Installation & Instruction Manual

Opera-MH
(OMH)

Opera-MJ
(OMJ)

Commercial & Industrial Medium Duty Jackshaft Operator
(For sectional doors, rolling doors and grilles)

Electrical Control (BOARD 100E)

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

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

SUPPLY VOLTAGE ......................... 115 V ac single-phase
CONTROL VOLTAGE ...................... 24 V ac class 2 transformer, 1 amp fuse type ACG
MOTOR ........................................... Intermittent duty 1/2 horsepower
OPERATOR OUTPUT SPEED .............. 39 RPM
NET WEIGHT (Operator only) .......... 68 Lbs (31 Kg) for Opera-MH and 60 Lbs (27 Kg) for Opera-MJ
STANDARD WIRING TYPE .............. C2 (momentary contact to open/stop and constant-pressure-to-close)
APPLICATION ............................. Medium duty for sectional doors, small rolling doors and grilles
DUTY ............................................ 14 cycles/hour or 50 cycles/day maximum

Table 1 - Operator Selection Guide

<table>
<thead>
<tr>
<th>Maximum Area in Square Feet (general guideline)</th>
<th>Rolling Doors</th>
<th>Sectional Doors</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP</td>
<td>Insulated</td>
<td>Steel Grilles</td>
</tr>
<tr>
<td></td>
<td>Steel</td>
<td>20 ga Steel</td>
</tr>
<tr>
<td>1/2</td>
<td>160</td>
<td>200</td>
</tr>
</tbody>
</table>

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

2.1 Delivery of Operator
Upon delivery of your jackshaft operator OPERA™, inspect the unit immediately for any shipping damages. Verify that you have received all the hardware parts pertaining to your operator model, as listed in Table 2 and shown in Figure 2. If ordered, other items such as radio controls or other types of optional equipment may be present. If any item is missing or if there is evidence of damage, call the transport company or your direct supplier.

2.2 Hardware Supplied

Table 2 - Standard Hardware Parts Supplied

<table>
<thead>
<tr>
<th>No</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>3-Push-button station (open/close/stop)</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Operator sprocket (1)</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Door sprocket (1)</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>#41/#50 Drive chain, 4ft (1) (2)</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>#41/#50 Chain link (1)</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>Hex bolt 3/8-16 x 1-1/4&quot;</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
<td>Type A plain flat washer 3/8</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>Helical spring lock washer 3/8</td>
</tr>
<tr>
<td>9</td>
<td>4</td>
<td>Hex nut 3/8-16</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
<td>5/16-18 x 5/16” Set screw</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>Key 1/4” x 1-1/2”</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>Pocket wheel hand chain, 24ft (3) (4)</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>Chain keeper for hand chain (4)</td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>Disconnect chain, 14ft (3) (5)</td>
</tr>
<tr>
<td>15</td>
<td>1</td>
<td>Chain keeper for disconnect chain (5)</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>Handle for disconnect chain (5)</td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>Entrapment Warning Placard</td>
</tr>
</tbody>
</table>

(1) Differs according to operator model and door characteristics
(2) 5ft for 42/54/60 tooth door sprocket, 8ft for 72 tooth door sprocket
(3) Quantity = 2 times door shaft height minus 4ft
(4) Only supplied with OMH/OPH/OHJ/OBH/OSH/OGH/ MGH/ GH
(5) Only supplied with OMJ/OPJ/OSH/MGH/GH

NOTE: Install the Entrapment Warning Placard (shown in Figure 3), next to the control station, visible in the area of the door.
3 Operator Installation

3.1 Operator Mounting Options

The jackshaft operator line has a dual output shaft and may be mounted on either the left hand side or the right hand side of a sectional door. These operators can also be hood or shelf-mounted on either side of the door.

The standard jackshaft hoist model comes with a chain hoist located on the right of the operator. If the application requires that the chain hoist to be on the left (ex: rolling doors, left operator hood mounting), it must be requested at time of order. Do not attempt to modify the chain hoist yourself.

This operator is not intended to be installed on horizontal slide doors.

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

**CAUTION**

To prevent access to the pinch point, this operator must be installed a minimum of 8 feet (2.4 m) above the floor.

The OPERA™ models have two sets of mounting holes: outside the frame for wall mounting and inside the frame for hood mounting, as shown in Figure 8.

1. Locate the four mounting and the two positive locking holes.
2. The optimum distance between the door shaft and operator drive shaft is between 12" and 15".
3. Mount the OPERA™ unit by fastening it to the wall, bench or hood with 3/8" or 1/2" thru-bolts. If the wall construction prohibits the use of thru-bolts, then sufficiently sized lag bolts and shields may be used.
4. Ensure that the door shaft and operator shaft are parallel.

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Figure 8 - Opera Mounting Holes
3.3 Sprockets, Spreader Bar and Drive Chain Installation

3.3.1 Sprocket Installation
The hardware components shown in Figure 9 and Figure 10 have been supplied with your operator.

1. Place the door sprocket loosely on the door shaft.
2. Place the operator drive sprocket on the appropriate side of the operator and align it with the drive sprocket of the operator.
3. Lock the operator and door sprockets in place by inserting the keys and tightening their respective set screws.
4. Wrap the operator drive chain around the door sprocket and the operator sprocket.
5. Shorten the drive chain to the appropriate length.
6. Use the chain link to attach the operator drive chain together, refer to Figure 10.
7. Slide the operator to tighten the drive chain and then firmly tighten the mounting bolts.
8. Check the tension on the chain (there should be no more than a 1/4" of slack when the chain is depressed between the sprockets).

Figure 9 - Hardware Components

Figure 10 - Chain Link
3.3.2 Spreader Bar Installation
Manaras-Opera recommends the use of a chain spreader. Refer to Figure 11 for installation guidance.

![Figure 11 - Chain Spreader Mounted on Door and Operator Shafts](image)

4 Operator Control Box

To open the control box cover, loosen the screw at the base of the cover. If the cover cannot be fully opened, the retaining arm may be used to hold the cover in other positions, see Figure 13.

After installation, allow for proper clearance upon opening the control box cover. If the cover is obstructed from opening, it is possible to remove the cover by unscrewing it from the box, see Figure 12.

Always close the cover before operating the door.

