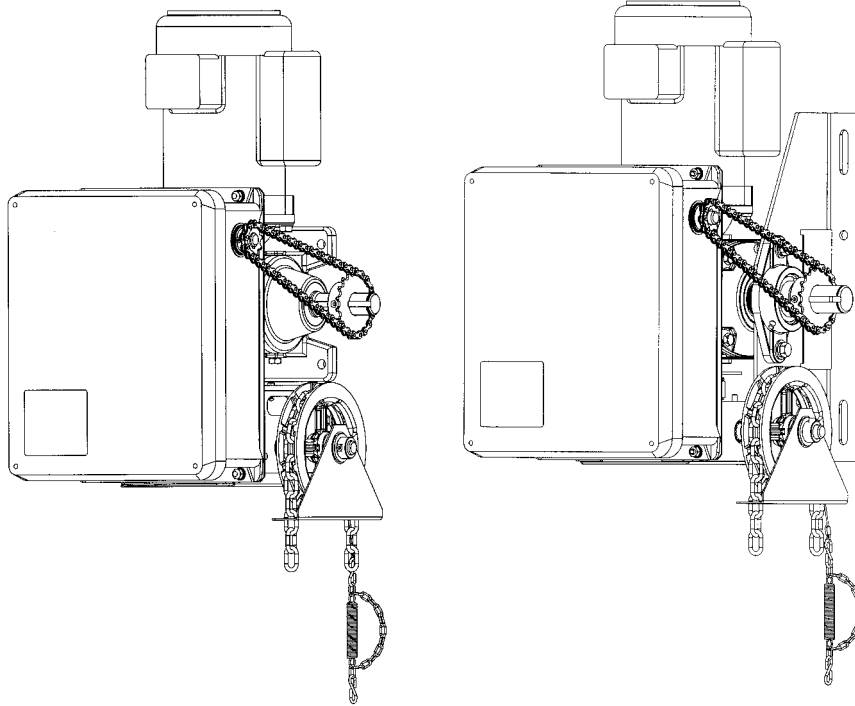


Addendum – Environmental Applications

This addendum is to be used in conjunction with the Installation & Instruction Manual.



GH, MGH, MGT, MGSL
with Nema 4/12 - Nema 4X Control Enclosures

Electrical Control (BOARD 070E/M)

READ AND FOLLOW ALL INSTRUCTIONS.
SAVE THESE INSTRUCTIONS.
GIVE TO END-USER.

Serial # _____

Model # _____

Wiring Diagram # _____

Project #/Name _____

Door #/Name _____



For technical support, please call 1-800-361-2260 or visit www.manaras.com for more information

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Installation Instructions

IMPORTANT INSTALLATION INSTRUCTIONS

WARNING

TO REDUCE THE RISK OF SEVERE INJURY OR DEATH TO PERSONS:

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.
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. Installation of this door operator must be done by a qualified installer.
5. Verify that the operator is correct for type, size of door and frequency of use per the operator specifications.
6. Install the door operator at least 8 feet (2,4 m) or more above the floor if the operator has exposed moving parts.
7. Do not connect the door operator to the source of power until instructed to do so.
8. Locate the control station: (a) within sight of the door, (b) at a minimum height of 5 feet (1,5 m) so small children cannot reach it, and (c) away from all moving parts of the door.
9. Install the Entrapment Warning Placard next to the control station in a prominent location.
10. For products having a manual release, instruct the end user on the operation of the manual release.
11. If you have any questions about the safety of the door operating system, do not install the operator, contact Manaras-Opera at 1-800-361-2260.

1 General Specifications and Dimensions

1.1 GH Dimensions with NEMA 4/12 & 4X Control Enclosures

SUPPLY VOLTAGE.....	115, 230 VAC single-phase, 208, 460, 575 VAC three-phase
CONTROL VOLTAGE.....	24 VAC class 2 transformer, 2 amp fuse type ACG
MOTOR.....	Continuous duty 1/2, 3/4, 1, 1-1/2, 2 horsepower (2HP avail. in 3-phase only)
OPERATOR OUTPUT SPEED.....	38 RPM
NET WEIGHT (Operator only).....	122 Lbs (55 Kg)
STANDARD WIRING TYPE.....	C2 (momentary contact to open/stop and constant-pressure-to-close)
APPLICATION.....	Heavy duty worm gear for sectional doors, rolling doors and grilles
DUTY.....	25 cycles/hour or >80 cycles/day maximum

