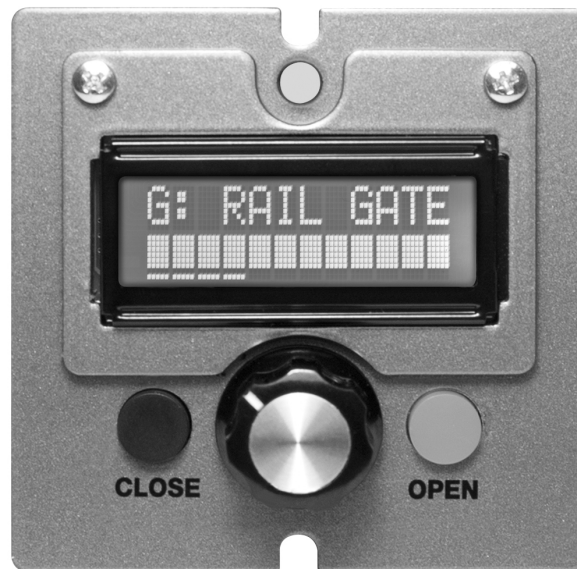# VGC-V2
# Operating, Customizing
# And Troubleshooting

**PATENT PENDING**

**VGG operator's control panel shown actual Size**

Other manuals available for the VGC are:

*VGC Pre-Installation Manual*
An overview of the VGC components, tips and suggestions for electricians, millwrights and project coordinators.

*VGC Electrical Wiring and Setup Manual*
Specifications, installation requirements, setup instructions and trouble shooting the installation.

*Converting an Electric Gate to VGC Control*
Mounting sensors on our standard limit switch electric gate to convert it to a VGC drive.

*Operating The VGC From A PLC*.
The VGC can be operated from a
PLC by using our UIO. The UIO will interface a PLC to as many as 20 VCG gates and/or EDI distributors. Programming instructions are included in this manual.

This manual covers operator instructions for operating the VGC gate from the Operator Control. It assumes the gate has been installed, wired and setup so that normal positioning of the gate may begin. See the separate *VGC Electrical Wiring and Setup Manual* if the installation is incomplete.

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## VGC CONTROL LAYOUT
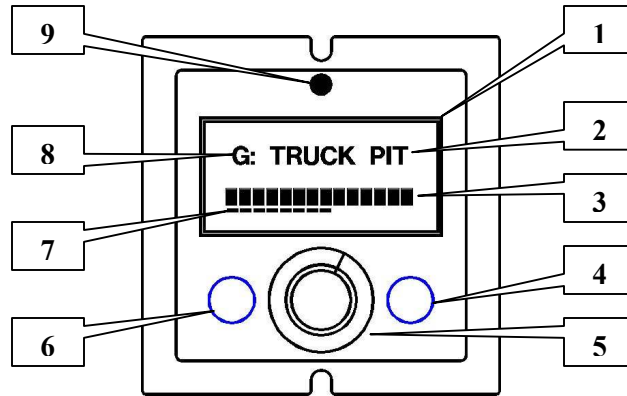


The diagram above shows the function of the controls and the meaning of the text shown in the LCD display.

1. LCD information screen. The display above shows the potentiometer set to approximately 60% and the gate fully closed.

2. The top line of the display presents the gate name. It is always shown during normal operation. The user can program a gate name up to 9 characters long to replace the default name 'VGC GATE'.

3. The gate position blocks fill the width of the LCD screen from right to left. [1]

4. The OPEN button opens the gate to the potentiometer setting. It has no operational function once the gate is open.

5. The potentiometer presets the open position if the gate is closed. If the gate is not closed, the gate will follow the potentiometer position.

6. The CLOSE button will close the gate from any non-closed position, The gate will not open again until the OPEN button is pressed, regardless of the potentiometer setting.

7. The potentiometer bars show the potentiometer setting from left to right. [1]

8. If the UIO interface is used for PLC communication, the network address character is also shown on the top line. The network address is field programmable.

