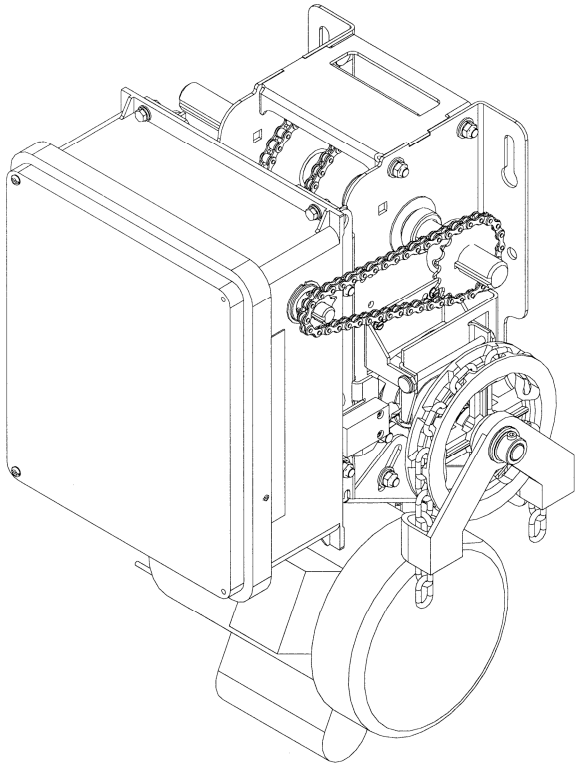
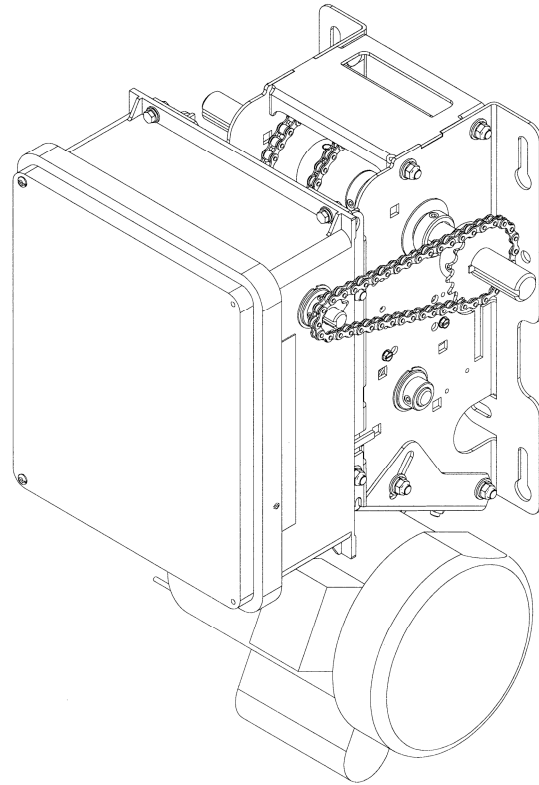


# Addendum – Environmental Applications



**OPHW**  
**(OPHC)**



**OPJW**  
**(OPJC)**

**Note:** This addendum is to be used in conjunction with the Installation & Instruction Manual supplied with the operator.

Waterproof or Corrosionproof operators are built with TEFC or TENV electric motors including a Watertight/Oil tight control enclosure, Nema4/12 or NEMA4X 3 push-button control station.

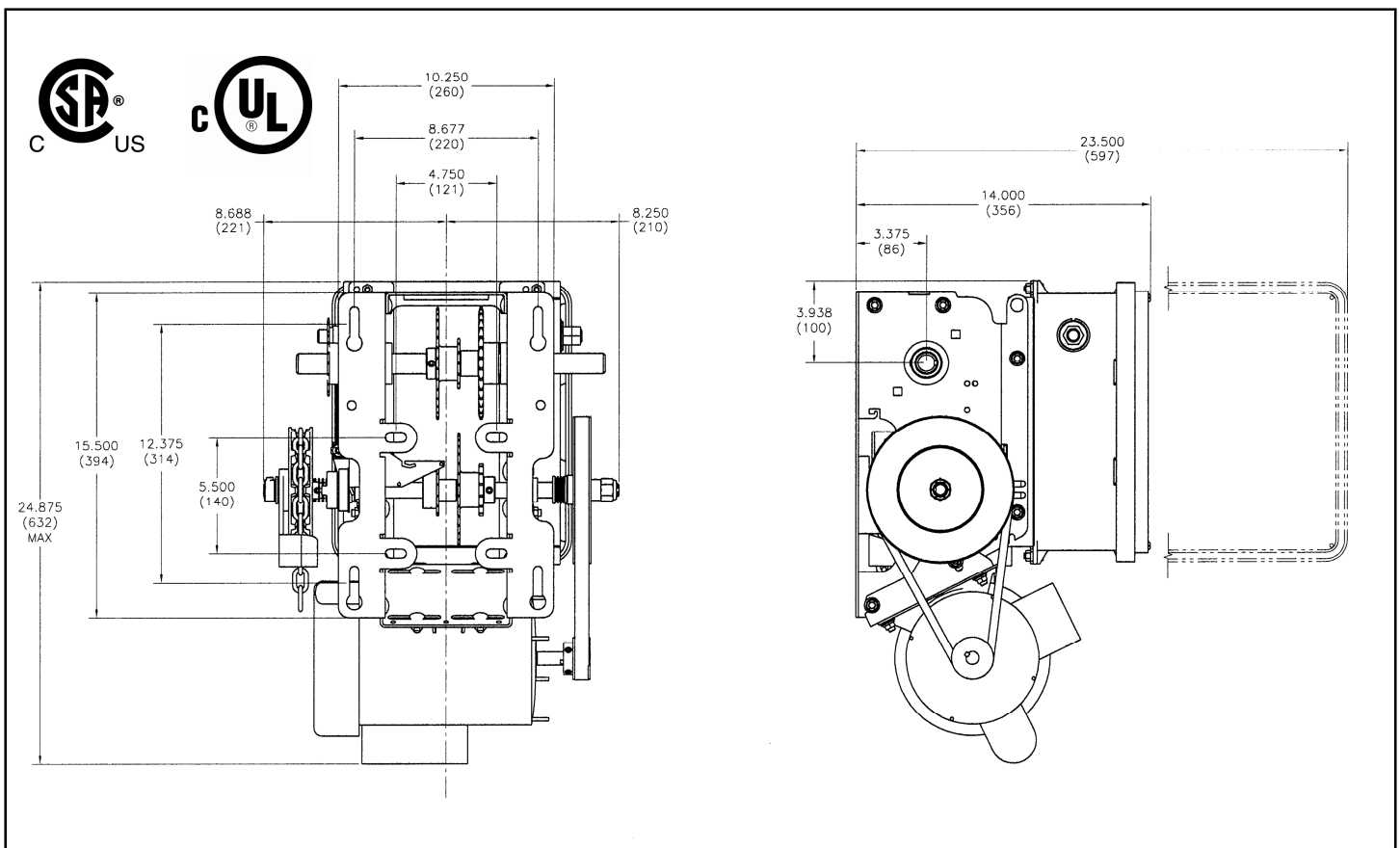
For a general information, refer to Installation and Instruction Manual supplied with the operator.