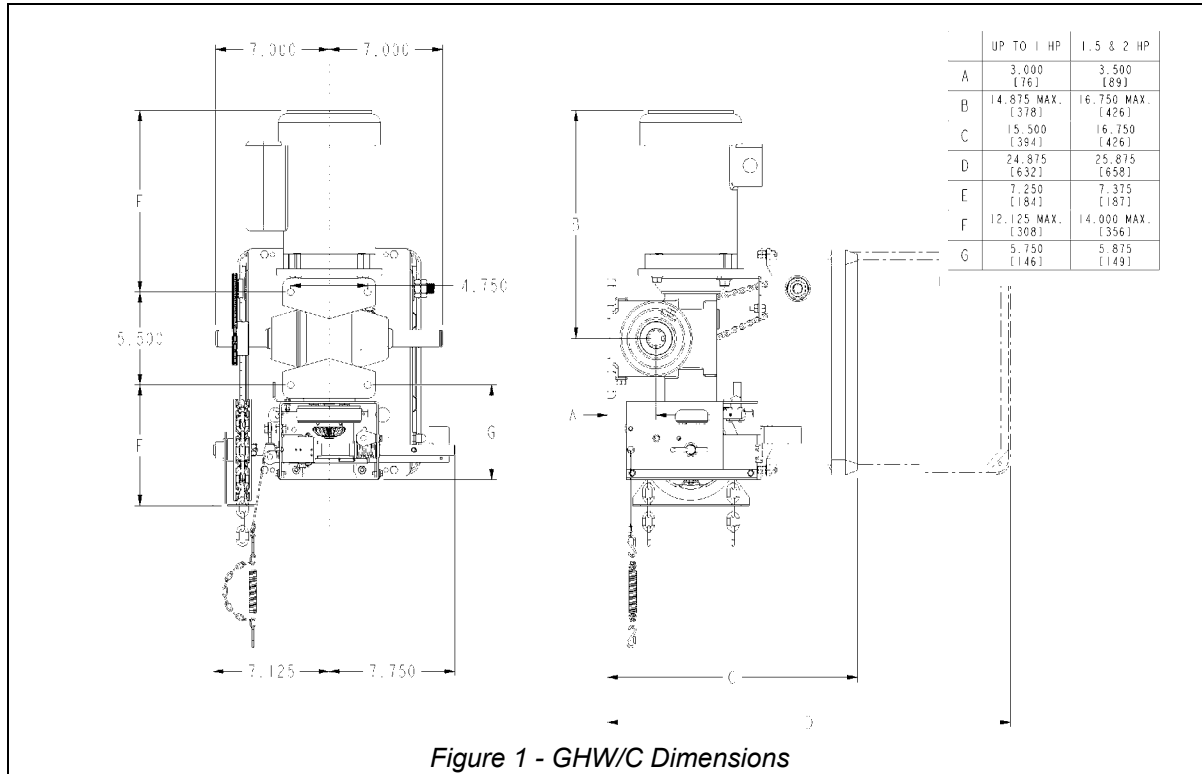


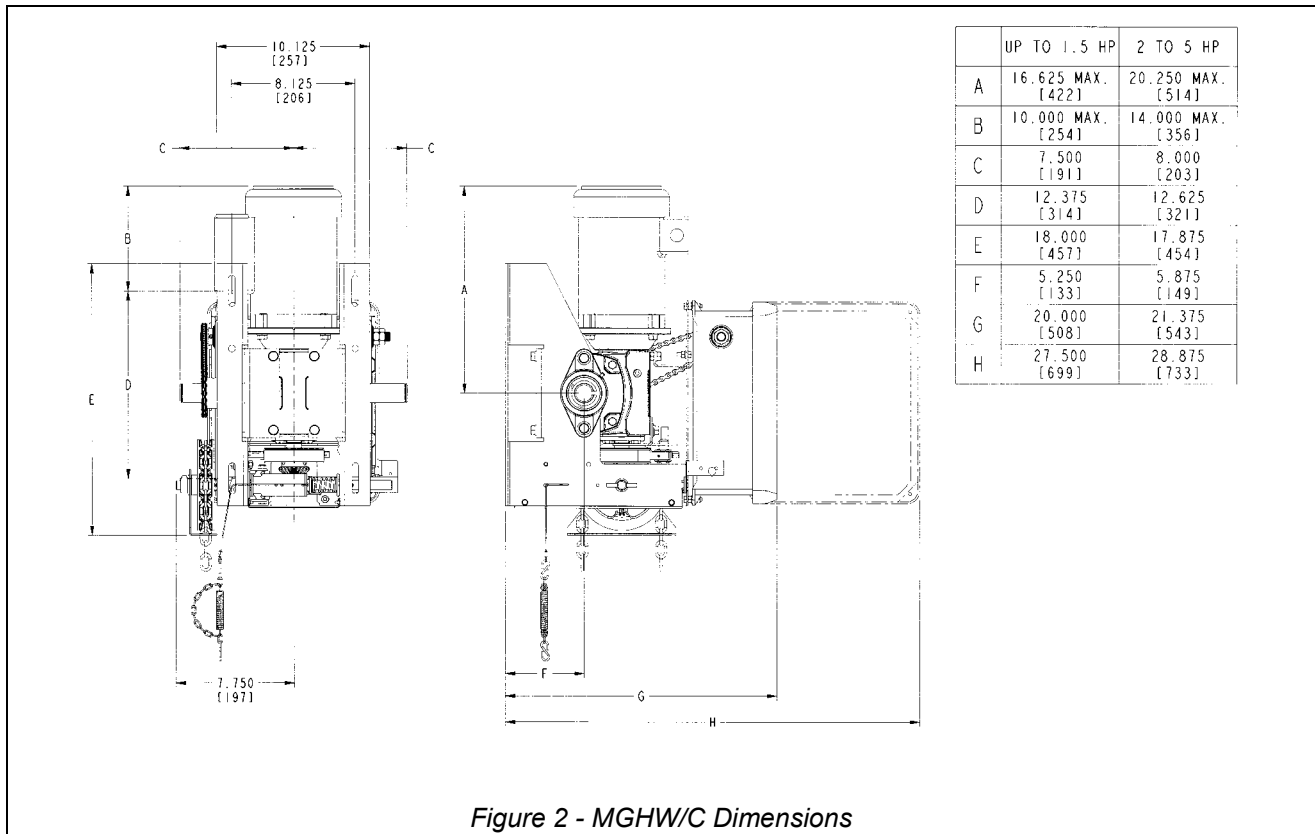
Figure 1 - GHW/C Dimensions

Table 1 - Operator Selection Guide

Maximum Area in Square Feet (general guideline)

HP	Rolling Doors					Sectional Doors				
	Insulated Steel	16 ga Steel	Steel Grilles 20 ga Steel	Alu. Door 22 ga Steel	Alu. Grilles 24 ga Steel	Steel 18 ga ins.	Steel 18 ga 20 ga ins.	Wood Steel 20 ga, 22 & 24 ga ins.	Alu. Steel 22 & 24 ga	Fiber Glass
1/2	157	236	260	319	358	196	245	314	343	392
3/4	206	294	358	451	515	270	319	441	490	549
1	255	358	446	574	613	294	392	490	564	613
1 1/2	353	486	633			373	466	549	613	
2	451	613								