9. When the gate is closed the LED will be green. When not closed, the LED is red.

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[1] The second line of the display can be changed to a numeric format using the Control Menu described later in this manual.

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# OPERATING THE GATE

When the gate is closed, the potentiometer position may be changed but the gate will not move. Once the OPEN button is pressed, the LED will turn red and the gate will open to the potentiometer setting. The gate position indicator blocks will retract to the right as the gate opens, to meet the position of the potentiometer.

The gate position will now follow the potentiometer setting as it is changed.

Pressing the CLOSE button will shut the gate and turn the LED green. It will not move again until the OPEN button is pressed.

If an obstruction in the gate is encountered while the gate is moving, the VGC will attempt corrective action. It does this by backing up a bit from the direction it was going and then returning in the original direction to complete its travel to the intended position. The back and forth movement may free the obstruction. It will repeat this action up to 3 times and then issue a screen message indicating a fault. Refer to the troubleshooting section for tips on how to recover from the error.

On power-up, the VGC will close the gate if it is open.

As an example, refer to the screen views below. The top row shows the display in GRAPHIC mode (default) and the bottom row shows it in NUMERIC mode. Either mode may be selected using the Control Menu described later in this manual.



**Graphic Mode**

**Numeric Mode**

Screen 1          Screen 2          Screen 3
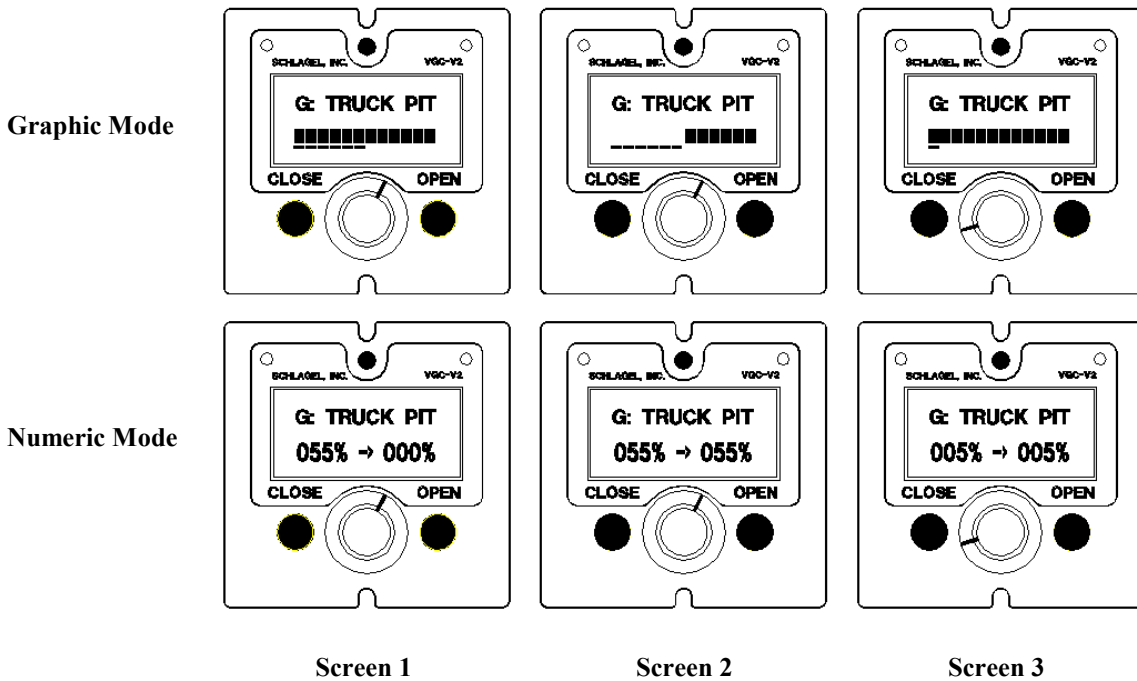
**Screen 1**: The gate is closed, the LED is green and the potentiometer is set to 55 percent. You can rotate the potentiometer and the bottom small indicator bars or percent value will change but the gate will not move. This is only pre-setting the open position.