![Figure 13 - Open Control Box Cover](image)  

![Figure 12 - Unscrewing Screws from Control Box Cover](image)
5 Manual Hand Chain and Disconnect Chain

5.1 Installation

5.1.1 Chain Hoist (Opera-MH)
Before pulling the hand chain through the pocket wheel, pull the limit cam's retaining bracket back. Turn the cams to the center of the limit shaft to be sure that they are not being mechanically driven through their normal limit switch end positions.

1. Run the hand chain through the pocket wheel and through the chain guide, see Figure 14.
2. Allow both ends of the chain to hang down toward the ground until both ends are approximately 2 feet (0.6 m) from the floor. Cut the hand chain if necessary.
3. Connect both ends of the hand chain together.

5.1.2 Disconnect Chain (Opera-MJ)

1. Link the disconnect chain to the hook located at the extremity of the operator's disconnect mechanism, see Figure 15.
2. Install the handle under the chain keeper to facilitate handling of the chain.
3. Under the handle, make a knot in order to fasten the end of the chain.
5.2 Operating Mode

5.2.1 Opera-MH (Hoist-a-matic® Chain Hoist System)

The automatic emergency chain hoist disconnect mechanism is provided in order to operate the door manually. A floor level disconnect is not required. In one simple step and by pulling the hand chain in the desired direction, the following operations may be successfully completed, see Figure 16.

1. Manual Mode

Pull chain on either side to operate door.

2. Return to Electric Mode

Wiggle chain until it moves freely.

3. Storage

Follow the 3 steps shown below to attach the chain (when not in use) to the chain keeper.

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

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5.2.2 Opera-MJ

This operator has a floor level disconnect to disconnect the door from the electrical motor and is ready to be manually operated, see Figure 17.

For technical support, please call 1-800-361-2260 or visit www.manaras.com for more information
6 Limit Switches & Limit Cams: Adjustment & Functionality

**WARNING**

To reduce risk of SEVERE INJURY or DEATH to persons:
- Do not attempt to make limit switch adjustments unless power has been electrically disconnected.

### 6.1 Limit Switch Adjustments: Open and Close Cam Settings

This operator is equipped with the ACCU-CAM® feature, for precise and quick one-handed limit setting adjustments.

To adjust the limit cams, see Figure 18.

1. Pull the cam's retaining bracket back.
2. Turn the cams for limit adjustment: turning cams toward the center of the limit shaft increases door travel or turning the cams toward the limit switch decreases door travel.

### 6.2 Limit Switch Functionality

#### Open Limit Switch and Advanced Open Limit Switch

When activated, the Open Limit Switch will stop the operator while the door is travelling in the upward direction. Should be adjusted accordingly to stop door in fully open position. The microprocessor has a built-in program that replaces the Advanced Open Limit Switch.

#### Close Limit Switch and Advanced Close Limit Switch

Close Limits are not present on operators with an ECB. In its place, the microprocessor has a built-in patented Advanced Close Time feature. While the door is travelling downwards and once the Advanced Close Limit Switch is activated, the door will stop after **200 milliseconds**. The distance travelled varies according to the speed of the door. The value is fixed and cannot be re-programmed or adjusted.

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For technical support, please call 1-800-361-2260 or visit [www.manaras.com](http://www.manaras.com) for more information.
6.3 Limit Switch Adjustment Using Manual Hand Chain (if applicable)

Table 3 - Limit Switch Adjustment Procedures

<table>
<thead>
<tr>
<th>Limit Switch</th>
<th>Adjustment Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Limit</td>
<td>1. Using the hoist, manually raise the door to a nearly opened position or desired open position.</td>
</tr>
<tr>
<td></td>
<td>2. Pull the cam-retaining bracket from the Open side, see Figure 18, and rotate the Open cam manually until it activates the Open Limit Switch sufficiently so that a “click” can be heard.</td>
</tr>
<tr>
<td></td>
<td>3. Release cam-retaining bracket and make sure that the bracket engages in the slots of both cams.</td>
</tr>
<tr>
<td>Advanced Close Limit</td>
<td>1. Using the hoist, manually lower the door to approx. 6” above the ground.</td>
</tr>
<tr>
<td></td>
<td>2. Pull the cam-retaining bracket from the Close side, see Figure 18, and rotate Close cam manually until it activates the Close limit switch sufficiently so that a “click” can be heard.</td>
</tr>
<tr>
<td></td>
<td>3. Release cam-retaining bracket and make sure that the bracket engages in the slots of both cams.</td>
</tr>
<tr>
<td>Limit Switch Fine Adjustment</td>
<td>Limit switch fine adjustment SHOULD be done after the main power supply is connected to the operator. Refer to section Operator Start-up, Table 5, p.21. Note: One (1) notch on cam is equal (=) to about 1/2” of the door travel.</td>
</tr>
</tbody>
</table>

6.4 Limit Switch Adjustment Without Manual Hand Chain (if applicable)

Table 4 - Limit Switch Adjustment Procedures (no hoist)

<table>
<thead>
<tr>
<th>Limit Switch</th>
<th>Adjustment Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Limit</td>
<td>1. Move the open cam close to the open limit switch and proceed as per described in section Operator Start-up, Table 5, p.21.</td>
</tr>
<tr>
<td></td>
<td>2. Release cam-retaining bracket and make sure that the bracket engages in the slots of both cams.</td>
</tr>
<tr>
<td>Advanced Close Limit</td>
<td>1. Pull the disconnect chain for manual operation.</td>
</tr>
<tr>
<td></td>
<td>2. Manually open the door approx. 6” above the ground.</td>
</tr>
<tr>
<td></td>
<td>3. Pull the cam-retaining bracket from the Close side, see Figure 18, and rotate Close cam manually until it activates the Close limit switch sufficiently so that a “click” can be heard.</td>
</tr>
<tr>
<td></td>
<td>4. Release cam-retaining bracket and make sure that the bracket engages in the slots of both cams.</td>
</tr>
<tr>
<td>Limit Switch Fine Adjustment</td>
<td>Limit switch fine adjustment SHOULD be done after the main power supply is connected to the operator. Refer to section Operator Start-up, Table 5, p.21. Note: One (1) notch on cam is equal (=) to about 1/2” of the door travel.</td>
</tr>
</tbody>
</table>
7 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.

