

INSTALLATION INSTRUCTIONS
AND
OPERATION MANUAL

FS Series
Rolling Fire Door Operators

U.S. GEAR CORPORATION

06/08

IMPORTANT INSTALLATION INSTRUCTIONS

WARNING - To reduce the risk of severe injury or death:

1. READ AND FOLLOW ALL INSTALLATION INSTRUCTIONS.
2. Install only on a properly operating and balanced door. A door that is operating improperly could cause severe injury. Have qualified service personnel make repairs to cables, spring assemblies, and other hardware before installing the operator.

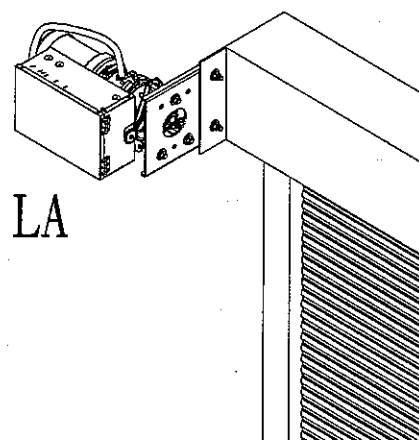
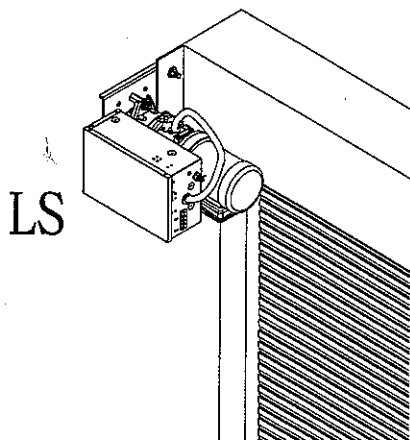
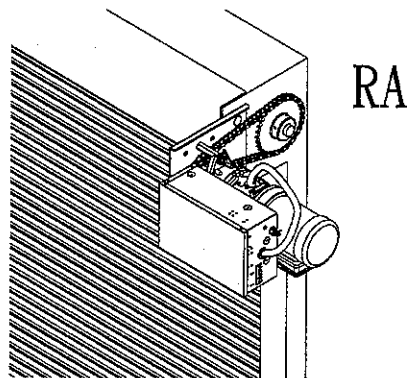
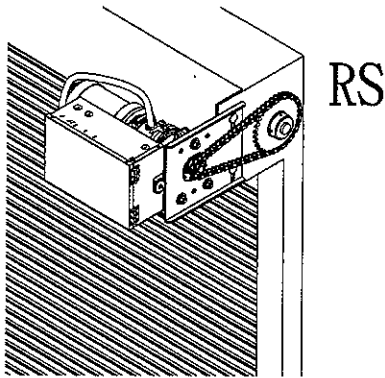
Exception: For fire door, spring tension must be adjusted so as to allow the fire door to self close during a drop test, alarm activation and/or power failure (Power failure condition only applies to fail-safe operators).

3. Remove all pull ropes and remove, or make inoperative, all locks (unless mechanically and/or electrically interlocked to the power unit) that are connected to the door before installing the operator.
4. Install the door operator at least 8 feet or more above the floor if the operator has exposed moving parts.
5. Do not connect the door operator to the source of power until instructed to do so.
6. Locate the control station: (a) within sight of the door, (b) at a minimum height of 5 feet so small children cannot reach it, and (c) away from all moving parts of the door.
7. Install the Entrapment Warning Placard next to the control station in a prominent location.
8. For products having a manual release, instruct the end user on the operation of the manual release.
9. The door is under extreme spring tension. Have qualified door mechanics make all necessary adjustments and repairs to the door.

10. 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.
11. 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.
12. 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.
13. Always disconnect power whenever installing or servicing the door operator or door.
14. All wiring is to comply with National Electrical Code (NEC) and local code requirements.
15. Any change in mounting position may result in change of operator rotation and consequently in change of control functions. Consult factory for any changes.

INSTALLATION INSTRUCTIONS

INSTALLATION POSITIONS (for 1/3hp and 1/2hp)

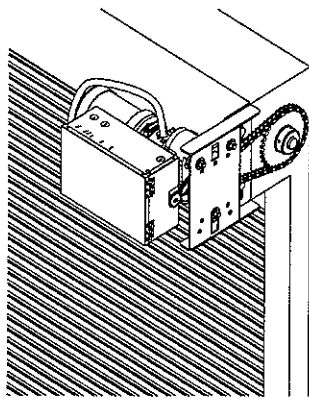


Consult factory for changes in installation positions.

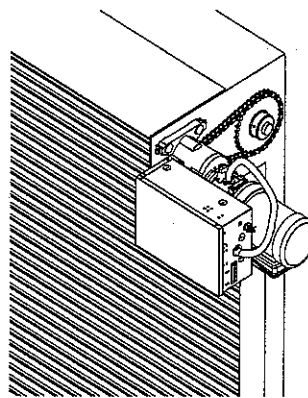
NOTE: Any change in mounting position may result in change of operator rotation and consequently in change of control functions. Consult factory for any changes. (LH=LS and RA, RH=RS and LA)

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

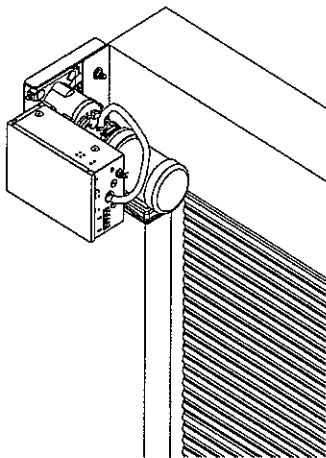
INSTALLATION POSITIONS (for 3/4hp)



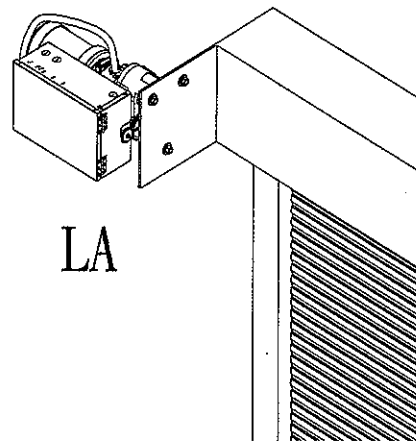
RS



RA



LS



LA

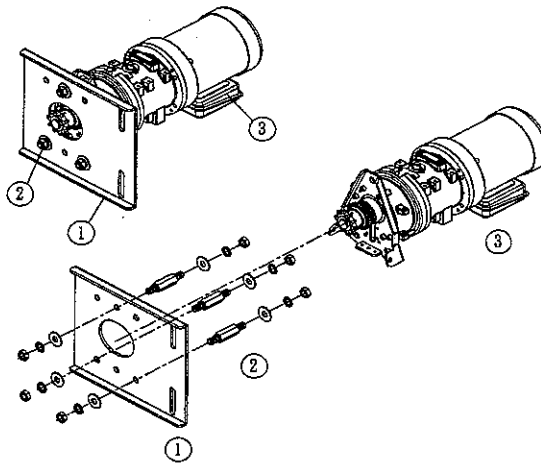
Consult factory for changes in installation positions.

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)

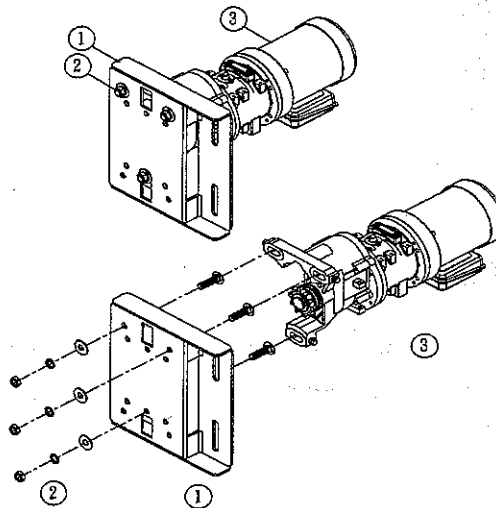
Operators mounted in alternate positions (LA, RA) require a straight mounting plate in lieu of the standard bent plate.

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. Attached and tighten the three legs (2) to the mounting plate. (Not applicable for 3/4hp)
4. Bolt the operator mounting plate (1) to the door bracket plate.
5. Finally, mount the operator (3) to the three legs (2) and tighten (for 1/3 and 1/2hp only). For 3/4hp, mount the operator (3) to the mounting plate (1).

