Operational & Maintenance Manual

Products: Enter Product Category / Model Number

Installation Site

Enter Project Name/Site info

Contractor

Enter Contractor Firm Name here

Architect

Enter Architect Firm Info Here

Distributor

Overhead Door Company of ABC
123 Eagle Street
Eagle Town, TX 75067

Enter Company Name Ex: Overhead Door Company of
Enter Street Address
Enter City, ST zip code

Dear Customer:

Thank you for choosing our company as your custom door installation specialist.

The Operation and Maintenance Manual, which is enclosed, has been supplied by Overhead Door Corporation to meet your needs as our customer. Appropriate information for the products installed has been compiled in this manual for your use. We recommend compliance with all of the safety information provided within the manual.

We strongly recommend implementing a preventative maintenance program. Benefits of properly maintaining your door system include:

- Increased operational efficiency and reliability.
- Extended useful life of your equipment.
- Increased probability of dependable equipment performance.
- Elimination of non-budgeted maintenance cost for door service.

As an Overhead Door distributor, we offer you complete product support for your service and maintenance needs. Do not hesitate to call us for assistance.

We hope that you will also continue to consider our company for your future product and installation needs. We are firmly committed to providing the finest in Overhead Door products, accessories, and a level of customer support unmatched in the industry.

Sincerely,

Enter Company Name Ex: Overhead Door Company of

Operation & Maintenance Manual

Commercial Operators

Table of Contents

GENERAL INFORMATION

OVERHEAD DOOR CORPORATION

Overhead Door Corporation, based in Dallas, Texas, is a leading single-source manufacturer of integrated door and operator systems for commercial and residential applications.

Overhead Door is the door solutions provider that delivers expert service and the highest level of performance and reliability. Our comprehensive product line encompasses a wide variety of commercial door solutions including: commercial operators, commercial sectional and rolling service doors, advanced performance rolling doors, and security grilles.

With our nationwide network of more than 400 authorized distributors, we are a leading provider of overhead and garage door systems, and we continue to lead the way with reliable solutions and unmatched professional installation, service and support that keeps customers coming back. The brand trusted for over 90 years, Overhead Door gives home and business owners confidence and peace of mind.

To locate a distributor:
From the United States, call 1-800-929-3667 (DOOR)
International: 1-717-248-0131
http://www.overheaddoor.com/Pages/distributor-locator.aspx

Contact Information:
Overhead Door Corporation
2501 S. State Hwy. 121, Suite 200
Lewisville, TX 75067
Telephone: 1-800-275-3290
www.overheaddoor.com

PREVENTATIVE MAINTENANCE

BENEFITS OF PREVENTATIVE MAINTENANCE PROGRAM

- **Increase operational efficiency, safety and reliability**
- **Extend useful life of your equipment**
- **Reduce probability of equipment malfunctioning**
- **Decrease costly downtime**
- **Decrease long-term repair expense**
- **Priority scheduling for service**
- **Establish relationship with experienced, service-oriented professionals**

SCOPE OF WORK FOR ELECTRIC OPERATORS

For the period _____, 20__, through _____, 20__, the following services and inspections will be provided as part of the Preventative Maintenance Program for operator(s):

ELECTRIC OPERATORS:

1) Inspect and adjust limit switches.
2) Inspect and adjust belts.
3) Inspect and adjust brake.
4) Inspect gear reducer.
5) Inspect operator mounting.
6) Inspect and test disconnect.
7) Inspect and lubricate roller chain.
8) Inspect and tighten all sprockets.
9) Inspect safety labels, placement and condition.

INSTALLATION INSTRUCTIONS

COMMERCIAL OPERATOR

Assembly - Installation - Operation and Service Instructions

The Genuine. The Original

OVERHEAD DOOR®

MODEL RDB+ PLUS

NOT FOR RESIDENTIAL USE

CONTENTS

After installation, keep these instructions in area of push button station.

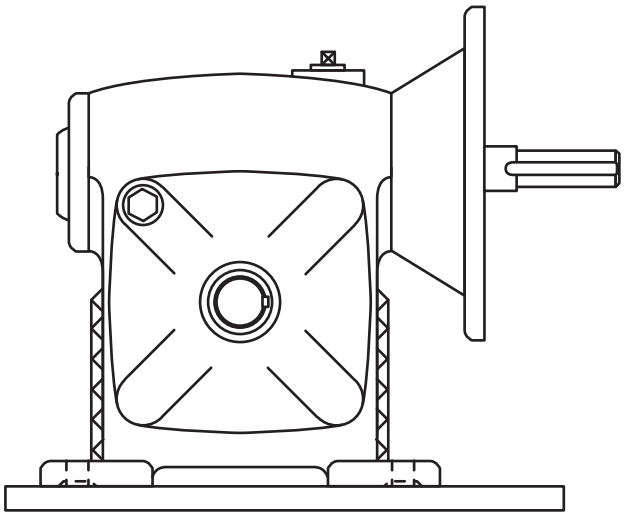
P/N 109456-0004 06/17/09

NOTICE

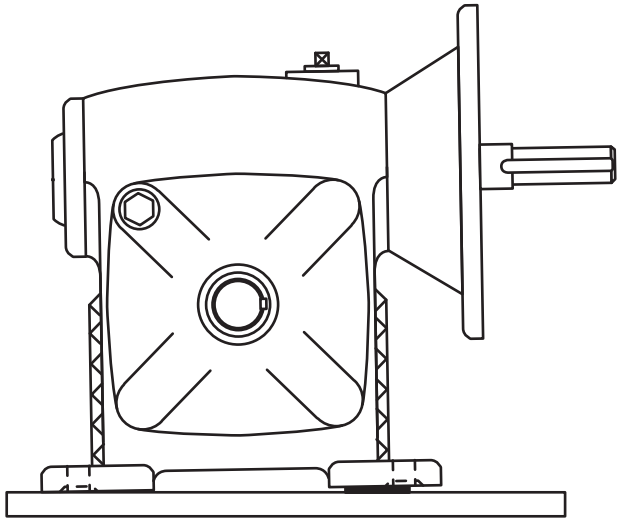
All RDB+ Commercial Operators

To insure the proper function and life cycle of the RDB+ Comercial Operator, it is necessary that the mounting feet of the Gear Reducer be mounted flush and securely fastened to the Mounting Bracket. Any obstruction between the Gear Reducer feet and the Mounting Bracket or loose mounting bolts can result in a fracture of the Gear Reducer Housing.

CORRECT



INCORRECT



SAFETY INFORMATION

The terms opener and operator mean the same thing when used in the following text.

⚠ WARNING

Overhead doors are large, heavy objects that move with the help of springs under high tension and electric motors. Since moving objects, springs under tension, and electric motors can cause injuries, your safety and the safety of others depend on you reading the information in this manual. If you have questions or do not understand the information presented, call your nearest service representative.

POTENTIAL HAZARD	EFFECT	PREVENTION
 **MOVING DOOR**	**Can Cause Serious Injury or Death**	**Do Not** operate unless the doorway is in sight and free of obstructions. Keep people clear of opening while door is moving. **Do Not** allow children to play with the door operator. **Do Not** change control to momentary contact unless an external reversing means is installed.
 **ELECTRICAL SHOCK**	**Can Cause Serious Burns or Death**	Turn off electrical power before removing powerhead cover. Operator must be electrically grounded.
 **HIGH SPRING TENSION**	**Can Cause Serious Injury or Death**	**Do Not** try to remove, repair or adjust any structure, wood block, steel bracket, cable or anything else to which door spring parts are fastened. Repairs and adjustments must be made by a trained service person using proper tools and instructions.

SAFETY INSTRUCTIONS

1. Read manual and warnings carefully.
2. Keep the door in good working condition. Periodically oil all moving parts of door.
3. If the door has a safety edge, periodically check its operation. Make any necessary repairs to keep it functional.
4. At least twice a year, manually operate the door by disconnecting it from the operator. The door should open and close freely. If it does not, correct the condition causing the malfunction.
5. The operator motor is protected against burnout by an internal overload protector. If the operator ceases to function because the motor protector has tripped, correct any condition which may have caused the overload. When the motor has cooled, the overload protector will automatically reset and normal operation can be resumed.
6. In case of power failure, the door can be operated manually by:
   1. Pull cable to engage chain hoist and pull on hand chain to raise or lower door or grille.
   2. To reengage the operator, pull on the other cable.
7. Do NOT attempt to engage the hand hoist while the operator is running.
8. Do NOT use the hand hoist to force a malfunctioning door to open or close. This is an emergency device only and is not designed to operate a door with broken springs or other serious problems.
9. Keep these instructions in a prominent location near the push button station.

In the following text, the words **Danger, Warning, and Caution** are used to emphasize important safety information. The word:

DANGER means that severe injury or death will result from failure to follow instructions.
WARNING means that severe injury or death can result from failure to follow instructions.
CAUTION means that property damage or injury can result from failure to follow instructions.

The word **NOTE** is used to indicate important steps to be followed or important differences in equipment.

INSTALLATION

Carefully inspect both carton and operator for apparent freight damage. If damage has occurred, contact the freight carrier involved for freight claim. Also check to make certain the unit has the electrical box, hand chain and limit switch drive in the proper position for the job. Check the name-plate electrical ratings with the power that is available at the job site.

NOTE:

- The electrical box may be rotated to the opposite side of the operator by removing the two self threading bolts holding the electrical box to the frame, loosening the conduit connector nuts. Rotate the box and secure with the self threading bolts and tighten the conduit nuts.

NOTE:

- Installation views given are for Right Hand mount - Left Hand will be opposite.
- Dimensions for installed units are for reference only.

BENCH MOUNT

STEP 1 (See Figure 1)

- Unless otherwise specified, clamp and weld the mounting angle to the headplate.
- WELD ALL EDGES BOTH SIDES.

STEP 2

- Place driven sprocket and key (shipped with the door) onto the door shaft.

STEP 3 (See Figures 2A and 2B)

- Set the operator on the mounting bracket as shown.
- SUPPORT UNIT UNTIL STEP 4 IS COMPLETE.

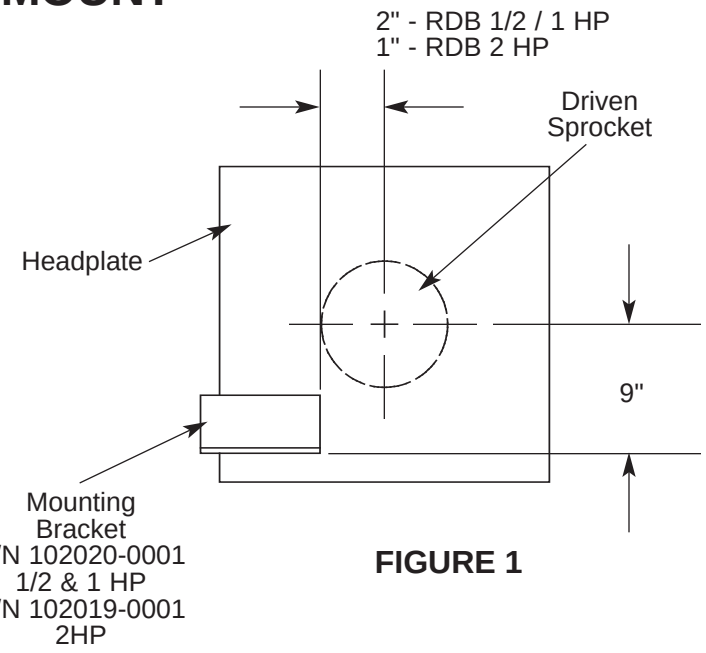


FIGURE 1

BRACE TO WALL FOR STABILIZING IS RECOMMENDED

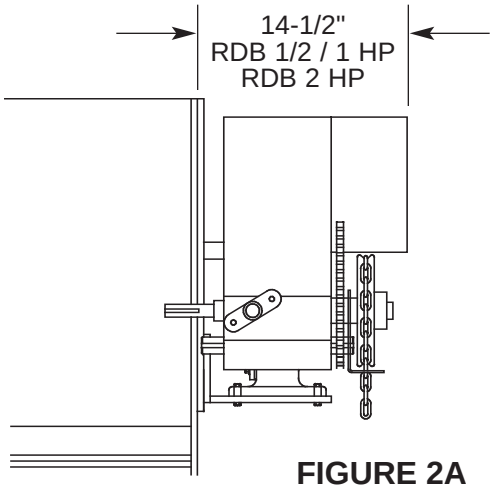


FIGURE 2A

Wire Type C

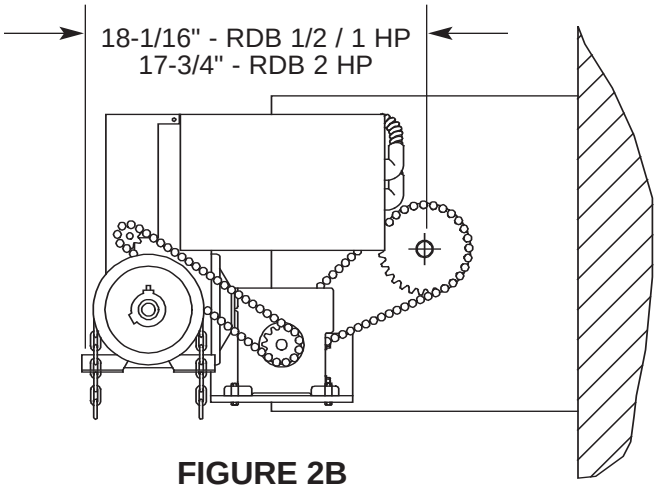


FIGURE 2B

STEP 4 (See Figure 3)

- Insert the four 3/8-16 x 1-1/2 hex head cap screws with washers through the slotted holes furthest from headplate and through the four holes in the base of the gear reducer.
- Install lock washers and nuts.
- DO NOT TIGHTEN.