## SPECIFICATIONS

## GENERAL

SUPPLY VOLTAGE.....	115, 230 VAC single phase, 208, 460, 575VAC three phase
CONTROL VOLTAGE.....	24VAC class II transformer, 2 amps fuse type AC
MOTOR.....	Continuous duty 1/2, 3/4, 1 Horsepower
OPERATOR OUTPUT SPEED.....	41 RPM
NET WEIGHT (Operator only).....	100 Lbs (45.5 Kg) for 1/2HP 115V - OPHW model
STANDARD WIRING TYPE.....	C2-momentary contact to open and stop and constant pressure to close

DIMENSIONS  
(OPHW)

**IMPORTANT**

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

- **CONDUITS AND FITTINGS FOR CONTROL BOX**

Compared to NEMA1 enclosures, the NEMA4/12 or NEMA4X enclosures are not supplied with pre-punched fitting entry holes to attach fittings for incoming power and other different accessories. All appropriate holes and cuttings should be performed by the customer.

- **Conduits and Fittings:**

Always use liquid-tight and flexible non-metallic conduits and fittings for that purpose. Use proper and appropriate cutting tools or jigs to cut the holes. While inserting the conduit to the fitting, ensure that the gland is properly compressed or the conduit jacket is not cut or ripped anywhere to avoid liquid leaking-in.

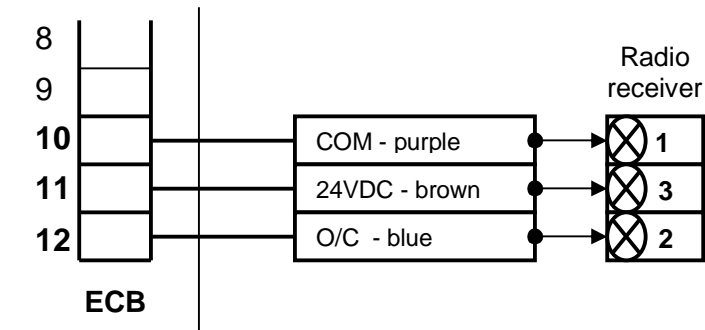
**NOTE:** Use materials as per NEMA guidelines and always follow manufactures instructions for conduit preparation.

**WARNING**

GROUND THE UNIT CORRECTLY USING THE GROUND LUG LOCATED INSIDE THE OPERATOR CONTROL BOX

- **RADIO RECEIVER**

In NEMA4/12 or NEMA4X applications, no terminal strip is provided on the side the controlbox. If a 3-pin Radio Control unit is being used, for a hardwired unit, the radio receiver should be connected directly to the main terminal strip. In case of an ECB unit, appropriate terminals are provided on the electronic board to connect the radio receiver. **Radio Receiver should be located in a remote or protected area to avoid damage caused by liquid immersion.** Please refer to the drawings below for wiring instructions.

**ELECTRONIC CONTROL BOARD****Part of ECB: bottom – Terminal Strip (TB2)**

## Connection Instructions

From ECB	To Radio Receiver
#COM	#1 (24 VOLTS)
#O/C	#2 (RELAY)
#24 V	#3 (COM OR GROUND)

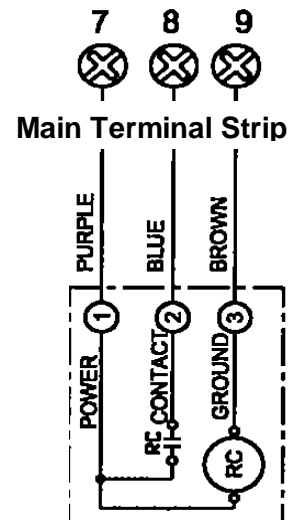
**HARDWIRED OPERATOR**

## Connection Instructions

From Terminal Strip	To Radio Receiver
# 7 (COM)	#1 (24 VOLTS)
#8 (O/C)	#2 (RELAY)
#9 (24 V)	#3 (COM OR GROUND)