1.2 MGH Dimensions with NEMA 4/12 & 4X Control Enclosures



2 Electrical Wiring

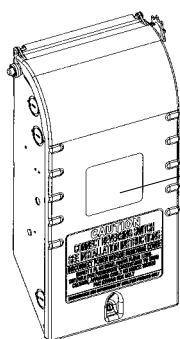
WARNING



To reduce risk of SEVERE INJURY or DEATH to persons:

- All electrical wiring should be done by a qualified professional and in accordance to local electrical codes.
- Always shut OFF the main power before performing any electrical intervention.
- Use proper wire gauge for incoming power line and for accessory connections.
- Install operator main circuit breaker next to operator for easy access for power shut-off.
- Use separate knockouts on operator control box for accessories and main power cables.
- Always separate low and high voltage wires.
- Operator should be properly grounded to the building ground and to the main power supply ground lug.
- Always use suitable and appropriate rating circuit breakers for operator protection.
- Compare available power supply voltage to voltage on operator name plate prior to electrical connection. Failure to connect appropriate power supply voltage may cause serious damage to the operator.

NOTICE

- THE OPERATOR MUST BE ADEQUATELY PROTECTED AGAINST OVERCURRENT AND SHORT-CIRCUIT.
- PLEASE REFER TO LOCAL ELECTRICAL CODE.
- PLEASE REFER TO NATIONAL ELECTRIC CODE (NFPA 70) ARTICLE 430 SECTION IV (430.51 / 430.52 / 430.53).
- PLEASE REFER TO CANADIAN ELECTRIC CODE (CSA 22.1) SECTIONS 28-200 / 28-206.



		TOLL FREE #			
		TEL: 1-800-361-2260			
		FAX: 1-888-626-0606			
		WWW.MANARAS.COM			
MODEL	<input type="text"/>	SER.#	<input type="text"/>		
HP	<input type="text"/>	VOLTS	<input type="text"/>	PH	<input type="text"/>
				AMPS	<input type="text"/>
CONTROL CIRCUIT	<input type="text"/>	60 Hertz		FT.LB/SEC	<input type="text"/>
DATE MFG.	<input type="text"/>			Fabriqué au Canada Made in Canada	
CAUTION DISCONNECT ELECTRIC POWER BEFORE ADJUSTING DOOR OR OPERATOR ATTENTION COUPEZ LE COURANT ELECTRIQUE AVANT DE METTRE AU POINT LA PORTE OU L'OPERATEUR					

FLA = Full Load Amp

Guideline to determine the branch-circuit rating of the protective device [A]:

Time Delay Fuse: $1,75 \times \text{FLA}$

Non-Time Delay Fuse: $3,0 \times \text{FLA}$

A fuse that does not exceed the next higher standard ampere rating shall be permitted.

Example: If **FLA = 3,8A**

- Time Delay Fuse: $1,75 \times 3,8\text{A} = 6,65\text{A} \rightarrow$ Standard fuse to use: 10A
- Non-Time Delay Fuse: $3,0 \times 3,8\text{A} = 11,4\text{A} \rightarrow$ Standard fuse to use: 15A

NOTICE

- The installer **MUST** test for proper connection and functionality of the operator and its accessories before leaving the job site.
- The installer should also perform a demonstration for the end-user.
- Use materials as per NEMA guidelines and always follow manufacturers instructions for conduit preparation.

2.1 Control Enclosure Conduits and Fittings

Compared to NEMA1 enclosures, the NEMA 4/12 and NEMA 4X enclosures are not supplied with pre-drilled fitting entry holes to attach fittings for incoming power and other different accessories. All appropriate holes and cuttings should be performed by the installer.

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

2.2 Low Voltage (Controls) and High Voltage (Power) Connections

1. Route the power line wires either from the right or from the left of the control box, as shown in Figure 3.
2. Route all low voltage control wires, as shown in Figure 3. **KEEP LOW VOLTAGE WIRES SEPARATE FROM LINE VOLTAGE WIRES.**
3. **USE COPPER CONDUCTORS ONLY.**