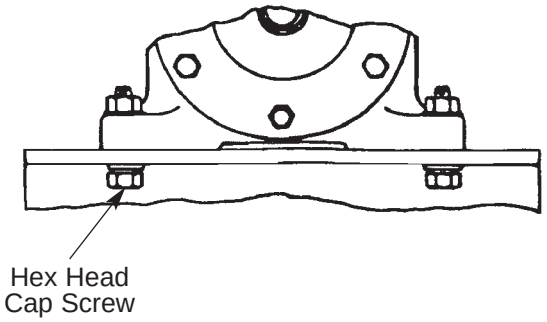


FIGURE 3

STEP 5

- Slide operator toward the driven sprocket as far as slotted holes will permit.
- Align driven sprocket with the drive sprocket.
- Secure sprockets and keys with the set screws.

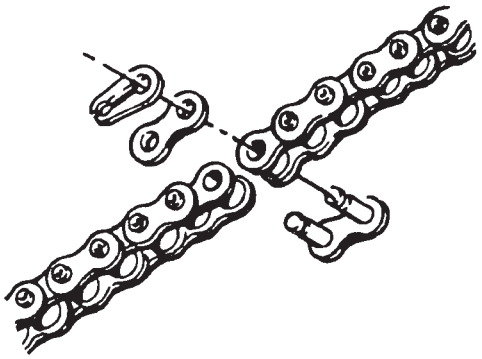


FIGURE 4

STEP 6

- Make electrical power connections to the operator. Refer to “Wiring Instructions” on pages 12 and 13.

STEP 7

- Prepare Control Wiring for Type D or Type C Output Shaft Rotation.
  - Read “Connection of Control Devices” on page 12.
  - Complete Step 2 on page 12.

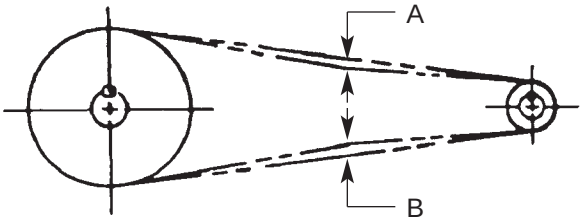
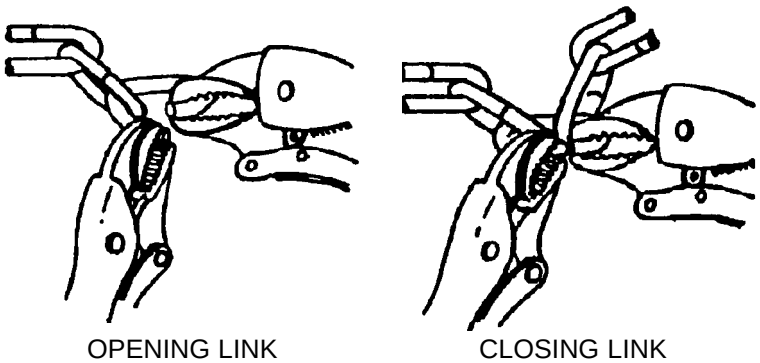


FIGURE 5

STEP 8 See “Limit Switch Adjustment” on page 14.

- Limit switches are **not** preset at the factory because the settings will vary with door size and Type rotation. To properly adjust:
  - Be certain a brass jumper is between Control Terminals “T” and “T”.
  - Connect a short jumper wire to Control Terminal “C” and touch other end to “DN”.
  - This should cause operator Output Shaft to rotate as if to close the door. See NOTE on page 7.
  - Hold jumper on “DN” until limit switch stops motor.



METHOD FOR SPLICING HAND CHAIN

FIGURE 6

*** NOTE:**

- If output shaft rotation is in direction that would open the door and electrical Power Source is three (3) phase; disconnect the power and interchange any two of the three power input lines. If Power Source is single phase, review and repeat Step 7 above.

STEP 9 (See Figure 4)

- Wrap #50 roller chain around the two sprockets to determine correct chain length.
- To shorten chain, punch out the pin which will leave an inside link nearest the desired length.
- Connect the chain around the sprockets using the master link.

STEP 10

- Slide operator to tighten chain (Figure 5).
- Firmly tighten mounting bolts and locking nuts (Figure 3).

STEP 11

- Touch jumper from Terminal “C” to Control Terminal “UP” and hold until bottom edge of door is even with top of door opening.
- Adjust the “UP” limit switch and the “Auxiliary Up” limit switch (refer to page 14, “Limit Switch Adjustment”).

STEP 12

- Complete External Control Wiring.
- See “Wiring Instructions” page 12 and 13.
- See External Wiring Diagram page 19.

STEP 13

- Feed hand chain through the chain guide, over the handwheel and through the opening in the chain guide.
- Open a link at the end of the chain and splice chain together (Figure 6).
- BEFORE COMPLETING SPLICE, MAKE SURE CHAIN IS NOT TWISTED.

STEP 14 (See Figure 7)

- Fasten manual hoist cable to the dental shaft arm and crimp the cable sleeves.

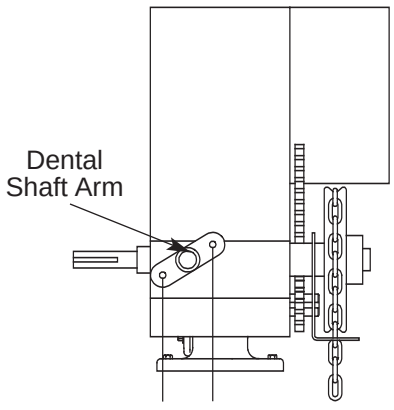


FIGURE 7

TOP OF THE HOOD MOUNT

STEP 1 (See Figure 8)

- Use P/N 102020-0001 Mounting bracket for 1/2 and 1 HP and 102019-0001 for 2 HP.
- Unless otherwise specified, clamp and weld the mounting angle to the headplate.
- WELD ALL EDGES BOTH SIDES.

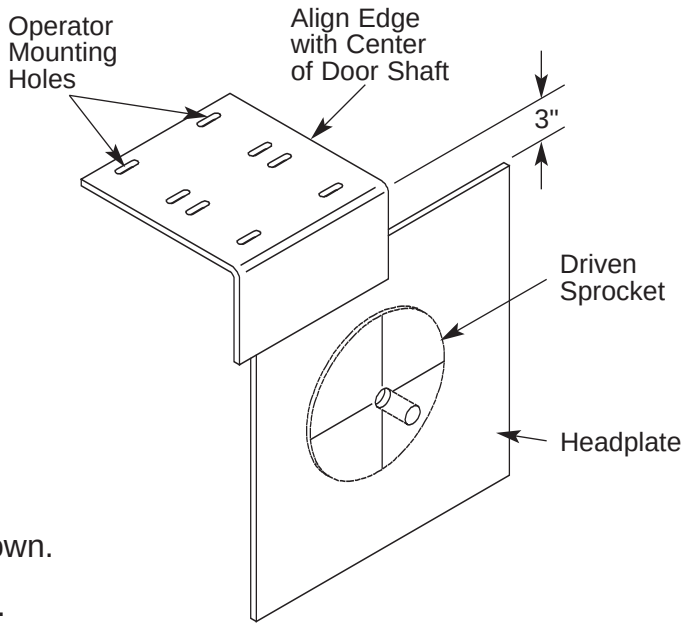


FIGURE 8

STEP 2

- Place driven sprocket and key (shipped with the door) onto the door shaft.

STEP 3 (See Figures 9A and 9B)

- Set the operator on the mounting bracket as shown.
- SUPPORT UNIT UNTIL STEP 4 IS COMPLETE.

STEP 4 (See Figure 3, page 6)

- Insert the four 3/8-16 x 1-1/2 hex head cap screws with washers through the slotted holes furthest from headplate and through the four holes in the base of the gear reducer.
- Install lock washers and nuts.
- DO NOT TIGHTEN.

BRACE TO WALL FOR STABILIZING IS RECOMMENDED

STEP 5

- To complete installation, refer to page 6, Steps 5 through 14 for Bench Mount.

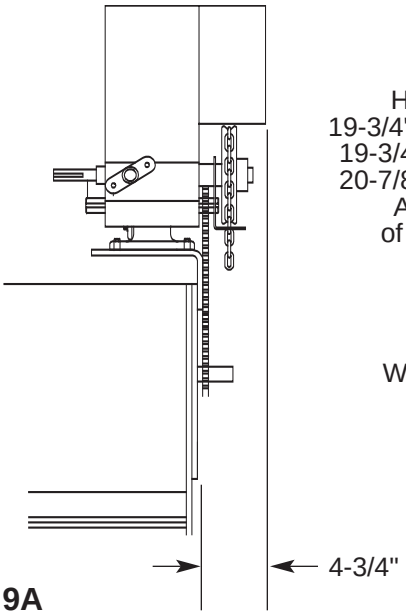


FIGURE 9A

Headroom:
19-3/4" - RDB 1/2 HP
19-3/4" - RDB 1 HP
20-7/8" - RDB 2 HP
Above Top of Headplate

Wire Type C

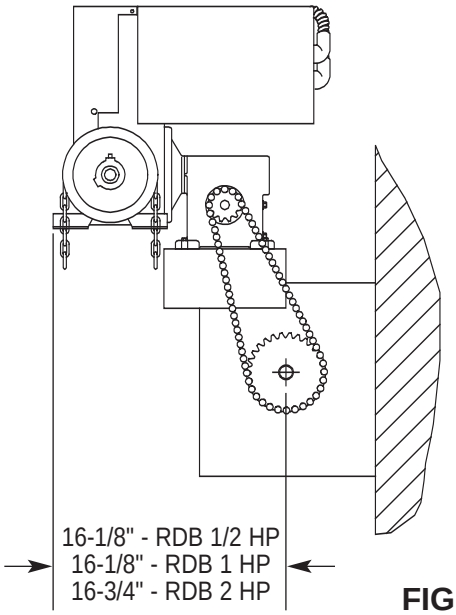


FIGURE 9B

FRONT OF THE HOOD MOUNT

STEP 1 (See Figure 10)

- Unless otherwise specified, clamp and weld the support bracket to the headplate.
- Leave 1" between back of bracket and the headplate edge.
- WELD ALL EDGES BOTH SIDES.

STEP 2 (See Figure 10)

- Clamp and weld the mounting bracket to the support bracket.
- WELD ALL EDGES SIDES.

STEP 3

- Place driven sprocket and key (shipped with the door) onto the door shaft.

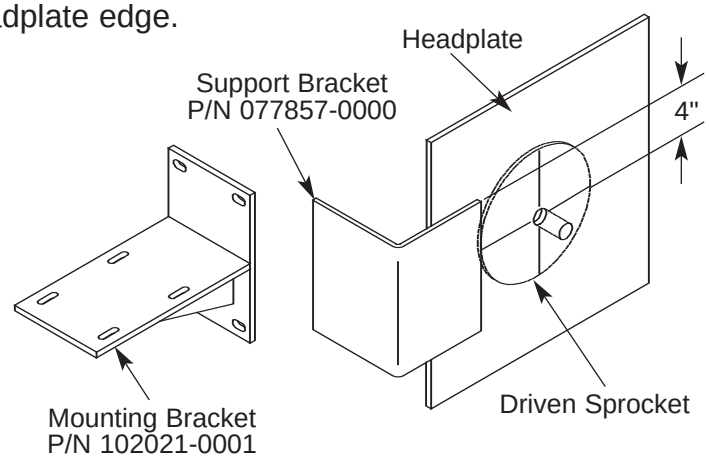


FIGURE 10

STEP 4

- Set the operator on the mounting bracket as shown in Figures 11A and 11B.
- SUPPORT UNIT UNTIL STEP 4 IS COMPLETE.