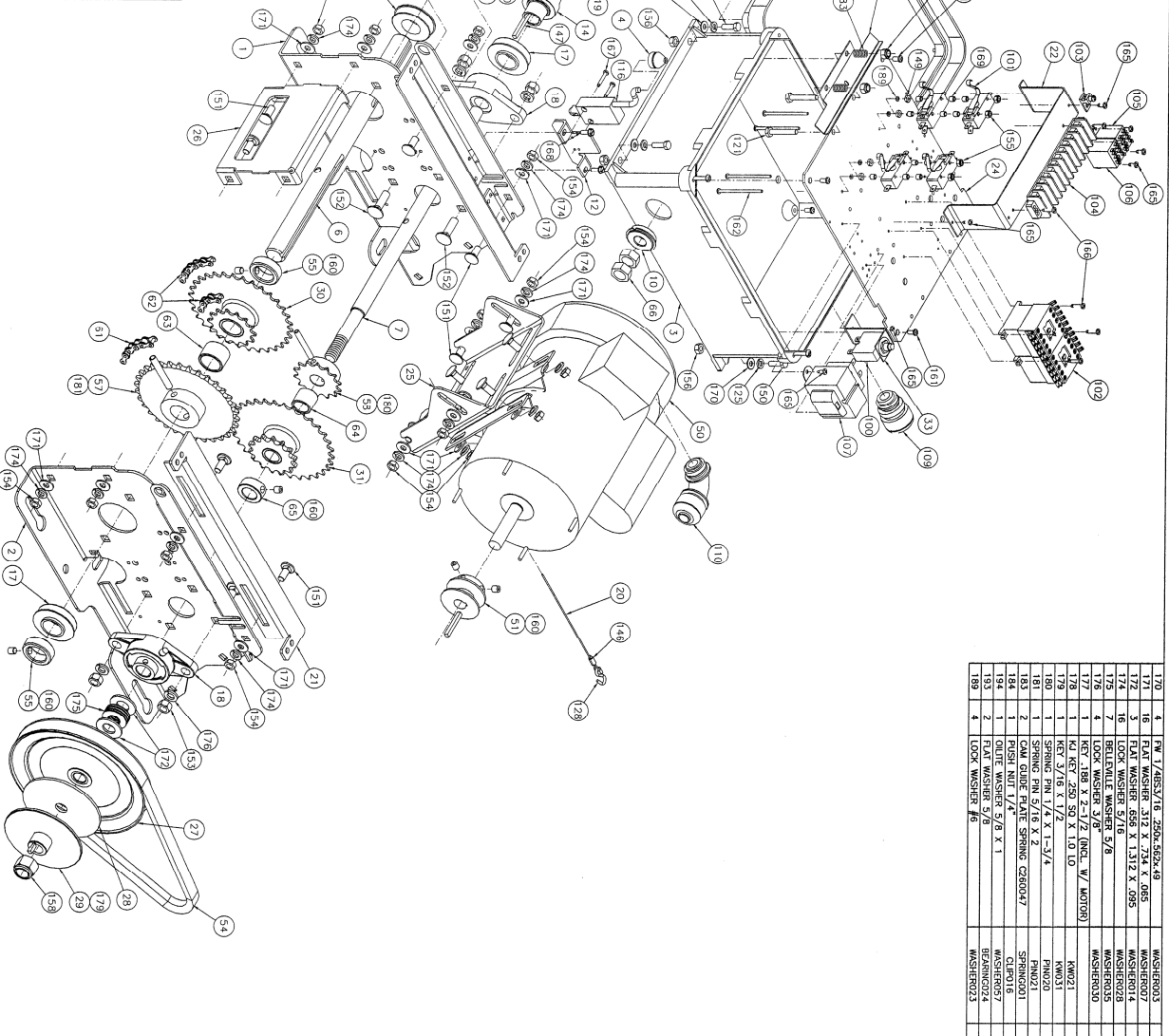
**IMPORTANT NOTE:**

For MCR-32 Model Receivers, please refer to the Technical Note supplied with the unit.



Opera-H (NEMA4/12)

QTY	DESCRIPTION	MANUFACT	REV.
1	OPER-H INSTR MAN+REV		
10	8-20X3 LIQUID TIGHT TUBING	BROOKROD	
2	INSULATED SPACE TERMINAL 290	CONNECTION	
1	MOTOR HARNISS ASM 1 PHASE	HARNISS01	
1	STD GBOX IPI-110 CMM	HARNISS04	A
1	LINK # 65 110-1	LINK002	
1	3 BUJON STATION CA DANCROSS	STATION03	
1	1/2" 28 X 1/4 X 4	STICKER01	
1	1" 7/8 X 1/2	STICKER05	
1	8/32 C/1 HW STICKER 738	STICKER09	
2	WIRE MGT ORANGE 738	WHEREINT01	



**PARTS IDENTIFICATION**

QTY	DESCRIPTION	# MANUFACT	REV.
4	PN 1/4BSX/16 .2500-.502X.49	WASHER005	
16	FLAT WASHER .212 X .734 X .085	WASHER007	
16	LOCK WASHER 5/8	WASHER014	
17/8	BELEWILLE WASHER 5/8	WASHER035	
4	LOCK WASHER 3/8	WASHER030	
1	KEY .189 X 2-1/2 (INCL. W/ MOTOR)	NW021	
1	KEY 3/16 X 1.0 TO	PN020	
1	SPRING PIN 1/4 X 1-5/4	PN020	
1	SPRING PIN 5/16 X 2	PN021	
1	FLAT WASHER 1/4 X 5/8 X 1	CAP016	
1	FLAT WASHER 5/8	BEARNG024	
4	LOCK WASHER #6	WASHER023	
1	LEFT HAND SINK FRAME	FRAM007	
1	RIGHT HAND SINK FRAME	FRAM008	
1	LIQUID TIGHT BUSHING	BUSHING02	
5	ROCK CAJ LIMIT SW/2 9/8-2X12	SWA17024	A
5	OPERA #1 OUTPUT SHIRT C12114	SWA1710	
1	CHINA GEAR SHAFT	SWA1710	
1	HAND CHAIN PULLEY	FOCKETW005	
1	BEARING FLANGED 5/8 PRECISION	BEARNG005	
1	MINI/MIHI GAUGE N-1	CAP016/017	
1	MANUAL MOTOR SWITCH SUPPORT	BRACKET076	
2	MANUAL MOTOR SWITCH	CAP016/017	
14	MANUAL MOTOR SWITCH	COUPL019	
1	DISCONNECT FORK	FORK001	
1	OSHA FORK PIVOT BRACKET	BRACKET04	
1	FLANGED BEARING 1 5/8-2 3/4-5C	BEARNG007	
1	COMP SPRING DISCOSH	SPRING04	
20	7/8" 1/8 X 1/8" C/W STOP TEND	CABL002	
2	WATERPROOF GBOX TESTIP SUPPORT	BRACKET05	
2	CHINA GEAR	BRACKET078	
1	MOTOR FLATE W/7/30	FLATE078	
2	HANDLE	HAND005	
27	BROWN PULLEY SL X 7"	PULLEY020	
2	FRICTION DISC	CLUTCH001	
30	DOUBLE SPRING	SPRING04	
1	DISCONNECT FORK AXLE	SER010B1A32X1	A
1	100% SW+ RESET SUPP BRACKET	4181441082X75	A
1	MOTOR PULLEY SL X 2"	PULLEY020	
1	COLLAR 3/8	COLLAR004	
5	Type B, Inside length .29"	VBL1729	
5	COLLAR 410 SPRING	COLLAR007	
5	14 TOOTH 410 SPRING	SER010B1A32X1	A
80	SFR410B9X3/8 KW3/16 2S51/4	SFR410B9X3/8	A
2	CHINA 410 4BP (WITH CHINA LINK)	CHINA009	
6	SPACER (6.608) (WITH CHINA LINK)	SPACER009	
6	COLLAR 3/4	SPACER009	
4	SMALL LOCK NUT 5/8-24	NUT015	
8	HAND CHAIN PULLEY (1.808)	CHANG06	
1	RESET	RESET	
1	SINGLE EM SW+ LEVER	LM1001	
1	GROUND TIE	CONDUCTOR04	
1	TERMINAL STRIP	TERMP001	
1	RELAY 120V OR 240V DIRT	RELA0024	
1	RELAY 24V DIRT	TRANS006	
1	BR CONNECTOR WATERIGHT 49SP	ADAPT002	
1	TELEDEC LIMIT SWITCH	ULTC025	
1	HEX HEAD BOLT 1/4 X 1-1/2	BOLTC08	
1	CABLE SLEWE 1/16	WASHER026	
1	HEX NUT 5/32 20UNGS X .75	NUT002	
1	CARRIAGE BOLT 3/16 X 1/4 X 3/4	BOLTC02	
1	3/8 INCH NUT	BOLTC02	
1	HEX NUT 5/16-18 UNC	NUT010	
1	NONION LOCK NUT 6-32UNC	NUT018	
2	NONION LOCK NUT 1/4-20UNC	NUT020	
1	SET SCREW 1/4-28-1/4	SCREW002	
9	SET SCREW 5/16-18UNC X 5/16	SCREW003	
4	MACHINE SCREW 6-32 X 2 1/2	SCREW005	
10	SELF TAPPING 8-32UNC X 3/8	SCREW006	
6	SELF TAPPING 8-32UNC X 5/8	SCREW007	
1	LIMIT SWITCH SPACER 1/4 X 1 1/2	SCREW007	
12	LIMIT SWITCH SPACER 1/4 X 1 1/2	SCREW007	

