Digital Gateway®

Installation & Owners Manual

Model DG1100

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INTRODUCTION

Your door control box is equipped with Rytec's Digital Gateway® which is a state-of-the-art, solid state microprocessor based high-speed door control. It provides connections for multiple activators, two (2) close delay timers, back-up timers, jog-open and jog-close, status indicators, and a display for counter and error messages. See Figure 1 for an overview of the Digital Gateway® controls.

READ THIS ENTIRE MANUAL BEFORE OPERATING THE DOOR.

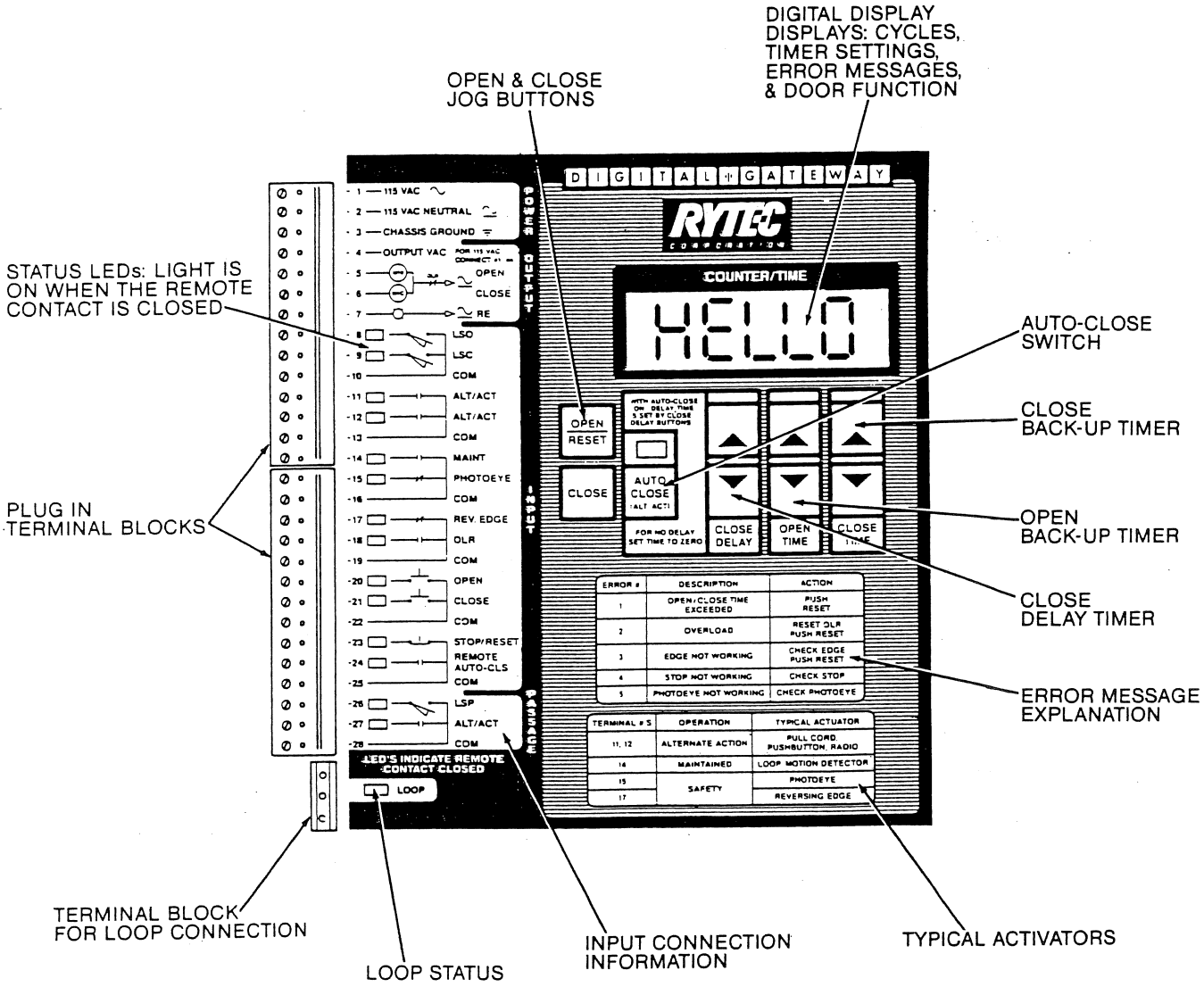


Figure 1.

ELECTRICAL SYSTEM CONNECTIONS

WARNING

Turn off power at fused disconnect.

1. CONNECTIONS AND START-UP

1.1 From the fused disconnect, route power supply wires to the control box and connect to terminal blocks L1, L2 and L3. Also attach a ground to the control box grounding block. See Figure 2 for recommended component locations. See Figures 3 and 4 for electrical connections.

WARNING

The electrical equipment used in Rytec doors requires high voltage. See that the power supply being used is in the "locked" or "off" position before electrical wiring is begun. All electrical wiring must meet all applicable local codes and must be installed by a qualified electrician.

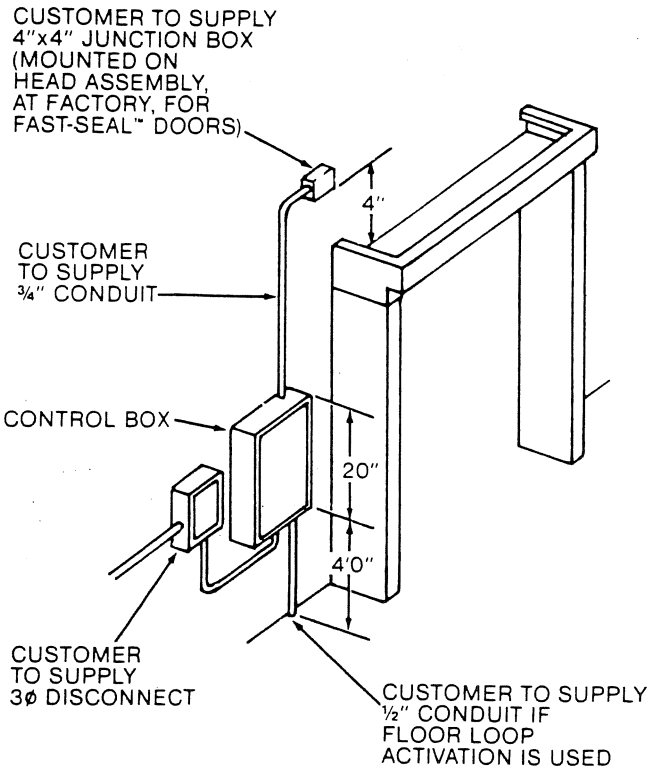


Figure 2.

FAST-SEAL™, 1 SPEED DIGITAL GATEWAY® E3010C

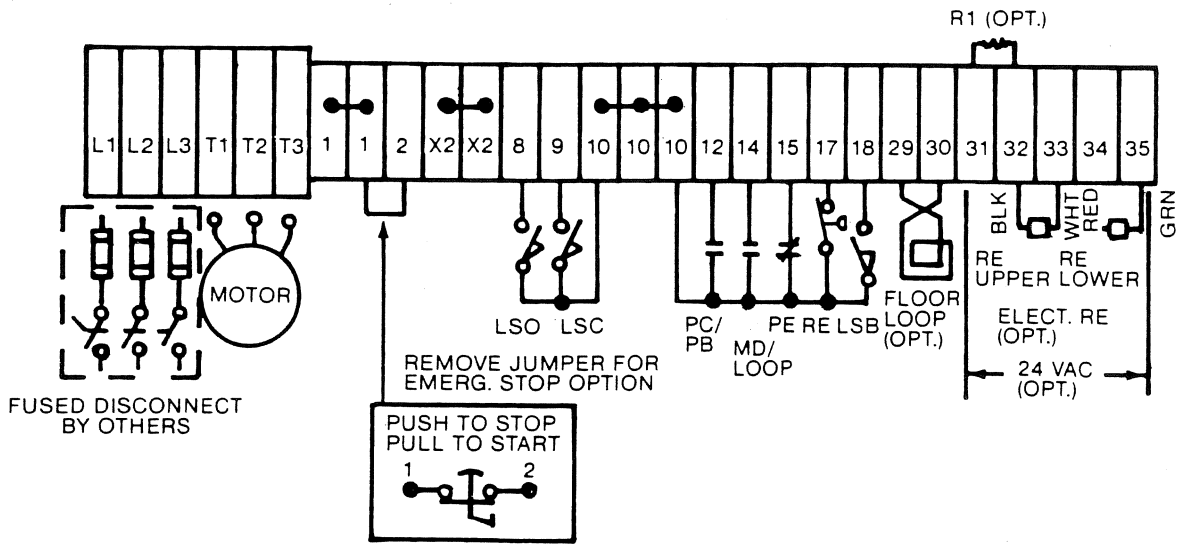
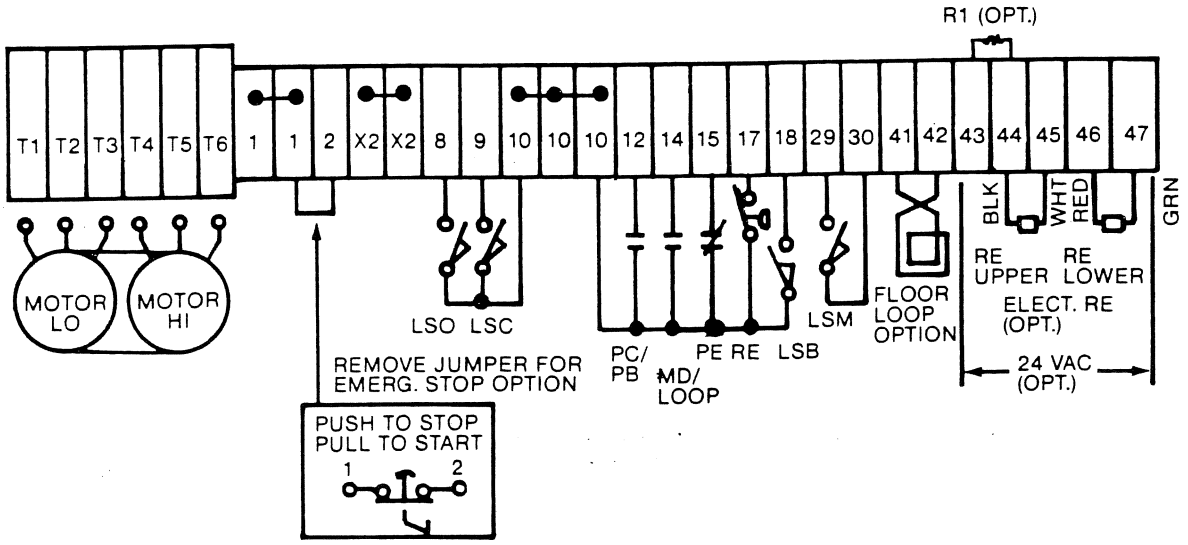