STEP 5 (See Figure 3, page 6)

- Insert the four 3/8-16 x 1-1/2 hex head cap screws with washers through the slotted holes furthest from headplate and through the four holes in the base of the gear reducer.
- Install lock washers and nuts.
- DO NOT TIGHTEN.

STEP 6

- To complete installation, proceed with Steps 5 through 14, pages 6 and 7.

BRACE TO WALL FOR STABILIZING IS RECOMMENDED

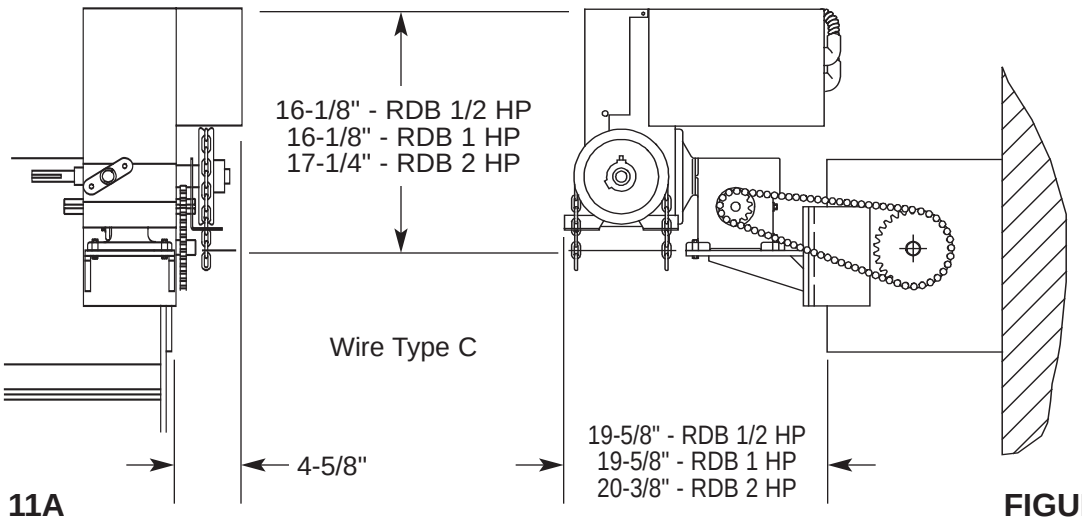


FIGURE 11A **FIGURE 11B**

WALL MOUNT

(BELOW OR ABOVE DOOR SHAFT)

STEP 1

- A bracket is provided to mount the operator to the wall.
  - Position the bracket as shown in Figure 12A for below the door shaft mount.

  OR
  - Position the bracket as shown in Figure 12B for above the door shaft mount.
- Secure bracket to wall using:
  - Anchor bolts.
  - Bolting through the wall.
  - Welding the steel pad if one has been provided.

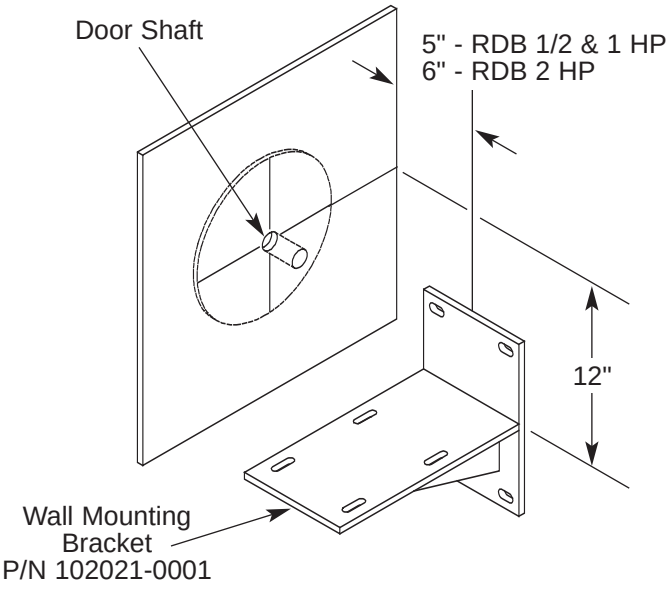


FIGURE 12A

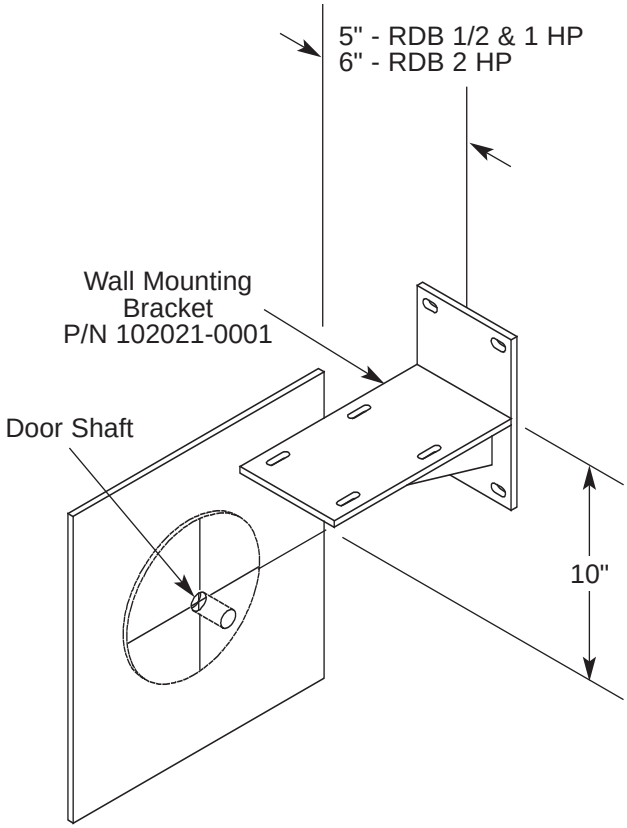


FIGURE 12B

STEP 2

- Place driven sprocket and key (shipped with the door) onto the door shaft.

STEP 3 (See Figures 13A and 13B or 13C and 13D)

- Set the operator on the mounting bracket as shown in Figures listed above.
- SUPPORT UNIT UNTIL STEP 4 IS COMPLETE.

STEP 4 (See Figure 3, page 6)

- Insert the four 3/8-16 x 1-1/2 hex head cap screws with washers through the slotted holes furthest from headplate and through the four holes in the base of the gear reducer.
- Install lock washers and nuts.
- DO NOT TIGHTEN.

STEP 5

- To complete installation, proceed with Steps 5 through 14 on pages 6 and 7.

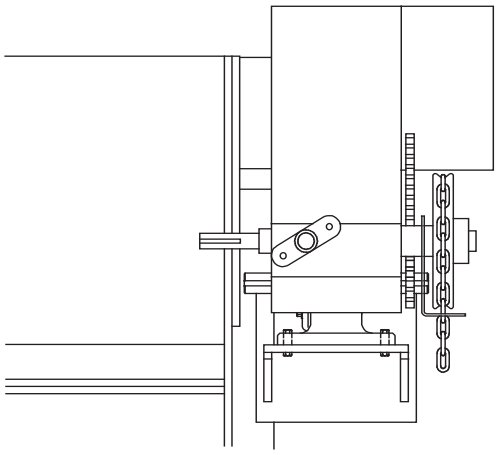


FIGURE 13A

Wire Type C

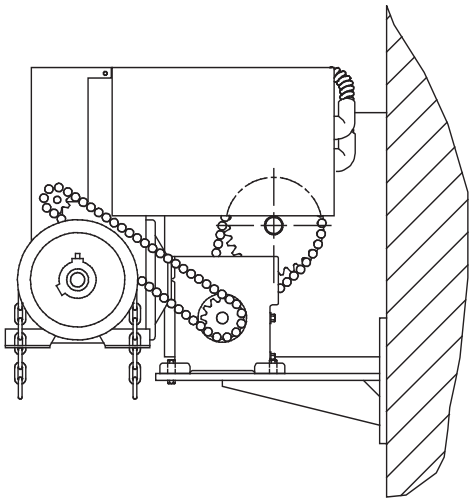


FIGURE 13B

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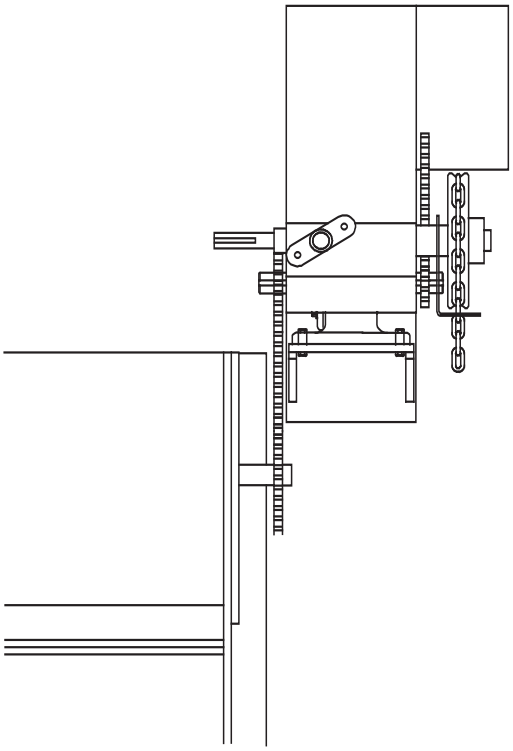


FIGURE 13C

Wire Type C

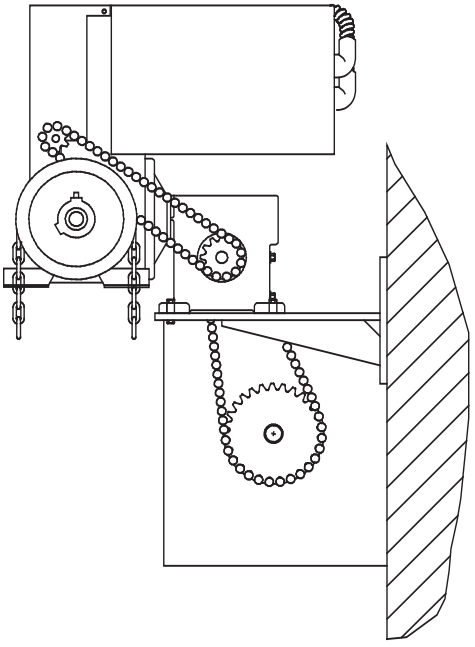


FIGURE 13D

WIRING INSTRUCTIONS

CONNECTION TO BUILDING ELECTRICAL POWER:

This operator has been wired and tested for the voltage, phase and frequency (hertz) as shown on the operator nameplate located on the electrical box cover.

STEP 1

- Check nameplate ratings with building power line rating to make certain they agree.
- Make power connections to terminal strip located and identified in the electrical box.
- Follow local wiring codes for electrical wiring. If there is not a local code, make wiring connection in accordance with the National Electric Code.

CAUTION

It is important that the operator be properly grounded. Connect the power system grounding conductor to the green grounding screw.

CONNECTION OF CONTROL DEVICES:

Control voltage is supplied from a N.E.C. Class 2 – 24 volt transformer. Also inside the electrical box is a twelve terminal panel for connection of control equipment (push buttons, safety devices, etc.). A three screw strip is located on the side of the box for connecting a radio receiver.

This operator was shipped from the factory wired for TYPE C Output shaft rotation. This matches the wiring requirements for mountings shown in this manual.

STEP 2

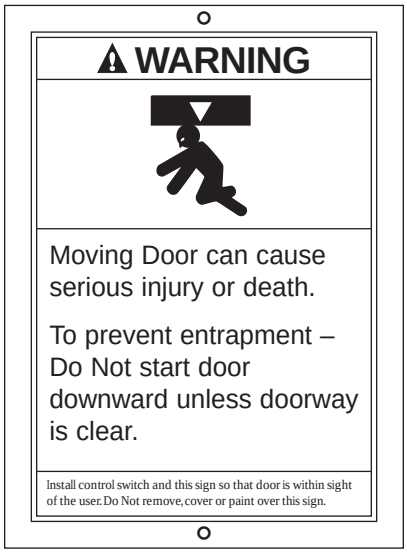
- Refer to page 19 for External Wiring Diagram for desired Rotation wiring and Top Limit Switch and Cam positions.
- If it has been determined TYPE D rotation is required:
- Interchange the wires to Terminals “A” & “B”.
- Remove the two keps nuts holding the Top single pole limit switch and invert it as shown for TYPE D on Wiring Diagram.
- Remove the top limit switch and cam and invert as shown for TYPE D on Wiring Diagram
- DO NOT add Momentary Contact jumpers until AFTER Limit Switch Adjustment has been completed.

STEP 3

- To check for proper phase rotation when power source is three phase refer to Step 8, page 6. See also NOTE page 7.

STEP 4

- Connect external control devices as shown on page 19 for External Wiring Diagram.