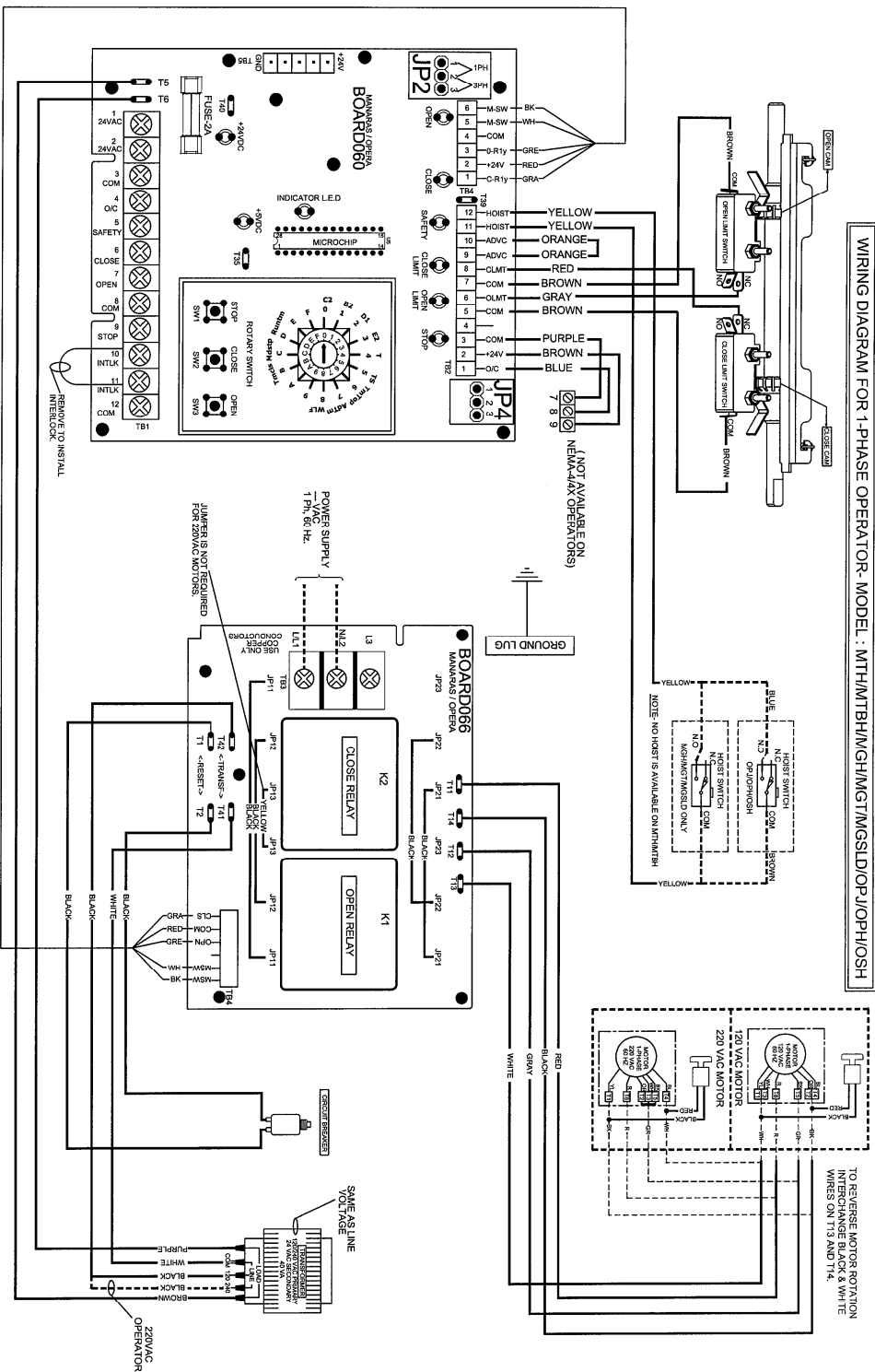
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MANASSAS AUTO TOOLS INC.  
 135 OAKDALE DRIVE  
 P.O. BOX 146  
 FAY, VA 24241-0146



# Single phase ECB wiring diagram

WIRING DIAGRAM FOR 1-PHASE OPERATOR- MODEL : MTH/MTBH/MGH/MGT/MSLD/OP/JOP/HOSH



TO REVERSE MOTOR ROTATION INTERCHANGE BLACK & WHITE WIRES ON T13 AND T14.