Figure 3.

FAST-SEAL™, 2 SPEED
DIGITAL GATEWAY® E5027



FAST-FOLD®, 2 SPEED
DIGITAL GATEWAY® E2011C

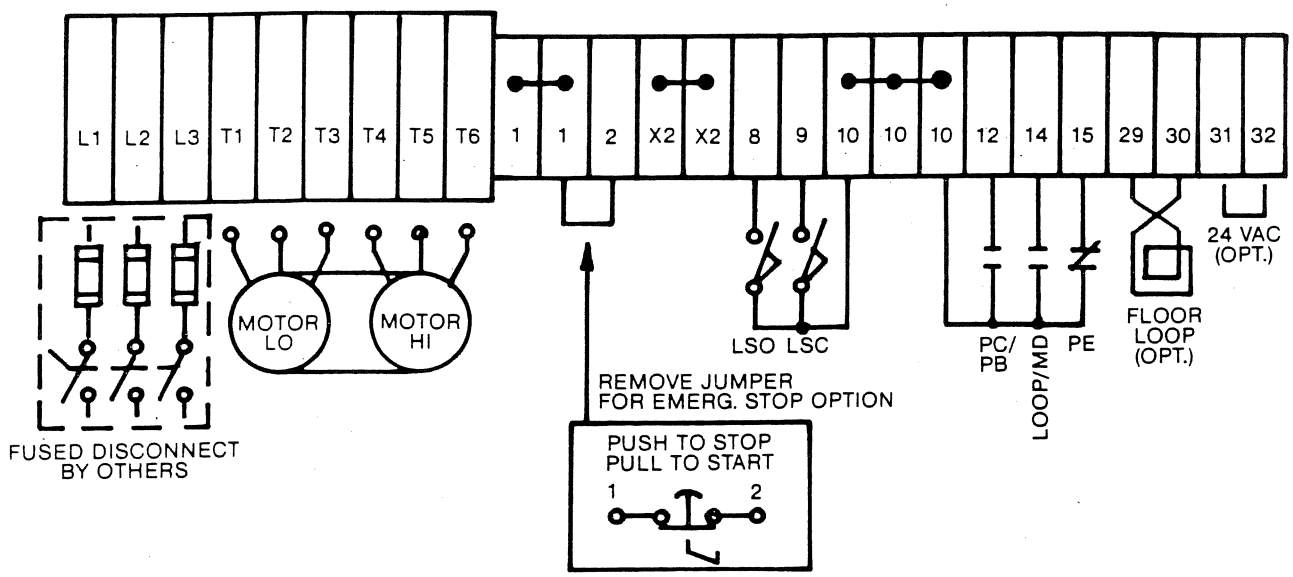


Figure 4.

1.2 See the individual door installation manual and electrical schematics for all other electrical connection requirements.

1.3 Connect motor wires to control box terminals T1, T2 and T3 (single speed); T1, T2, T3, T4, T5, and T6 (two [2] speed). Connect ground wire. See Figures 3 and 4.

1.4 Connect the three (3) wires coming from the two (2) limit switches to terminals 8, 9 and 10 in the control box.

1.5 For Fast-Seal™ Doors, make the necessary connections for the breakaway kill switch (terminal 18) and the reversing edge (terminal 17).

1.6 For Fast-Seal™ Doors, make the necessary connections in the control box for the photoeye. See individual electrical schematics for proper connections.

1.7 Turn on power.

1.7.1 The display will read "HELLO." See Figure 5.

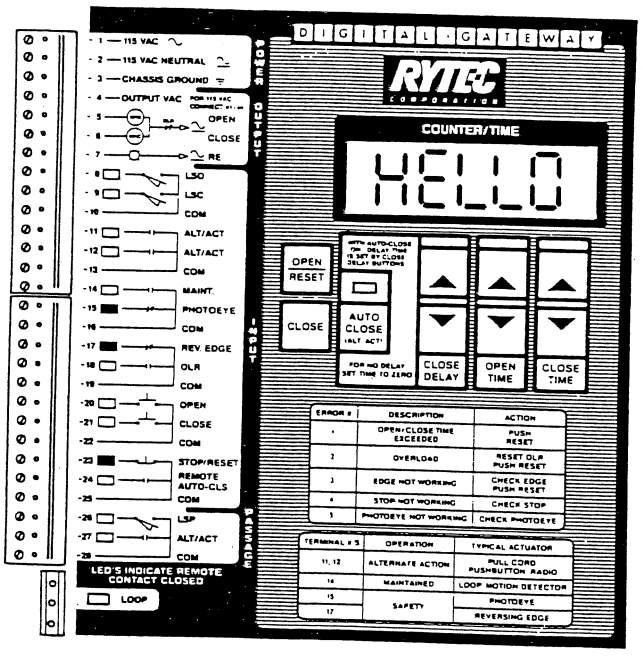


Figure 5.

1.7.2 The photoeye terminal 15, reversing edge terminal 17 and the stop terminal 23 LEDs should be illuminated.

1.7.3 Press the Open/Reset button. The display will read "000000." See Figure 6.

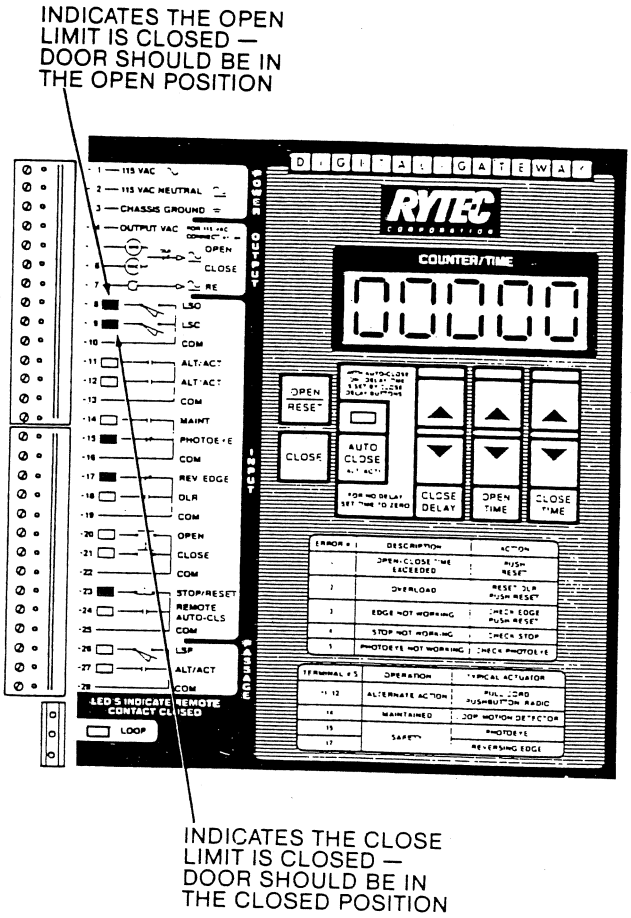


Figure 6.

1.8 While watching the M1O and M1C contactors inside the control box, jog the motor briefly so the door starts to move. Use the jog open and close buttons on the Digital Gateway® to operate the door. The M1O contactor must activate when the door opens. If not, turn off the power and switch any two (2) of the power supply wires (L1, L2 or L3) inside the control box. This will reverse the direction of the motor. The M1C contactor must activate when the door closes. If the motor is a two (2) speed, the door will open fast and close slow. The door must open when the M1O contactor activates; if not, turn off the power and reverse T4 and T5. The door must close when the M1C contactor activates; if not, turn off the power and reverse T1 and T2.

1.9 Set the back-up open and close timers slightly longer than you expect the door to take to open and close. All timers are initially set at one (1) second.

1.10 Use the jog button to completely open the door. Adjust the open limit switch until the LSO LED on the Digital Gateway® comes on. Jog the door completely closed and adjust the close limit switch until the LSC LED comes on. See Figure 6.