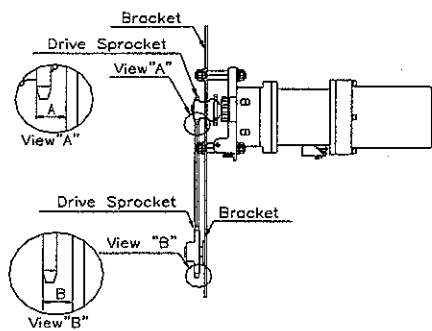


(Figure 1 for 1/3hp and 1/2hp)

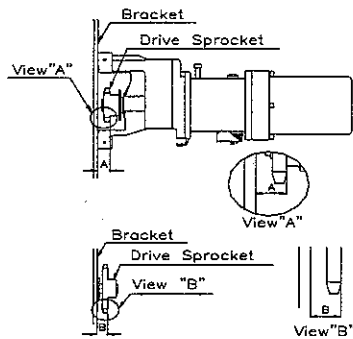
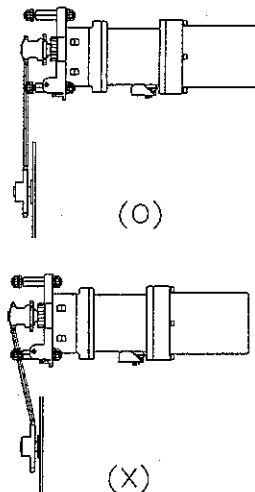


(Figure 2 for 3/4hp)

6. 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 1 for 1/3hp and 1/2hp; see Figure 2 for 3/4hp)
7. 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.

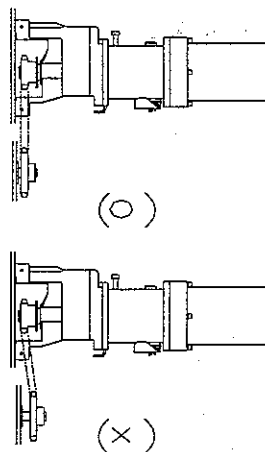


(Figure 1 for 1/3hp and 1/2hp)



(Figure 2)

(Figure 2 for 3/4hp)



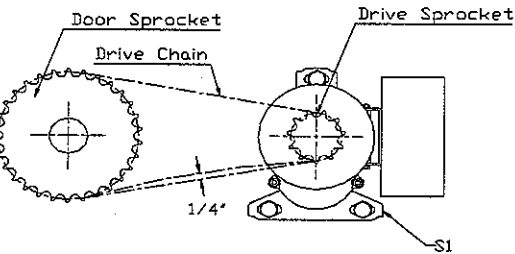
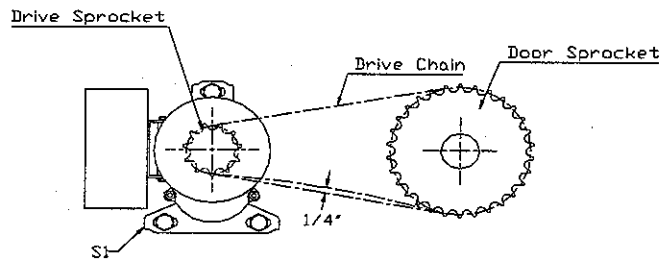
DRIVE CHAIN ADJUSTMENT

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

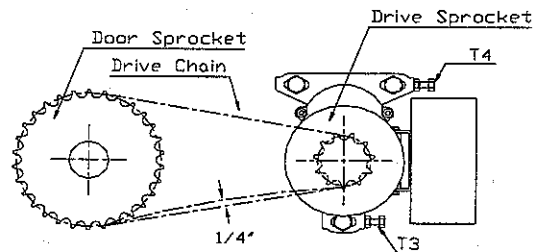
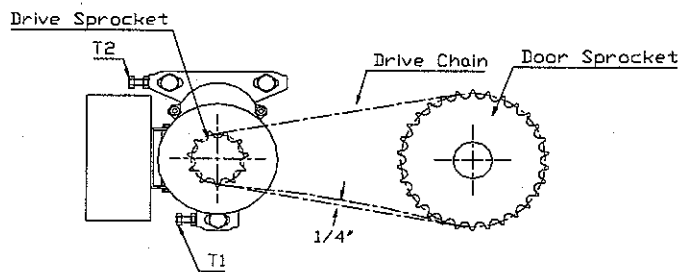
1. Adjust the drive chain by tilting or move the operator so that there is about 1/4" of slack when the chain is depressed.

Note: The set screw included in the operator may be used for adjustment. (See figure 1- S1 location for 1/3hp and 1/2hp), (See figure 2 - T1, T2, T3, T4 for 3/4hp).

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



(Figure 1 for 1/3hp and 1/2hp)



(Figure 2 for 3/4hp)

LIMIT SWITCH ADJUSTMENT

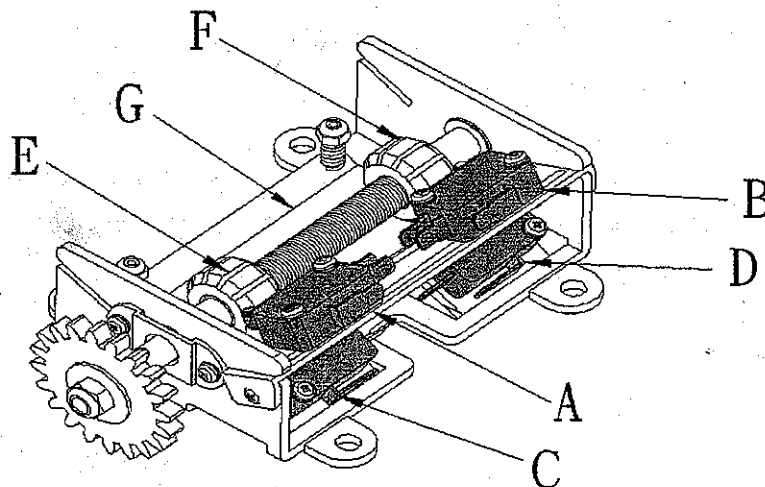
Make sure the limit cams are positioned between the limit switch actuators before proceeding with adjustments.

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



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

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



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

FS 115V 1 Phase (DRY CONTACT ALARM) LH (For FS-31)

EB105-31 L

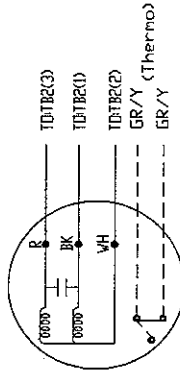
- NOTES:
- RA-WIRELESS EDGE RELAY (COIL 24VAC)
 - RS-SENSING-EDGE RELAY (COIL 24VAC)
 - RG-ALARM RELAY (COIL 24VAC)
 - RG-ALARM RELAY (COIL 24VAC)
 - R7-EXTERNAL POWER SOURCE RELAY (COIL 24VAC)
 - CAPACITOR(CM4)-FOR FS-31

- 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:
- CONTROL STATION-STOP
 - CONTROL STATION-UP
 - CONTROL STATION-DN
 - CONTROL STATION-COMMON

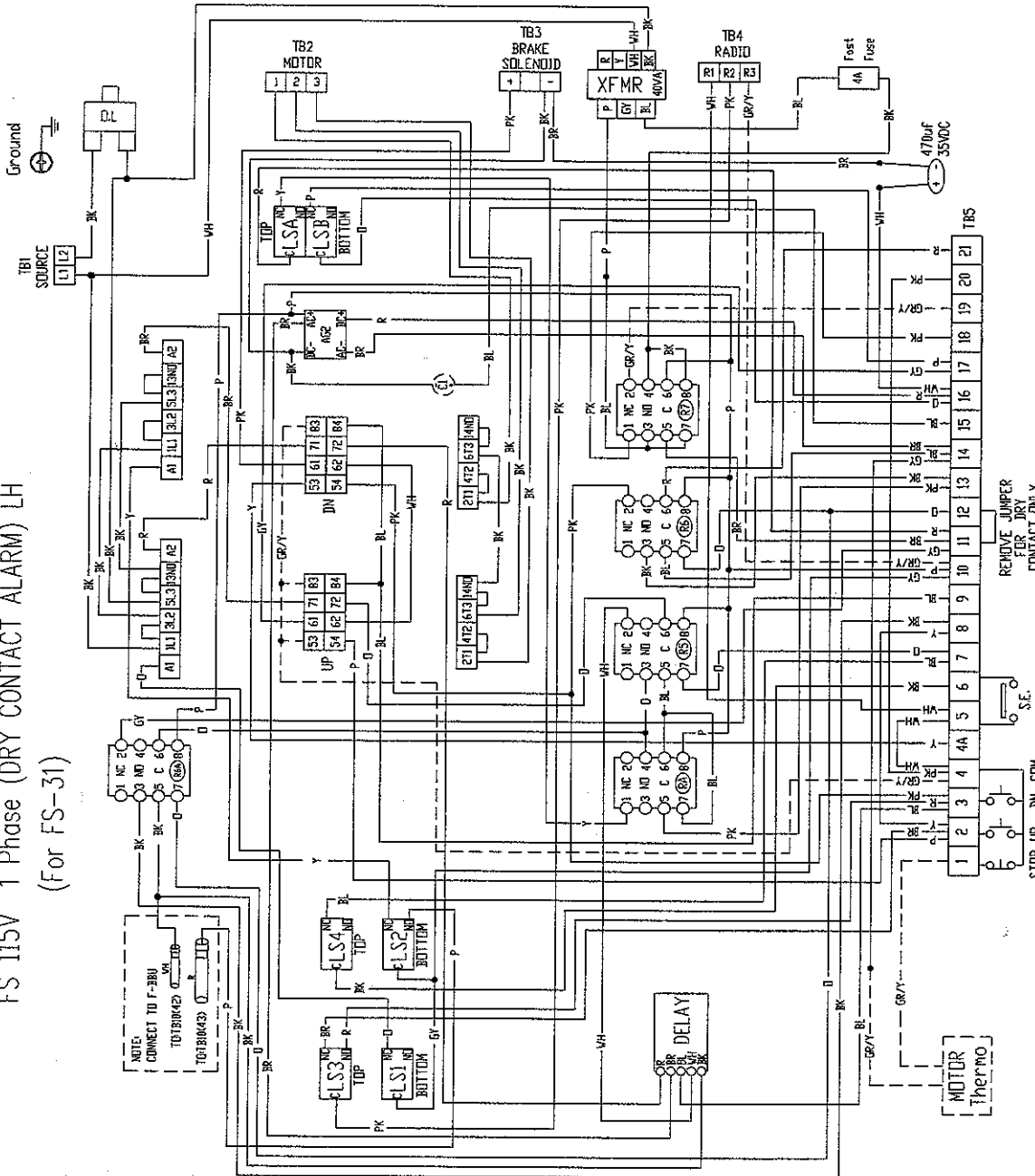
- 4A4A JUMP FOR MOMENTARY CONTACT DOWN
- 5A6 SENSING-EDGE (S.E.) CONNECTION
- 7A8 JUMP FOR S.E. TO REVERSE
- 9A10 DOOR MOVING WARNING SIGNAL AC 24V
- 15A16 JUMP FOR ALARM AND POWER FAILURE 10 SEC DELAY
- 16A17 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
- 18A19 EXTERNAL POWER INPUT AC 24V