## ROTARY SWITCH SETTINGS

WIRING TYPES	PROGRAM SETTINGS
0 C2 WIRING	6 MID-STOP TIMER TO CLOSE
1 P2 WIRING	7 ADV. CLOSE TIME
2 D1 WIRING	8 WARNING LIGHT TIMER
3 D2 WIRING	B TIMER TO CLOSE
4 T WIRING	C MID-STOP
5 TS WIRING	D RUN TIMER

## ON BOARD JUMPER SETTINGS

JP2 1 2 3 1.2	JP4 DISCONNECT SWITCH PRESENT / NOT PRESENT 1.2 / 2.3
---------------------	--

## WARNING LIGHT/RECEIVER MODULE

CONNECTION FOR WARNING LIGHT AND RECEIVER MODULE. (CONSULT FACTORY)

NOTE:  
FOR ROTARY SWITCH SETTINGS AND PROGRAMMING PROCEDURES, REFER TO INSTRUCTION MANUAL.

## EXTERNAL WIRING

LINE POWER	24 VAC POWER	EXTERNAL INTERLOCK	SAFETY REVERSE	OPEN/CLOSE COMMAND	SINGLE PUSH-BUTTON STATION	TWO PUSH-BUTTON STATION
L/L1 N/L2 1 Ph, 50 Hz	1 2 24 VAC POWER (MOTOR DETECTOR AVAILABLE 10A MAX)	10 11 FACTORY INSTALLED JUMPER REMOVE IF EXTERNAL INTERLOCK IS USED	3 5 CONTACT FOR SAFETY DEVICES/SAFETY DEVICE	3 4 CONTACT FOR OPERATOR/SAFE DEVICE	9 8 7 6 NOTE: PLACE A JUMPER BETWEEN TERMINALS 9 AND 8. IF STOP BUTTON IS NOT USED.	6 7 8 9 P.B. SH1 P.B. SH2

For connection of Radio Receiver, refer to page 3

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY TO MANARAS/OPERA AND SHALL NOT BE REPRODUCED OR DISCLOSED OR USED FOR ANY DESIGN OR MANUFACTURE EXCEPT WHEN USER POSSESSES DIRECT WRITTEN AUTHORIZATION FROM MANARAS/OPERA.

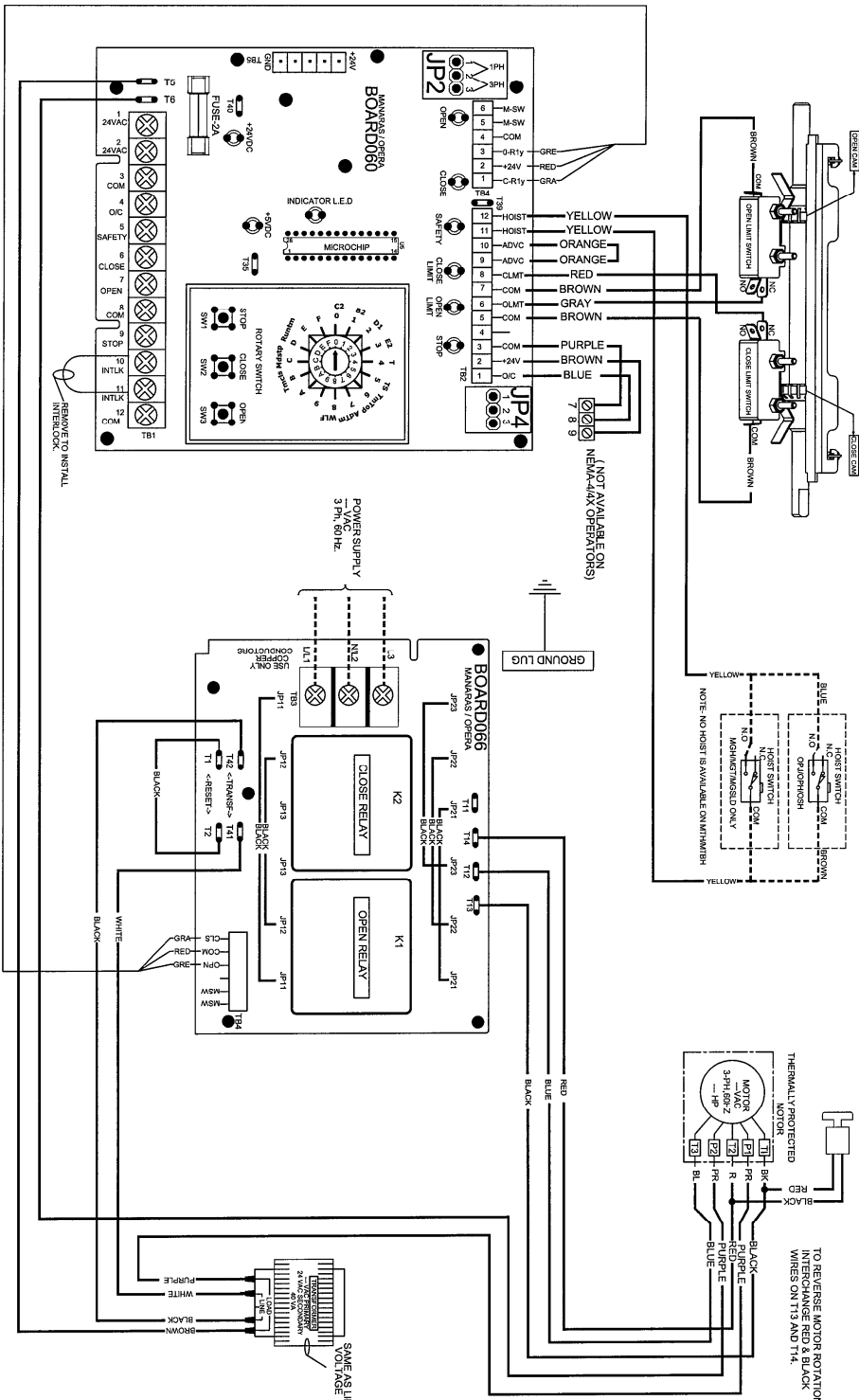
TITLE: WIRING DIAGRAM, 120/208/220VAC, 1-PHASE (Nema-4)