1.11 Connect the activators into the desired locations on the terminal strip. Terminals 10 and 12 are for alternate action activators. These are activators such as pull cords, pushbuttons or radio controls. Terminals 10 and 14 are for maintained activators such as floor loops, motion detectors or photoeyes.

Do not apply any external voltage to the activator terminal connections. This includes ohmmeters.

1.12 Reset the open and close timers to slightly longer than it actually takes to operate the door. **Example:** The door takes 2 seconds to open; set the timer to 3 seconds.

1.13 Set the close delay timer using the close delay switch.

1.14 If a second close delay timer is needed, the Auto-Close timer can be used for alternate action inputs. Set the auto close delay by turning on the auto close function. Press the Auto-Close button. The LED should be on. Then set the delay time using the close delay buttons. See Figure 7. If no time delay is required, set the timer to 0.

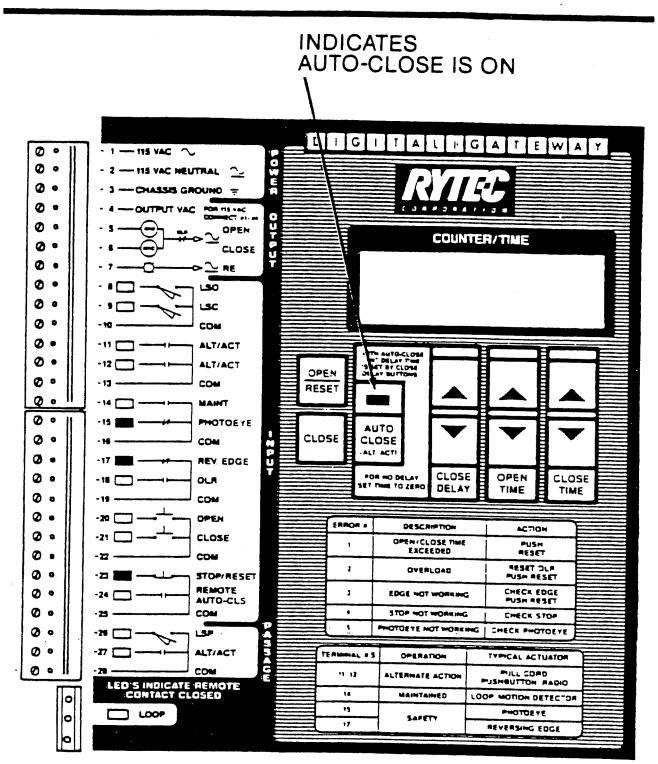


Figure 7.

2. START-UP SEQUENCE

2.1 When the power is turned on, the Digital Gateway® will read "HELLO." The door will not move regardless of the status of any of the activators. The system will reset and be operational with any activator change.

Example 1: If a fork truck is on the loop when the power is turned on, the door will not move. When the truck leaves the loop, the system will be reset and be ready for the next command.

Example 2: If all activators are off when the power is restored, the door will not move. When any of these activators turn on, the system will first reset and then carry out the indicated function.

NOTE

The system may have to be cycled twice to insure it has been reset.

If a reversing edge switch is not present on start-up, the system will go into ERROR 3. A jumper is installed at the factory if a reversing edge is not required (Digital Gateway® terminal 17).

If the stop input (i.e., pushbutton with an NC contact) is not present on start-up, the system will go into ERROR 4. A jumper is installed at the factory if an external stop is not required (Digital Gateway® terminal 23).

If the photoeye input is not present on start-up, the system will go into ERROR 5. A jumper is installed at the factory if a photoeye has not been specified for this door.

3. EXPLANATION OF DIGITAL GATEWAY® CONTROLS (see Figure 8)

3.1 Pushbuttons

3.1.1 Open/Reset — This pushbutton jogs the door open. It is not operational when the door is being controlled by any activator. It is also the reset for error messages once the fault causing the error has been corrected.

3.1.2 Close — This pushbutton jogs the door closed. It is not operational when the door is being controlled by any activator. It will operate while in the ERROR 2 and ERROR 3 modes.

3.1.3 Up Arrow/Down Arrow — Momentarily depressing any of these buttons while the system is in a normal condition will display the setting for that timer. If the button is held in, the setting will count up/down in one second increments. When released, the new setting will be displayed.

3.1.4 Auto-Close — See timers.

3.2 Timers

3.2.1 Open "OP" — This is the back-up timer for the opening of the door. This feature will stop the door if it does not reach the full open position within the time set or if the limit switch does not shut off the door when it reaches the open position. When this time has been exceeded ERROR 1 will appear in the display and the system will shut down until reset. To reset the system, push the Open/Reset button or the external stop. The timer display will show "OP" plus time.

3.2.2 Close "CL" — This timer operates the same as the Open timer except that it is a back-up to the close function. The timer display will show "CL" plus time.

3.2.3 Close Delay "dEL" — This timer delays the closing of the door when opened by the maintained input. If no delay is required, set the timer to zero. After the maintained connection is removed, the timer will time out and close the door.

3.2.4 Close Delay "ACL" (Auto-Close) — This timer delays the closing of the door when it is opened by the Alternate Action or Passage A/A inputs, if the Auto-Close feature has been selected. If no delay is required, set the timer to zero. After the Alternate Action or Passage A/A connection is removed, the timer will time out and close the door.

3.2.5 Auto-Close — This toggle pushbutton activates the Auto-Close function for the Alternate Action and Passage A/A inputs. When on, as indicated by the LED, the door will automatically close after the selected time delay (ACL) when it has been opened by these inputs. If Auto-Close has been selected and there is a power failure, it will again be on when power is restored.

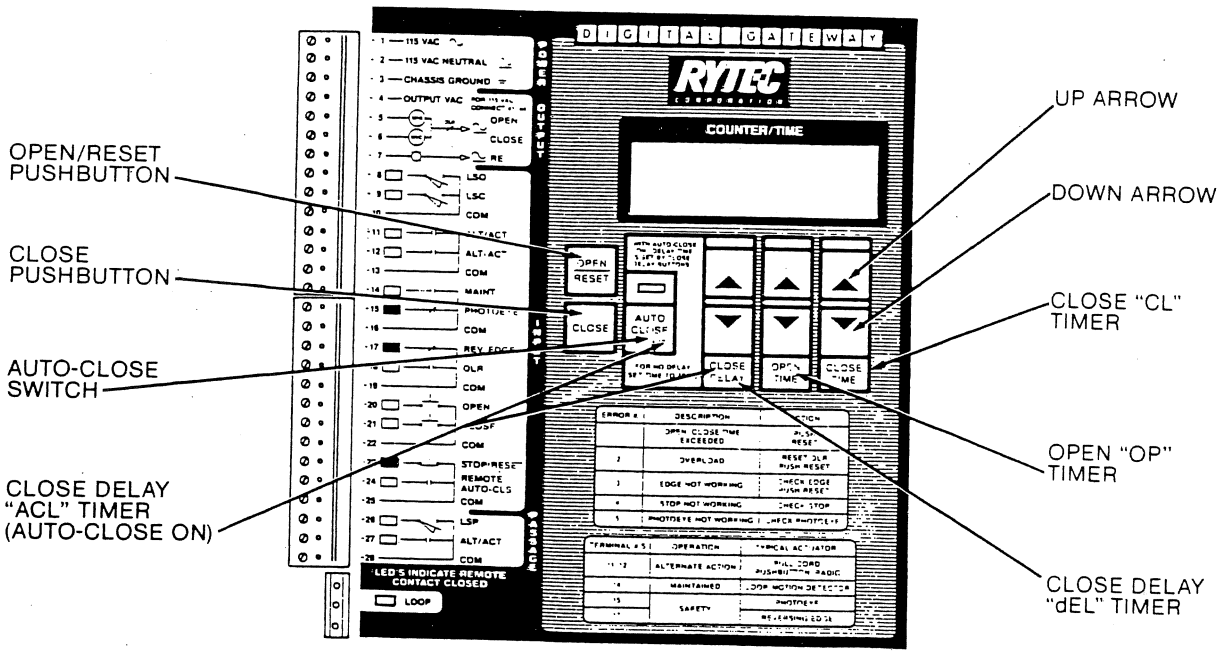


Figure 8.

4. SETTING THE TIMERS

4.1 The timers are set by using the red Up Arrow or Down Arrow buttons as described in the pushbutton section. The timers count in one (1) second increments.

The Close Delay buttons are used to set both the "dEL" timer for the maintained input and the "ACL" for the Alternate Action and Passage A/A inputs when the Auto-Close function is used. Both "dEL" and "ACL" timers are active according to which activator is used.

The timer display is active while setting the timers and while the system is performing the timing functions. During these periods the display will show the timer settings with the following codes for identification:

OP — Open Time
CL — Close Time
dEL — Close Delay
ACL — Close Delay (used with the Alternate Action and Passage A/A inputs when the Auto-Close is on).

