNAL POWER INPUT AC 24V

ALARM FUNCTION	11&12	13&14	20&21
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV.DN)	DRY CONTACT	OPEN	OPEN
ALARM (PW.DN)	DRY CONTACT	JUMP	JUMP



460V 3 Phase
MOTOR CONNECTION

(This drawing must be used in conjunction with : F-200 and F-500 series Brake solenoid connections)

Rev:2004.10.01

Reference

Fail-Safe Series Terminal Connections

<table>
<tr><th>1</th><th>2</th><th>3</th><th>4</th><th>4A</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th><th>11</th><th>12</th><th>13</th><th>14</th><th>15</th><th>16</th><th>17</th><th>18</th><th>19</th><th>20</th><th>21</th></tr>
<tr><td colspan="5">Control Station</td><td colspan="2">Safety Edge Connection</td><td colspan="2">S.E. Open to Stop</td><td colspan="2" rowspan="2">Door moving warning signal 24VAC</td><td colspan="2" rowspan="2">Alarm Connection
Dry Contact</td><td colspan="2" rowspan="2">Alarm Function Please review Alarm Table</td><td colspan="2">10 Sec. Delay for central signal</td><td></td><td colspan="2" rowspan="2">External power source 24VAC</td><td colspan="2" rowspan="2">Alarm Function Please review Alarm Table</td></tr>
<tr><td>Stop</td><td>Up</td><td>Down</td><td>Com</td><td></td><td></td><td></td><td colspan="2">S.E. Jump to Reverse</td><td></td><td colspan="2">10 Sec delay for fusible link</td></tr>
<tr><td></td><td></td><td></td><td colspan="3">Jump for momentary contact close</td><td></td><td></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="4">If and only if alarm has delay, then fusible link has delay.</td><td colspan="2"></td></tr>
</table>

Alarm Table

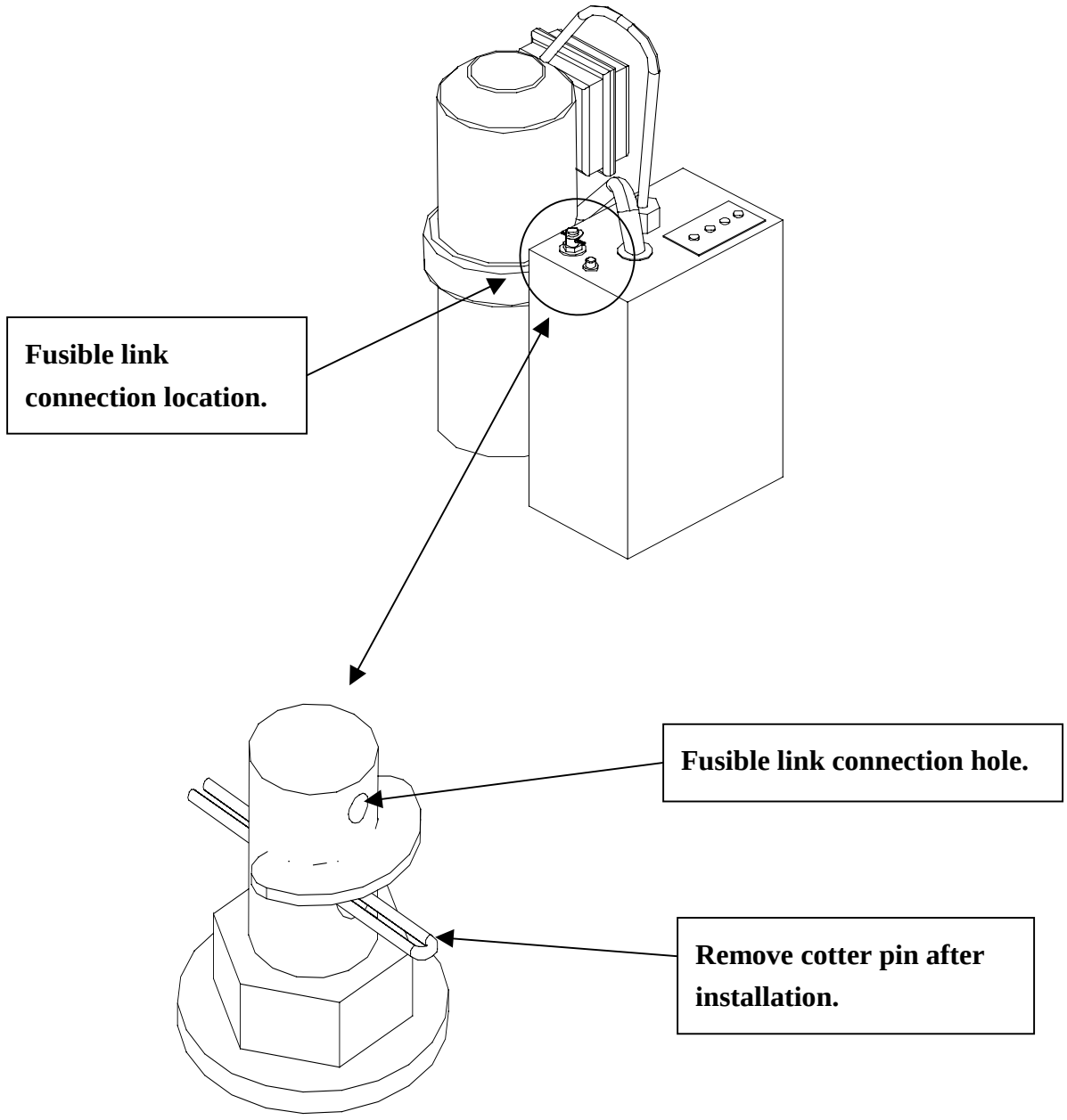
Alarm Function	Terminal		
	11&12	13&14	20&21
No Alarm	Jump	Open	Open
Alarm (Gravity Down)	Dry Contact	Open	Open
Alarm (Power Down)	Dry Contact	Jump	Jump

- It comes with 10-second delay standard during power failure. Other delay adjustments can be made on the terminal strip.
- Control box comes with one-second delay on reverse.
- When the door is moving downward, a push of “Up” or “Stop” button will stop the door from moving.
- When the door is moving downward, the radio control transmitter can stop and reverse the door at anytime.
- For gravity down during alarm function, no power to the control. The door will close under gravity.

FUSIBLE LINK CONNECTIONS

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

Consult NFPA-80 and the authority having jurisdiction for fusible link location(s) and method.



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

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. 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.

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.

3. Door may also be operated by remote devices.

MAINTENANCE INSTRUCTIONS

Brake adjustment is a part of installation and maintenance procedure. Please follow instruction for adjustment. Consult factory for detail information.

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.

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	●		
Drop-test	Inspect door, drop-test for proper operation and full closure per NFPA-80			●

- ❖ 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 obtained from the door manufacturer per NFPA-80.

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