MANARAS/OPERA 136 ONEIDA DRIVE  
TEL: 514-426-4330 FAX: 514-426-4330

REV DATE  
A 13/FEB/2007

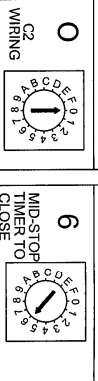
### 3 - phase ECB wiring diagram

WIRING DIAGRAM FOR 1-PHASE OPERATOR - MODEL : MTH/MTB/MGH/MGT/MGSLD/OP/OPH/OSH



EXTERNAL WIRING		SAFETY REVERSE		OPEN/CLOSE COMMAND		SINGLE PUSH-BUTTON STATION		TWO PUSH-BUTTON STATION		For connection of Radio Receiver, refer to page 3	
LINE POWER	24 VAC POWER	EXTERNAL INTERLOCK	SAFETY REVERSE	OPEN/CLOSE COMMAND	SINGLE PUSH-BUTTON STATION	TWO PUSH-BUTTON STATION					
L1, L1 N1, L2 L3	1 2	10 11	3 5	3 4	9 7 8	7 9					
POWER SUPPLY 3 Ph, 60 Hz	24 VAC POWER (MOTION DETECTOR) AVAILABLE TOTAL MAX	FACTORY INSTALLED JUMPER REMOVE IF EXT. INTERLOCK IS USED.	CONTACT FOR SAFETY REVERSE/SAFETY DEVICE	OPEN/CLOSE DEVICE	NOTE: PLUG A JUMPER BETWEEN TERMINALS 9 AND 9. IF STOP BUTTON IS NOT USED.	P.B. SW1 P.B. SW2					
ATTENTION- USE 18AWG OR HIGHER FOR WIRING ALL EXTERNAL CONNECTIONS											

ROTARY SWITCH SETTINGS	
WIRING TYPES	PROGRAM SETTINGS
0 C2 WIRING	6 MID-STOP TIMER TO CLOSE
1 P2 WIRING	7 ADV. CLOSE TIME
2 D1 WIRING	8 WARNING LIGHT TIMER
3 E2 WIRING	B TIMER TO CLOSE
4 T WIRING	C MID-STOP
5 TS WIRING	D RUN TIMER



**WARNING LIGHT/RECEIVER MODULE**

CONNECTION FOR WARNING LIGHT AND RECEIVER MODULE (CONSULT FACTORY)

**NOTE:-**

FOR ROTARY SWITCH SETTINGS AND PROGRAMMING PROCEDURES, REFER TO INSTRUCTION MANUAL.

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY TO MANARAS/OPERA AND SHALL NOT BE REPRODUCED OR USED FOR ANY DESIGN OR MANUFACTURE EXCEPT WHEN USER POSSESSES DIRECT WRITTEN AUTHORIZATION FROM MANARAS/OPERA.

**TITLE: WIRING DIAGRAM, 208/480/575VAC, 3- PHASE (Nema-4)**

DRAWN BY: BP DATE: 15 NOV 2008 CAD FILE: BRB-11-14

REV DATE: A 13 FEB 2007

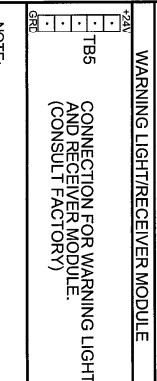
MANARAS/OPERA 9140-0720 QUEBEC INC.