ALARM FUNCTION	11E12	13E14	20E21
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV/DND)	DRY CONTACT	OPEN	OPEN
ALARM (PV/DND)	DRY CONTACT	JUMP	JUMP



110V/115V 1 Phase
MOTOR CONNECTION

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FS 115V 1 Phase (DRY CONTACT ALARM) RH
(For FS-31)

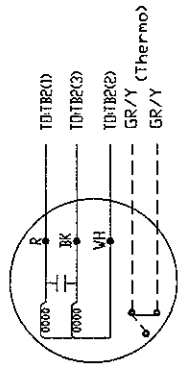
EB105-31 R

- NOTES:
- RA-WIRELESS EDGE RELAY (COIL 24VAC)
 - RS-SENSING-EDGE RELAY (COIL 24VAC)
 - R6-ALARM RELAY (COIL 24VAC)
 - R6A-ALARM RELAY (COIL 24VAC)
 - R7-EXTERNAL POWER SOURCE RELAY (COIL 24VAC) CAPACITOR(1M)-FOR FS-31

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

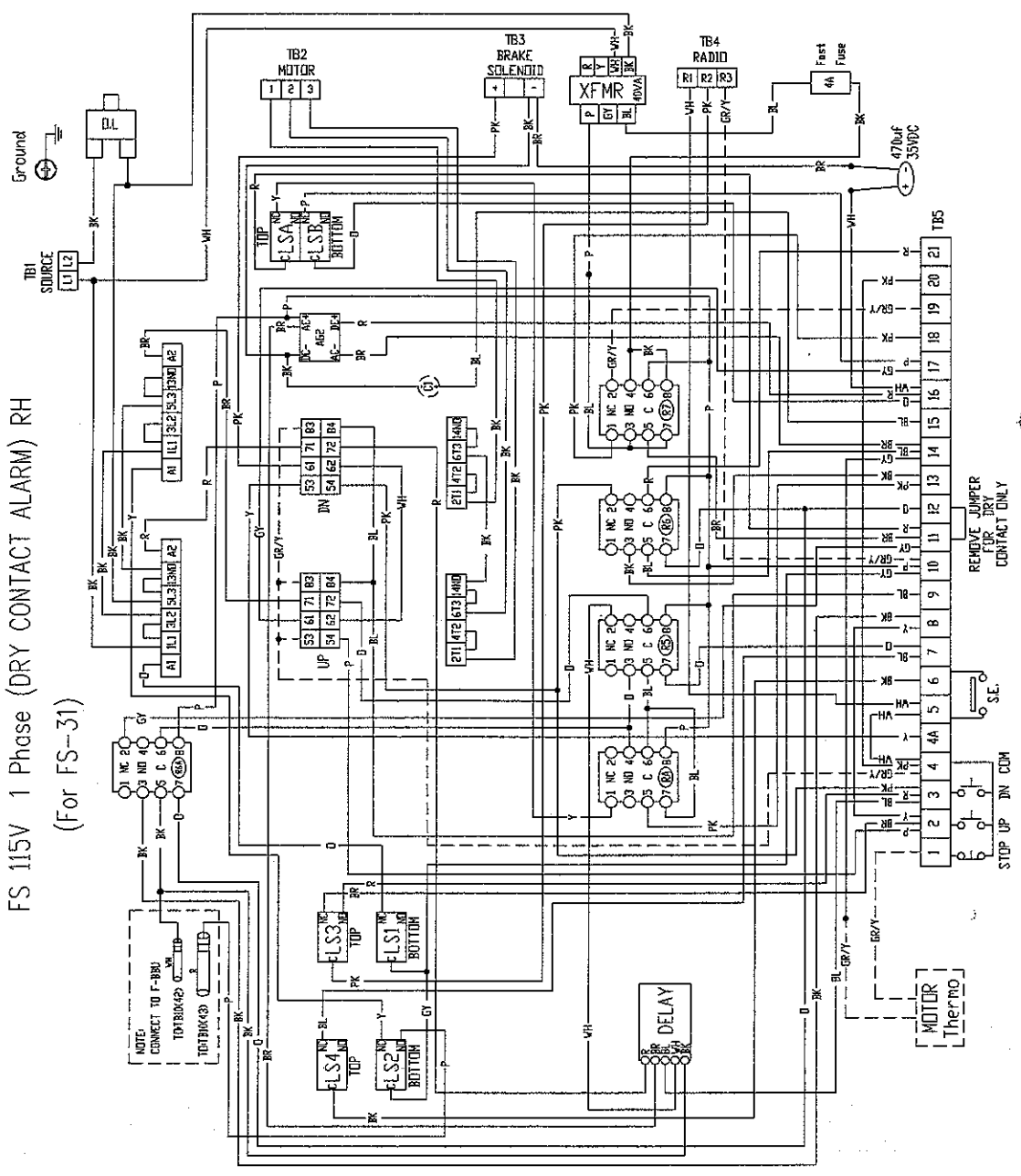
- TERMINAL NUMBER:
- CONTROL STATION-STOP
 - CONTROL STATION-UP
 - CONTROL STATION-DN
 - CONTROL STATION-COMMON
 - 4&4A JUMP FOR MOMENTARY CONTACT DOWN
 - 5&6 SENSING-EDGE (S.E.) CONNECTION
 - 7&8 JUMP FOR S.E. TO REVERSE
 - 9&10 MOTOR MOVING WARNING SIGNAL AC 24V
 - 15&16 JUMP FOR ALARM AND POWER FAILURE 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 (GVA/DN)	DRY CONTACT	DRY CONTACT	DRY CONTACT
ALARM (PVA/DN)	DRY CONTACT	JUMP	JUMP



110V/115V 1 Phase
MOTOR CONNECTION

Rev:2008.05.30



FS 115V 1 Phase (DRY CONTACT ALARM) LH (For FS-51, FS-71)

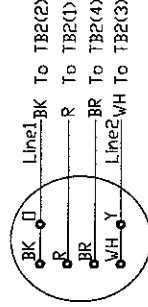
EB105-1 L

- NOTES:
 RA-WIRELESS EDGE RELAY (COIL 24VAC)
 R5-SENSING-EDGE RELAY (COIL 24VAC)
 R6-ALARM RELAY (COIL 24VAC)
 R6A-ALARM RELAY (COIL 24VAC)
 R7-EXTERNAL POWER SOURCE RELAY (COIL 24VAC)
 CAPACITOR(CM2)-FOR FS-51
 CAPACITOR(CM2)-FOR FDR FOR FS-71