WARNING PLACARD

CAUTION

If control is by 3-button station only, locate the push button so that the door is within sight of the user. Attach the warning placard adjacent to the push button.

- If a pedestrian pass door or door locking system is to be used, an interlock switch MUST be used to prevent motor operation when the pass door is open or the door is locked. Connect interlock switch as shown in Figure 14.

STEP 5

- If momentary contact control action is to be used, a sensing edge switch or other reversing means must be used. See page 16 for installation of a sensing edge switch.

For special control actions not covered in the wiring diagrams shown on page 19, contact the Overhead Door Operator Division - Alliance, Ohio.

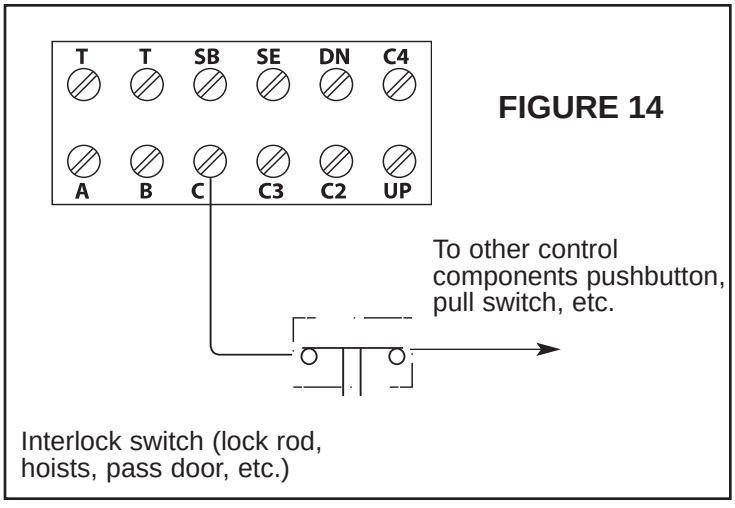


FIGURE 14

LIMIT SWITCH ADJUSTMENT

STEP 1

- So that limit switches accurately stop the door in the full open and close position, the limit switch cams must operate their respective switches by striking the steep ramp of the switch lever. See Figure 15.
- If the cams are not striking the steep slope first, refer to Steps 1, 2 and 3 under “Wiring Instructions” on page 12.

STEP 2

- Course adjustments of limit switches are made by:
  - Loosening the set screw in the appropriate cam (use 3/32" Allen wrench).
  - Rotating cam required direction
    - Toward switch ramp will decrease amount of door travel.
    - Away from ramp will increase door travel.
- When adjustment is within 3" or less of the desired door stopping position, proceed to Step 3.

STEP 3

- Fine adjustment of limit switches is made by turning the slotted machine screws in the cams:
  - Rotating screws clockwise will increase the amount of door travel a little with each turn.
  - Rotating counterclockwise will decrease door travel.
- To insure consistent limit switch action, the gap between cam jaws should not exceed 3/16". See Figure 16.

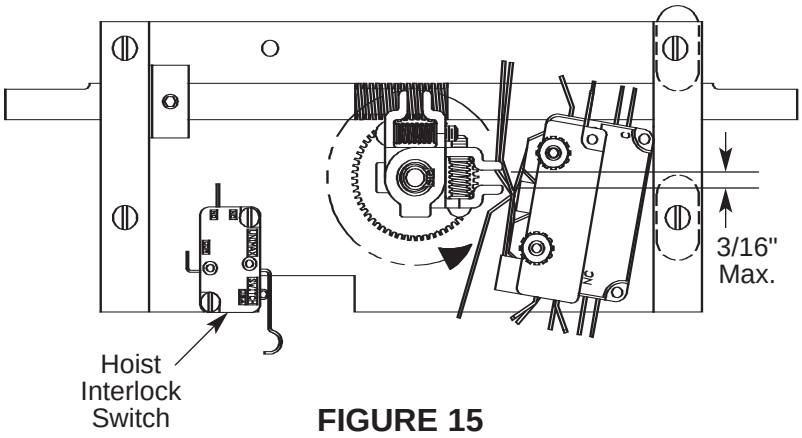


FIGURE 15

STEP 4 (See Figure 16)

- After UP and DOWN limit switches have been adjusted; adjust the top cam to actuate the TOP switch 6" to 12" before the door is fully open. This switch permits closing of door by Radio Control or single button.

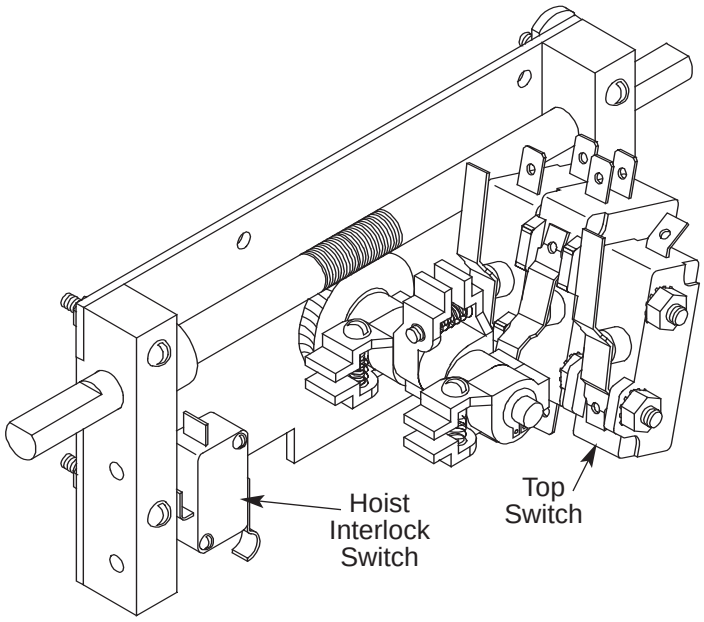


FIGURE 16

BRAKE ADJUSTMENT

The brake will normally not require adjustment but might be needed if the brake or motor has required service. For best performance and maximum life, the brake must be adjusted for correct brake tensioning when the solenoid is ***NOT*** energized.

STEP 1 (See Figure 17)

- To increase brake tension, tighten locking nut “A”. The amount of tension is critical to the life of the solenoid.
  - If there is excessive “hammering” when the solenoid is energized, there is too little tension on solenoid plunger. This will cause solenoid to self destruct.
  - Excessive vibrating noise indicates too much tension which will cause solenoid coil to heat and burn out.

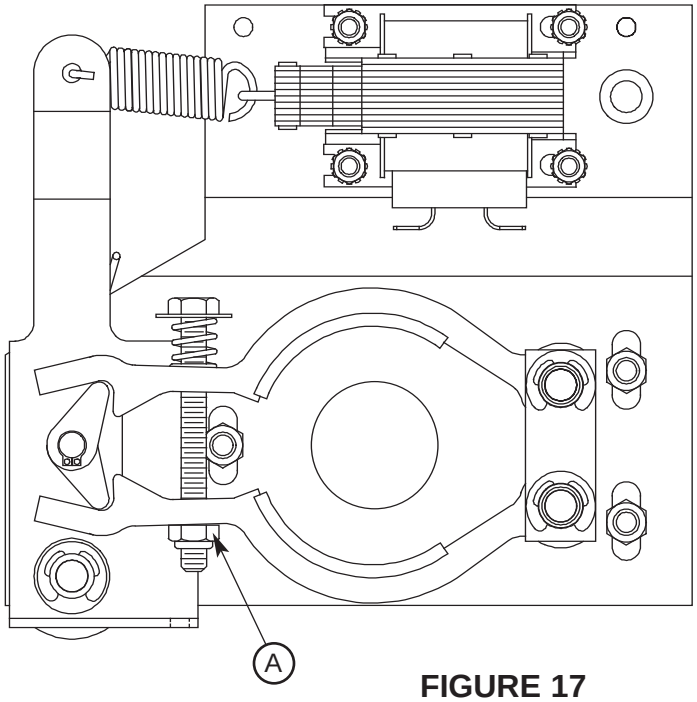


FIGURE 17

GEAR REDUCER CARE

INSTALLATION:

- Install vent plug as shown in Figure 18.

CARE:

- Periodically check the oil level in the gear reducer. See Figure 19 for oil level check plug.
- If necessary to add oil use AGMA 7 with pour point of -40 degrees.

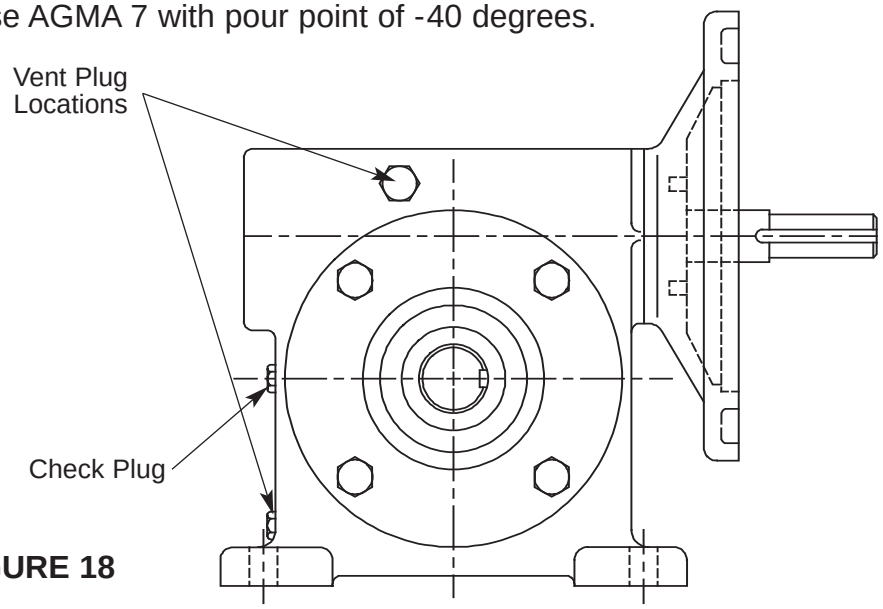


FIGURE 18

SENSING EDGE SWITCH INSTALLATION

Figure 19 shows an example of a typical sensing edge installation. Left hand side is shown but right hand is a mirror image of this. See also page 19 for wiring diagram.

STEP 1

- If wiring from sensing edge switch to operator is coiled cord or 2 wire jacketed cord:
  - Install junction box 12" above the center of the door opening on same side as sensing switch.
  - Secure one end of cord to junction box using a cable clamp.
- If connection is to be made through a take up reel cord:
  - Install on same side as sensing edge switch and above door opening and slightly to the side.
  - Install junction box adjacent to take up reel and route the stationary cord from the reel to the box and secure with a cable clamp.

STEP 2

- Secure other end of cord (straight, coiled or reel) to sensing edge switch enclosure using a cable clamp.

STEP 3

- Connect wires of cord to sensing edge switch using wire nuts or other suitable wire connectors.

STEP 4

- Run a straight 2 wire cord from the junction box (Step 1) to the operator electrical box.
- Secure using cable clamp on each end.

STEP 5

- Join wires in cord from operator to wires in cord from switch using wire nuts or other suitable wire connectors.

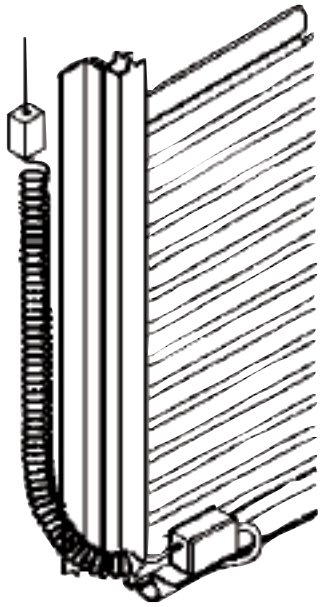


FIGURE 19

STEP 6

- Connect one wire of the cord to Terminal “C3” and the other wire to Terminal “SE”. See Wiring Diagram page 19.

STEP 7

- Operate the door to make certain cord is free to travel and does not become snared during door opening or closing.
- Check sensing edge switch for proper operation.

The Genuine. The Original.