4.1.1 With the Auto-Close function "OFF," the Close Delay buttons are used to set the "dEL" timer. See Figure 9.

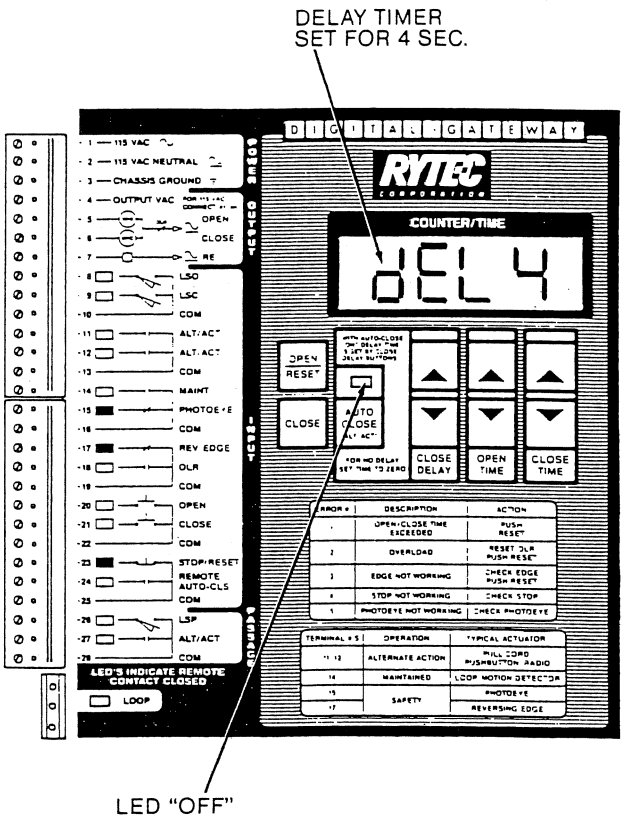


Figure 9.

4.1.2 With the Auto-Close function "ON," the Close Delay buttons are used to set the "ACL" timer. See Figure 10.

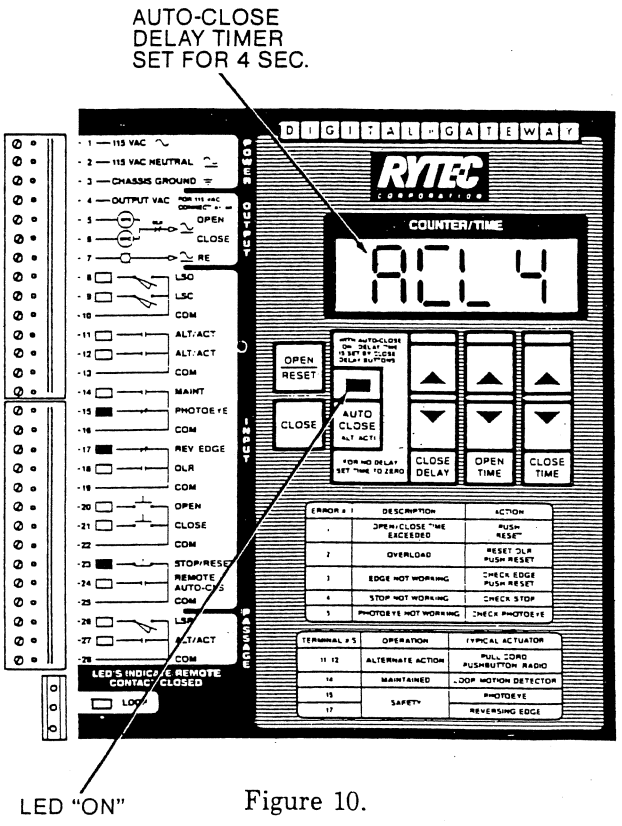


Figure 10.

5. COUNTER

5.1 This display indicates the number of door cycles. This is a nonresettable counter and will start over from 0 after 999,999.

6. DESCRIPTION OF CONTROL BOX INPUTS

6.1 Limit Switches (LSO, LSC, LSP)

Once the door has started, it will move until it is shut off by one of the limit switches or a back-up timer.

6.1.1 Open (LSO) — The LSO LED will be on when the door has reached the full opened position.

6.1.2 Close (LSC) — The LSC LED will be on when the door has reached the full closed position.

6.1.3 Passage (LSP) Optional — The LSP LED will be on when the door has reached the passage position, but only when the door was started by the Passage Alternate Action input. The Passage Limit is used to partially open the door. **Example:** A Fast-Fold™ Door may be opened a few feet to allow for pedestrian traffic or a 15 foot high door may be opened 8 feet for small loads.

6.2 Alternate Action Inputs (A/A) — Momentary Connection Activators Terminals 11 & 12

These inputs take priority over the Open–Close–Stop and the Passage A/A inputs.

A momentary connection while the door is closed, closing or stopped between limits will open the door. A momentary connection while the door is in the full open position will close the door. **Example:** The pushbutton on the door of the control box is an A/A input.

6.3 Maintained Input (Maint) — Terminal 14

This input takes priority over the Alternate Action, Open–Close–Stop and Passage A/A inputs. **Example:** A fork truck drives on a loop; loops are maintained contact inputs. The door will open and remain open until the truck leaves the loop even if someone tries to close the door with a pull cord or other activator.

A maintained connection while the door is closed, closing or stopped between limits will open the door. The door will stay open as long as the maintained connection is present. When the connection is removed, the close delay timer (dEL) times out and the door closes. The close delay timer will reset if another maintained connection is made while the timer is timing out. If you require no closing delay, set the timer to 0.

6.4 Photoeye — Optional on Fast-Fold™

The photoeye input LED should be on for normal operation.

A momentary loss of this connection while the door is closing will immediately reverse the door and open it to the full open position. The door will remain open as long as the photoeye detects an obstruction.

After the obstruction is removed:
a) The door will remain open if it was originally activated by a non-automatic input.
b) The door will close automatically if originally activated with an automatic input.

It is recommended that the photoeye be set to the "Light On" function. If set in this mode, should the photoeye become non-functional, the door will not close.

6.5 Reversing Edge (Rev. Edge) — Terminal 17

The reversing edge input LED should be on for normal operation. This indicates a contact is closed in the reversing edge switch. See the Fast-Seal™ manual for pressure switch adjustment instructions.

A momentary loss of this connection, such as the door coming down on something while it is closing, will immediately reverse the door and open it. To close the door, use the A/A or Close inputs (the pushbutton on the control box). This will reset the system and then close the door. To reset the system without closing the door, push the Open/Reset button or activate an external stop input (if one has been installed on the door). The display will read "EdGE" until the system is reset. The output for the optional reversing edge light will also be on.

If the reversing edge connection is lost for 1-2 seconds while the door is in the fully opened position or during initial start-up, the system will enter ERROR 3 and will not operate until it is reset. Check the operation and connection of the reversing edge. To lower the door for inspection while in ERROR 3, use the close button on the Digital Gateway®. When it is operational, reset the system using the Open/Reset button or the external Stop.

Typical devices that can be used for this safety function are reversing edges or photoeyes.

6.6 Overload Relay — Terminal 18 (see 6.10 for Fast-Seal™ Breakaway Kill Switch)

When the overload relay detects a motor malfunction it will trip and turn off the motor contactors. ERROR 2 will appear in the display. Once the malfunction has been corrected and the overload itself has been reset, reset the system using the Open/Reset button or the external stop. To reset the overload, push the reset button on the face of the overload.

6.7 Open–Close–Stop Pushbuttons — Optional, Terminals 20, 21 & 23

6.7.1 Open — A momentary connection while the door is closed, closing or stopped between the limits will open the door.

6.7.2 Close — A momentary connection while the door is opened or stopped between limits will close the door.

6.7.3 Stop — A momentary connection will stop the door, but only when the door has been started by the Open or Close inputs.

This button can also be used as a remote means to reset the system when it is in an error mode. The problem must be corrected before the system can be reset.

NOTE

The Stop input is not an Emergency stop. For an Emergency stop connection, refer to Figures 3 and 4.

6.8 Remote Auto-Close — Optional, Terminal 24

A maintained connection will turn on the Auto-Close function for the Alternate Action and Passage A/A inputs. This will allow the door to close automatically after a time delay (ACL) when the door has been opened by one of these inputs.

If no delay is required for closing, set the Close Delay timer (ACL) to zero.

6.9 Passage Alternate Action — Optional, Terminal 27

A momentary connection when the door is closed, closing or stopped between limits will open the door to the passage position as set by the Passage limit switch (LSP). If the door is between the Passage limit and open limit, the door will open fully. Closing the door completely will allow you to open the door to the passage position using the passage activator, or all the way using another activator.

FAST-SEAL™ DOORS ONLY

6.10 Overload Relay (OLR & LSB) — Breakaway Kill Switch

The kill switch for the breakaway bottom bar is also connected into terminal 18. If the breakaway is struck, the door will stop and the Digital Gateway® will go into Error 2. While in Error 2 you can jog the door down (not up) using the close button on the Digital Gateway® to make it easier to reassemble the breakaway bottom beam. After the door is assembled, reset the system and restart the door. Anytime the Digital Gateway® is in Error 2, check for a motor overload and also check the breakaway kill switch.

7. ERROR MESSAGES

7.1 Error 1 (Err 1) — see Figure 11

This message indicates that the open or close timer has timed out before the door has fully opened or closed. This indicates that the door is not operating in the time set on the open and close back-up timers and should be inspected for proper operation. To reset the system, push the Open/Reset button or activate the optional external Stop input (if one has been installed on the door).