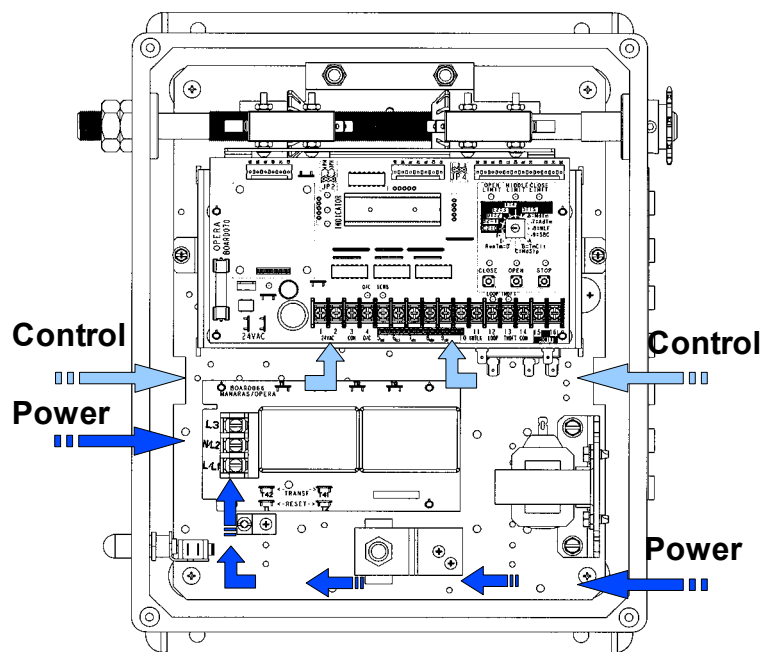
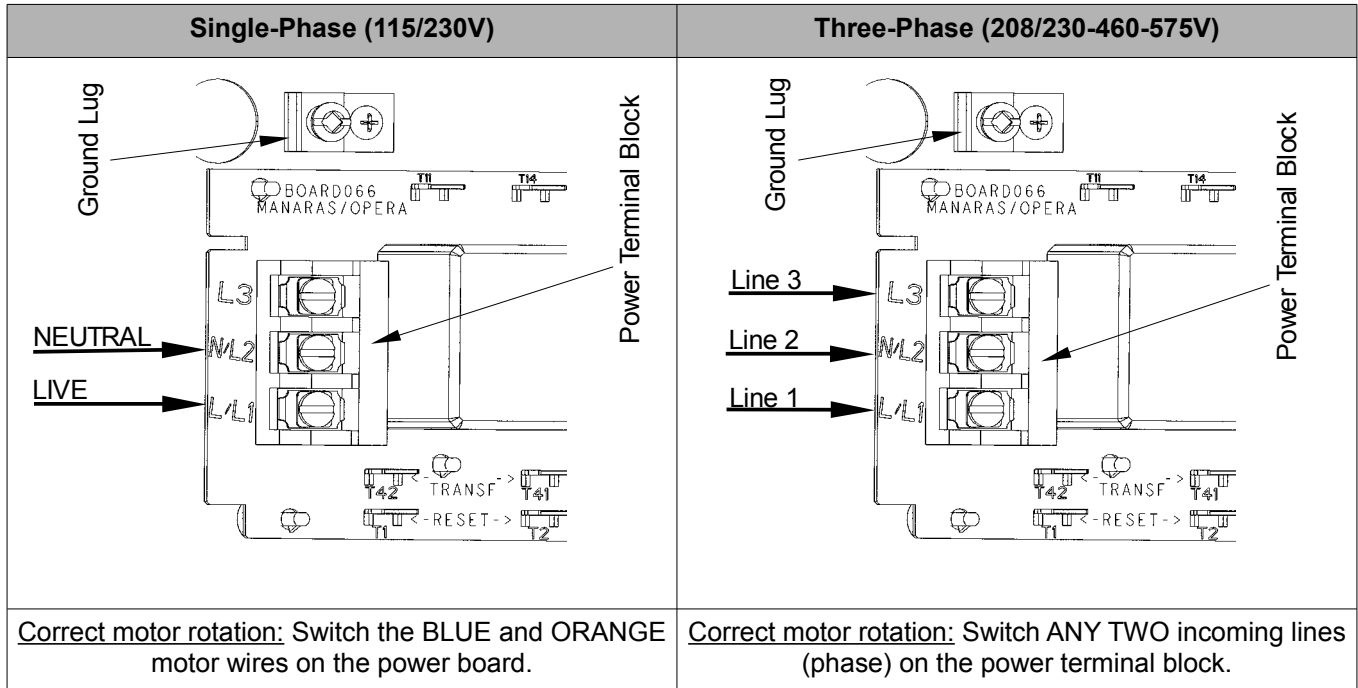


Figure 3 - Low Voltage (Controls) and High Voltage (Power) Connections

2.3 Main Power Supply Connection



2.4 Radio Receiver Connection

NOTICE

- The radio receiver should be located in a remote or protected area to avoid damage caused by liquid immersion.

2.4.1 External Single-Button Radio Control Receiver

In NEMA 4/12 and NEMA 4X applications, a terminal strip is not provided on the outside of the control box.

If a 3-pin radio control receiver is being used, appropriate terminals are provided on the electronic control board in order to connect the radio receiver. Please refer to Figure 4 for wiring instructions.