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

Time Delay Fuse: 1,75 x FLA
Non-Time Delay Fuse: 3,0 x FLA

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

Example: If $\text{FLA} = 3,8A$

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

For technical support, please call 1-800-361-2260 or visit www.manaras.com for more information
7.1 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 19.
2. Route all low voltage control wires, as shown in Figure 19. KEEP LOW VOLTAGE WIRES SEPARATE FROM LINE VOLTAGE WIRES.
3. USE COPPER CONDUCTORS ONLY.

7.2 Main Power Supply Connection

Correct motor rotation: Switch the BLUE and RED wires on the capacitor.
7.3 **Wall-Button Connection**

**WARNING**

- Wall controls must be mounted in clear view of the door safely away from all moving parts and at least 5 feet (1.5 m) above the standing surface.
- Keep low voltage wires separate from line voltage wires.
- Use copper conductors only.

**3 Push-Button Station (3 PBS) Connection**

![Diagram of 3 PBS Wiring Connections]

*Figure 20 - STATION 020*  
3-PBS Open / Close / Stop

*Figure 21 - STATION 079*  
3-PBS Open / Close / Stop with Key Lock-out

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

NOTICE

- Keep low voltage wires separate from line voltage wires.
- Use copper conductors only.

7.4.1 Electric Photo Cells / Photo Eyes (Non-Monitored)

Through Beam With Interface Module

Through Beam Type

For technical support, please call 1-800-361-2260 or visit www.manaras.com for more information
7.4.3 Reversing Edge Device (Non-Monitored)

**NOTICE**

- If the door is controlled by any device other than a constant pressure push-button station on close, including a timer-to-close, a reversing edge must be connected.

**Pneumatic Reversing Device**  
 *(air switch, air hose, air plug, coil cord, take-up reel)*

1. Place the air switch in position.  
2. Place the air hose in position.  
3. Use a coil cord or take-up reel to connect the air switch to the operator terminals. Install electric wires according to Figure 27 and Figure 28.  
4. Connect one end of the air hose to the air switch.  
5. Place the air plug in the other end of the air hose.
Electric Reversing Edge

7.4.4 Pull Cord & Key Switch

Use a coil cord or take-up reel to connect the electric reversing edge to the operator terminals.

2-Wire Edge

Figure 29 - Electric Reversing Edge

2-Position Key Switch

Recommendation: Put Control Board on C2 or E2 Mode (constant-pressure-to-close)

Place a Jumper between #COM & #Stop

Figure 31 - KEYSWITCH 015

2-Position Key Switch & Stop Button

Figure 32 - KEYSWITCH 019

For technical support, please call 1-800-361-2260 or visit www.manaras.com for more information
7.4.5 External Single-Button Radio Control Receiver

Mount the Radio receiver directly on the terminal strip provided on the side of the control box.

Figure 33 - RADIO 014 or RADIO 015

Figure 34 - Other Radio Receivers with 4 or 5-wires

7.4.6 Vehicle Loop Detector

Twist the two (2) leads (wires) a minimum of 6 twists/foot.

Figure 35 - Vehicle Loop Detector

7.4.7 Other Accessories

Additional accessories are available, such as:

- Plug-In Radio Receiver
- External Mid-Stop Switch

Please contact your dealer or our inside sales department at 1-800-361-2260 for further information.
8 Operator Start-up

**WARNING**

To reduce risk of SEVERE INJURY or DEATH to persons:
- Personnel should keep away from a door in motion and keep the moving door in sight until it is completely closed or opened. NO ONE SHOULD CROSS THE PATH OF A MOVING DOOR.
- Never go under a stopped, partially opened door.

1. Turn power ON.
2. Use on-board, wall-button station (Open/Close/Stop), external entrapment device or jumper wires for testing, see Table 5.

### Table 5 - Start-up and Testing Guide

<table>
<thead>
<tr>
<th>Test</th>
<th>Door Position</th>
<th>Action</th>
<th>Door Response</th>
<th>LED Status</th>
</tr>
</thead>
</table>
| Open       | Door at 6" from the closed position | 1. Press "OPEN".  
2. Check if door is stopped by Open limit switch.  
3. If required, re-adjust Open limit, as shown in Figure 18, p.12. | Door should open instantly. | D4 "OPNLMT" LED is ON |
| Close      | Door at fully open position        | 1. Press "CLOSE".  
2. Check if door is stopped by Close limit switch.  
3. If required, re-adjust Close limit, as shown in Figure 18, p.12. | - C2 mode: (selector switch on C2=0).  
Door should close as long as the close button is activated.  
- B2 mode: (selector switch on B2=1).  
Door should close instantly. | D5 "CLSLMT" LED is ON |
| Sense Edge | A) Door at fully closed position   | Activate external entrapment device OR  
Momentarily touch #3 & #5 on the main terminal with a jumper wire. | Door should stay at closed position. | D6 "SENS" LED is ON as long as the contact is maintained |
| Sense Edge | B) Door is closing (movement)      | Activate external entrapment device OR  
Momentarily touch #3 & #5 on the main terminal with a jumper wire. | Door should stop and then reverse to fully opened position. |
| Open & Close (single-button radio) | A) Door at fully opened position | Activate the single-button transmitter OR  
Momentarily touch #3 & #4 on the main terminal with a jumper wire. | Door should close. | D7 & D8 "OPEN & CLOSE" LEDs are ON as long as the contact is maintained (+/- 2 sec) |
| Open & Close (single-button radio) | B) Door at fully closed position | Activate the single-button transmitter OR  
Momentarily touch #3 & #4 on the main terminal with a jumper wire. | Door should open. |
| Open & Close (single-button radio) | C) Door is closing (movement)      | Activate the single-button transmitter OR  
Momentarily touch #3 & #4 on the main terminal with a jumper wire. | Door should reverse to fully opened position. |
9 Clutch Adjustment

NOTICE

- The friction clutch is NOT intended to protect people. It is designed to protect the operator and door system against potential damage.
- The friction clutch is factory adjusted during final testing. Proper adjustments should be done on site according to the door characteristics and application.
- In order to avoid the door from getting damaged when the lock is on, the friction clutch must be properly adjusted according to the instructions below.

Best Practices Encouraged by Manaras-Opera
On sectional doors: Manaras-Opera recommends the installation of a hard stop at the end of the tracks (ex. bolt, deformation of tracks, bumper spring, pusher spring, etc). With such installation, the door is prevented from running out of the tracks. The clutch (torque limiter) will prevent any damage to occur to the door system.