136 ONIEDA DRIVE

POINTE-CLAIRE, QC H9R 1A8

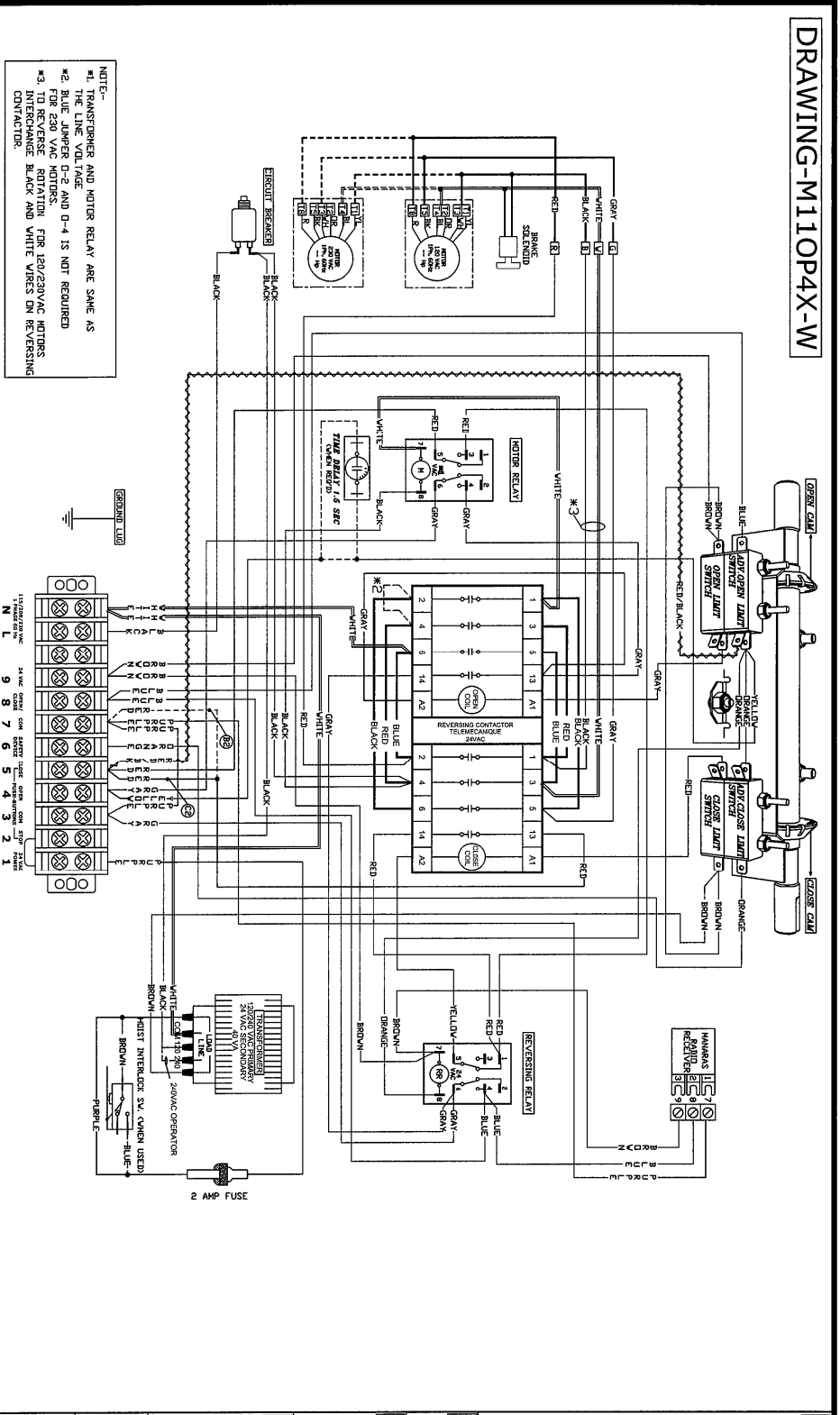
TEL: 1-800-381-2280

FAX: 1-508-525-0008



# Hardwired single-phase wiring diagram

## DRAWING-M11OP4X-W



NOTE:  
 #1. TRANSFORMER AND MOTOR RELAY ARE SAME AS THE LINE VOLTAGE  
 #2. BLUE JUMPER D-2 AND D-4 IS NOT REQUIRED FOR 230 VAC MOTORS.  
 #3. TO REVERSE MOTOR FOR 230/230VAC MOTORS INTERCHANGE BLACK AND WHITE WIRES ON REVERSING CONTACTOR.

LINE POWER	POWER 24 VAC	EXTERNAL INTERLOCK	SAFETY REVERSE	OPEN/CLOSE COMMAND	3-POSITION KEY SW. W/SPRING RETURN TO OPEN	PUSH-BUTTON STATION SINGLE	PUSH-BUTTON STATION TWO	RADIO RECEIVER
								<p>For connection of Radio Receiver, refer to page 3</p>

1. ON SITE MODIFICATIONS
  - NOTE (C1)/C2
  - C2 ⇨ B2
  - 1A REMOVE THE RED WIRE WITH RAPID CONNECTOR FROM TERMINAL #5, AND TRANSFER IT TO TERMINAL #7.
  - B2 ⇨ C2
  - 1B REMOVE THE RED WIRE WITH RAPID CONNECTOR FROM TERMINAL #7, AND TRANSFER IT TO TERMINAL #5.
2. CONSTANT PRESSURE OPEN
3. WIRING FOR INSTANT STOP (ON SAFETY EDGE OR DEVICE)
  1. REMOVE THE YELLOW WIRE FROM ADV. OPEN LIMIT SWITCH, AND CAP IT.
  2. REMOVE THE BLUE WIRE FROM PIN # 4 OR REVERSING RELAY(RR) AND CAP IT.
4. ADDING A TIME DELAY ON REVERSE
  1. REMOVE THE YELLOW WIRE FROM ADV. OPEN LIMIT SWITCH, CONNECT THIS WIRE TO THE YELLOW WIRE FROM THE 1.6 SECOND TIME DELAY RELAY.
  2. FROM OTHER END OF THE TIME DELAY RELAY, CONNECT BACK TO ADV. OPEN LIMIT SWITCH.
5. CONSTANT PRESSURE OPEN & CLOSE - DI
 

PERFORM THE MODIFICATION EXPLAINED IN THE NOTES, 1B, 2 AND 3
6. ANY OTHER OPTIONS
 

FOR ANY OTHER OPTIONS LIKE, TIMER TO CLOSE, ADV STOP, WIRING, LONG DISTANCE MODULE, OR ANY OTHER, PLEASE CONSULT MANARAS AT 1-800-861-2860/1-866-77-6732(USA)