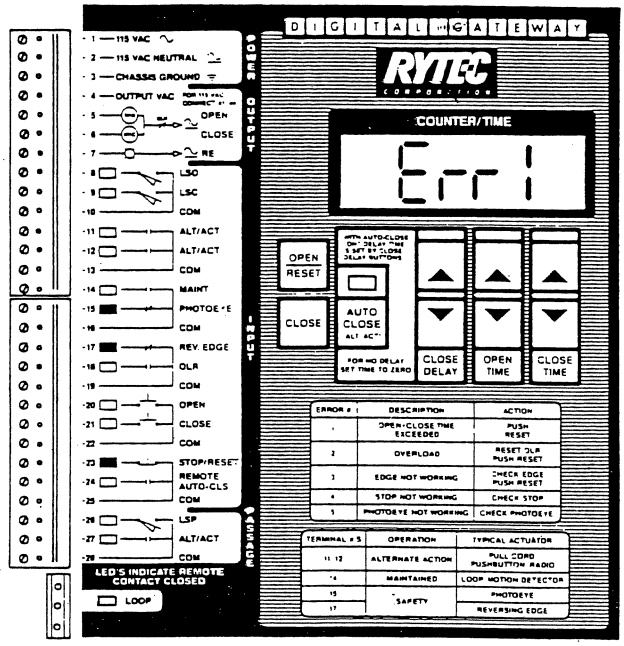


Figure 11.

7.2 Error 2 (Err 2) — see Figure 12

This message indicates that either the motor has overloaded and the overload relay has tripped, or on Fast-Seal™ Doors, the kill switch on the breakaway bottom bar has tripped. If the motor overload has tripped, the motor contactors in the control box will not operate until the overload relay has been reset. Reset the overload relay or reassemble the breakaway bottom bar. When they are operational, reset the system by pushing the Open/Reset button or activating the optional Stop input.

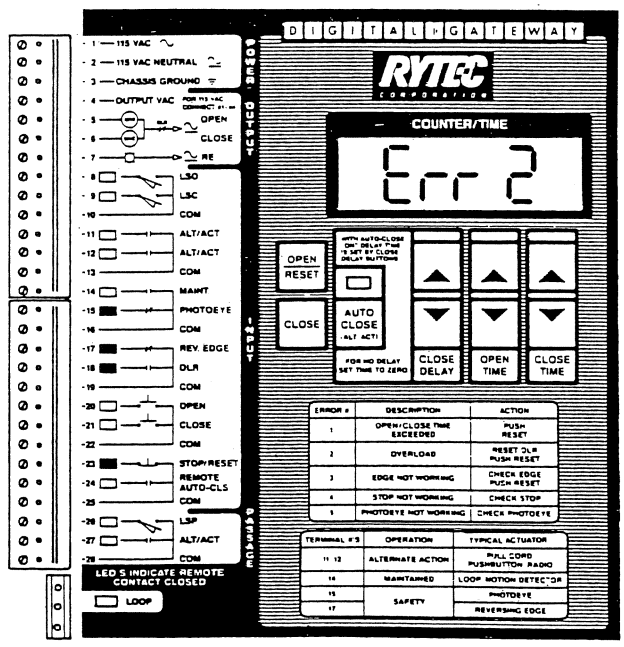


Figure 12.

7.3 Error 3 (Err 3) — see Figure 13

This message indicates that the reversing edge is not connected.

NOTE

If a reversing edge input is not required, a jumper is installed in the control box at terminal 17.

The Digital Gateway® monitors this input on power up and each time the door reaches the fully opened position. Check the device for proper operation and connection. When it is operating correctly, reset the system by pushing the Open/Reset button or activating the optional Stop input.

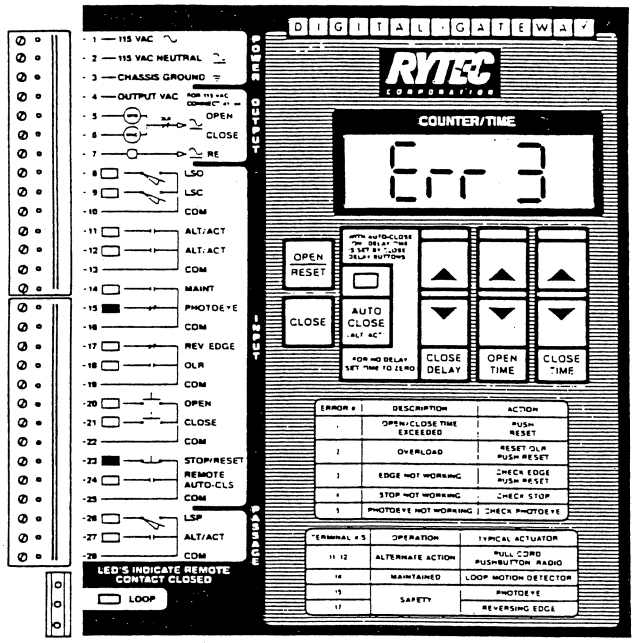


Figure 13.

7.4 Error 4 (Err 4) — see Figure 14

This message indicates that the Stop input is not connected.

NOTE

If an external stop is not required, a jumper is installed in the control box at terminal 23.

The Stop input is monitored when the system is powered-up. Check the Stop for proper operation and connection. When it is operating properly, the "HELLO" message will appear in the display and the system will be ready for operation.

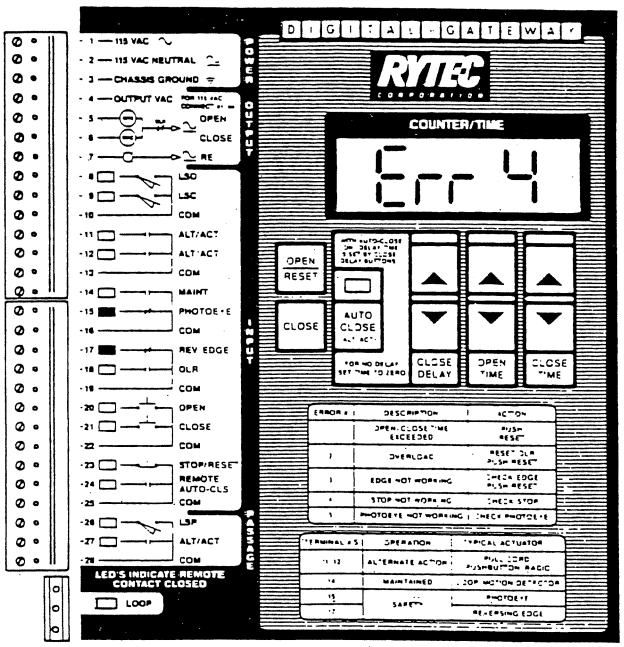


Figure 14.

7.5 Error 5 (Err 5) — see Figure 15

This message indicates that the photoeye is not connected.

NOTE

If a photoeye is not required, a jumper is installed in the control box at terminal 15.

The photoeye input is monitored when the system is powered-up. Check the photoeye for proper operation and connections. When it is operating properly, the "HELLO" message will appear in the display and the system will be ready for operation.

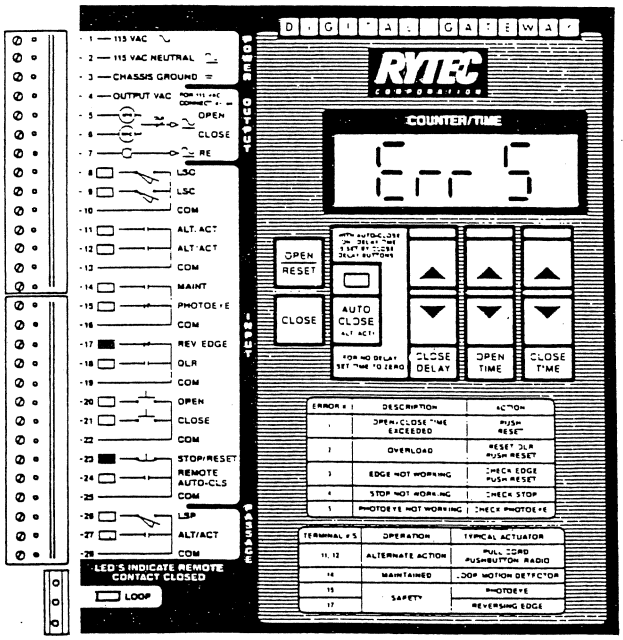


Figure 15.

7.6 EdGE — see Figure 16

This message will appear when the reversing edge has been activated while the door is closing, reversing the door to the fully opened position. It will remain on until the system is reset. Resetting the system when it is in the edge mode can be done by activating an Alternate Action activator, such as the pushbutton on the control box, a Passage A/A activator, a Close or Stop button, or by pushing the Open/Reset button on the Digital Gateway.®

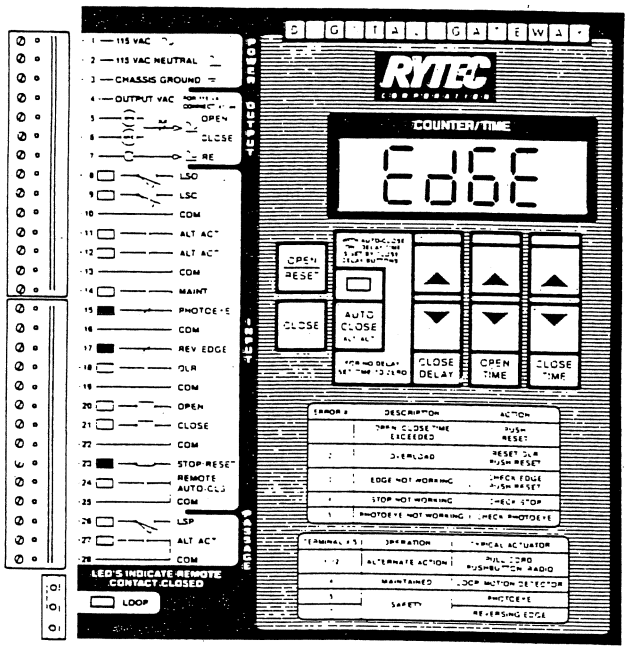


Figure 16.