This operator is supplied with a Door Lock Sensor feature. The door lock sensor feature prevents the door from getting damaged when the door lock hasn't been removed prior to electronic operation. It eliminates the need of external interlock wiring.

This feature can only be used on operators equipped with a friction clutch. When the lock stops the door, the clutch slips and in less than 1 second, the door will reverse a fraction of a second to release the tension on the lock.

To adjust the clutch:
1. Unlock the jam nuts with two (2) 15/16" keys, refer to Figure 36.
2. Rotate the nut counter-clockwise to release the tension.
3. Gradually rotate the nut clockwise until there is just enough tension to permit smooth operation (while still allowing the clutch to slip if the door is obstructed).
4. Lock the jam nuts.

Figure 36 - Clutch Adjustment
10 Electronic Control Board (ECB) – BOARD 100E

10.1 General Layout

Figure 37 - Electronic Control Board – BOARD 100E
10.2 On-Board LED Monitoring Status

The electronic control board’s LEDs help with wiring and troubleshooting diagnostics. Every LED indicates the status of the door. BOARD 100E has a non-volatile memory and the LEDs return to their initial state after a power interruption. Refer to Figure 37, p.23 as reference.

Table 6 - LED Monitoring Status

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>LED Status</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>GREEN</td>
<td>ON</td>
<td>Indicates presence of 24Vdc.</td>
</tr>
</tbody>
</table>
| D2  | GREEN | ON, Flash  | • When door is opening.  
                  |        |            | • When timer to close is counting before closing the door. |
| D3  | RED   | Flash      | • When door is closing.  
                  |        |            | • Indicates wrong handling feature activation (if open limit switch is not released within 3.6 sec while door starts to close from fully open position). |
| D4  | RED   | ON         | When open limit switch is activated. |
| D5  | RED   | ON         | When close limit switch is activated. |
| D6  | RED   | ON         | When reversing or sensing edge is activated. |
| D7  | RED   | ON         | When close command is activated. |
| D8  | RED   | ON         | When open command is activated. |
| D9  | YELLOW| ON         | Indicates that the stop button is connected and hoist or disconnect switch is not engaged. |
| D10 | RED   | ON         | When inductive loop is activated. |
## 10.3 Electronic Control Board (ECB) Programming

### WARNING

To reduce risk of SEVERE INJURY or DEATH to persons:
- Manaras-Opera strongly recommends the use of external entrapment protection devices, especially in the case of momentary contact to close (B2 wiring or Timer to Close).

### 10.3.1 Run Mode Settings

### NOTICE

- Always return the door to **fully closed position** before performing any program settings.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Selector Switch Position</th>
<th>Set Switch On</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2</td>
<td>0</td>
<td>C2 = 0</td>
<td>Momentary contact to open and stop, constant-pressure-to-close with 3-button station. Activation of safety devices will reverse the door while closing. Auxiliary devices function as an Open control and will reverse the door while closing.</td>
</tr>
<tr>
<td>B2</td>
<td>1</td>
<td>B2 = 1</td>
<td>Momentary contact to Open, Close and Stop with 3-button station. Activation of safety devices will reverse the door during closing. Auxiliary devices function as Open-Close control and will reverse the door while closing.</td>
</tr>
<tr>
<td>D1</td>
<td>2</td>
<td>D1 = 2</td>
<td>Constant-pressure-to-open and constant-pressure-to-close. Activation of safety devices will stop the door while closing.</td>
</tr>
<tr>
<td>E2</td>
<td>3</td>
<td>E2 = 3</td>
<td>Momentary contact to open and constant pressure to Close. Release of Close button or activation of safety devices will reverse the door to fully open position.</td>
</tr>
<tr>
<td>T</td>
<td>4</td>
<td>T = 4</td>
<td>Under Mode T=4, if safety devices are activated while door is closing, door will reverse and will not close by Timer to Close (TTC). TTC will also be disabled if the chain hoist is engaged or if the stop is activated before elapsed time. TTC will resume its normal operation only after the door is fully closed.</td>
</tr>
<tr>
<td>TS</td>
<td>5</td>
<td>TS = 5</td>
<td>Under Mode TS=5, if safety devices are activated while door is closing, door will reverse and will close by Timer to Close (TTC). TTC will also be refreshed if the chain hoist is engaged, if the stop is activated before elapsed time or in case of a power outage.</td>
</tr>
</tbody>
</table>

**T (4) & TS (5) Mode:** Only applicable with Timer to Close, refer to Features Programming section, p. 26.

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

NOTICE

• Always return the door to **fully closed position** before performing any program settings.

**Maximum Run Timer**

Maximum run timer is set to 90 seconds by default. When programmed, this feature calculates the total time required for the door to travel from the fully closed to the fully opened position and adds 10 seconds to this time. Therefore, if the door is obstructed while travelling up or down, this feature will stop the operator after the maximum run timer time has elapsed.

<table>
<thead>
<tr>
<th>Run Timer Programming</th>
<th>Select Switch</th>
<th>Set Run Timer to Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Verify if close limit switch is activated and if close LED is ON.</td>
<td></td>
<td>1. Verify if close limit switch is activated and if close LED is ON.</td>
</tr>
<tr>
<td>2. Set select switch on D = Run Tm.</td>
<td></td>
<td>2. Set select switch on D = Run Tm.</td>
</tr>
<tr>
<td>3. Press “Open” button and let the door reach the fully opened position. <strong>Result:</strong> 10 sec is added to the total travel time.</td>
<td></td>
<td>3. Press “Stop” button. <strong>Result:</strong> The max. run timer is set to the default value of 90 sec.</td>
</tr>
<tr>
<td>4. Set select switch on run mode (0, 1, 2, 3, 4 or 5).</td>
<td></td>
<td>4. Set select switch on run mode (0, 1, 2, 3, 4 or 5).</td>
</tr>
</tbody>
</table>

**Timer to Close (TTC)**

Timer to Close (T = 4 or TS = 5 Mode), will close the door from the fully opened position after a factory preset time (5 sec.). Timer to Close can be programmed in increments of 1 sec. or 15 sec.