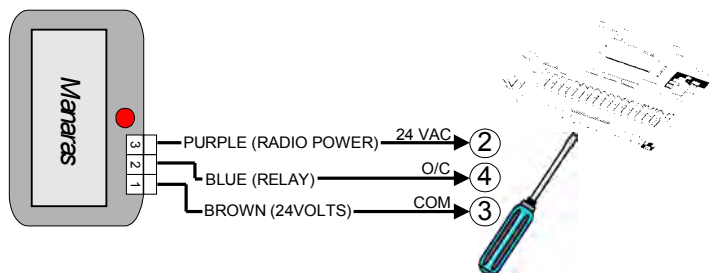


Figure 4 - RADIO 014 or RADIO 015

3 Electrical Drawings

3.1 1 Phase Operator with BOARD 070E/M

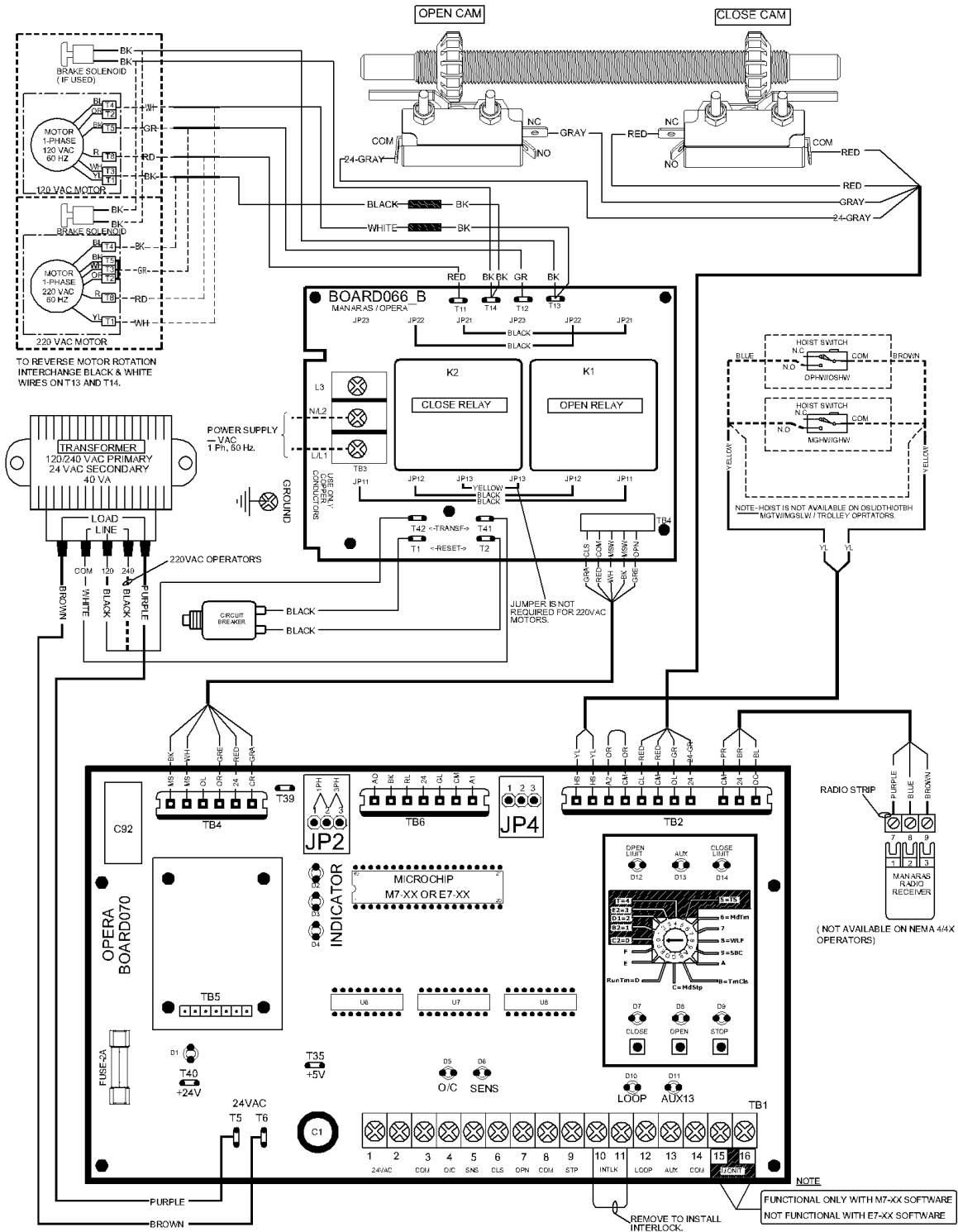


Figure 5 - MECB11-70-N40



3.2 3 Phase Operator with BOARD 070E/M

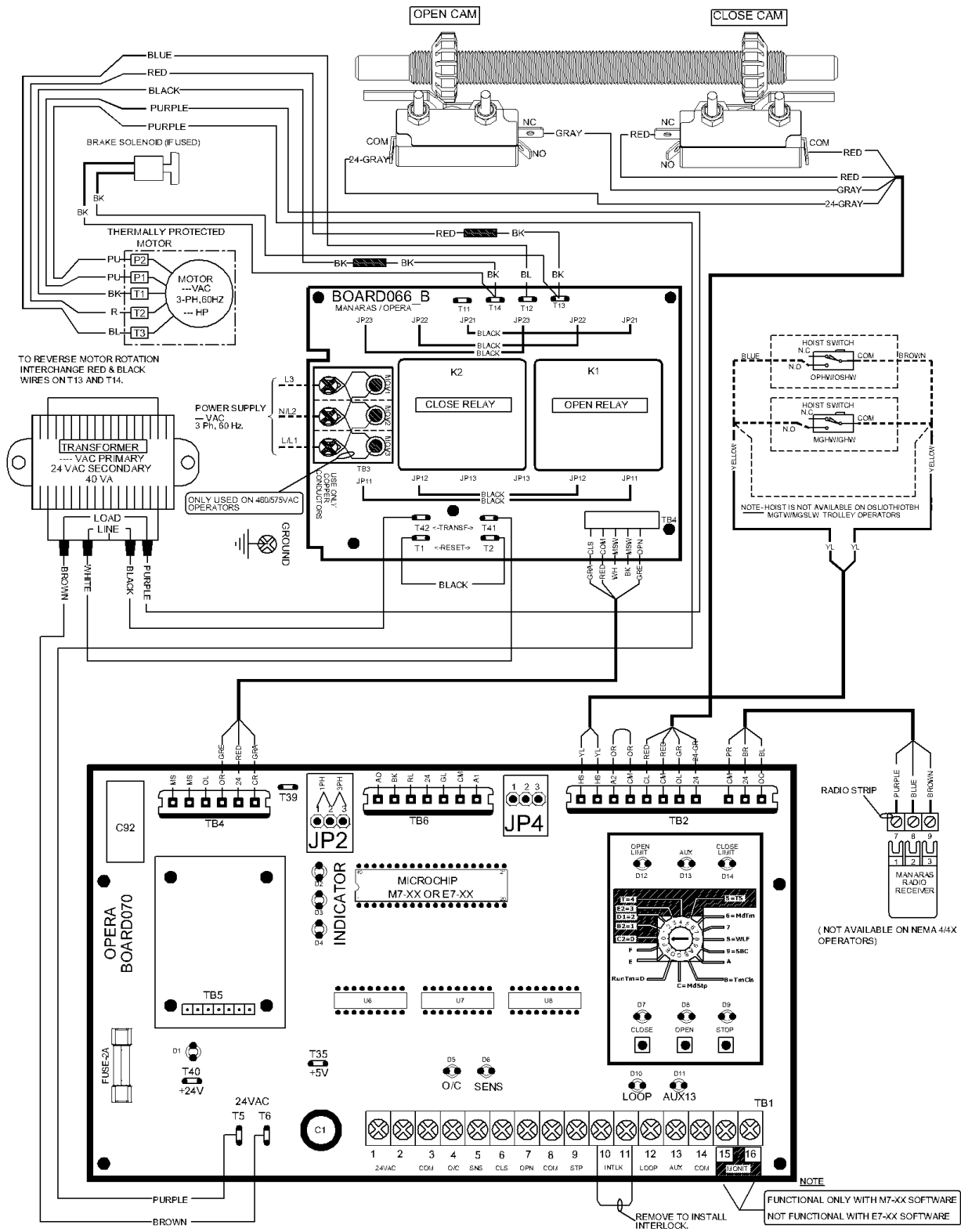


Figure 6 - MECB33-70-N40



4 Mechanical Exploded Views and Replacement Components

4.1 GH Nema 4/12 & 4X

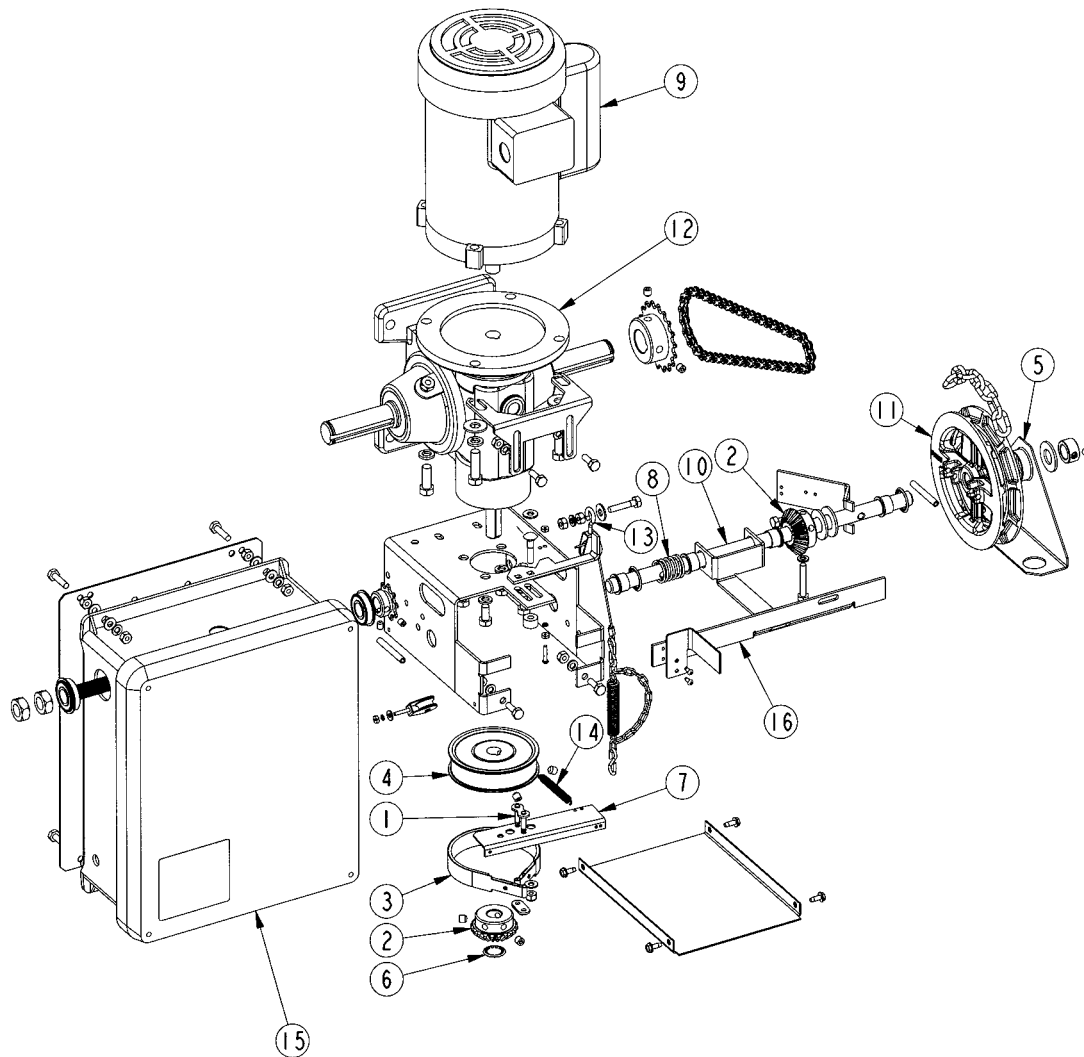


Figure 7 - GHWC Mechanical Exploded View

Table 2 - GHWC Replacement Components

No	Qty	Description	Manaras-Opera Part #	No	Qty	Description	Manaras-Opera Part #
1	1	#50 CONNECTING LINK 50-1	LINK011	10	1	OGH HOIST SHAFT	SHAFT115
2	2	BEVEL GEAR GH MGH 5/8 20TH	GEAR001	11	1	OPERA POCKETWHEEL	POCKETWHEEL005
3	1	BRAKE BAND ASSEMBLY HEAVY DUTY	BRAKEPART019	12	1	REDUCER DSM 70 44:1 FR56C	REDUCER012
4	1	BRAKE DRUM	DRUM005	12	1	REDUCER DSM 55 45:1 FR56C	REDUCER025
5	1	CHAIN GUIDE OPERA	GUIDE014	13	2	SINGLE SWIVEL PULLEY 1.0	PULLEY016
6	1	EXTERNAL 5/8 RETAINING RING	CLIP024	14	1	TROLLEY ARM DISCONNec SPRING	SPRING026
7	1	GH C-4 SOLENOID LEVER	LEVER049	15	1	VINCKIER N4X-N4/12 12 X 10 X 5	PANEL078
8	1	MJ DISCONNECT HOIST SPRING	SPRING012	16	1	WP GEAR HEAD DISC. TRAVELER	LEVER073
9	1	MOTOR	SEE Table 4				