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

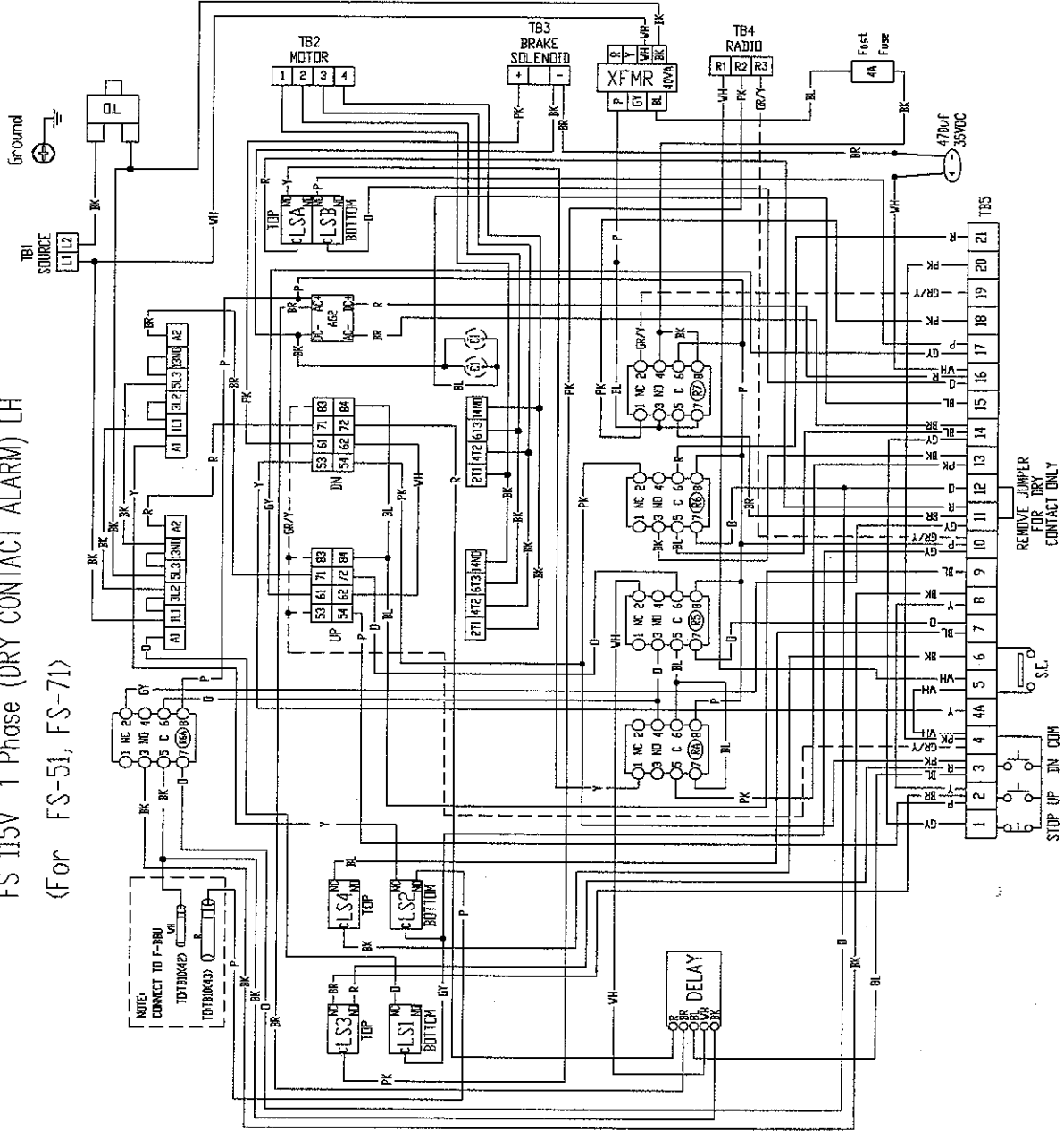
- TERMINAL NUMBER
 1 CONTROL STATION-STOP
 2 CONTROL STATION-UP
 3 CONTROL STATION-DN
 4 CONTROL STATION-COMMON
 484A JUMP FOR MOMENTARY CONTACT DOWN
 586 SENSING-EDGE (S.E.) CONNECTION
 788 JUMP FOR S.E. TO REVERSE
 9810 MOTOR MOVING WARNING SIGNAL AC 24V
 15816 JUMP FOR ALARM AND POWER FAILURE 10 SEC DELAY
 16817 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
 18819 EXTERNAL POWER INPUT AC 24V

ALARM FUNCTION	11812	13814	20821
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV/DN)	DRY CONTACT	OPEN	OPEN
ALARM (PV/DN)	DRY CONTACT	JUMP	JUMP



110V/115V 1 Phase
MOTOR CONNECTION

Rev:2008.05.30



FS 115V 1 Phase (DRY CONTACT ALARM) RH
(For FS-51, FS-71)

EB105-1 R

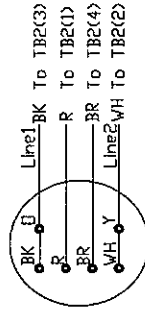
- NOTES:
 RA-WIRELESS EDGE RELAY (COIL 24VAC)
 RS-SENSING-EDGE RELAY (COIL 24VAC)
 RG-ALARM RELAY (COIL 24VAC)
 RGA-ALARM RELAY (COIL 24VAC)
 R7-EXTERNAL POWER SOURCE RELAY (COIL 24VAC)
 CAPACITOR(C10)-FOR FS-51
 CAPACITOR(C10)-FOR FS-71

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

TERMINAL NUMBER:

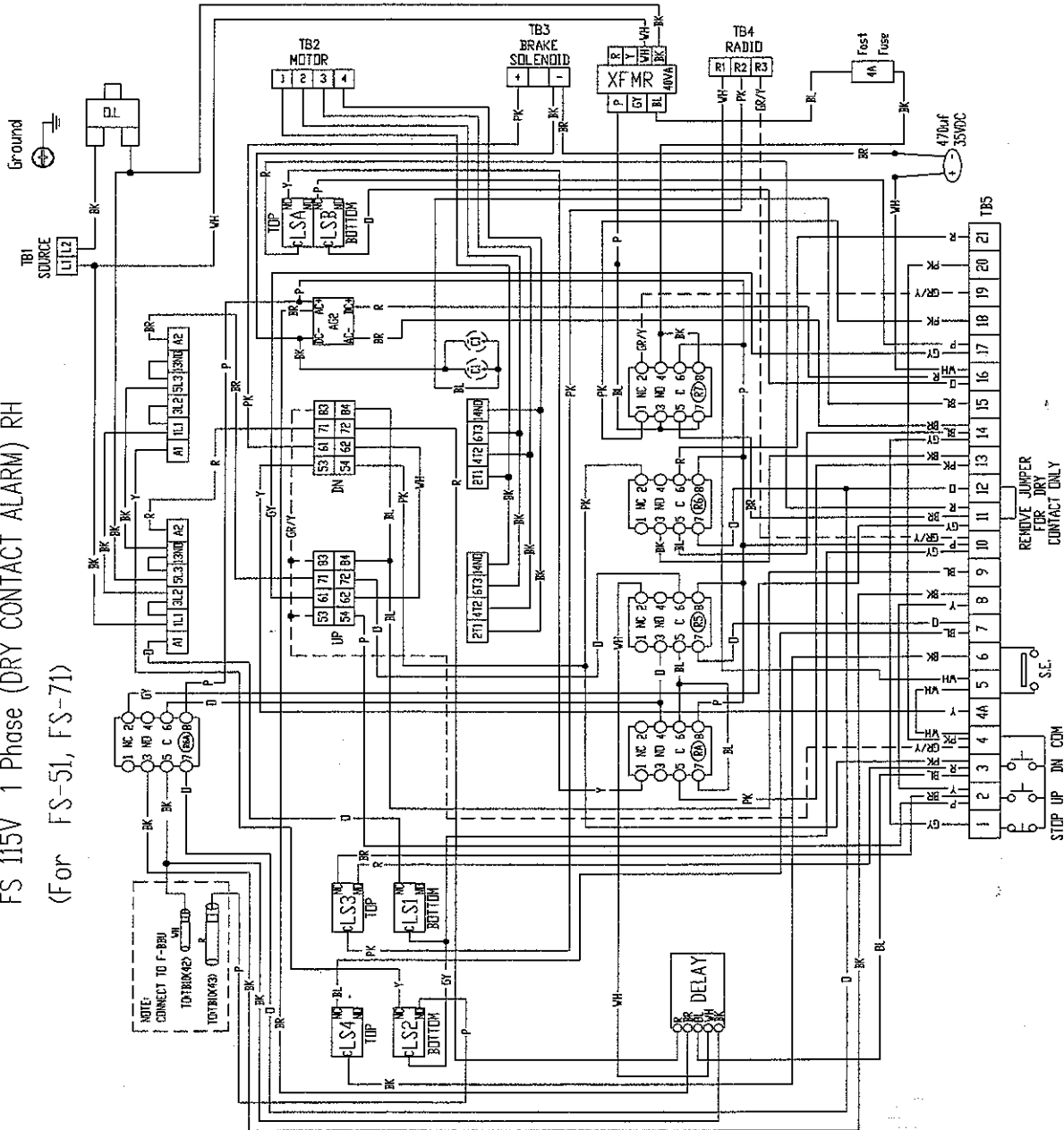
- 1 CONTROL STATION-STOP
- 2 CONTROL STATION-UP
- 3 CONTROL STATION-DN
- 4 CONTROL STATION-COMMON
- 4A-4A JUMP FOR MOMENTARY CONTACT DOWN
- 5-6 SENSING-EDGE (S.E.) CONNECTION
- 7-8 JUMP FOR S.E. TO REVERSE
- 9-10 DDER MOVING VARNING SIGNAL AC 24V
- 15-16 JUMP FOR ALARM AND POWER FAILURE 10 SEC DELAY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

ALARM FUNCTION	18-12	13-14	20-21
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAY/DN)	DRY CONTACT	OPEN	OPEN
ALARM (PW/DN)	DRY CONTACT	JUMP	JUMP



110V/115V 1 Phase
MOTOR CONNECTION

Rev2008.05.30



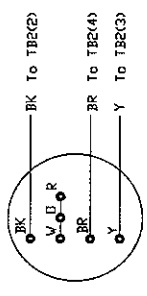
FS 230V 1 Phase (DRY CONTACT ALARM) LH
(For FS-32, FS-52, FS-72)