<table>
<thead>
<tr>
<th>TTC Programming</th>
<th>Select Switch</th>
<th>TTC Deactivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Verify if close limit switch is activated and if close LED is ON.</td>
<td></td>
<td>1. If the TTC is not required, set select switch on run mode (0, 1, 2, or 3).</td>
</tr>
<tr>
<td>2. Set select switch on B = Tm Cls.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Press the “Stop” button to return the time to 0 sec. or to reprogram.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Press “Open” button to add 15 sec. increments, or press “Close” button to add 1 sec. increments. Max. 4 min.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Set select switch on T = 4 or TS = 5. Refer to Run Mode Settings section, p. 25 for mode descriptions.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Timer to Close User Suspension Feature

This feature allows the Timer to Close to be enabled/disabled from the floor by using a wall push-button station. This feature allows the user to keep the door opened for ONE CYCLE only.

<table>
<thead>
<tr>
<th>TTC Deactivation</th>
<th>TTC Activation</th>
</tr>
</thead>
<tbody>
<tr>
<td>While the door is in the closed position, by pressing the “Stop” button 3 times and the “Close” button 3 times consecutively on the push-button station, the TTC is deactivated (<em>TTC is suspended</em>).</td>
<td>The TTC is re-activated (<strong>TTC returns to normal function</strong>) when the door is closed.</td>
</tr>
</tbody>
</table>
**Single-Button Control (SBC)**

With this feature, it is possible to use a single-channel transmitter for a Commercial Application, as well as a Single-Button Control (SBC). The SBC provides the user with the possibility to open, stop or close the door by using a single-button radio transmitter (or a single push-button station).

<table>
<thead>
<tr>
<th>SBC Activation</th>
<th>Select Switch</th>
<th>SBC Deactivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Verify if close limit switch is activated and if the close LED is ON.</td>
<td></td>
<td>1. Verify if the close limit switch is activated and if the close LED is ON.</td>
</tr>
<tr>
<td>2. Set select switch on 9 = SBC.</td>
<td></td>
<td>2. Set select switch on 9 = SBC.</td>
</tr>
<tr>
<td>3. Press &quot;Open&quot; button.</td>
<td></td>
<td>3. Press the “Stop” button.</td>
</tr>
<tr>
<td>4. Set select switch on run mode (1, 4, or 5).</td>
<td></td>
<td>4. Set select switch on run mode (0, 1, 2, 3, 4 or 5).</td>
</tr>
</tbody>
</table>
User Instructions

IMPORTANT SAFETY INSTRUCTIONS

WARNING

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

1. READ AND FOLLOW ALL INSTRUCTIONS.
2. Never let children operate or play with door controls. Keep the remote control (where provided) away from children.
3. Personnel should keep away from a door in motion and keep the moving door in sight until it is completely closed or opened. NO ONE SHOULD CROSS THE PATH OF A MOVING DOOR.
4. Test the door's safety features at least once a month. After adjusting either the force or the limit of travel, retest the door operator's safety features. Failure to adjust the operator properly may cause severe injury or death.
5. For products having a manual release, if possible, use the manual release only when the door is closed. Use caution when using this release with the door open. Weak or broken springs may cause the door to fall rapidly, causing severe injury or death.
6. KEEP DOORS PROPERLY OPERATING AND BALANCED. See Door Manufacturer’s Owner Manual. An improperly operating or balanced door could cause severe injury or death. Have trained door systems technician make repairs to cables, spring assemblies and other hardware.
7. SAVE THESE INSTRUCTIONS.

IMPORTANT

For more information or for immediate assistance, please contact your local dealer.

NOTICE

• The installer should perform a demonstration of the installed accessories (ex: push-button station, radio control), external entrapment protection device and manual release for the end-user.

For instructions regarding the Hoist, Disconnect Mechanism and Emergency Egress, refer to the Installation Instructions found in section 5.2, p.11.
1 Quick Fix Instructions

Table 7 - Basic Troubleshooting Guide ~ from floor level

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Fix Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door doesn't respond to any command</td>
<td>➕Chain hoist is in engaged position, if applicable. (LED D9 is OFF)</td>
<td>➔Return the chain to its neutral position (electrical mode). Refer to p.11 for further details.</td>
</tr>
<tr>
<td></td>
<td>➕Disconnect chain is in engaged position, if applicable. (LED D9 is OFF)</td>
<td>➔Release tension from the disconnect chain and secure the chain keeper. Refer to p.11 for further details.</td>
</tr>
<tr>
<td></td>
<td>➕“Stop” button is stuck. (LED D9 is OFF)</td>
<td>➔Press and release the “Stop” button on the wall station several times.</td>
</tr>
<tr>
<td></td>
<td>➕No power supply. (LED D2 is OFF)</td>
<td>➔Verify the incoming power line from the main breaker, making sure it has not tripped or blown a fuse.</td>
</tr>
<tr>
<td>Door doesn't not respond to “Close” or radio commands</td>
<td>➕Photo cells are not properly aligned or are obstructed.</td>
<td>➔Clear the obstruction or re-align photo cells.</td>
</tr>
<tr>
<td></td>
<td>➕Loop is obstructed (presence of metal). (LED D10 is ON)</td>
<td>➔Clear the obstruction.</td>
</tr>
<tr>
<td>When pressing “Open” button, door opens ~1-2 ft, then stops and reverses</td>
<td>➕Mechanical door lock is engaged.</td>
<td>➔Release the door lock.</td>
</tr>
<tr>
<td></td>
<td>➕Verify if the rubber seal at the bottom of the door is frozen to the ground (winter time).</td>
<td>➔Clear ice and free the rubber seal at the bottom of the door.</td>
</tr>
<tr>
<td>Door doesn't respond to any radio command</td>
<td>➕No power supply. (Transmitter light is OFF)</td>
<td>➔Replace transmitter’s battery.</td>
</tr>
<tr>
<td></td>
<td>➕Poor radio control range.</td>
<td>➔Bring the radio transmitter closer to the operator.</td>
</tr>
<tr>
<td></td>
<td>➕Photo cells are not properly aligned or are obstructed.</td>
<td>➔Clear the obstruction or re-align photo cells.</td>
</tr>
<tr>
<td>Timer to Close doesn't close the door</td>
<td>➕Timer to Close has been suspended accidentally for ONE cycle.</td>
<td>➔Timer to Close will return to normal after the door has been fully closed. Refer to p.26 for further details.</td>
</tr>
<tr>
<td>Timer to Close closes the door after being suspended</td>
<td>➕Timer to Close has been reactivated accidentally.</td>
<td>➔To suspend the Timer to Close, close the door completely. Then press the “Stop” button 3 times and then press the “Close” button 3 times. Refer to p.26 for further details.</td>
</tr>
</tbody>
</table>
IMPORTANT SAFETY INSTRUCTIONS

**WARNING**

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

- Inspections, service and repairs should be performed anytime a malfunction is observed or suspected.
- Only qualified persons should perform maintenance on a door operator and all safety precautions should be taken into consideration.
- When servicing, always disconnect operator from main power supply.
- KEEP DOORS PROPERLY OPERATED AND BALANCED.
- See Door Manufacturer's Owner Manual. An improperly operated or balanced door can cause severe injury or death. Have qualified door system technicians perform repairs to cables, spring assemblies and other hardware.