8. NOTES

8.1 Inputs — Activators, Limits, Reversing Edge, etc.

All inputs should be contact closure or NPN open collector only. RC networks, MOV's or any noise suppression devices which allow small leakage currents that are connected across an input contact should be removed. Consult the factory for details.

WARNING

Never apply external voltage to any input terminal. External voltage is not required.

A normally open contact (NO) is required for all inputs, except for the Photoeye (terminal 15), the Reversing Edge (terminal 17) and the Stop (terminal 23). These three inputs require a normally closed (NC) contact. The opposite side of each input contact is brought back to terminal 10. The Digital Gateway® provides 12 volts DC to the contacts in the inputs.

An LED is provided for each input contact. It is on when the contact is closed (the input is active). The Photoeye, Reversing Edge and Stop LEDs should be on for normal operation.

8.2 Filters

To avoid problems associated with electrical noise, MOV's have been connected across the coils on all contactors used with the Digital Gateway®. If the MOV's are removed, due to replacement of a contactor(s), the MOV(s) must be reinstalled prior to placing the door into service.

9. TROUBLESHOOTING

The Digital Gateway® provides status LEDs and Error messages that show you what the door is doing. The Error message explanations and descriptions of the LEDs will guide you to problems that may come up.

10. REPLACEMENT

If the Digital Gateway® ever requires replacement, turn off power, remove the plug in terminal blocks, remove wires from loop connection terminal block (if used), then remove the existing Digital Gateway® from the control box. Install the replacement and reconnect the plug in terminal blocks, making sure the numbers on the terminal blocks correspond with the terminal numbers on the Digital Gateway®, and connect wires to the loop connection terminals (if used). Turn on power.

After installation of the Digital Gateway® is completed, all timers will require resetting. See Section 4, page 7.

If any options were used, they must also be reset. See Section 11, page 11.

11. OPTIONS

A number of options have been provided in the Digital Gateway® for special applications.

11.1 Option 1

Close button, input 21, is changed to constant pressure. The close pushbutton must then be held in for the door to operate.

11.2 Option 2

Allows for an external switch to be connected to input 24. This switch then allows the door to be set in either the manual or automatic operating mode. The Auto-Close pushbutton on the face of the Digital Gateway® is not active.

When the contact in the switch is "Open," the door can be operated only in the "Manual" mode.

The Maint input will not be active while the door is fully closed. It will stop and reverse the door to the open position when closing, or it will hold the door open when in the full open position. The dEL and ACL time delays are not active.

When the contact in the switch is "Closed," the door can be operated only in the "Automatic" mode.

The Maintained and Close inputs will operate as normal. The Alternate Action and Alternate Action passage inputs will be in the Auto-Close mode, that is the ACL timer will be active. The door will open, go into the ACL delay and then close to the fully closed position.

11.3 Option 3

Option 3 is used only when the automatic mode of Option 2 has been selected.

This option deactivates the open input terminal 20 and close input terminal 21.

11.4 Option 4

Allows the Digital Gateway® to be placed in an idle state, where no inputs will operate the door. A closed connection at input 24, while the door is in the fully closed position will activate this condition and the word "LOC" will appear in the display.

This option is not available if Option 2 is selected.

This option can be used with a door interlock, a 24-hour time clock where the door can be made operational only during selected times or in other applications as may be recommended by the factory.

11.5 Option 5

This option initiates a ½ second time delay when the door is told to reverse by the A/A, Maint, Open, or A/A-P inputs. If any of these inputs become active while the door is closing, the door will stop, wait ½ second and then reverse to the full open position.

12. SELECTING OPTIONS

12.1 Turn off power to the Digital Gateway®.

12.2 Press and hold the Close Delay Up Arrow button while turning the power on.

12.3 The display should read "1 Off."

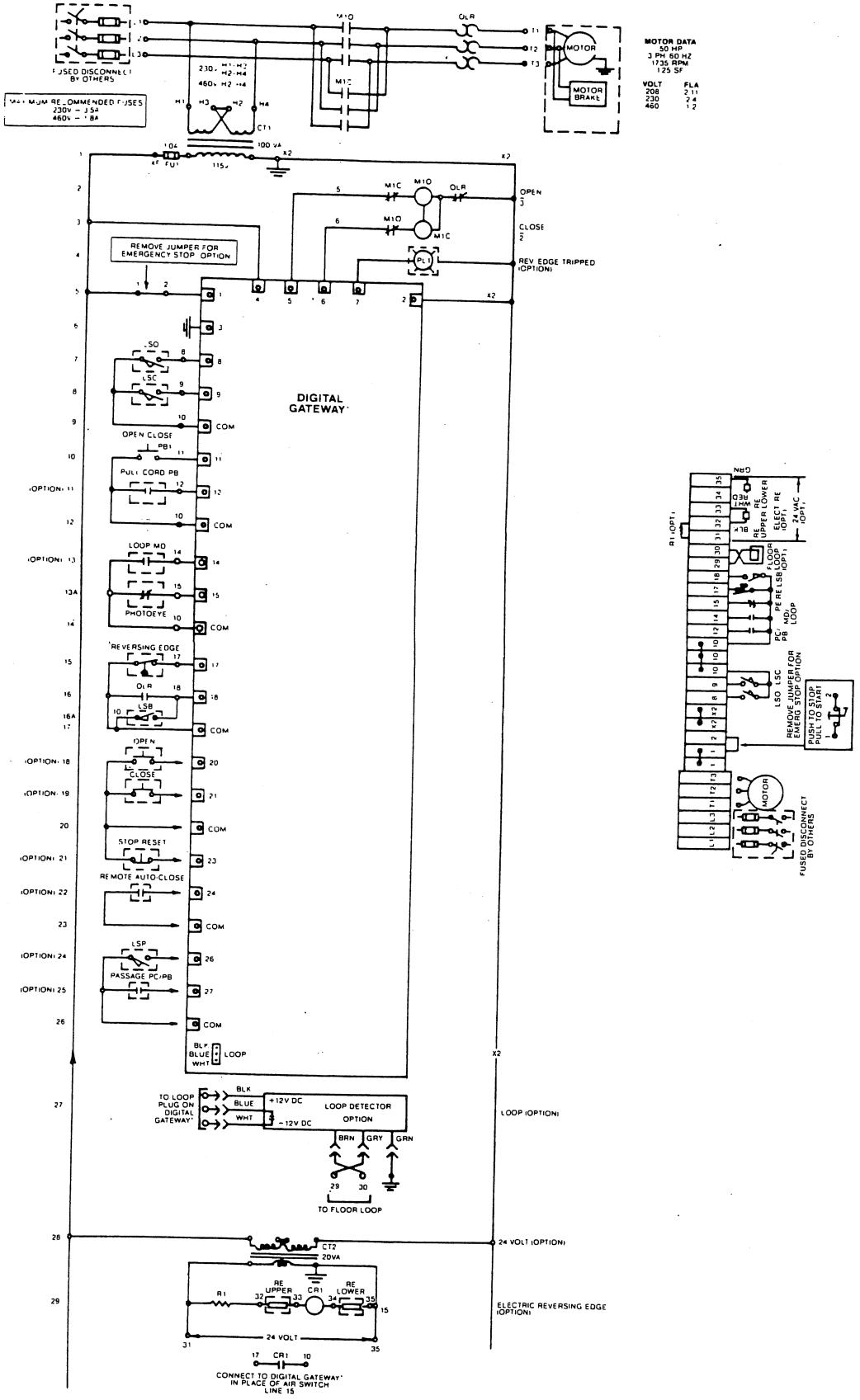
12.4 Release the Up Arrow button.

12.5 To select the option number, momentarily press the Open Time Up Arrow button until the desired number is in the display.