EB205 L

- NOTES:
- RA-WIRELESS EDGE RELAY (COIL 24VAC)
 - RS-SENSING-EDGE RELAY (COIL 24VAC)
 - RG-ALARM RELAY (COIL 24VAC)
 - RG4-ALARM RELAY (COIL 24VAC)
 - R7-EXTERNAL POWER SOURCE RELAY (COIL 24VAC)
 - CAPACITOR(C1-C2)-FOR FS-32, FS-52
 - CAPACITOR(C3-C4)-FOR FS-72

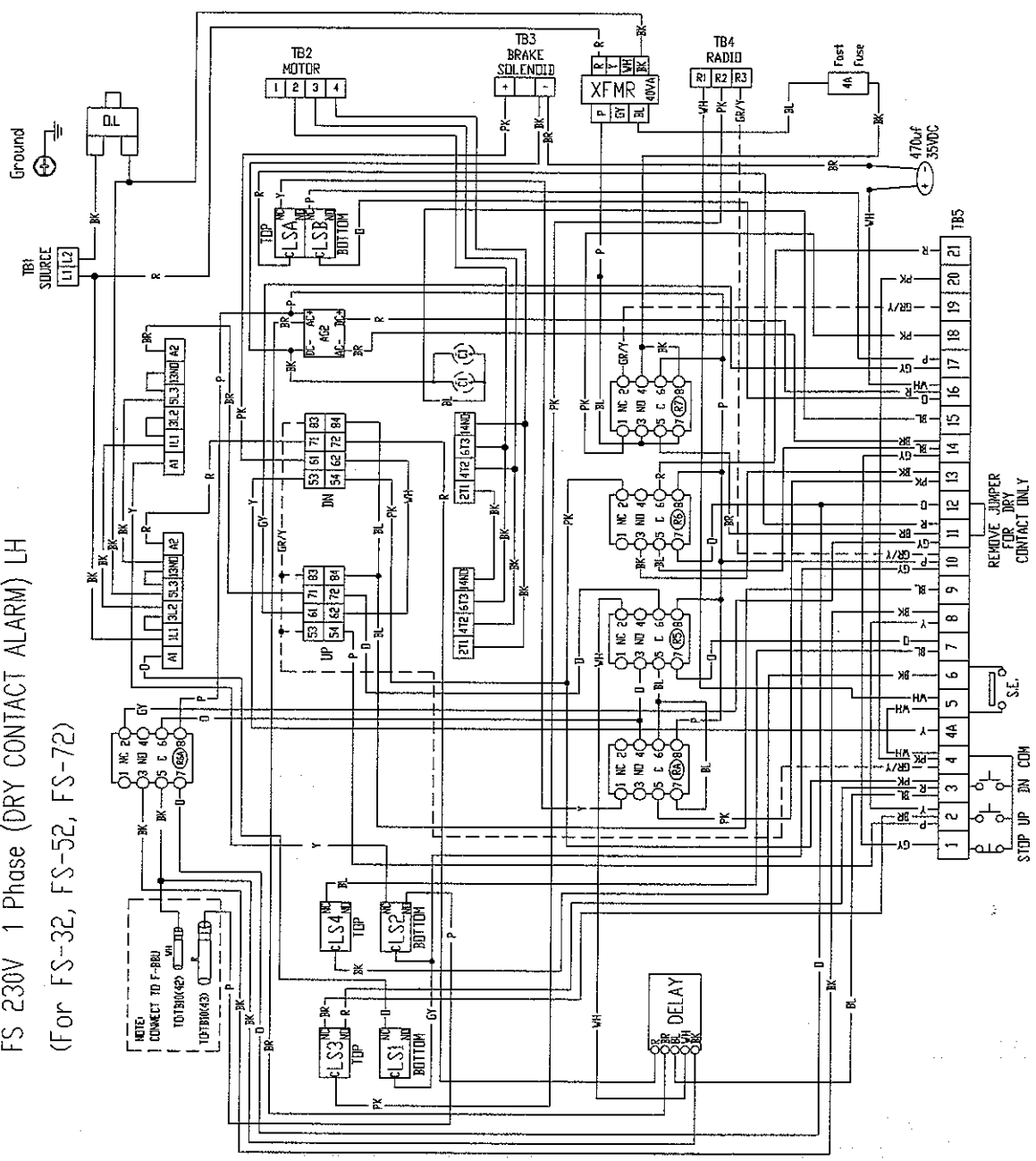
- LS1-OPEN MICROSWITCH
 - LS2-CLOSE MICROSWITCH
 - LS3-RADIO CONTROL MICROSWITCH
 - LS4-SENSING-EDGE MICROSWITCH
 - LSA-FUSIBLE LINK MICRO (TOP)
 - LSB-FUSIBLE LINK MICRO (BOTTOM)
- TERMINAL NUMBER:
- 1 CONTROL STATION-STOP
 - 2 CONTROL STATION-UP
 - 3 CONTROL STATION-DN
 - 4 CONTROL STATION-COMMON
 - 4A4A JUMP FOR MOMENTARY CONTACT DOWN
 - 5A5 SENSING-EDGE (S.E.) CONNECTION
 - 7A8 JUMP FOR S.E. TO REVERSE
 - 9A10 DDER MOVING WARNING SIGNAL AC 24V
 - 15A15 JUMP FOR ALARM AND POWER FAILURE 10 SEC DELAY
 - 16A17 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
 - 18A19 EXTERNAL POWER INPUT AC 24V

ALARM FUNCTION	18A12	13A14	20A21
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV/DN)	DRY CONTACT	OPEN	OPEN
ALARM (PW/DN)	DRY CONTACT	JUMP	JUMP



230V 1 Phase
MOTOR CONNECTION

Rev:2008.05.30



FS 230V 1 Phase (DRY CONTACT ALARM) RH (For FS-32, FS-52, FS-72)

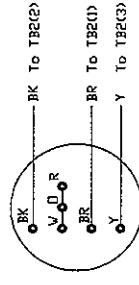
EB305 R

- NOTES:
- RA-WIRELESS EDGE RELAY (COIL 24VAC)
 - R5-SENSING-EDGE RELAY (COIL 24VAC)
 - R6-ALARM RELAY (COIL 24VAC)
 - R6A-ALARM RELAY (COIL 24VAC)
 - R7-EXTERNAL POWER SOURCE RELAY (COIL 24VAC)
 - CAPACITOR(C1)(C2)-FOR FS-32, FS-52
 - CAPACITOR(C1)(C2)-FOR FS-72

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

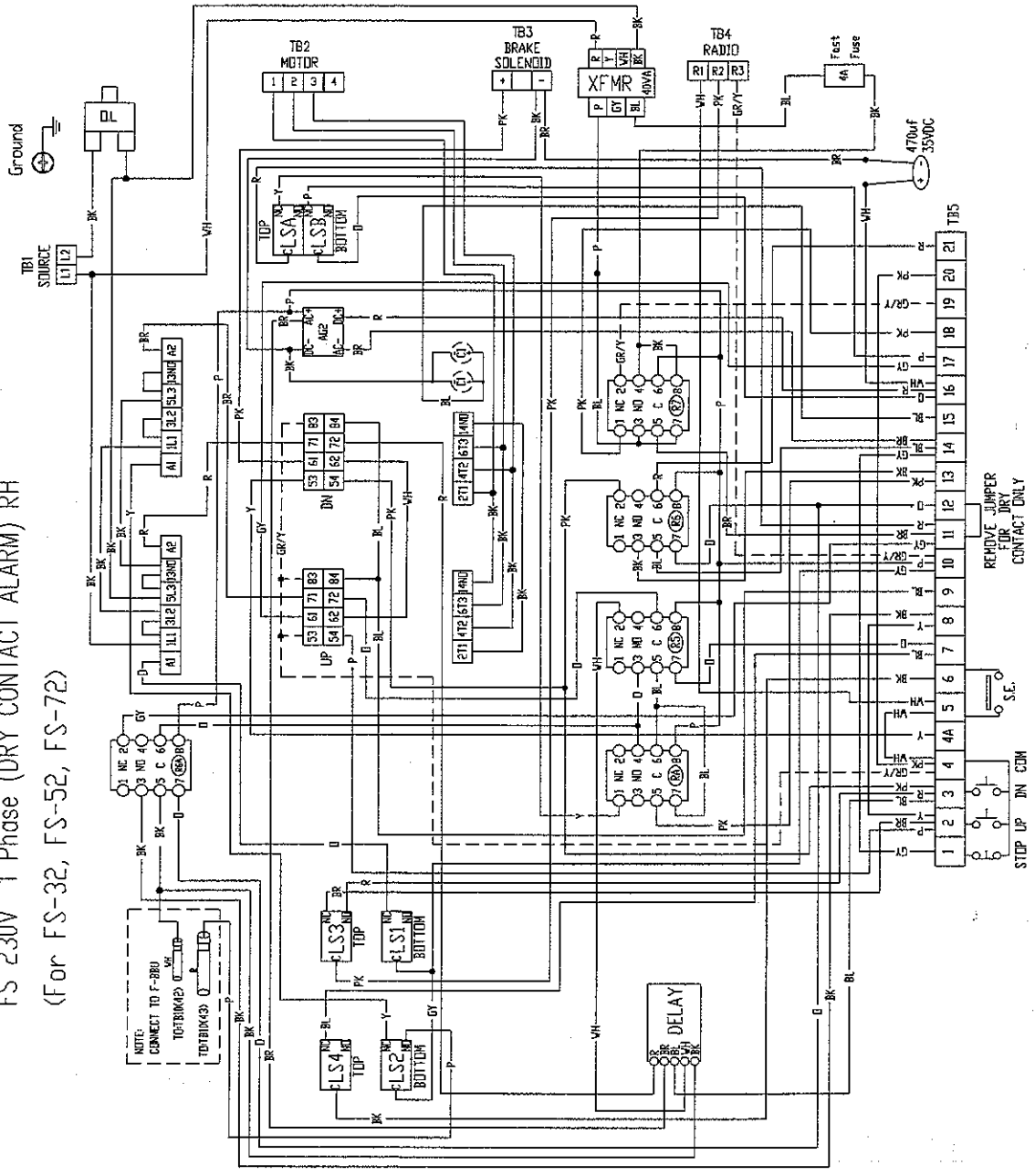
- TERMINAL NUMBER:
- CONTROL STATION-STOP
 - CONTROL STATION-UP
 - CONTROL STATION-DN
 - CONTROL STATION-COMMON
- 484A JUMP FOR MOMENTARY CONTACT DOWN
 - 586 SENSING-EDGE (S.E.) CONNECTION
 - 788 JUMP FOR S.E. TO REVERSE
 - 9810 DOOR MOVING WARNING SIGNAL AC 24V
 - 15836 JUMP FOR ALARM AND POWER FAILURE 10 SEC DELAY
 - 16837 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
 - 18839 EXTERNAL POWER INPUT AC 24V