1 Preventative Maintenance Schedule

1.1 Mechanical Inspection

The door area should always be kept clear of dirt, rocks or any other substances in order to insure proper operation. Maintenance of the door operator should be performed according to the schedule in Table 8 and Table 9.

Table 8 - Mechanical Inspection Schedule (Part 1)

<table>
<thead>
<tr>
<th>Time Frame</th>
<th>Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every Month</td>
<td>• Test the door's safety features at least once a month.</td>
</tr>
<tr>
<td></td>
<td>• After adjusting either the clutch or the limit's travel, retest the operator’s safety features.</td>
</tr>
<tr>
<td></td>
<td>• Verify gear reducer's oil level (if applicable).</td>
</tr>
<tr>
<td>Every 3 Months</td>
<td>• Verify and adjust the clutch if necessary.</td>
</tr>
<tr>
<td>Every 6 Months</td>
<td>• Lubricate all moving parts. Bushings are oil impregnated and are lubricated for life.</td>
</tr>
<tr>
<td></td>
<td>• Verify that all mechanical parts function properly.</td>
</tr>
<tr>
<td></td>
<td>• Inspect the V-belt and adjust or replace if necessary.</td>
</tr>
<tr>
<td></td>
<td>• Manually operate the door. If the door does not open or close freely, correct the cause of the malfunction.</td>
</tr>
</tbody>
</table>
### Table 9 - Mechanical Inspection Schedule (Part 2)

<table>
<thead>
<tr>
<th>Time Frame</th>
<th>Inspection</th>
</tr>
</thead>
</table>
| Once a Year | • Run the operator a few cycles:  
  ○ Make sure that the door rollers are rolling smoothly on the track.  
  ○ Listen to the motor: The motor should hum quietly and smoothly.  
  ○ Verify that the limits operate quietly and smoothly: investigate any unusual noise.  
• Verify that the mounting bolts are holding the unit securely.  
• Inspect the unit for evidence of corrosion.  
• Change the gear reducer's oil, at the very least, after every 2500 hours of operation or once a year (if applicable). |

### 1.2 Electrical Inspection

It is recommended that the electrical maintenance inspections, be performed at the same intervals as the mechanical maintenance inspections.

### Table 10 - Electrical Inspection

<table>
<thead>
<tr>
<th>Time Frame</th>
<th>Inspection</th>
</tr>
</thead>
</table>
| Every Month | • Inspect the unit for evidence of corrosion on electrical wires and connectors.  
• Inspect the wiring compartment and remove any dirt from the control units.  
• Verify all the grounding wires and terminals for corrosion. Be particularly careful to verify the ground wires.  
• Verify the terminal strip to insure that all the screws are tightened.  
• Verify that the pneumatic edge or other entrapment protection devices installed on the operator are fully operational.  
• Verify the voltage at the input terminals while the operator is running. The voltage must not drop more than 10% momentarily. If the voltage drop is too deep when running, the relays may chatter and the contact points will wear prematurely and may eventually seize. Verify the power terminals for corrosion.  
• Verify the current consumption of the unit with an amp-meter. The value of current should be consistent with the nameplate specifications. Investigate any anomaly. |
2 Troubleshooting Guide

The electronic control board LEDs help with wiring and troubleshooting diagnostics. Every LED indicates the status of the door. The electronic control board has a non-volatile memory and the LEDs return to their initial state after a power interruption.

**Easy Fix:** Before starting any intervention, verify the LED's monitoring status and refer to Table 6, p.24 for a proper diagnosis.

### Table 11 - Troubleshooting Guide - Part 1

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Probable Cause</th>
<th>Suggested Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door doesn't respond to any command</td>
<td>– Chain hoist is in engaged position, if applicable. (LED D9 is OFF)</td>
<td>➔ Return the chain to its neutral position (electrical mode). Refer to p.11 for further details.</td>
</tr>
<tr>
<td></td>
<td>– Disconnect chain is in engaged position, if applicable. (LED D9 is OFF)</td>
<td>➔ Release tension from the disconnect chain and secure the chain keeper. Refer to p.11 for further details.</td>
</tr>
<tr>
<td></td>
<td>– “Stop” button is stuck. (LED D9 is OFF)</td>
<td>➔ Press and release any “Stop” button.</td>
</tr>
<tr>
<td></td>
<td>– Control station is not connected or is wired incorrectly. (LED D9 is OFF)</td>
<td>➔ Verify and correct wiring.</td>
</tr>
<tr>
<td></td>
<td>– No power supply. (LED D2 is OFF)</td>
<td>➔ Verify the incoming power line from the main breaker, making sure it has not tripped or blown a fuse.</td>
</tr>
<tr>
<td>Operator is not operating as expected</td>
<td>– Selector switch is not set on the desired mode.</td>
<td>➔ Set switch on desired mode, refer to p.25 for further details.</td>
</tr>
<tr>
<td>Timer to Close doesn't close the door</td>
<td>– Timer to Close has been suspended accidentally for ONE cycle.</td>
<td>➔ Timer to Close will return to normal after the door has been fully closed. Refer to p.26 for further details.</td>
</tr>
<tr>
<td>Door doesn't respond to any radio command</td>
<td>– No power supply. (Transmitter light is OFF)</td>
<td>➔ Replace transmitter’s battery.</td>
</tr>
<tr>
<td></td>
<td>– Transmitter is not properly programmed.</td>
<td>➔ Reprogram transmitter.</td>
</tr>
<tr>
<td></td>
<td>– Photo cells are not properly aligned or are obstructed.</td>
<td>➔ Clear the obstruction or re-align photo cells.</td>
</tr>
<tr>
<td>Door doesn't respond to “Open” command, but does respond to “Close” command</td>
<td>– Defective “Open” push-button or “Open” limit switch.</td>
<td>➔ Replace push-button or limit switch.</td>
</tr>
<tr>
<td></td>
<td>– Loose wire on “Open” push-button or “Open” limit switch.</td>
<td>➔ Verify and correct wiring.</td>
</tr>
<tr>
<td>Door doesn't respond to “Close” command, but does respond to “Open” command</td>
<td>– Defective “Close” push-button or “Close” limit switch.</td>
<td>➔ Replace push-button or limit switch.</td>
</tr>
<tr>
<td></td>
<td>– Loose wire on “Close” push-button or “Close” limit switch.</td>
<td>➔ Verify and correct wiring.</td>
</tr>
</tbody>
</table>