4.2 Nema 4/12 & 4X Control Enclosure with BOARD 070E/M

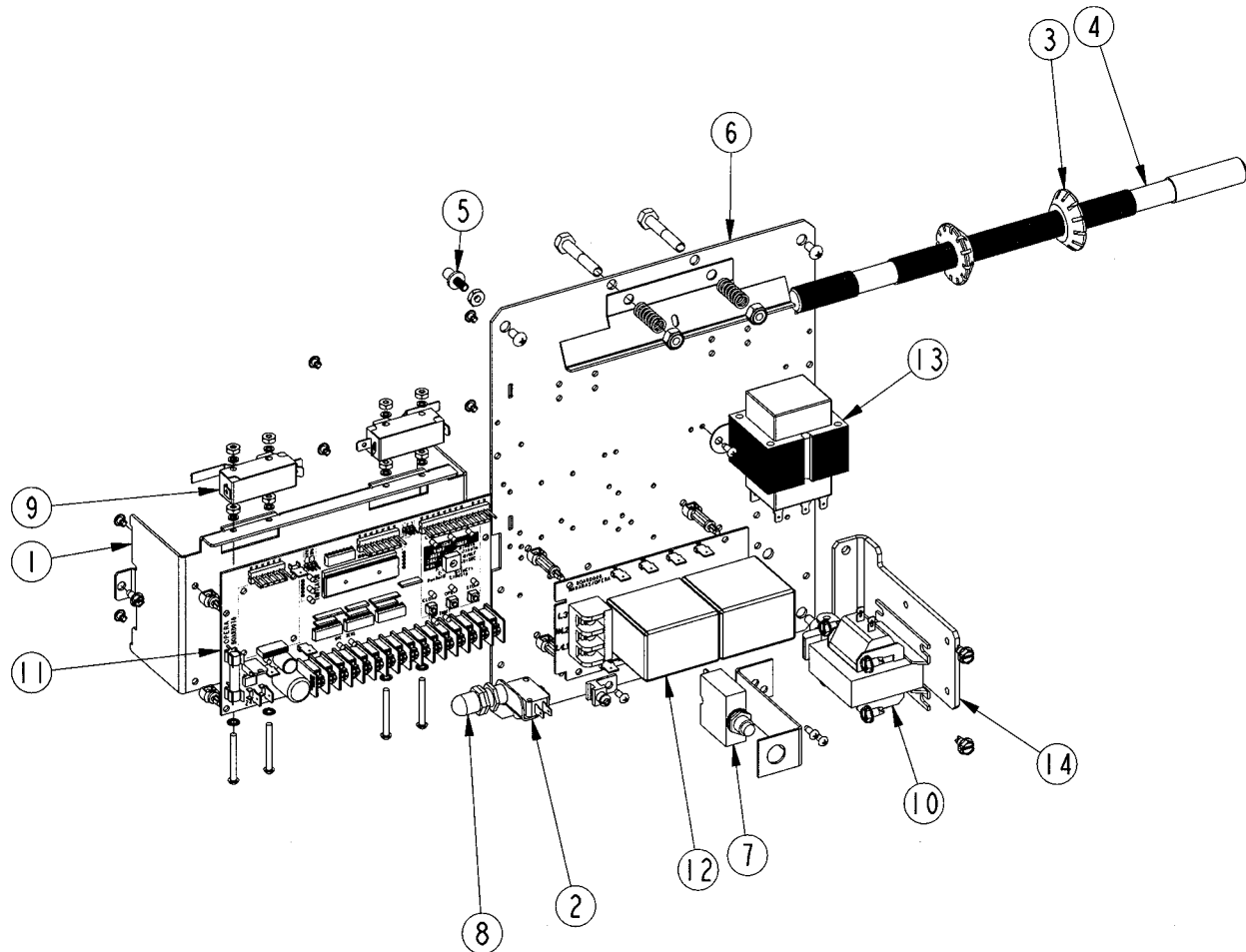


Figure 8 - Nema 4/12 & 4X Control Enclosure with BOARD 070E/M

Table 3 - Control Enclosure Replacement Components (PANEL078)

No	Qty	Description	Manaras-Opera Part #
1	1	BOARD SUPPORT PLATE FOR W/C PROOF	BRACKET235
2	1	LIMIT 10A 250V AC	LIMIT017
3	2	LIMIT CAM 5/8-24UNEF	CAM004
4	1	LIMIT SHAFT 5/8-24 X12.5	SHAFT064
5	1	PASSE CABLE CBOX WATERPROOF HD	GUIDE013
6	1	PLATE IN CBOX WP/CP	PLATE079
7	1	RESET	SEE Table 4
8	1	RUBBER BOOT FOR SWITCH GRAY	CAP001
9	2	SINGLE LIMIT SWITCH - LEVER 46 DEG	LIMIT023
10	1	SOLENOID	SEE Table 4
11	1	STD ELECT. CONTR. BOARD	BOARD070E/M
12	1	STD ELECT. POWER BOARD 2 RELAYS	BOARD066
13	1	TRANSFO TO 24V	SEE Table 4
14	1	XP/WP CBOX SOLENOID SUPPORT	BRACKET187

4.3 Replacement Motors, Transformers, Solenoids and Resets

Table 4 - GHW/C, MGHW/C, MGTW/C, MGSLW/C Replacement Motors, Transformers, Solenoids and Resets According to Voltage/Phase and HP