OVERHEAD DOOR

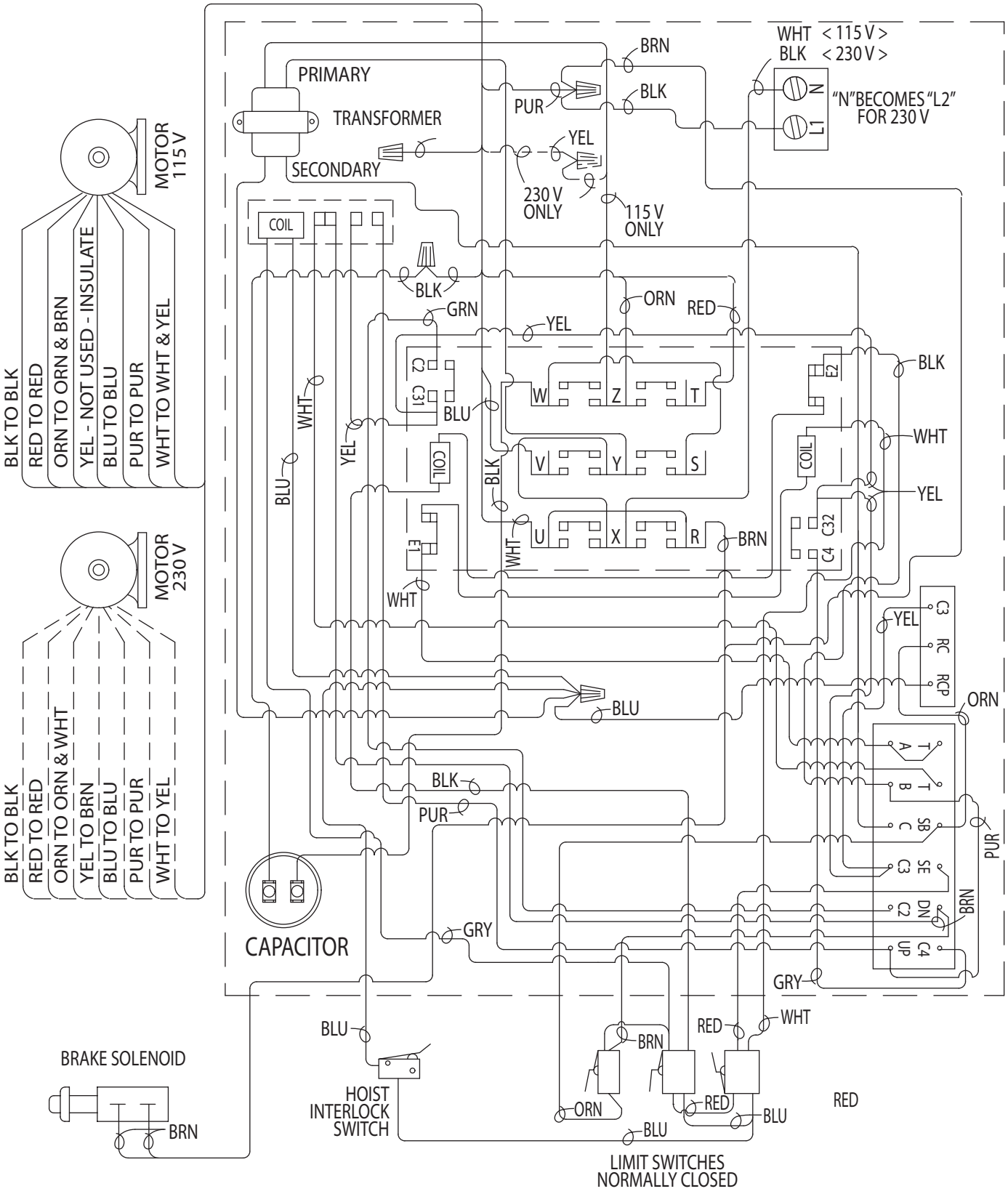
INTERNAL WIRING DIAGRAM

FOR EXTERNAL WIRING SEE: 109433-0001

OPERATOR RDB+

DWG. NO. 109463-0001 REV. C

115/230 VOLT 1 PH



The Genuine. The Original.

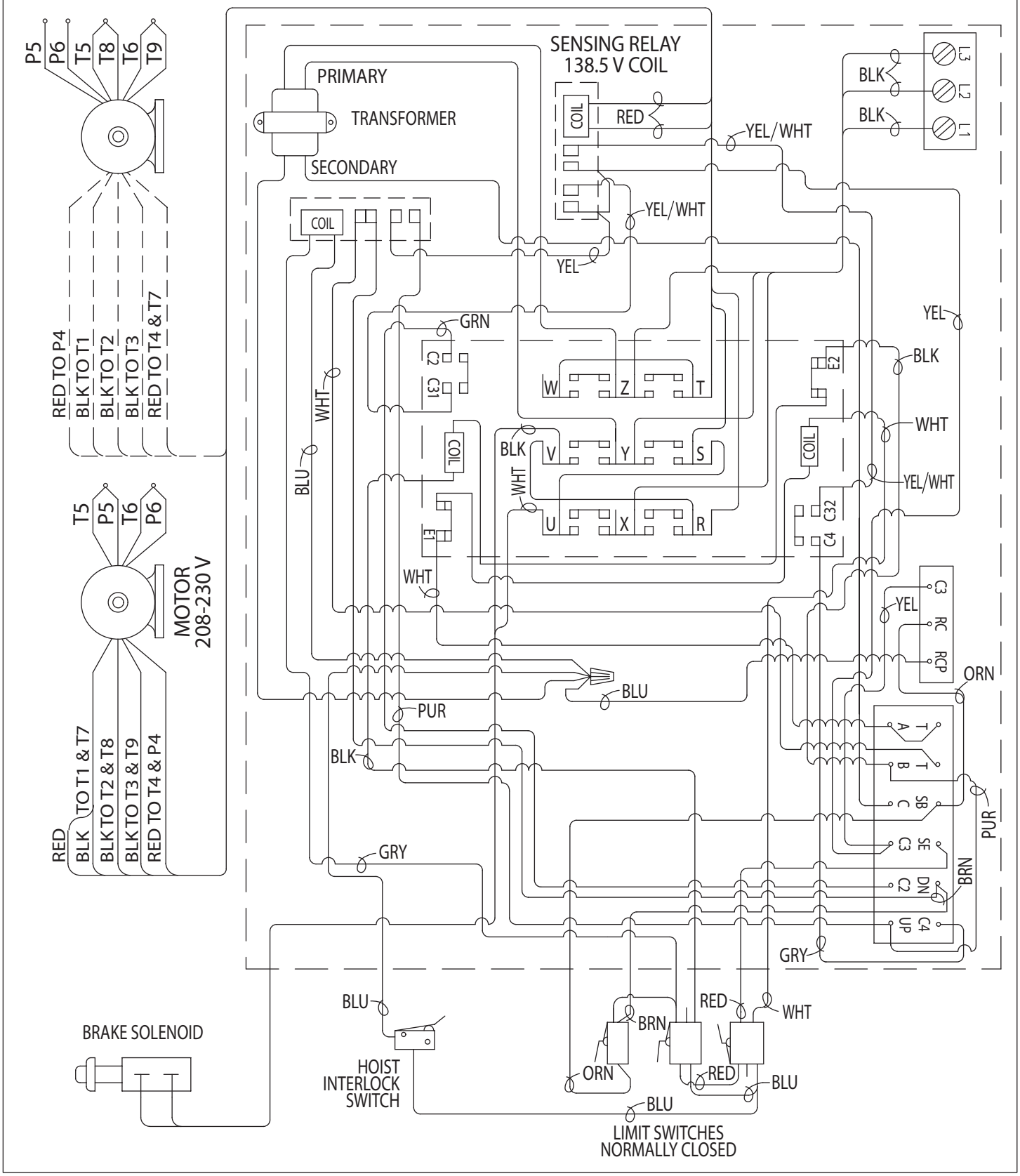
INTERNAL WIRING DIAGRAM

FOR EXTERNAL WIRING SEE: 109433-0001

OPERATOR RDB+

DWG. NO. 109463-0003 REV. C

208-230/460 VOLT 3 PH

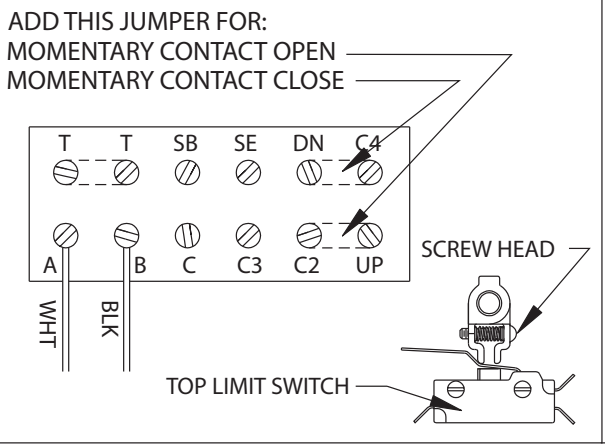


EXTERNAL WIRING DIAGRAM
IF THE DOOR IS TO HAVE MOMENTARY CONTACT CLOSE, A SENSING DEVICE MUST BE INSTALLED.

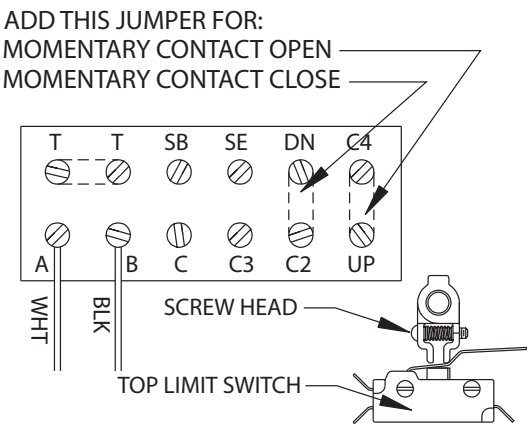
EXTERNAL WIRING DIAGRAM

DWG. NO. 109433-0001 REV. B

TYPE D & DRAWBAR

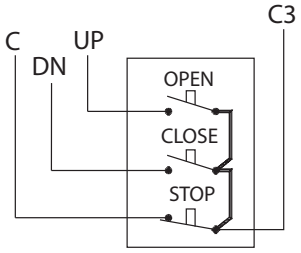


TYPE C

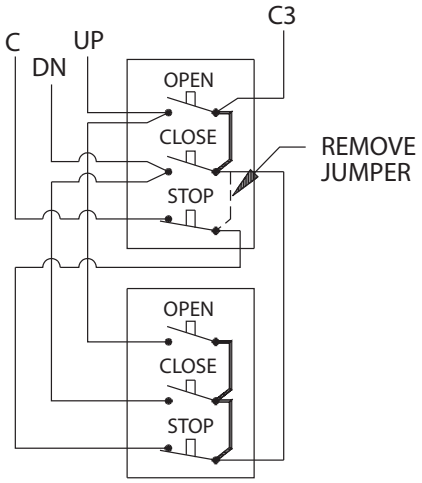


NOTE: ALL RDB+ OPERATORS ARE SHIPPED FROM THE FACTORY WIRED TYPE C. ALL OTHER OPERATORS ARE SHIPPED FROM THE FACTORY WIRED DRAWBAR AND JACKSHAFT TYPE D. TO CHANGE WIRING TYPE, SEE BOXES ABOVE AND

1) INTERCHANGE THE BLACK AND WHITE WIRES AT TERMINALS "A" AND "B."
2) REVERSE TOP LIMIT SWITCH AND CAM. SEE "LIMIT SWITCH ADJUSTMENT" INSTRUCTIONS.

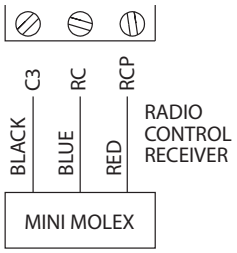


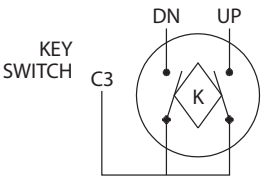
ONE PUSH BUTTON STATION



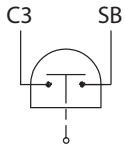
TWO PUSH BUTTON STATIONS

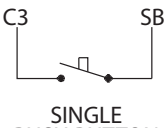
ACCESSORY CONTROL WIRING



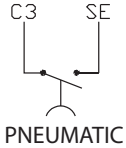


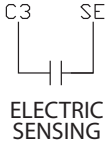
NOTE: IF CONTROL IS ONLY BY SINGLE BUTTON AND/OR RADIO CONTROL – JUMPER C TO C3 AND WIRE MOMENTARY OPEN & CLOSE.





NOTE: ONLY 2 WIRE CORD REQUIRED





OVERHEAD DOOR
the original since 1921

Commercial / Industrial

INSTALLATION AND SERVICE INSTRUCTIONS

EXPLOSION-PROOF DOOR OPERATOR MOTOR CONTROL PANEL ENCLOSURE with INTRINSICALLY SAFE CONTROL WIRING

NOTE:

FOR OPERATOR MOTOR AND FRAME INSTALLATION REFER TO INSTALLATION INSTRUCTIONS FOR MODEL OF OPERATOR BEING USED.