For technical support, please call 1-800-361-2260 or visit [www.manaras.com](http://www.manaras.com) for more information.
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Probable Cause</th>
<th>Suggested Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Stop” button doesn’t stop the door</td>
<td>Two 3-push button stations (or more) are connected in parallel.</td>
<td> Verify and correct wiring (Stop buttons in series, only Open &amp; Close in parallel).</td>
</tr>
<tr>
<td>Door reverse to fully open position after the door closes and reaches the floor</td>
<td>The “Close” limit switch is not being engaged by travelling cam.</td>
<td> The “Close” limit switch needs to be adjusted properly at the end of travel.</td>
</tr>
<tr>
<td></td>
<td>An “Open” command is being given.</td>
<td> Verify “Open” push-button or any opening device for short-circuit.</td>
</tr>
<tr>
<td>Door doesn’t open or close, motor hums or blows the main breaker.</td>
<td>Mechanical door lock is engaged.</td>
<td> Release the door lock.</td>
</tr>
<tr>
<td></td>
<td>Door is jammed.</td>
<td> Verify manual operation of door.</td>
</tr>
<tr>
<td></td>
<td>Brake doesn’t release, if applicable.</td>
<td> Verify and adjust brake tension.</td>
</tr>
<tr>
<td></td>
<td>Loose wire on solenoid brake, if applicable.</td>
<td> Verify and correct wiring.</td>
</tr>
<tr>
<td></td>
<td>Faulty solenoid brake, if applicable.</td>
<td> Replace.</td>
</tr>
<tr>
<td>Motor hums when “Open” or “Close” buttons are pressed.</td>
<td>Loose motor wires.</td>
<td> Verify and correct wiring.</td>
</tr>
<tr>
<td></td>
<td>Defective capacitor.</td>
<td> Replace.</td>
</tr>
<tr>
<td>Motor fails to shut off at fully closed or fully opened positions</td>
<td>Defective limit switch.</td>
<td> Operate limit switch manually while door is moving. If door does not stop, replace the switch.</td>
</tr>
<tr>
<td></td>
<td>Limit cams are not adjusted.</td>
<td> Verify and adjust.</td>
</tr>
<tr>
<td></td>
<td>Limit drive chain is broken.</td>
<td> Replace.</td>
</tr>
<tr>
<td></td>
<td>Loose sprocket on limit shaft.</td>
<td> Tighten set screw.</td>
</tr>
<tr>
<td></td>
<td>Limit shaft does not rotate.</td>
<td> Verify and replace accordingly.</td>
</tr>
<tr>
<td>Motor turns but door does not move</td>
<td>Sprocket key is missing.</td>
<td> Replace.</td>
</tr>
<tr>
<td></td>
<td>Drive chain is broken.</td>
<td> Replace.</td>
</tr>
<tr>
<td></td>
<td>Clutch is slipping.</td>
<td> Adjust clutch to proper tension.</td>
</tr>
<tr>
<td>Limit switches do not hold their settings</td>
<td>Loose drive or limit chain.</td>
<td> Adjust chain to proper tension.</td>
</tr>
<tr>
<td></td>
<td>Limit cam retaining bracket is not engaging in the slots of the limit cams.</td>
<td> Be sure it is engaged in slots of both cams.</td>
</tr>
<tr>
<td></td>
<td>Limit cams are binding on shaft threads.</td>
<td> Lubricate shaft threads. Limit cams should turn freely.</td>
</tr>
<tr>
<td></td>
<td>Limit shaft has a slight “play”.</td>
<td> Verify and adjust.</td>
</tr>
<tr>
<td>Poor radio range</td>
<td>Transmitter battery is low.</td>
<td> Verify and replace battery.</td>
</tr>
<tr>
<td></td>
<td>Radio antenna is not properly positioned.</td>
<td> Make sure antenna cable is not bent. Cable should be passed through control box.</td>
</tr>
<tr>
<td></td>
<td>Ambient radio, environmental or building structure interference.</td>
<td> Check connection of plug-in antenna. If required, add an external antenna (socket on receiver available).</td>
</tr>
</tbody>
</table>
3 Electrical Drawings

3.1 1 Phase Operator with BOARD 100E

Figure 38 - MECB11-100-OMH-W
3.2 **External Wiring with BOARD 100E**

**Figure 39 - External Wiring**

**LINE POWER**

- **L** (Line)
- **N** (Neutral)

**POWER 24 VAC**

- **1** (Phase A)
- **2** (Phase B)

**EXTERNAL INTERLOCK**

- **10**
- **11**

**EXTERNAL SENS**

- **3**
- **5**

**OPEN/CLOSE COMMAND**

- **3**
- **4**

**3-POSITION KEY SW. W/SPRING RETURN TO CENTRE**

- **6**
- **7**
- **8**

**SINGLE PUSH-BUTTON STATION**

- **6**
- **7**
- **8**
- **9**

**TWO PUSH-BUTTON STATION**

- **6**
- **7**
- **8**
- **9**

**CAUTION**

PLACE A JUMPER BETWEEN TERMINAL #8 AND #9. IF STOP BUTTON IS NOT USED.