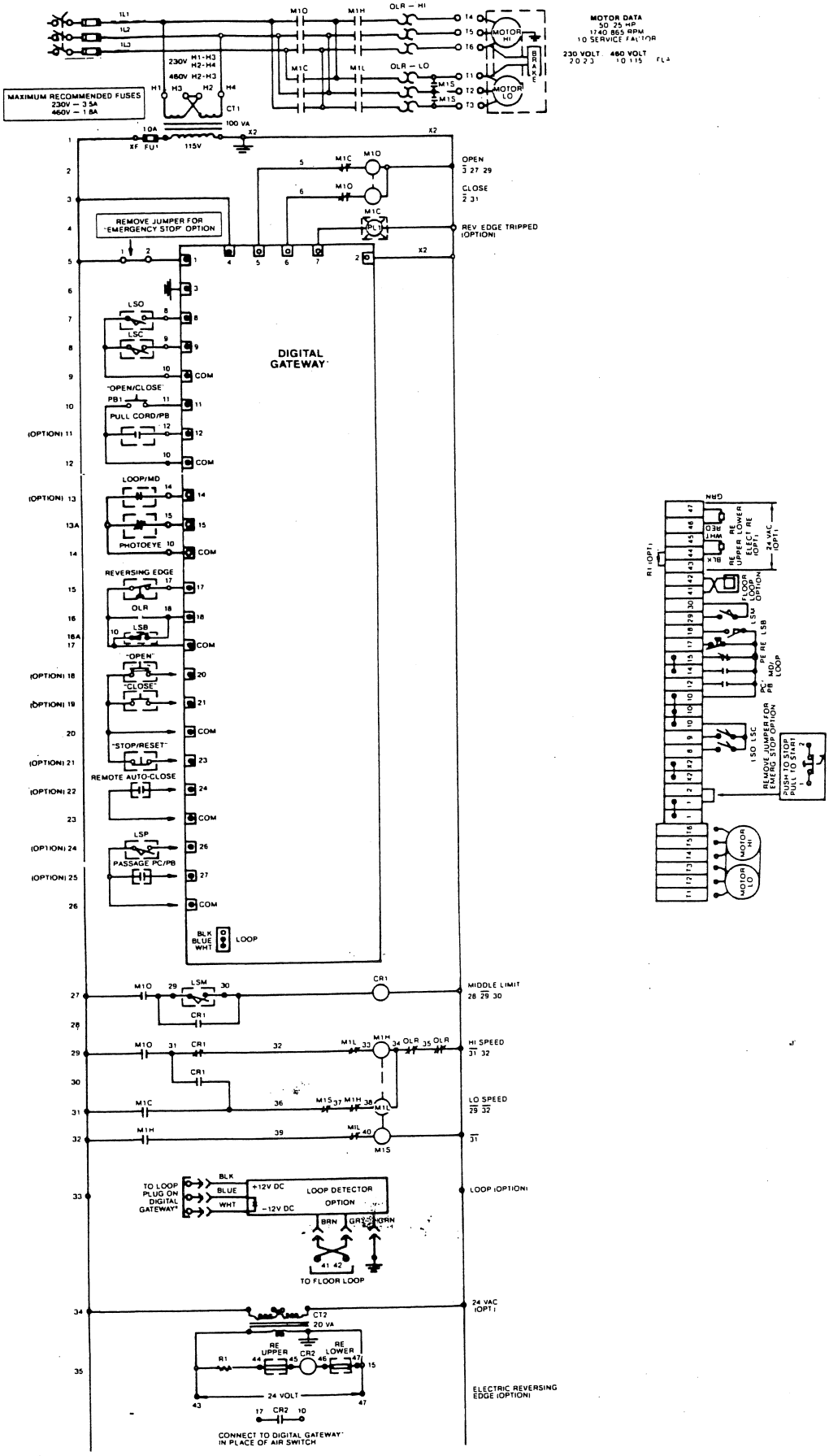
12.6 To turn the desired option on, momentarily press the Close Time Up Arrow button. The display should read "X On." To turn an option off, press button again to read "Off."

12.7 When the desired options have been selected, press and release the Close Delay Up Arrow button. The display will then read "HELLO." The Digital Gateway® is now ready for normal operation and the selected options have been permanently stored in memory.