THIS ENCLOSURE FOR:		OPTIONS	
VOLTAGE	PHASE		
115 ☐	1 ☐	WITHOUT DYNAMIC BRAKE	☐
230 ☐	3 ☐	WITH DYNAMIC BRAKE	☐
460 ☐	☐	WITHOUT SAFETY EDGE CONTROL	☐
		WITH SAFETY EDGE CONTROL	☐

Factory Mutual System Approved	**EXPLOSION-PROOF** with Intrinsically Safe Control Wiring Class I Division 1 Group D
	DUST IGNITION-PROOF with Intrinsically Safe Control Wiring Class II Division 1 Groups F and G

IMPORTANT:

PLEASE READ THESE INSTRUCTIONS AND REVIEW WIRING DIAGRAM BEFORE PROCEEDING WITH INSTALLATION.

IMPORTANT:

ON MULTI-OPERATOR INSTALLATIONS, MATCH THE SERIAL NUMBER ON THE OPERATOR FRAME WITH THE SERIAL NUMBER ON THE CONTROL ENCLOSURE.

For specific examples of Explosive Atmospheres see page 12.

IMPORTANT NOTICES

PLEASE READ THIS PAGE CAREFULLY BEFORE ATTEMPTING INSTALLATION.

This equipment is designed for use in rooms or buildings where highly volatile gases or dust are, or could be present. If the instructions outlined in this manual and particularly the items listed on this page are observed, such gases or dust will not be ignited by this door operator system.

CAUTION

Confirm that the power available in the building for this Door Operator matches the rating marked on the front page of this manual.

WARNING

Confirm that the explosive atmosphere of this installation is not more severe than Class I, Division 1, Group D or Class II, Division 1, Groups F and G (see Page 12).

WARNING

DO NOT connect intrinsically safe control wires to any powered switching device such as radio control receivers, time clocks, photocells, etc., even when such devices are enclosed within an explosion-proof enclosure or in an non-hazardous area. Any such connection nullifies the intrinsically safe rating. Contact factory for additional data.

CAUTION

Should motor require repair service, contact factory for location of motor service center authorized for explosion-proof motor repair.

CAUTION

Should motor control panel require service, contact Overhead Door Corporation distributor from which the unit was purchased, or contact factory.

CAUTION

A good ground connection to the explosion-proof enclosure is required for proper operation of the intrinsically safe barriers. A grounding lug is provided in the upper left corner of the enclosure panel for this purpose.

WARNING

Keep All high voltage wiring at least 2" from any intrinsically safe wiring. This means that all intrinsically safe wiring MUST be run in separate conduit.

CAUTION

ALL high voltage wiring from the power source and to the motor MUST be in rigid conduit and must be installed in accordance with the current National Electrical Code, Articles 500 through 516 and/or local requirements for hazardous wiring.

DEFINITIONS

1. Intrinsically Safe Wiring, Intrinsically Safe Control System, etc.:

Intrinsically safe controls and associated wiring are designed so as to limit energy levels to less than that which is sufficient to cause ignition of a hazardous atmospheric mixture in its most volatile concentration.

The intrinsically safe barrier relays used with this door operator control system have been rated by Factory Mutual as being safe for wiring run in the most hazardous atmospheres (i. e., Class I, Division 1, Group A) and have been tested to assure that any malfunction (either normal or abnormal) that might occur in the intrinsically safe barrier does not create a hazardous condition. The limitation on this operator, to Class 1, Division 1, Group D, is due to motor and enclosure rating.

The use of an intrinsically safe control system allows the use of standard NEMA 1 rated equipment such as push buttons, pull switches, and safety edges. The intrinsically safe rating is voided if the intrinsically safe wiring is connected to electrically powered switching devices such as timers, relays, radio controls, etc. The voiding occurs even when the electrically powered device is placed in an explosion-proof enclosure, since the electrical power source to such devices cannot be sufficiently insulated from the switching mechanism to guarantee complete isolation.

2. Dynamic Braking:

The Dynamic Braking used on this equipment applies a D. C. voltage for 2 seconds to the motor winding at the moment A. C. power to the motor is interrupted. This low D. C. voltage sets up a magnetic field to stop the motor.

WARNING

Our standard drum type brake cannot be used with explosion-proof operators.

3. Delay on Reverse Timer :

To permit the full impact of the dynamic brake and also to protect the operator/door systems from the mechanical shock of reversing large doors, this timer prevents the motor from being reversed during the 2 second braking period. This delay does not occur when restarting is done in the original direction of travel. Also see Page 8 for other timer information.

4. Auxiliary Motor Relay:

This relay is used on single phase operators with dynamic braking. The relay is energized whenever either reversing contactor is energized. When energized, this relay applies power to the auxiliary run winding of the motor. When de-energized, the D. C. voltage is applied through this relay to the auxiliary motor run winding. This isolates the D. C. voltage completely.

On three phase motors, the D. C. voltage is isolated by 600 volt rated, double pole auxiliary contacts controlled by the reversing contactor coils.

5. Motor Overheating and Restart Protection:

Motors that have explosion-proof approval from recognized test agencies are protected from motor surface overheating by thermal overload protectors or thermostats located within the motor enclosure. These protectors are always of the automatic reset type. For physical safety reasons, this operator system has been designed to prevent automatic start-up in either direction when the overload resets.

On single phase operators, power to the control transformer primary is routed through the overload protector. If the thermal protector trips, the reversing contactor is de-energized and cannot be re-activated until thermal reset occurs.

On three phase operators that use motors with thermal overload protectors, a 138 volt relay is connected across one of the motor windings to detect overload trip. If overload trip occurs, the 138 volt relay initiates a time delay relay which in turn removes power to the reversing contactor coils.

On three phase operators that use motors with thermostat type protectors, the thermostat controls the secondary voltage from the control transformer to release the reversing contactor.

In both single phase and three phase applications, motor operation can be resumed(after the motor protector has been reset)by the push buttons.

INSTALLATION DIAGRAMS — POWER INPUT/MOTOR WIRING

CAUTION

ALL high voltage wiring from the power source and to the motor MUST be in rigid conduit and must be installed in accordance with the current National Electrical Code, Articles 500 through 516 and/or local requirements for hazardous wiring.

MOTOR WIRING

FOR SINGLE PHASE

Units without brake - 5 wire
Units with Brake - 7 wire

FOR THREE PHASE

All models - 5 wire
- see Power Wire Size Charts, page 5.

CAUTION

A good ground connection to the explosion-proof enclosure is required for proper operation of the intrinsically safe barriers. A grounding lug is provided for this purpose (see Page 9).

CAUTION

Keep ALL high voltage wiring at least 2" from any intrinsically safe wiring. This means that all intrinsically safe wiring MUST be run in separate conduit.

For additional information, see Page 6, plus drawing D-106648 and wiring diagram supplied with operator.

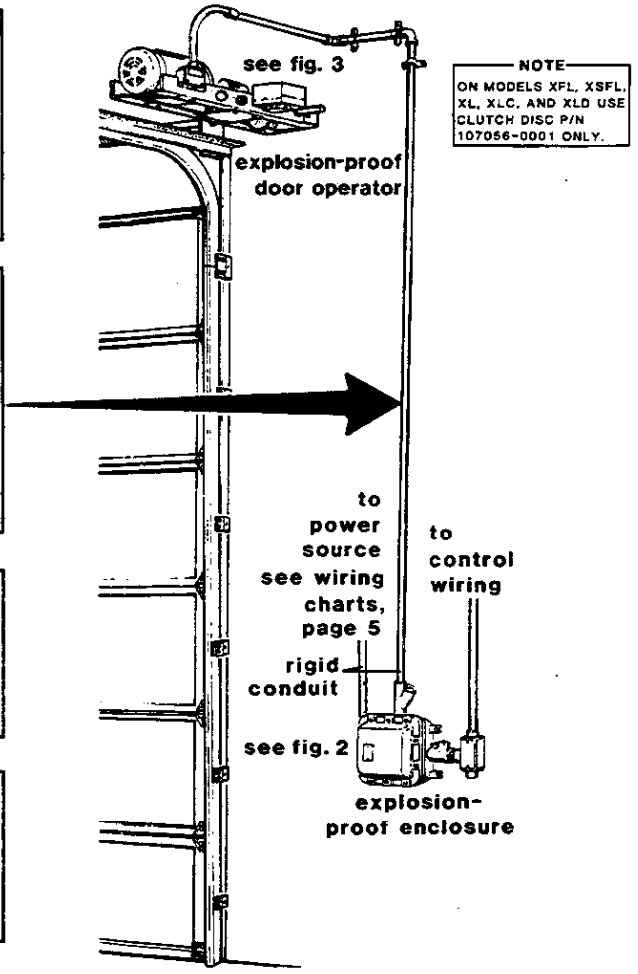


Fig. 1 Typical Mounting Arrangement Power Input and Motor Wiring of Explosion-Proof Operator

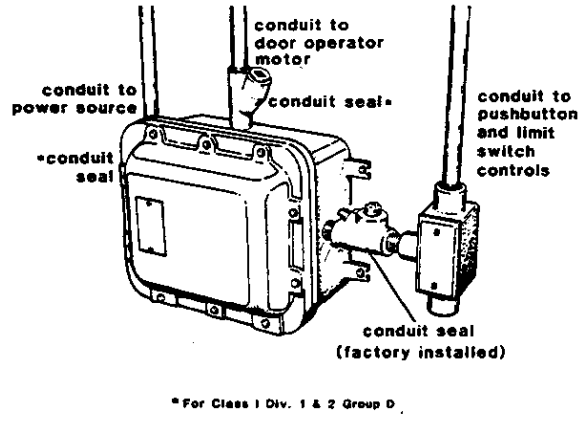


Fig. 2 Explosion-Proof Enclosure with Intrinsically Safe Control Wiring
(Houses Motor Control and Intrinsically Safe Relays)

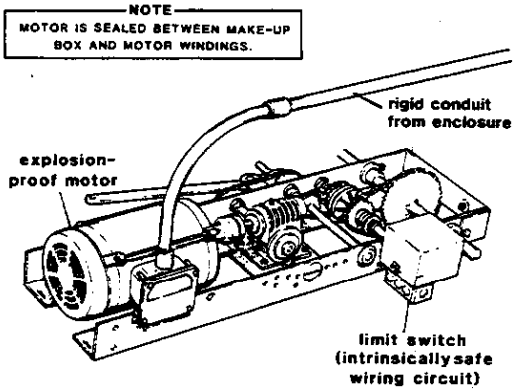


Fig. 3 Explosion-Proof Door Operator
(Model L - Shown as Typical)

INSTALLATION DIAGRAMS

INTRINSICALLY SAFE CIRCUIT

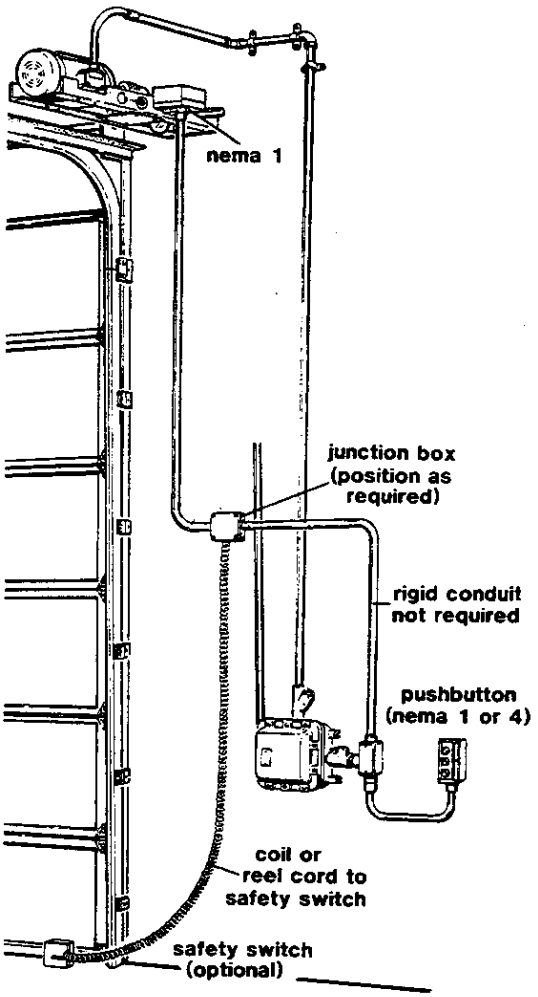


Fig. 4 Typical Mounting Arrangement Power Input and Motor Wiring of Explosion-Proof Operator

Intrinsically Safe Wiring and switches do not have to meet N. E. C. Code for Hazardous Wiring. (See Article 500-2, N. E. C. 1987 Handbook)

Intrinsically Safe Relays interface the control elements (pushbutton, limit switch, etc.) with the motor reversing contactor.

The Intrinsically Safe Relay is housed within the explosion-proof control enclosure and the control wiring is rated safe to Class I, Div. 1, Group A (See Page 3, Item 1).

Intrinsically Safe Circuits limit the energy levels in the circuit to less than the energy capable of igniting the explosive atmosphere.