ALARM FUNCTION	11812	13814	20821
NO ALARM	JUMP	OPEN	OPEN
ALARM (P.V.DN)	DRY CONTACT	OPEN	OPEN
ALARM (P.V.DN)	DRY CONTACT	JUMP	JUMP



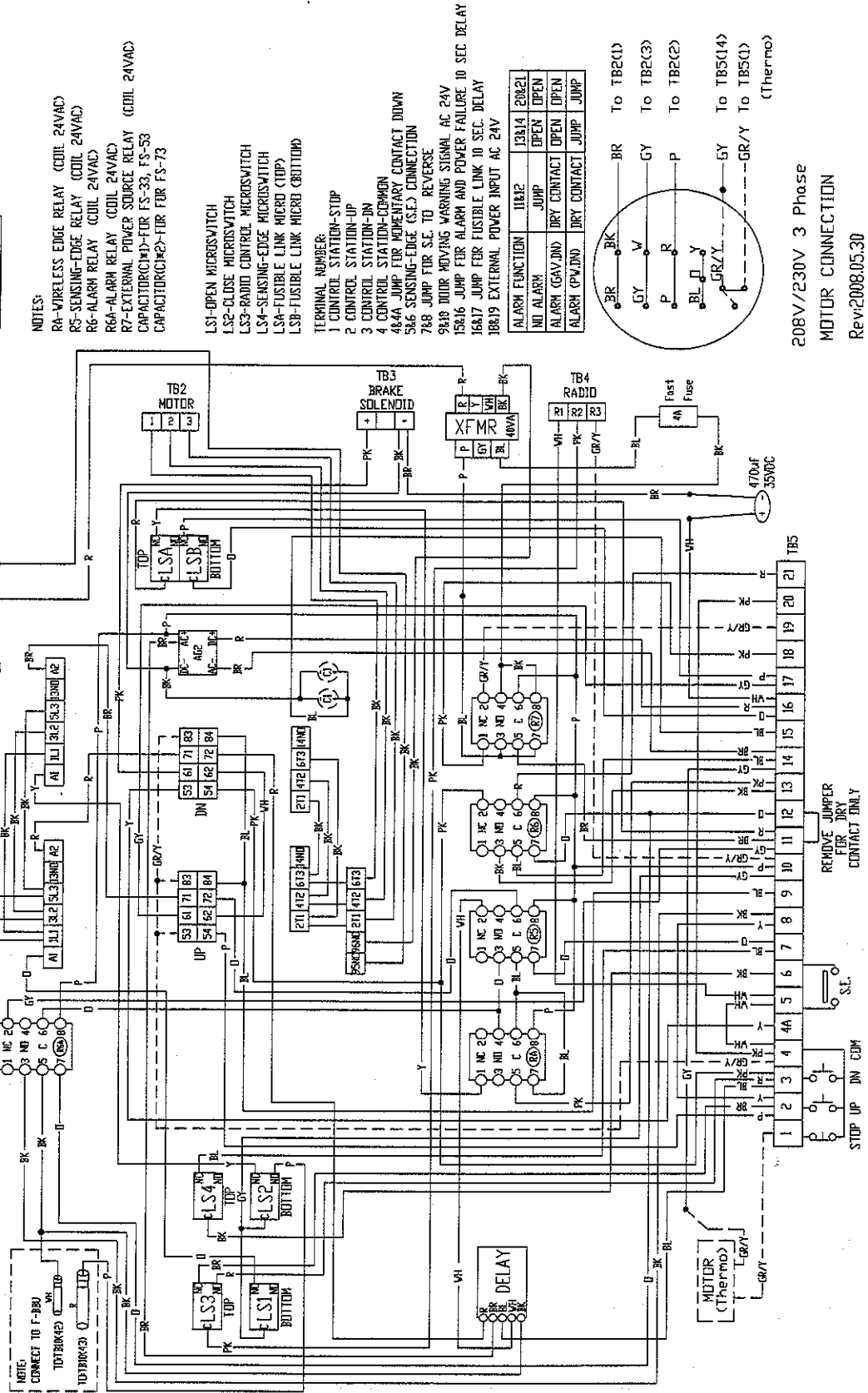
230V 1 Phase
MOTOR CONNECTION

Rev:2008.05.30



FS 208/230V 3 Phase (DRY CONTACT ALARM) LH (For FS-33, FS-53, FS-73)

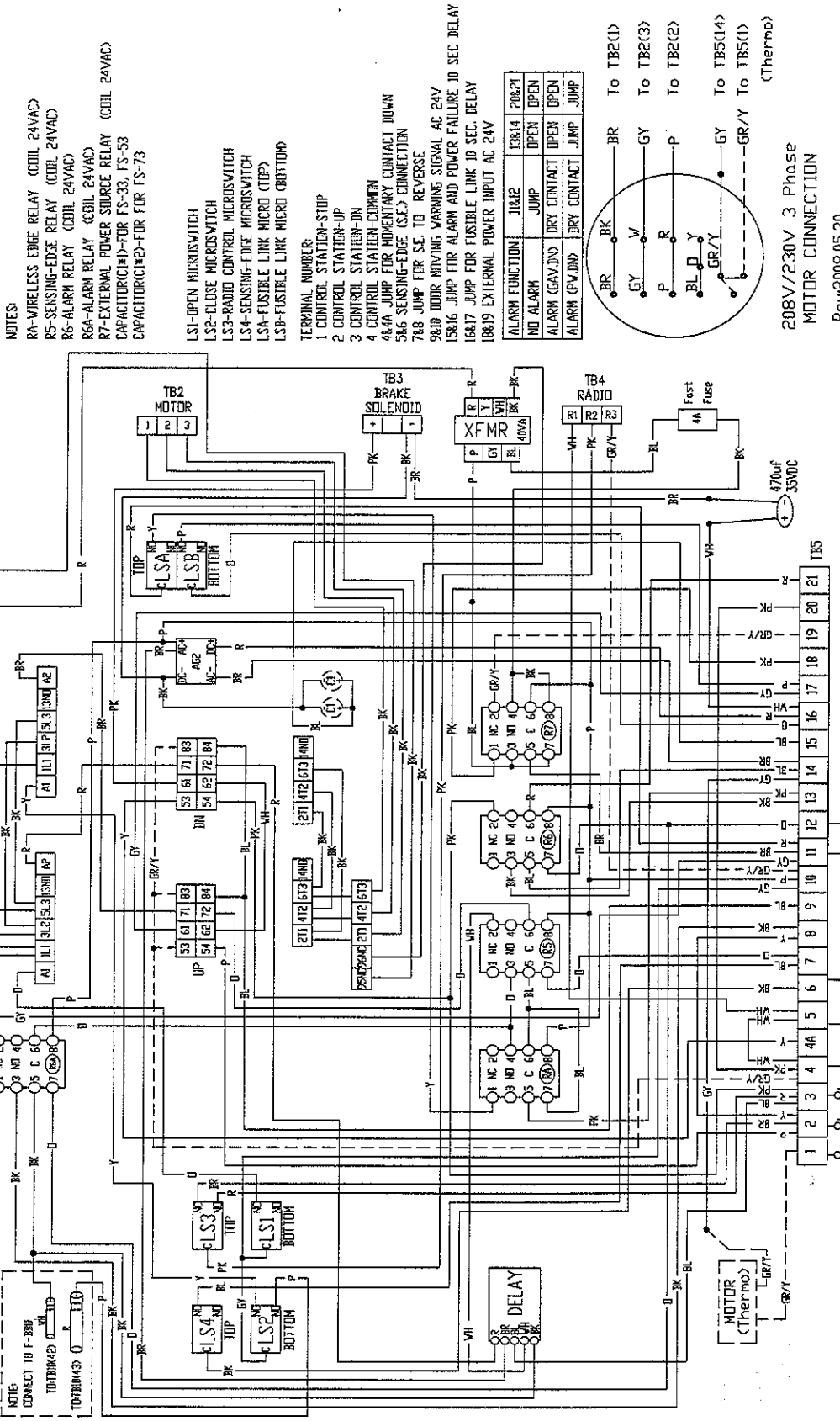
EB405 L



208V/230V 3 Phase
MOTOR CONNECTION
Rev:2008.05.30

FS 208/230V 3 Phase (DRY CONTACT ALARM) RH
(For FS-33, FS-53, FS-73)