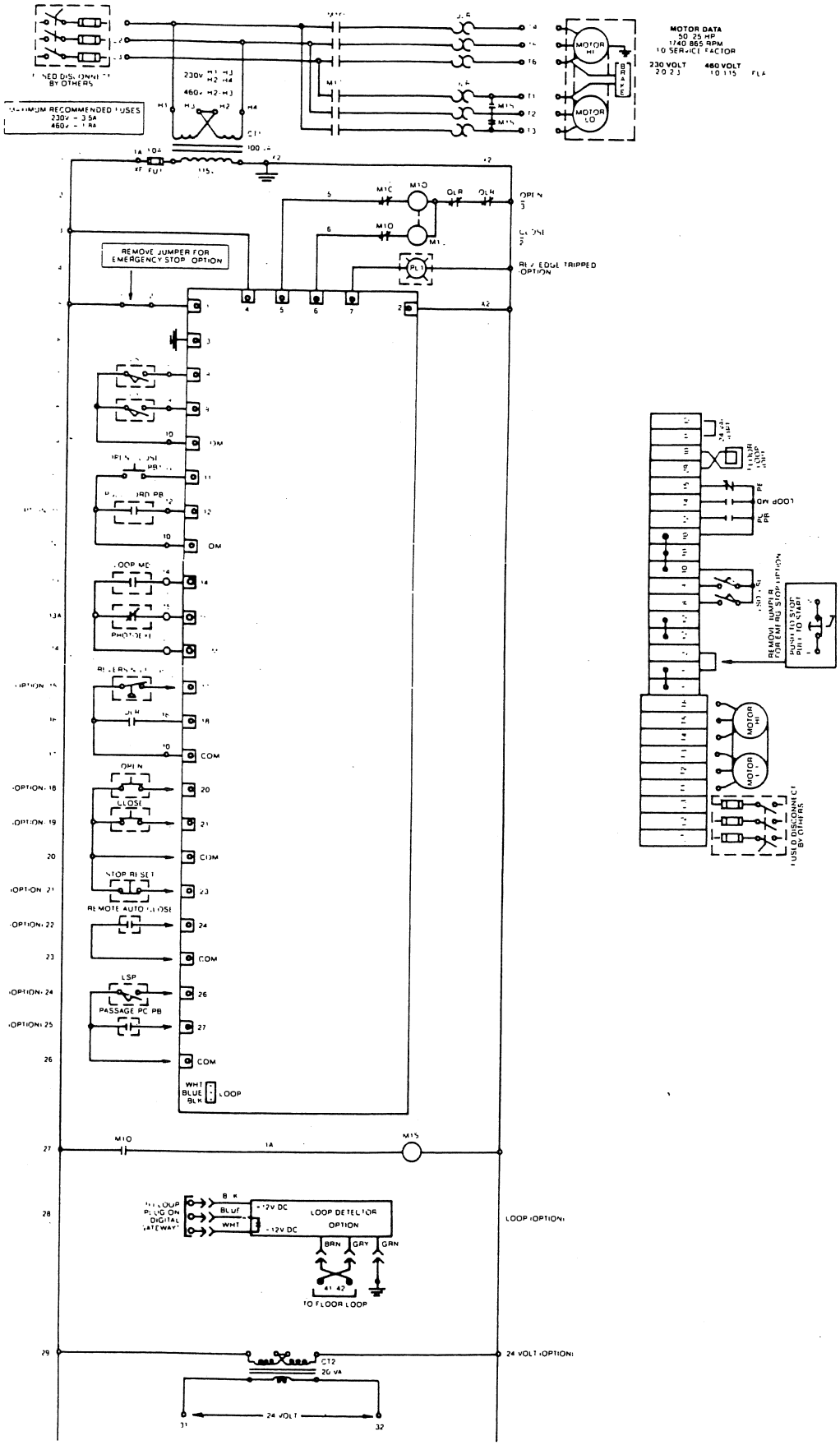
ELECTRICAL SCHEMATIC
FAST-SEAL®, 1 SPEED
DIGITAL GATEWAY® E3010C



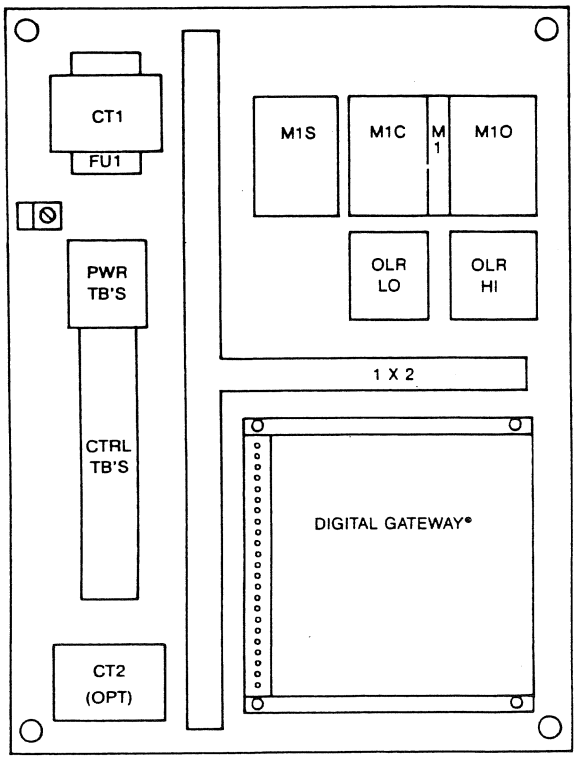
ELECTRICAL SCHEMATIC
FAST-SEAL", 2 SPEED
DIGITAL GATEWAY® E5027

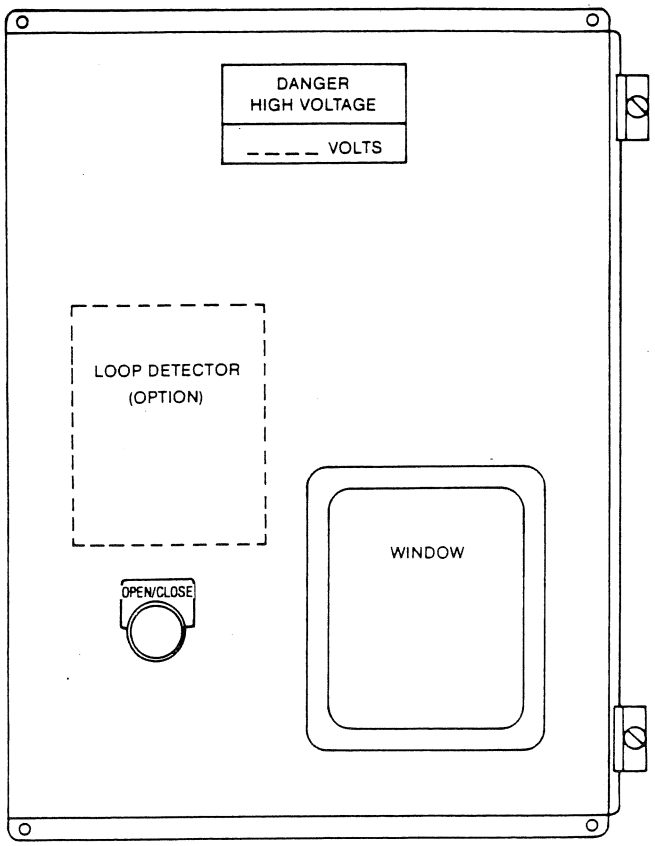


ELECTRICAL SCHEMATIC
FAST-FOLD, 2 SPEED
DIGITAL GATEWAY E2011C



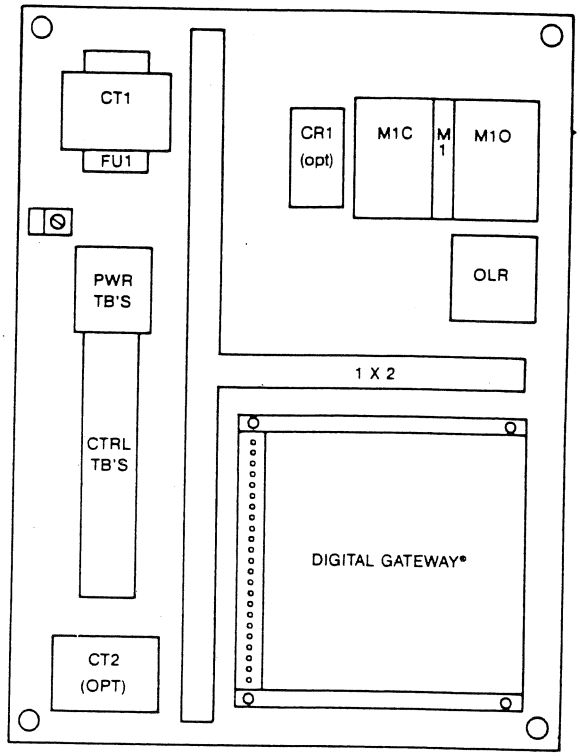
FAST-FOLD®2 SPEED
DIGITAL GATEWAY® E2011C

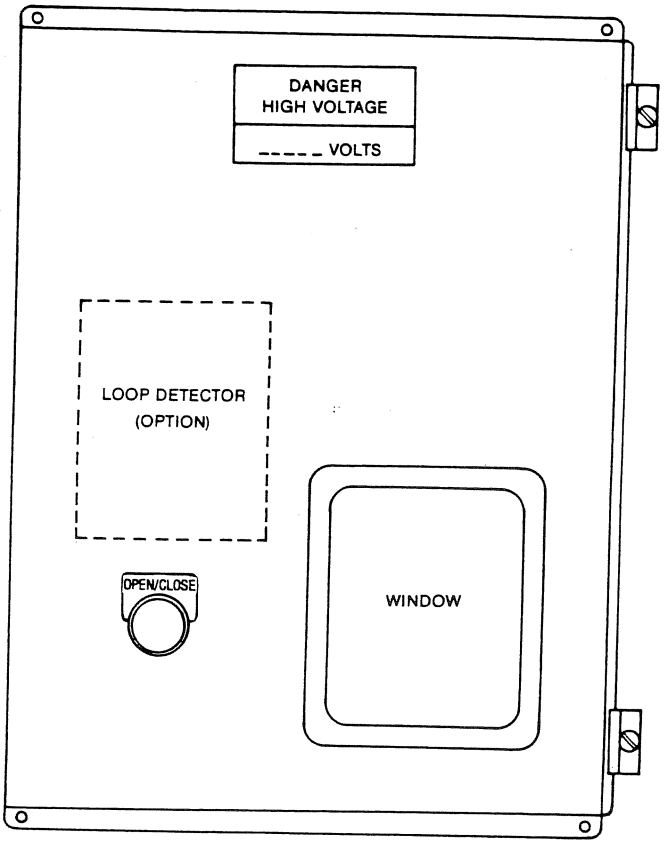




QTY.	ITEM	RYTEC NO.	DESCRIPTION
1 each	M10/M1C/M1S	0-011-201	Contactor
1	MI	0-011-202	Mechanical/Electrical Interlock
2	OLR	0-011-20*	Overload (*sized for motor)
1	DLC	0-011-633	Digital Gateway®
1	PB1	0-011-214	Pushbutton
1	CT1	0-011-215	Control Transformer
1	FU1	0-011-217	Fuse
23	TB	0-011-220	Terminal Blocks
	LOOP (OPT)	0-012-550	Loop Controller
	CT2 (OPT)	0-011-216	Transformer

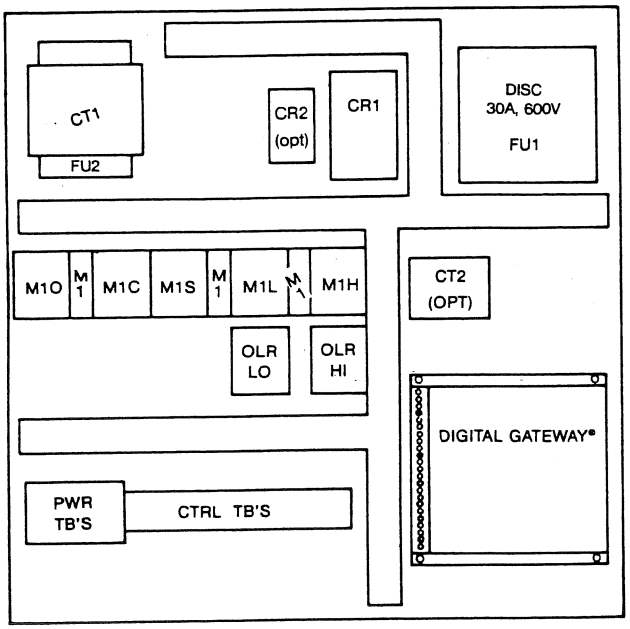
FAST-SEAL™, 1 SPEED
DIGITAL GATEWAY® E3010C

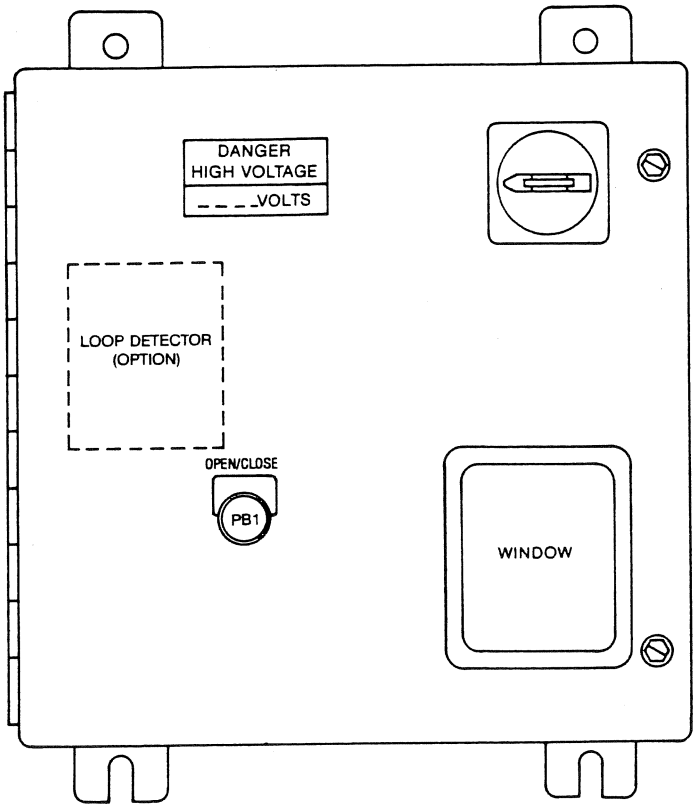




QTY.	ITEM	RYTEC NO.	DESCRIPTION
1 each	M10/M1C	0-011-201	Contactor
1	M1	0-011-202	Mechanical /Electrical Interlock
1	OLR	0-011-20*	Overload (* sized for motor)
1	DLC	0-012-633	Digital Gateway®
1	PB1	0-011-214	Pushbutton
1	CT1	0-011-215	Control Transformer
1	FU1	0-011-217	Fuse
28	TB	0-011-220	Terminal Block
	Loop (Opt)	0-012-550	Loop Detector
	CT2 (Opt)	0-011-216	Transformer 24V
Elect.	R1	0-011-219	Resistor
RE (Opt)	CR1	0-011-210 0-011-211	Relay with Socket

FAST-SEAL™, 2 SPEED
DIGITAL GATEWAY® E5027





QTY.	ITEM	RYTEC NO.	DESCRIPTION
1 each	M10/M1C	0-011-201 0-011-376	Contactor with Aux Contact
1 each	M1H/M1L/M1S	0-011-201	Contactor
3	M1	0-011-202	Mechanical/Electrical Interlock
2	OLR	0-011-20*	Overload (* sized for motor)
1	DLC	0-012-633	Digital Gateway®
1	CR1	0-011-209	Control Relay
1	PB1	0-011-214	Pushbutton
1	CT1	0-011-215	Control Transformer
1	FU1	0-011-217	Fuse
30	TB	0-011-220	Terminal Blocks
	Loop (Opt)	0-212-550	Loop Dectector
	CT2 (Opt)	0-011-216	Transformer 24V
Elect.	R1	0-011-219	Resister
RE (Opt)	CR2	0-011-210 0-011-211	Relay with Socket
1	Disc	0-011-531	Disconnect, 30A, 600V
3	FU1	0-011-538	Fuse, 600V