CAUTION

Do Not connect intrinsically safe control wires to any powered switching device such as radio control receivers, time clocks, photo-cells, etc., even when such devices are enclosed within an explosion-proof enclosure or in a non-hazardous area. Any such connection nullifies the intrinsically safe rating. Contact factory for additional data.

CAUTION

When conducting continuity checks of field wiring of the intrinsically safe circuits, disconnect all incoming wires to control circuit makeup wires. Externally applied voltage of the continuity tester could damage the barrier and require replacement.

POWER WIRE SIZE CHARTS

SINGLE PHASE TWO WIRE PLUS GROUND

	WIRE SIZE				
MOTOR SIZE	14	12	10	8	6
1/3 HP	75	120	200	240	450
1/2 HP	60	100	150	190	350
3/4 HP	50	70	120	150	275
1 HP	--	60	100	120	210

Maximum conduit run to major power source in feet by wire size vs motor HP 115 volt 1 phase. For 230 volt, 1 Phase, multiply distance by 4.

THREE PHASE THREE WIRE PLUS GROUND

	WIRE SIZE				
MOTOR SIZE	14	12	10	8	
1/3 HP	720	1150	1800	2200	
1/2 HP	575	725	1440	1800	
3/4 HP	450	720	1125	1380	
1 HP	360	575	900	1100	
2 HP	190	310	490	600	

For 460 volt, 3 phase, multiply distance by 4.

INSTALLATION

POWER UNIT

Install the door operator unit containing the motor, speed reduction system, and limit switches as shown in the installation manual for the model operator being installed. Disregard references made to electrical equipment since the manual is intended for standard environmental conditions. Before installing, check motor data to make certain that the voltage and phase is in agreement with job site conditions.

EXPLOSION-PROOF ENCLOSURE

The preferred enclosure mounting location is on the wall, within sight of the door operator and close enough to the floor to permit service without the use of a ladder.

Some alternate locations might be; in an adjacent room, on the wall in close proximity to the operator power unit, or on the operator support hangers (if sufficiently rigid or reinforced). Unless the conduit run to the motor dictates otherwise, the mounting position shown in Figure 1 (Page 5) is preferred.

WIRING

All power input wiring to the explosion-proof enclosure and between the enclosure and the motor must be contained in rigid conduit and installed in compliance with the latest National Electrical Code requirements for hazardous location, unless superceded by local codes. A conduit seal must be used near the entrance to the enclosure. Wire size should be in accordance with standard practice for the motor size except in single phase motor installations where the distance between the circuit panel and enclosure is more than 250 feet. On such single phase installations, the next larger wire size should be used to guard against excessive voltage drops when the motor is attempting to start. The power input wires enter the left conduit hole and connect to terminals L1 and L2 (single phase) or L1, L2, and L3 (three phase). In addition, a grounding wire must be connected to the lug provided in the enclosure (see Figure 5). Wiring to the motor must also be run in rigid conduit according to hazardous location codes. The conduit runs must have conduit seals at each end of the run, plus, additional seals, if required, for long runs. The exit from the enclosure should be as shown in Figure 2 and the entrance to the motor should be as shown in Figure 3. The wires to the motor connect to the terminals on the right side of the large terminal strip. The wires from the terminal strip must be routed through the insulated bushing (see Figure 6) to prevent the motor wires from coming within 2" of the intrinsically safe barrier terminals. Routing through this bushing also assures ample room for servicing components. See wiring diagram for connections.

Wiring to the push buttons(s), safety edge, and limit switches is made in the electro-let box. Wiring from the explosion-proof enclosure has been routed through a factory installed conduit seal. Since this wiring is intrinsically safe, the protective housing and subsequent conduit runs do not have to conform to hazardous wiring codes.

The push buttons, limit switches, safety edges, etc., may be in NEMA 1 enclosures without risk of creating a hazard.

CONTROL CIRCUIT WIRING

(See wiring diagram included with this manual for control action desired.)

Note that with control actions requiring use of a "stop" push button switch, such a switch must be of the double pole, normally closed type. This is required to prevent interaction between the intrinsically safe barrier relays under certain control conditions.

INSTALLATION (con't)

CONTROL CIRCUIT WIRING (con't)

When interlock switches are to be used (lock rod interlocks, pass door interlocks, etc.) the switch must be of the double-pole type and wired as shown in the External Wiring Diagram.

The limit switch selection, as to which switch controls travel in the "open" direction, and which controls travel in the "close" direction, may be determined from the chart below in conjunction with the operator installation manual. The operator manual indicates under the heading "WIRING INSTRUCTION", whether the wiring should be in accordance with type "C" or type "D" wiring diagrams (Note: type "D" and drawbar have the same wiring configuration). When type wiring is determined, the "open" and "close" limit can be identified as shown here.

LIMIT SWITCH FUNCTION	TYPE "C"	TYPE "D"/ DRAWBAR
"OPEN" limit switch (stops upward travel)	White Set of Leads	Black Set of Leads
"CLOSE" limit switch (stops downward travel)	Black Set of Leads	White Set of Leads

For clarification of type "C" and type "D", see operator installation manual. Red set of leads are for safety edge when used.

(Note: On operators intended for use with safety edge switches, the limit switch also has a set of "red" leads. These are wired in the safety switch circuit only.)

CHECKING AND ADJUSTING THE INSTALLATION

Unlike other operators manufactured by Overhead Door Corporation, the reversing contactor is arranged so that one coil always causes the motor to open the door while the other coil causes the motor to close the door. Since the motor is wired to the contactor in the field, proper rotation must be accomplished at the job site.

The contactor which opens the door has a small decal, marked "up", affixed to that side of the reversing contactor. In enclosures using the style of reversing contactor depicted as item 23 in the Exploded View (Page 11) the contacts and coil nearest the Power Terminal Strip (15) control upward travel. In enclosures using a Reversing Contactor of the style depicted as item 12 in the Exploded View, the contacts and coil nearest the grounding lug (36) are intended to open the door.

To check for proper motor rotation (as outlined below) make test before connecting to door.

The contactor may be manually actuated by pressing firmly on the contactor plunger with a non-conducting probe. If the motor does not operate in the intended direction, interchange the following wires to the motor at the power terminal strip:

Single Phase: Interchange motor leads at terminals 5 and 6. This will reverse the motor "Start" winding.

Three Phase: Interchange any two motor wires connected to "T1", "T2", or "T3".

LIMIT SWITCH ADJUSTMENT

See detailed instructions in operator installation manual.

CLOSING ENCLOSURE COVER

When limit switches are adjusted and the operator electrical system is functioning properly, replace the cover. Insert all cover bolts and tighten slightly. Then, partially tighten each bolt in an alternating manner (as you would wheel lugs) until all bolts are firmly tightened.

SERVICING THE OPERATOR

Do not attempt to operate this equipment in an explosive atmosphere with the enclosure cover open.

MOTOR

If, at any time, the motor is deemed as being in need of repair, such work MUST be performed by an authorized motor service center that has been certified by U. L., C. S. A., and/or Factory Mutal to service explosion-proof motors. If the motor has been dismantled by an unauthorized person, the explosion-proof rating is voided.

ENCLOSURE

Remove bolts holding cover in place, then swing cover open. Take precautions not to mar the mating faces of the cover and enclosure.

Components in this enclosure have been arranged to permit most circuit checks without removing other components or removing the Main Mounting Base. The only component that requires removal of the entire base for replacement is the control/brake transformer.

Intrinsically Safe Barriers (3) and the Timer Board Assembly (9) are mounted on a Relay Mounting Plate (2) which is secured to the Main Mounting Base (18) with two 8-32 nuts in conjunction with two Weld Bolts (24) in the Main Mounting Base. To extract the Relay Mounting Plate, remove the two nuts and gently pull the panel from the Weld Bolts. The electrical connection to the panel can be disconnected at the multiple pin plugs.

To remove the Main Mounting Base, first remove the Relay Mounting Plate and then the Screws (22 and 35) in the four corners of the Base.

To test the D. C. dynamic brake voltage, connect a D. C. voltmeter across the gray (+ positive) and violet (- negative) leads from the Bridge Rectifier (21). These leads can be reached easily at the Auxiliary Contact Block (11) atop the Reversing Contactor (12) or at the Auxiliary Relay contacts. The 24 volt potential will only be available for approximately 2 seconds immediately after the Reversing Contactor drops out and removes A. C. power to the motor.

TIME LIMIT TIMER

The delay on the reverse timer board also has an electronic timer designed to prevent this operator from running for a prolonged time in a single direction. Prolonged running could be caused by clutch slippage (due to a locked door or broken door spring) or failure of a mechanical drive system component. The running time is restricted to 45 seconds for drawbar type operators and 90 seconds on all other units. In normal operation, the maximum running time for drawbar operators is 30 seconds, but other types may require up to 60 seconds.

If the operator is shut off by a limit switch or the "stop" push button, the timer resets to zero time. However, if the operator runs until the timer setting is reached, a relay in the timer will latch in and remove power to all control elements and the reversing contactor will remove power to the motor. To restore control action, momentarily disconnect power to the operator at the power distribution panel

If the timer relay ever latches in, thoroughly check door and operator to determine problem and correct before again trying to use the operator.

MISCELLANEOUS

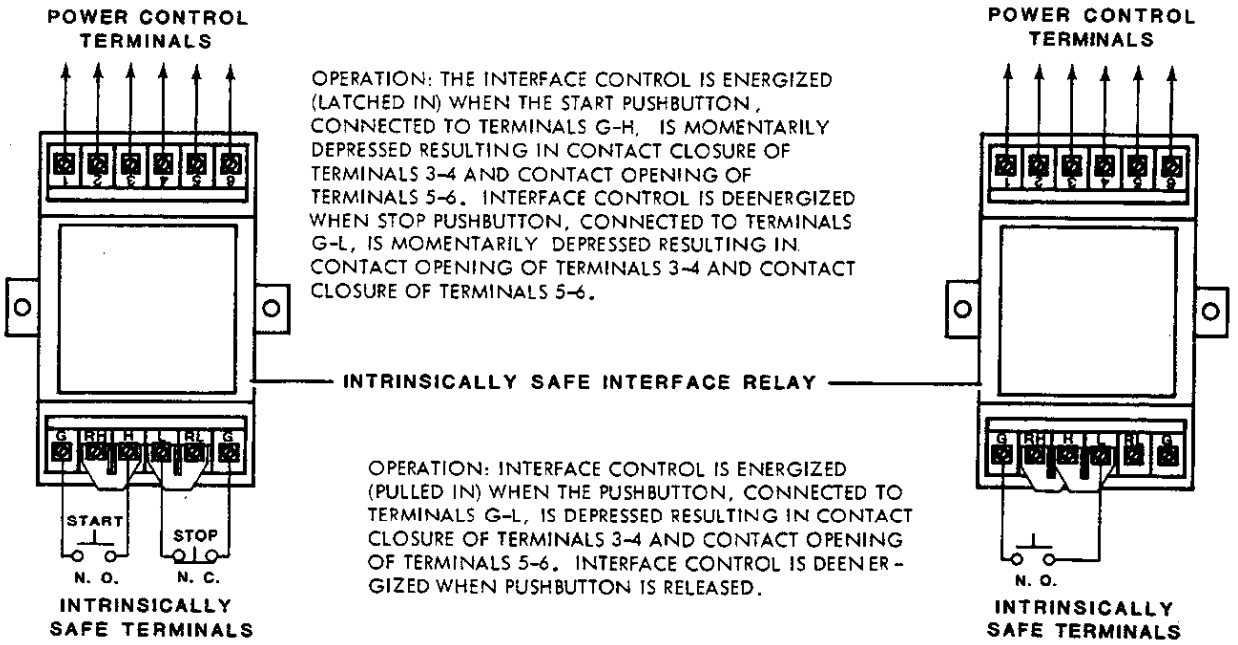


Fig. 5 - Control Jumper Arrangement (see external control wiring diagram)