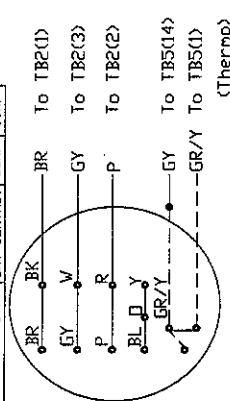
EB405 R



- NOTES:
- RA-WIRELESS EDGE RELAY (COIL 24VAC)
 - RS-SENSING-EDGE RELAY (COIL 24VAC)
 - R6-ALARM RELAY (COIL 24VAC)
 - R6A-ALARM RELAY (COIL 24VAC)
 - R7-EXTERNAL POWER SOURCE RELAY (COIL 24VAC)
 - CAPACITOR(C1)2-FOR FS-33, FS-53
 - CAPACITOR(C1)2-FOR FS-73

- LS1-OPEN MICROSWITC
 - LS2-CLOSE MICROSWITC
 - LS3-RADIO CONTROL MICROSWITC
 - LS4-SENSING-EDGE MICROSWITC
 - LSA-FUSIBLE LINK MICRO (TOP)
 - LSB-FUSIBLE LINK MICRO (BOTTOM)
- TERMINAL NUMBER:
- CONTROL STATION-STOP
 - CONTROL STATION-UP
 - CONTROL STATION-DN
 - CONTROL STATION-COMM
 - 48A4 JUMP FOR MOMENTARY CONTACT DOWN
 - 5A6 SENSING-EDGE (S.E.) CONNECTION
 - 7A8 JUMP FOR S.E. TO REVERSE
 - 9A10 DOOR MOVING WARNING SIGNAL AC 24V
 - 15A16 JUMP FOR ALARM AND POWER FAILURE 10 SEC DELAY
 - 16A17 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
 - 18A19 EXTERNAL POWER INPUT AC 24V

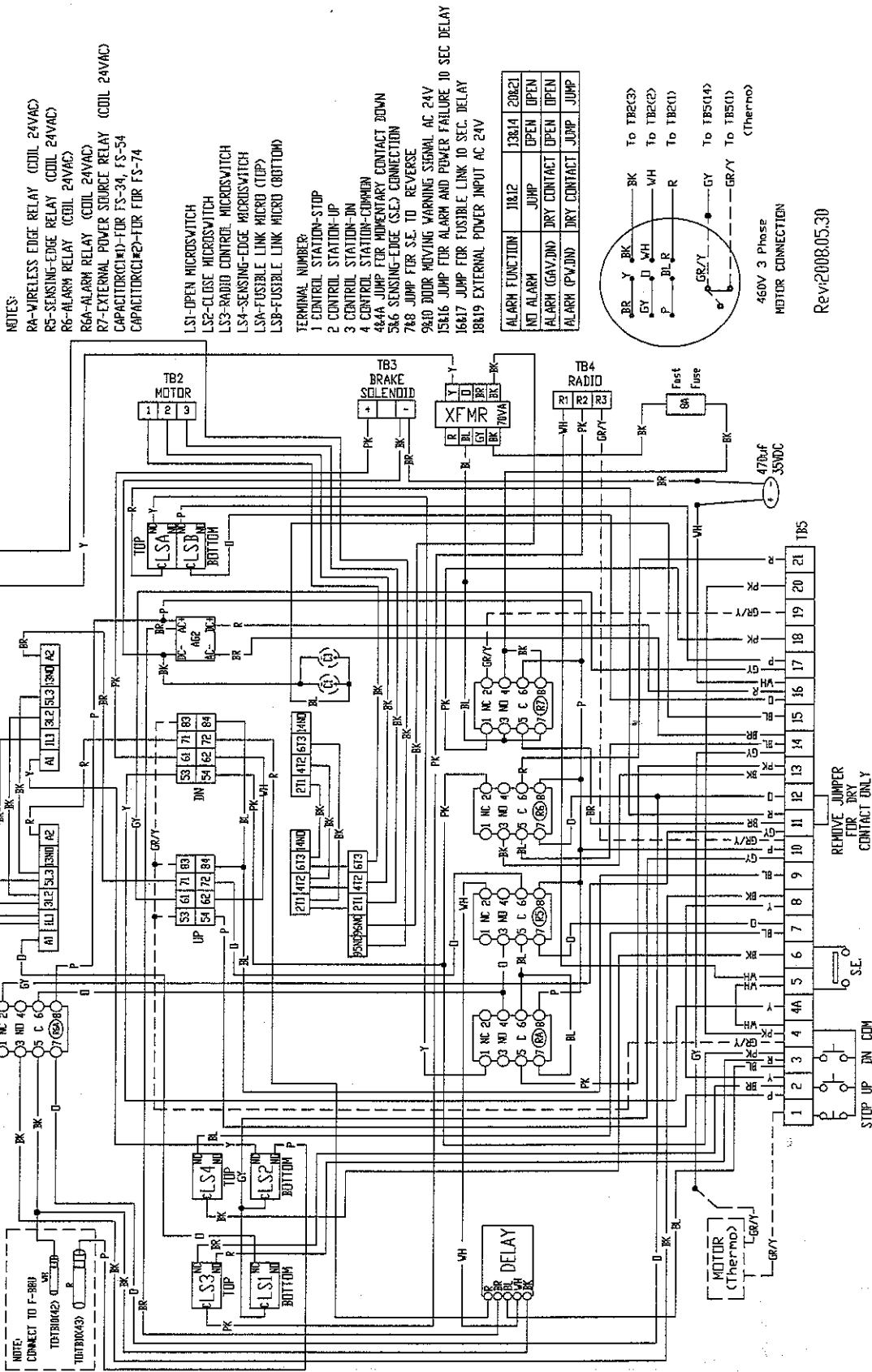
ALARM FUNCTION	J1&2	13&14	20&21
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV)DN	DRY CONTACT	OPEN	OPEN
ALARM (GAV)DN	DRY CONTACT	JUMP	JUMP



208V/230V 3 Phase
MOTOR CONNECTION
Rev:2008.05.30

FS 460V 3 Phase (DRY CONTACT ALARM) LH
(For FS-34, FS-54, FS-74)

EB505 L

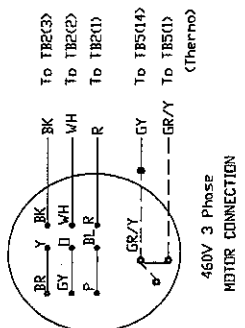


- NOTES:
- RA-WIRELESS EDGE RELAY (COIL 24VAC)
 - RS-SENSING-EDGE RELAY (COIL 24VAC)
 - R6-ALARM RELAY (COIL 24VAC)
 - R6A-ALARM RELAY (COIL 24VAC)
 - R7-EXTERNAL POWER SOURCE RELAY (COIL 24VAC)
 - CAPACITOR(C1)-FOR FS-34, FS-54
 - CAPACITOR(C2)-FOR FS-74

- 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-COMM
 - 4A4A JUMP FOR MOMENTARY CONTACT DOWN
 - 5A6 SENSING-EDGE (S.E.) CONNECTION
 - 7A8 JUMP FOR S.E. TO REVERSE
 - 9A10 MOTOR MOVING WARNING SIGNAL AC 24V
 - 15A16 JUMP FOR ALARM AND POWER FAILURE 10 SEC DELAY
 - 16A17 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
 - 18A19 EXTERNAL POWER INPUT AC 24V

ALARM FUNCTION	18A12	13A14	20A21
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV/DN)	DRY CONTACT	OPEN	OPEN
ALARM (PW/DN)	DRY CONTACT	JUMP	JUMP