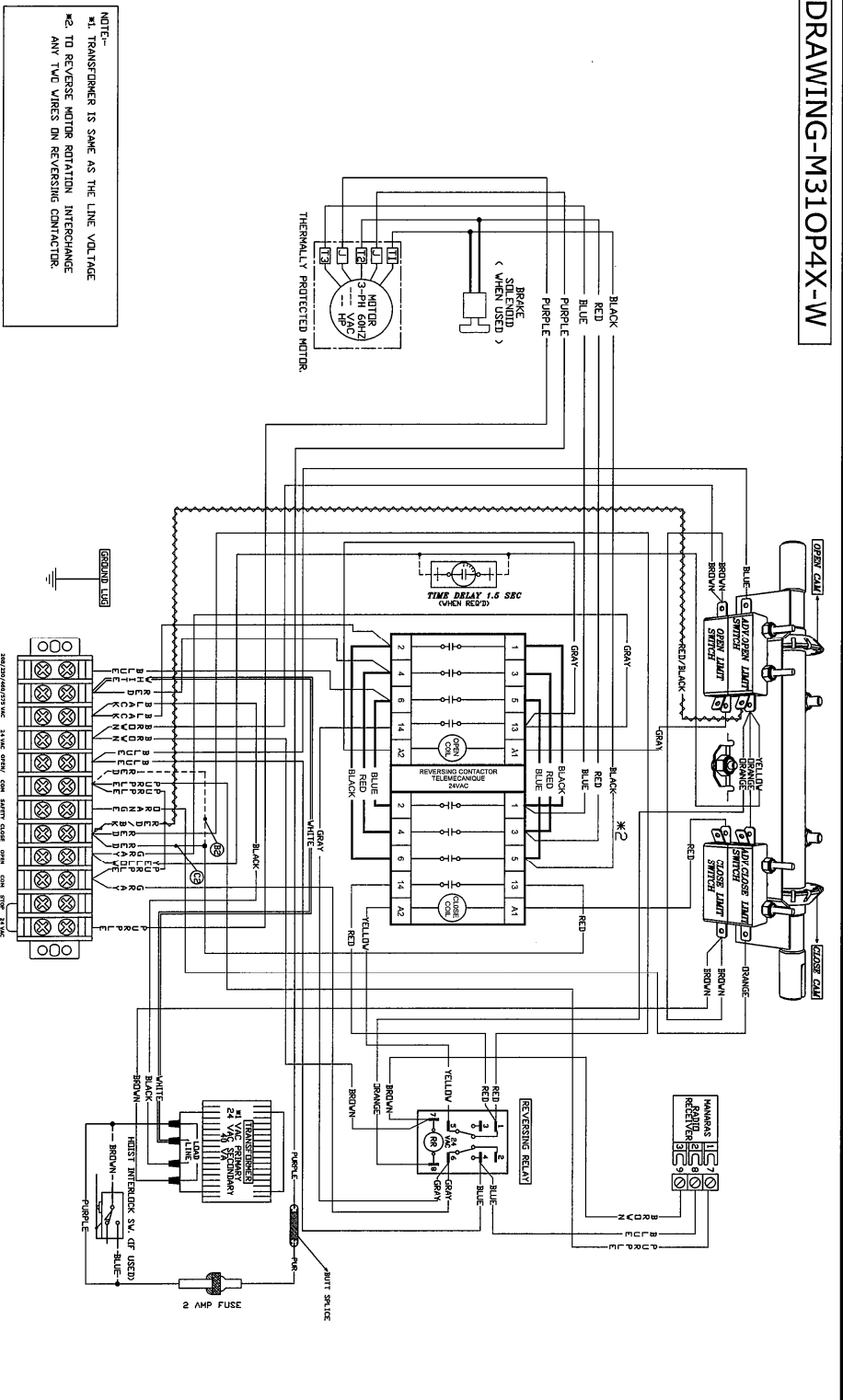
WIRING DIAGRAM FOR USE/OPN/OP1-4/4X  
 120/230 VAC, 1 PHASE MOTORS

TITLE: M11OP4X-W  
 PROJECT: M11OP4X-W  
 CLIENT: M11OP4X-W  
 ENGINEER: M11OP4X-W  
 DISTRIBUTOR: M11OP4X-W  
 M.F.D. BY: MANARAS AUTO DOORS INC.

DATE: 19. Apr. 2005

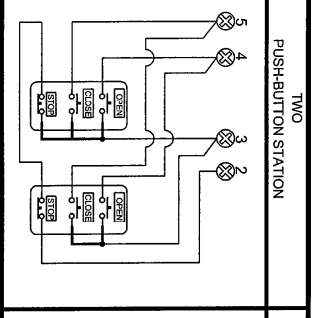
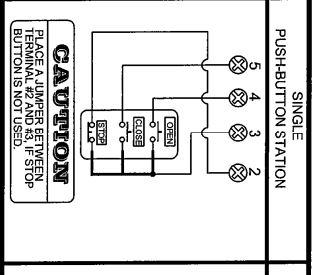
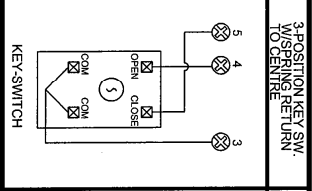
# Hardwired 3-phase wiring diagram

## DRAWING-M31OP4X-W



NOTE-  
 #1 TRANSFORMER IS SAME AS THE LINE VOLTAGE  
 #2 TO REVERSE MOTOR ROTATION INTERCHANGE  
 ANY TWO WIRES ON REVERSING CONTACTOR

LINE POWER	POWER 24 VAC	EXTERNAL INTERLOCK	SAFETY REVERSE	OPENING/USE COMMAND
L1 L2 L3	1 9	1 2	3 6	7 8
POWER SUPPLY 208/240/275 VAC 3 PH 3 W	24 VAC POWER AVAILABLE FROM MAX	REMOVE INTERLOCK	CONTACT FOR SAFETY REVERSE	CONTACT FOR OPEN/ CLOSE DOOR DEVICE



RADIO RECEIVER  
 For connection of Radio Receiver, refer to page 3

### ON SITE MODIFICATIONS

1. REMOVE THE RED WIRE FROM TERMINAL #3 AND PLACE IT ON TERMINAL #4
2. REMOVE THE BLUE WIRE FROM PIN #4 OR REVERSING RELAY(R) AND CN-T1
3. WIRING FOR INSTANT STOP (ON SAFETY EDGE OR DEVICE)  
 1. REMOVE THE YELLOW WIRE FROM ADV. OPEN LIGHT SWITCH AND CAP IT.  
 2. REMOVE THE BLUE WIRE FROM PIN #4 OR REVERSING RELAY(R) AND CN-T1.
4. ADDING A TIME DELAY ON REVERSE
5. CONSTANT PRESSURE OPEN & CLOSE - DI PERFORM THE MODIFICATION EXPLAINED IN THE NOTES [1] [2] AND [3]
6. ANY OTHER OPTIONS  
 FOR ANY OTHER OPTIONS LINE, TIMER TO CLOSE, AND STOP OPENING DISTANCE MODE, AND STOP OPENING DISTANCE MODE, PLEASE CONSULT MANARAS AT 1-800-561-2880/1-866-77-8792(USA).

### WARNING:

MOTORIZED DOORS CAN CAUSE SERIOUS INJURIES OR DEATH. MANARAS STRONGLY RECOMMENDS THE USE OF ENTRAPMENT PROTECTION SYSTEMS, ESPECIALLY IN THE CASES OF MOMENTARY CONTACT TO CLOSE. AS IN B2 WIRING OR TIMER TO CLOSE.

### WIRING DIAGRAM FOR OSH/OP/1-4/X 208/460/575 VAC, 3 PHASE MOTORS

MANARAS AUTO DOORS INC.  
 1-800-561-2880 / 1-866-77-8792 (USA)

FOR ANY OTHER OPTIONS LINE, TIMER TO CLOSE, AND STOP OPENING DISTANCE MODE, AND STOP OPENING DISTANCE MODE, PLEASE CONSULT MANARAS AT 1-800-561-2880/1-866-77-8792(USA).

WIRING DIAGRAM FOR OSH/OP/1-4/X 208/460/575 VAC, 3 PHASE MOTORS

TITLE: M31OP4X-W  
 PROJECT: \_\_\_\_\_  
 CLIENT: \_\_\_\_\_  
 ENGINEER: \_\_\_\_\_  
 DISTRIBUTOR: \_\_\_\_\_  
 M.F.D. BY: MANARAS AUTO DOORS INC.

DATE: \_\_\_\_\_  
 DESIGNED BY: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_