V-PH	HP	Transfo.	Solenoid	Description	NEMA 4/12 Manaras-Opera Part #	NEMA 4X Manaras-Opera Part #
120V - 1PH	1/2HP	TRANSF143	SOLENOID001	MOTOR 1/2HP - 120V/230V - 1PH	MOTOR316	MOTOR377
				1PH - RESET	RESET005 (8 AMPS)	RESET007 (10 AMPS)
	3/4HP			MOTOR 3/4HP - 120V/230V - 1PH	MOTOR317	MOTOR148
				1PH - RESET	RESET010 (13 AMPS)	RESET011 (14 AMPS)
	1HP			MOTOR 1HP - 120V/230V - 1PH	MOTOR318	MOTOR172
				1PH - RESET	RESET013 (16 AMPS)	RESET014 (17 AMPS)
	1-1/2HP			MOTOR 1.5HP - 120V/230V - 1PH	MOTOR319	MOTOR378
				1PH - RESET	RESET017 (22 AMPS)	RESET017 (22 AMPS)
230V - 1PH	1/2HP	TRANSF143	SOLENOID002	MOTOR 1/2HP - 120V/230V - 1PH	MOTOR316	MOTOR377
				1PH - RESET	RESET001 (4 AMPS)	RESET003 (6 AMPS)
	3/4HP			MOTOR 3/4HP - 120V/230V - 1PH	MOTOR317	MOTOR148
				1PH - RESET	RESET004 (7 AMPS)	RESET004 (7 AMPS)
	1HP			MOTOR 1HP - 120V/230V - 1PH	MOTOR318	MOTOR175
				1PH - RESET	RESET005 (8 AMPS)	RESET005 (8 AMPS)
	1-1/2HP			MOTOR 1.5HP - 120V/230V - 1PH	MOTOR319	MOTOR378
				1PH - RESET	RESET008 (11 AMPS)	RESET010 (13 AMPS)
208V - 3PH	1/2HP	TRANSF037	SOLENOID003	MOTOR 1/2HP - 208V/460V - 3PH	MOTOR261	MOTOR320
				MOTOR 3/4HP - 208V/460V - 3PH	MOTOR262	MOTOR322
	1HP			MOTOR 1HP - 208V/460V - 3PH	MOTOR264	MOTOR323
				MOTOR 1.5HP - 208V/460V - 3PH	MOTOR266	MOTOR324
	2HP			MOTOR 2HP - 208V/460V - 3PH	MOTOR268	MOTOR327
				MOTOR 3HP - 208V/460V - 3PH	MOTOR051	MOTOR328
	3HP			MOTOR 5HP - 208V/460V - 3PH	MOTOR053	MOTOR329
				5HP		
460V - 3PH	1/2HP	TRANSF088	SOLENOID003	MOTOR 1/2HP - 208V/460V - 3PH	MOTOR261	MOTOR320
				MOTOR 3/4HP - 208V/460V - 3PH	MOTOR262	MOTOR322
	1HP			MOTOR 1HP - 208V/460V - 3PH	MOTOR264	MOTOR323
				MOTOR 1.5HP - 208V/460V - 3PH	MOTOR266	MOTOR324
	2HP			MOTOR 2HP - 208V/460V - 3PH	MOTOR268	MOTOR327
				MOTOR 3HP - 208V/460V - 3PH	MOTOR051	MOTOR328
	3HP			MOTOR 5HP - 208V/460V - 3PH	MOTOR053	MOTOR329
				5HP		
575V - 3PH	1/2HP	TRANSF142	SOLENOID004	MOTOR 1/2HP - 575V - 3PH	MOTOR340	MOTOR330
				MOTOR 3/4HP - 575V - 3PH	MOTOR263	MOTOR331
	1HP			MOTOR 1HP - 575V - 3PH	MOTOR269	MOTOR332
				MOTOR 1.5HP - 575V - 3PH	MOTOR072	MOTOR379
	2HP			MOTOR 2HP - 575V - 3PH	MOTOR270	MOTOR333
				MOTOR 3HP - 575V - 3PH	MOTOR078	MOTOR238
	3HP			MOTOR 5HP - 575V - 3PH	MOTOR080	MOTOR334
				5HP		

Notes



Warranty

Manaras-Opera warrants its operators to be free from defects in material and workmanship under normal and proper use for a period of two years from date of invoice, unless otherwise stated. Mechanical, electrical and electronic accessories are warranted for one year from date of invoice, unless otherwise stated. Wearing parts such as clutch pads, v-belts, and brake bands are excluded from warranty.

Manaras-Opera's only obligation shall be to repair or replace defective equipment which does not conform to the warranty. Manaras-Opera shall not be liable for any injury, loss or damage, direct or consequential, arising out of the inability to use the equipment. Before using, Buyer and/or the ultimate User shall determine the suitability of the product for its intended use, and User assumes all risks and liability in connection therewith. The foregoing may not be changed except by an Agreement signed by an authorized representative of Manaras-Opera.

The articles that are replaced pursuant to the terms of this warranty shall be retained by Manaras-Opera, and the User is responsible for any freight costs relating to repair or replacement.

The foregoing warranty is exclusive and in lieu of all other warranties of quality, whether written, oral or implied (including any other warranty of merchantability or fitness for purpose).

The following are exclusions from warranty:

- If usage, product modification, adaptation or installation are not in accordance with our installation and operating instructions.
- If the product has been opened, dismantled or returned with clear evidence of abuse or other damage.
- If our written specifications are not properly applied by the Buyer when selecting the equipment.
- If our written instructions for installation and wiring of the electrical connections have not been followed.
- If our equipment has been used to perform functions other than the functions it was designed to handle.
- If Manaras-Opera equipment is used with electrical accessories (switches, relays, etc.) that have not been previously approved in writing by the Manaras-Opera Engineering Department.
- If electrical accessories and other components have been used in disregard of the basic wiring diagram for which they were designed.

All costs related to installation and reinstallation of the Manaras-Opera equipment covered by this warranty are not the responsibility of Manaras-Opera. Manaras-Opera will not be responsible for any consequential damages following installation procedures performed by the Buyer or the User. If the Buyer resells any Manaras-Opera products to another Buyer or User, it shall include all of the terms and provisions of this warranty in such resale. Manaras-Opera's responsibility to any such Third Party shall be no greater than Manaras-Opera's responsibility under the warranty to the original Buyer.

Returns

No returns will be accepted without prior written authorization by Manaras-Opera. All returns must be accompanied by a Return Authorization Number issued by Manaras-Opera, and all unauthorized returns will be refused. The return shipment is to be freight prepaid by the Buyer, and under no circumstances shall the Buyer deduct the value of the returned merchandise from any remittance due. A restocking fee of 15% of the Manaras-Opera sale price will be charged for all returns not covered under warranty.



Commercial Door OPERATOR



Manaras-Opera is extending their well-known OPERA brand name across its entire line of Commercial Door OPERATORS. Over the years, the OPERA brand name has become synonymous with innovation and reliability. The high quality products you have come to expect from us will now be backed by the OPERA brand name.

**When you think
Commercial Door OPERATORS,
just think OPERA.**

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