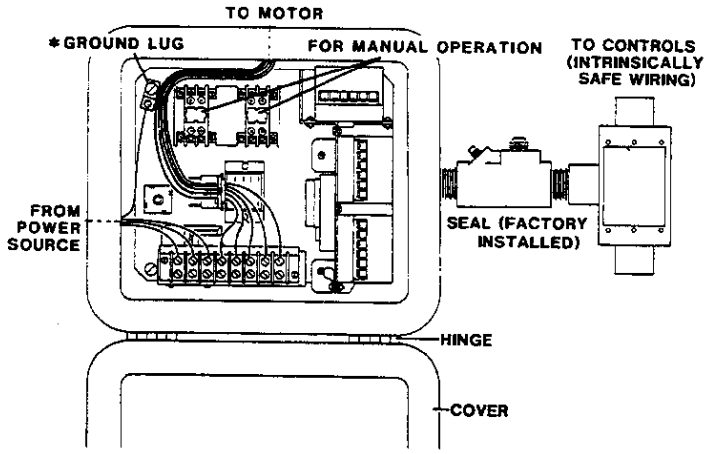


Fig. 6A - Enclosure Layout, 30 Models with Dynamic Brake

***Ground lug may be located on side of enclosure.**

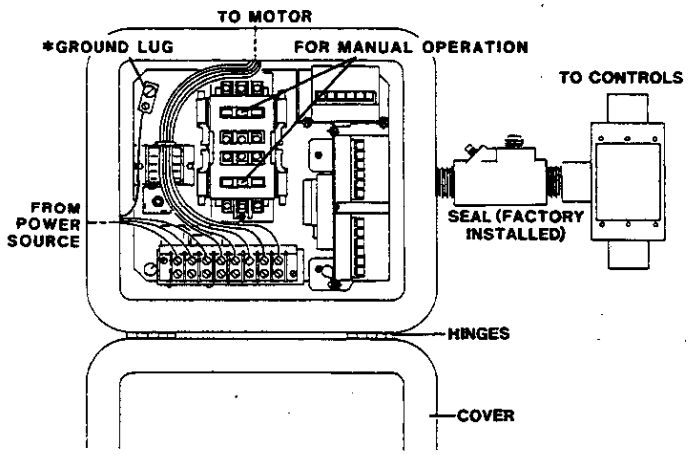


Fig. 6B - Enclosure layout, 30 Models without Dynamic Brake and 10 Models with and without Dynamic Brake

OVERHEAD DOOR
the original since 1921

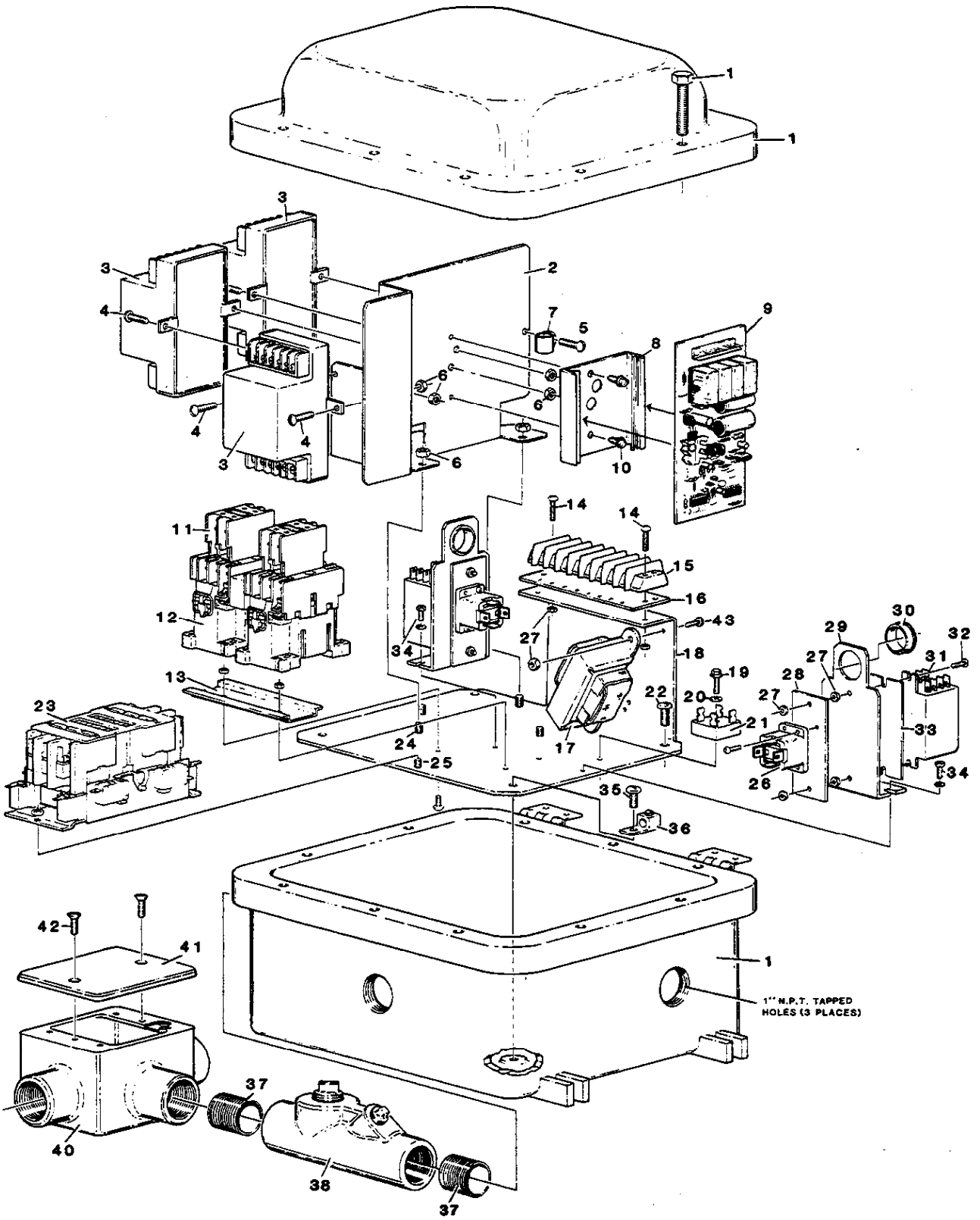
PARTS LIST

REF. NO	PART NO.	DESCRIPTION	APPLICATION			
			1Ø w/o DYN BR	3Ø w/o DYN BR	1Ø with DYN BR	3Ø with DYN BR
1	106076-0001	Enclosure, Explosion-Proof				
2	106391-0001	Plate, Relay Mounting				
3	106058-0001	Intrinsically Safe Barrier +				
4	080288-1206	Screw, RHMS Slot, 8-32 x 3/8"				
5	080288-1208	Screw, RHMS Slot, 8-32 x 1/2"				
6	086480-1232	Nut, Hex 8-32				
7	080626-0001	Clamp, Plastic				
8	106060-0001	Bracket, Timer Board Mounting				
9	107193-0001	Timer Board Assembly				
10	086575-0504	Screw, Thread Forming, 6-32 x 1/2"				
11	106057-0001	Auxiliary Contact Block	Not Used	Not Used	Not Used	
12	106056-0001	Contactor, Reversing	Not Used	Not Used	Not Used	
13	106084-0001	Bracket, Mounting Reversing Contactor				
14	086575-0512	Screw, Thread Forming, 6-32 x 3/4"				
15	106052-0001	Terminal Strip, 8 Lug, 600V				
16	106075-0001	Marker Assembly, Terminal Strip 1Ø		Not Used		Not Used
	106075-0002	Marker Assembly, Terminal Strip 3Ø	Not Used		Not Used	
17	106072-0001	Transformer,Control,120V Imp. Pro. 40VA*				
	106072-0002	Transformer,Control,208V Imp. Pro. 40VA*				
	106072-0003	Transformer,Control,230V Imp. Pro. 40VA*				
	106072-0004	Transformer,Control,460V Imp. Pro. 40VA*				
18	105916-0001	Main Mounting Base				
19	086575-0612	Screw, Thread Forming, 8-32 x 3/4"	Not Used	Not Used		
20	080302-1212	Washer, Flat, 3/16 x 3/8"	Not Used	Not Used		
21	106051-0001	Rectifier, Bridge	Not Used	Not Used		
22	086120-1604	Screw, Pan Head, Slot, 1/4-20 x 1/4"				
23	076803-0001	Contactor, Reversing				Not Used
24	605909-1206	Screw, Spotweld, 8-32 x 3/8"				
25	605909-1006	Screw, Spotweld, 6-32 x 3/8"				
26	105921-0001	Relay, Thermal, Time Delay	Not Used		Not Used	
27	086480-1032	Nut, Hex Keps, 6-32				
28	105922-0001	Plate, Thermal Relay Mounting	Not Used		Not Used	
29	106061-0001	Bracket, Relay Mounting				
30	605905-0008	Bushing, Heyco, 7/8"				
31	077151-0022	Relay, General Purpose, DPDT 138V	Not Used		Not Used	
	106059-0001	Relay, Motor Rated, DPDT	Not Used	Not Used		Not Used
32	080288-1012	Screw, R.H. Machine, 6-32 x 3/4"				
33	077153-0000	Insulation, Relay	Not Used		Not Used	
34	086575-0504	Screw, Thread Forming, 6-32 x 1/4"				
35	--	Screw, R.H., Slot, Grn., 1/4-20				
36	--	Grounding Lug				
37	106406-0001	Nipple, 1" Close, 1" NPT				
38	107210-0001	Seal Wiring Assembly				
39	--					
40	106404-0001	Electrolet Box				
41	106405-0001	Lid, Electrolet Box				
42	--					
43	080288-1008	Screw, R.H. Machine, 6-32 x 1/2"				

* Specify primary voltage

\+ Two used per unit without safety Reverse Feature.
Item 3A added for safety Reverse feature.

EXPLODED VIEW



CLASSIFICATION OF HAZARDOUS ATMOSPHERES
NATIONAL ELECTRICAL CODE
ARTICLE 500 HAZARDOUS LOCATIONS

CLASS I
flammable gases

Division	Group	Typical Atmosphere
1 Normally hazardous	A	acetylene
	B	butadiene ethylene oxide hydrogen manufactured gases containing more than 30% hydrogen (by volume) propylene oxide
	C	acetaldehyde cyclopropane diethylether ethylene unsymmetrical dimethyl hydrazine (UDMH1, 1-dimethyl hydrazine)
	D	acetone acrylonitrile ammonia benzene butane 1-butanol (butyl alcohol) 2-butanol (secondary butyl alcohol) n-butyl acetate isobutyl acetate ethane ethanol (ethyl alcohol) ethyl acetate ethylene dichloride gasoline heptanes hexanes isoprene methane (natural gas) methanol (methyl alcohol) 3-methyl-1-butanol (isoamyl alcohol) methyl ethyl ketone methyl isobutyl ketone 2-methyl-1-propanol (isobutyl alcohol) 2-methyl-2-propanol (tertiary butyl alcohol) petroleum naphtha octanes pentanes 1-pentanol (amylalcohol) propane 1-propanol (propyl alcohol) 2-propanol (isopropl alcohol) propylene styrene toluene vinyl acetate vinyl chloride xylenes

Division	Group	Typical Atmosphere
2 Not normally hazardous	A	Same as Division 1
	B	Same as Division 1
	C	Same as Division 1
	D	Same as Division 1 (not normally hazardous means that the gases aren't normally present.)

CLASS II
Combustible dusts

Division	Group	Typical Atmosphere
1 Normally hazardous	E	Metal dust, including aluminum, magnesium and their commercial alloys, hazardous characteristics.
	F	Carbon black, coal, coke dust with more than 8% volatile material.
	G	Flour, starch, grain dusts.
2 Not normally hazardous	E, F, G	Same as Division 1

CLASS III
Easily Ignitable fibers and flyings

Division	Group	Typical Atmosphere
1,2	E, F	

WARRANTY

LIMITED WARRANTY

The authorized distributor of Overhead Door Corporation products whose name appears below (“Seller”) warrants the product sold under this warranty to be free from defects in material and workmanship under normal use and service. This warranty extends only to the original consumer (“Buyer”) and expires one year after the date of installation.

Seller’s sole obligation under this warranty is limited to repairing or replacing any parts which shall be determined by Seller to be defective and is conditioned upon Buyer giving notice of any such defect to Seller within the warranty period. If Seller concludes that repair or replacement is necessary, Seller will commence work within a reasonable time after the decision to repair or replace is made.

This warranty does not apply to any product which has been altered or repaired by any person not authorized by the Seller, or which has been subjected to misuse, neglect, or accident.

THERE IS NO WARRANTY OF MERCHANTABILITY, WARRANT OF FITNESS FOR ANY PARTICULAR PURPOSE OR ANY OTHER IMPLIED WARRANTY BEYOND THE ONE YEAR PERIOD DESCRIBED ABOVE. SELLER SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES NOR FOR ANY FURTHER LOSS WHICH MAY ARISE IN CONNECTION WITH ANY CLAIM.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow limitation of how long the implied warranty lasts and some states do not allow the exclusion of limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

Seller has not established any informal dispute settlement procedure of the type described in the Magnuson-Moss Warranty Act. Claims under this warranty must be made in writing to the Selling Distributor whose name and address appears below within the applicable warranty period. (Proof of purchase and identification as the original purchaser may be required.)

Inquiries to the Seller concerning this warranty should be directed to:

YOUR LOCAL DISTRIBUTOR

Overhead Door Corporation
2501 S. State Hwy 121 Bus., Suite 200
Lewisville, TX 75067
1-800-929-3667(DOOR)
www.overheaddoor.com