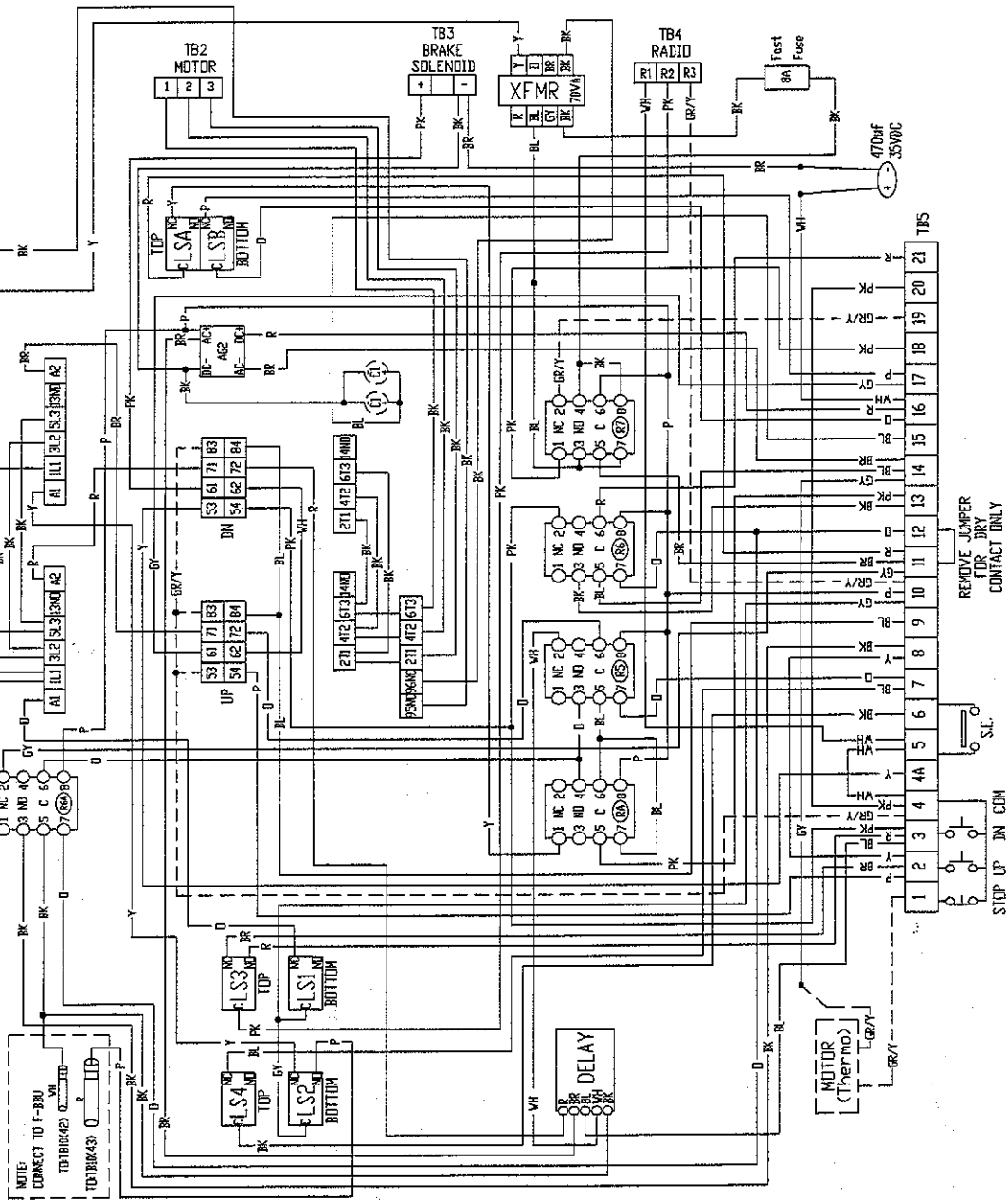


Rev:2008.05.30

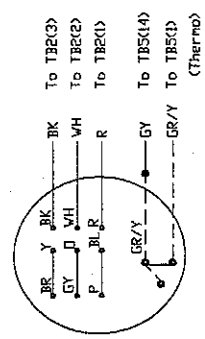
FS 460V 3 Phase (DRY CONTACT ALARM) RH
(For FS-34, FS-54, FS-74)

EB505 R

- NOTE:
 RA-WIRELESS EDGE RELAY (COIL 24VAC)
 RS-SENSING-EDGE RELAY (COIL 24VAC)
 R6-ALARM RELAY (COIL 24VAC)
 R6A-ALARM RELAY (COIL 24VAC)
 R7-EXTERNAL POWER SOURCE RELAY (COIL 24VAC)
 CAPACTOR(C14)-FOR FS-34, FS-54
 CAPACTOR(C14)-FOR FS-74
- 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-STEP
 2 CONTROL STATION-UP
 3 CONTROL STATION-DN
 4 CONTROL STATION-COMMON
 464A JUMP FOR MOMENTARY CONTACT DOWN
 566 SENSING-EDGE (SEC) CONNECTION
 788 JUMP FOR S.E. TO REVERSE
 9810 DOOR MOVING WARNING SIGNAL AC 24V
 15816 JUMP FOR ALARM AND POWER FAILURE 10 SEC DELAY
 16817 JUMP FOR FUSIBLE LINK 10 SEC. DELAY
 18819 EXTERNAL POWER INPUT AC 24V



ALARM FUNCTION	J1812	13814	20821
NO ALARM	JUMP	OPEN	OPEN
ALARM (GAV.DN)	DRY CONTACT	OPEN	OPEN
ALARM (P.V.DN)	DRY CONTACT	JUMP	JUMP



460V 3 Phase
 MOTOR CONNECTION
 Rev:2008.05.30

Reference

Fail-Safe Series Terminal Connections

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

Alarm Table

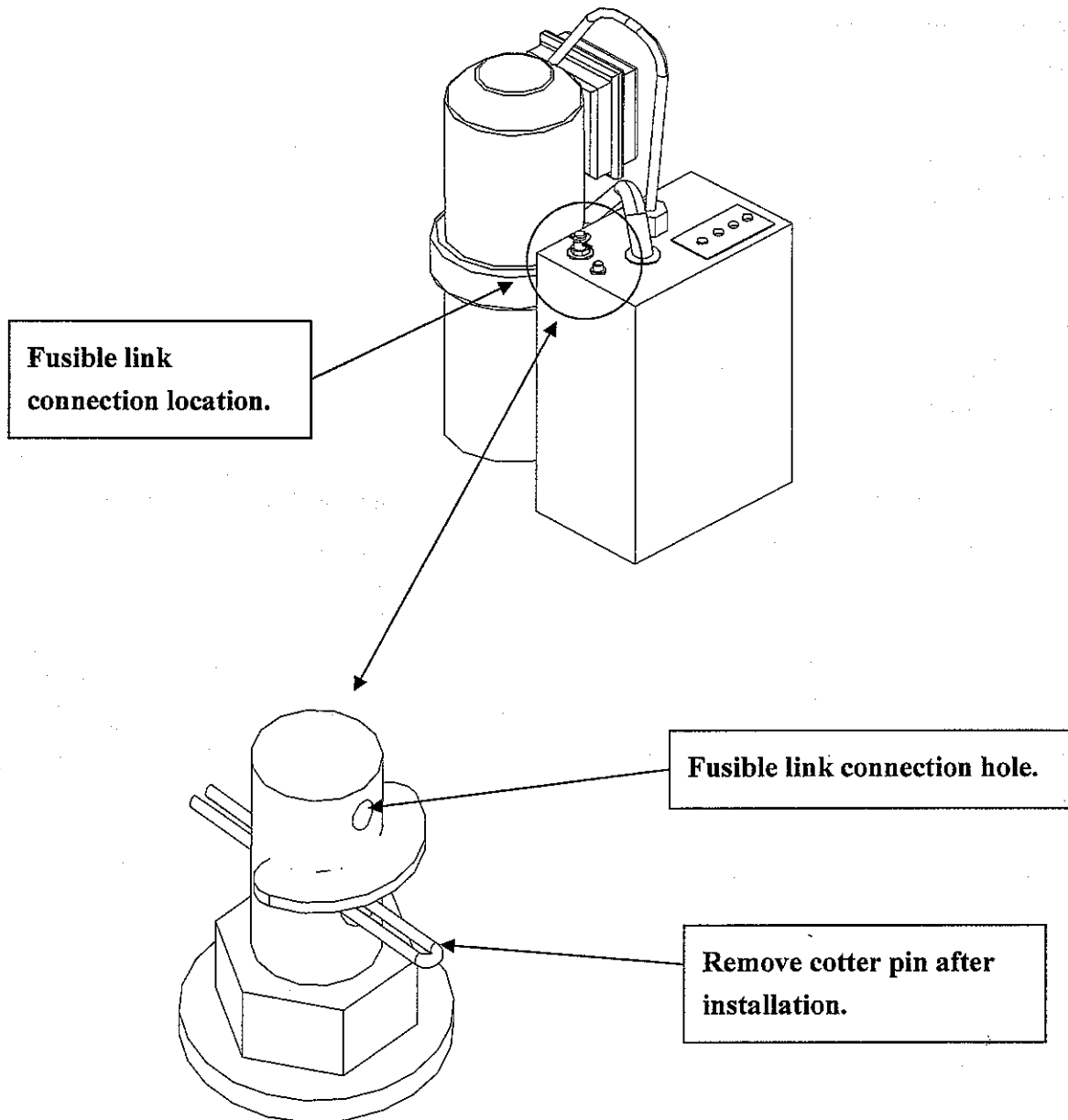
Alarm Function	Terminal	
	11&12	13&14
No Alarm	Jump	Open
Alarm (Gravity Down)	Dry Contact	Open
Alarm (Power Down)	Dry Contact	Jump

- ❖ 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 "Open" 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 closing during alarm, control has no power. The door will close under gravity.
- ❖ There is no 10-second delay under power closing during alarm.
- ❖ Per NFPA 80, if equipped with sensing edge door, will stop on the object during alarm.
- ❖ Per NFPA 80, all control is disabled during alarm condition.

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.

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.**

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

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.

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.