**LOOP DETECTOR**

- **8**
- **12**

**RADIO RECEIVER**

- **JP4**

**ON BOARD JUMPER SETTINGS**

<table>
<thead>
<tr>
<th>DISCONNECT SWITCH</th>
<th>PRESENT</th>
<th>NOT PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>JP4</strong></td>
<td>1,2</td>
<td>2,3</td>
</tr>
</tbody>
</table>

For technical support, please call 1-800-361-2260 or visit [www.manaras.com](http://www.manaras.com) for more information.
4 Mechanical Exploded Views and Replacement Components

4.1 Opera-MH

Table 13 - Opera-MH Replacement Components

<table>
<thead>
<tr>
<th>No</th>
<th>Qty</th>
<th>Description</th>
<th>Manaras-Opera Part #</th>
<th>No</th>
<th>Qty</th>
<th>Description</th>
<th>Manaras-Opera Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>5/8-18 HEX JAM NUT ZP</td>
<td>NUT013</td>
<td>11</td>
<td>1</td>
<td>MOTOR PULLEY 2.0 x 5/8 5L STL</td>
<td>PULLEY014</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>CAM DISCONNECT OPERA</td>
<td>CAM010</td>
<td>12</td>
<td>1</td>
<td>OPERA CLUTCHPLATE</td>
<td>CLUTCHPLATE006</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>CAM LIMIT OPERA</td>
<td>CAM011</td>
<td>13</td>
<td>1</td>
<td>OPERA DISCONNECT FRIC. BAND</td>
<td>SHOE011</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>CHAIN GUIDE OPERA MD</td>
<td>GUIDE014</td>
<td>14</td>
<td>1</td>
<td>OPERA LIMIT SHAFT</td>
<td>SHAFT103</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>CLPAD 5/8x4x0.125&quot;</td>
<td>CLUTCHPAD005</td>
<td>15</td>
<td>2</td>
<td>OPERA LIMIT SHAFT BUSHING</td>
<td>BUSHING055</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>DISCONNECT SWITCH SHOE</td>
<td>SHOE010</td>
<td>16</td>
<td>1</td>
<td>OPERA OUTPUT SHAFT</td>
<td>SHAFT102</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>DISCONNECT SWITCH SHOE A</td>
<td>SHOE009</td>
<td>17</td>
<td>1</td>
<td>PULLEY 7&quot; x 5/8&quot; 5L/B</td>
<td>PULLEY020</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>EXTERNAL 3/8 RETAINING RING</td>
<td>CLIP021</td>
<td>18</td>
<td>1</td>
<td>PW ASSEMBLY (ROLLERS AND CLIPS)</td>
<td>POCKETWHEEL007</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>INPUT SHAFT OPERA-H</td>
<td>SHAFT104</td>
<td>19</td>
<td>1</td>
<td>TYPE B, INSIDE LENGTH 26</td>
<td>VBELTB26</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>M.AOS 1/2HP 60HZ/115V OPD 48Y KBAY</td>
<td>MOTOR403</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 40 - Opera-MH Mechanical Exploded View

For technical support, please call 1-800-361-2260 or visit www.manaras.com for more information
### Table 14 - Opera-MJ Replacement Components

<table>
<thead>
<tr>
<th>No</th>
<th>Qty</th>
<th>Description</th>
<th>Manaras-Opera Part #</th>
<th>No</th>
<th>Qty</th>
<th>Description</th>
<th>Manaras-Opera Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>5/8-18 HEX JAM NUT ZP</td>
<td>NUT013</td>
<td>9</td>
<td>1</td>
<td>M: AOS 1/2 HP 60Hz/115V OPD 48Y KWAY</td>
<td>MOTOR403</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>CAM LIMIT OPERA</td>
<td>CAM011</td>
<td>10</td>
<td>1</td>
<td>MOTOR PULLEY 2.0 x 5/8 SL STL</td>
<td>PULLEY014</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>CL.PAD 5/8x4x0.125&quot;</td>
<td>CLUTCHPAD005</td>
<td>11</td>
<td>1</td>
<td>OPERA CLUTCHPLATE</td>
<td>CLUTCHPLATE006</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>COMP. SPRING 1&quot;ID 2&quot;L</td>
<td>SPRING041</td>
<td>12</td>
<td>1</td>
<td>OPERA LIMIT SHAFT</td>
<td>SHAFT103</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>COUPLING 3/4 2 PINS 1/4</td>
<td>COUPLING014</td>
<td>13</td>
<td>2</td>
<td>OPERA LIMIT SHAFT BUSHING</td>
<td>BUSHING055</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>DISCONNECT FORK</td>
<td>FORK001</td>
<td>14</td>
<td>1</td>
<td>OPERA OUTPUT SHAFT</td>
<td>SHAFT102</td>
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<tr>
<td>7</td>
<td>1</td>
<td>EXTERNAL 3/8 RETAINING RING</td>
<td>CLIP021</td>
<td>15</td>
<td>1</td>
<td>PULLEY 7&quot; x 5/8 SL/B</td>
<td>PULLEY020</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>INPUT SHAFT OPJ</td>
<td>SHAFT107</td>
<td>16</td>
<td>1</td>
<td>TYPE B, INSIDE LENGTH 26</td>
<td>VBELTB26</td>
</tr>
</tbody>
</table>

*For technical support, please call 1-800-361-2260 or visit www.manaras.com for more information*
### 4.3 Opera-MH and Opera-MJ Control Box with BOARD 100E

#### Figure 42 - Opera-MH and Opera-MJ Control Box with BOARD 100E

#### Table 15 - Control Box Replacement Components (CBOX031)

<table>
<thead>
<tr>
<th>No</th>
<th>Qty</th>
<th>Description</th>
<th>Manaras-Opera Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>70 MF 250vac/B50/60HZ</td>
<td>CAPACITOR024</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>MEDIUM DUTY ELECT. CONTROL BOARD</td>
<td>BOARD100E</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>OPERA MEDIUM DUTY CONTROL BOX</td>
<td>CBOX031</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>RADIO CONTROL TERM STRIP</td>
<td>TSTRIP005</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>SINGLE LIMIT SWITCH - LEVER 46 DEG</td>
<td>LIMIT023</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>STD SINGLE LIMIT SWITCH</td>
<td>LIMIT015</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>TERMINAL STRIP 2 POSITIONS</td>
<td>TSTRIP009</td>
</tr>
</tbody>
</table>
**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. Mechanical, electrical and electronic accessories are warranted for one year from date of invoice. 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 re-installation 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 End-user. If the Buyer resells any Manaras-Opera products to another Buyer or End-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 Manaras-Opera sale price will be charged.

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

Call us for more information
1-800-361-2260

www.manaras.com