**Screen 2**: The OPEN button was pressed, the LED turned red and the gate moved to meet the potentiometer setting.

**Screen 3**: The potentiometer was rotated to 5 percent and the gate moved to follow it. The LED is still red.

At any time the CLOSE button may be pressed, closing the gate, turning the LED green and preventing any further gate movement until the OPEN button is pressed.

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# CONTROL MENU

A menu function on the display allows access to certain functions that perform maintenance, gate operational information and troubleshooting help.

To access the menu, close the gate, Press and hold both the CLOSE and OPEN buttons. After 2 seconds the top line of the display will show 'CONTROL MENU'. Release both buttons.

The top line displays 'SELECT JOB'. You can now select the function you want by turning the potentiometer until the desired function is shown on the bottom line of the display. The current menu items are:

- **EXIT** – Exit the control menu and return to normal operation.

- **AUTO RUN** - Repeatedly move the gate to random locations for testing.

- **NET ADDRESS** - Set the network address to allow network communication. The special character "#" for Relay Mode is available at the fully clockwise position of the potentiometer.

- **GATE NAME** - Create the gate name to be shown on the display.

- **DISPLAY MODE** – Change between GRAPHIC potentiometer and gate position display (default) to NUMERIC display

- **LEARN MODE** - Force the Learn Mode routine to run.

- **MANUAL MODE** - Put the gate into manual mode for moving the gate back and forth with the pushbuttons.

- **OPERATION** – Change between VARIABLE (default) to OPEN/CLOSE gate operation (V1.26 and later).

  OPEN/CLOSE operation is used when only full open or fully closed gate positions will be used, such as intermediate conveyor discharge gates. In this case the potentiometer is disabled and only the OPEN and CLOSE buttons are functional. PLCs that take control of the VGC continue to have percent positioning capability.

Turn the potentiometer until desired function is shown, press the OPEN button and that function will begin. Pressing the CLOSE button will complete and save the action for most functions.


**Example**: Changing the gate name**.**

By default, the gate name was set to 'VGC GATE' when the VGC control was installed.

To change the name use the Control Menu to navigate to GATE NAME and press the OPEN button. The existing gate name will be erased and 'GATE NAME' will appear on the top line of the display. The beginning of the bottom line will have a single character shown. This character will change as you turn the potentiometer.

When you have the desired character shown for the first letter of the gate name, press the OPEN button. That character is saved and you will now be selecting the second character of the name, using the potentiometer, and so on for a maximum of 9 characters. The characters you can select from are 0-9, <space>, A-Z.

**Tip:** Wait a moment or so after finding the desired character before pressing the OPEN button to make sure the character is stable on the screen.

When finished with the name press the CLOSE button to return to normal operation. The new name is now displayed on the top line of the display.

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# TROUBLESHOOTING

A VGC system consists of the VGC Operator Control, a motor power module and a barrier relay. These may be located in diverse areas of the facility. Determining the cause of the problem may require attention to any or all of these areas. The two most common problems are the loss or interruption of power or a mechanical problem at the gate.

The error message on the display is helpful in resolving the problem.

> **Fatal Error -** Three attempts were made to move the gate but were unsuccessful. Most likely this is caused by mechanical interference in the gate but could also be an improperly adjusted wheel sensor on the gear reducer.

> **Closing Error -** This happens after the CLOSE switch has been pressed, or the power is restored, but the gate was unable to find the closed position. This too is usually caused by mechanical interference in the gate but it may also be that the gate closed sensor is improperly adjusted.

Press the CLOSE switch when ready to try again.

It may be helpful to manually move the gate back and forth for testing and inspection. Do this by using the Control Menu to select Manual Mode. The gate may then be intermittently moved using the pushbuttons.

If the display is lit but it is blank, there may have been a severe power disruption and just repowering the control may fix the problem. Remember that a reset or restoring power will close the gate if mechanically possible so make sure it is safe to do so.

If that does not fix the problem a qualified maintenance person should look at the gate drive and sensors. Sensor adjustment and associated testing is discussed in the installation manual.

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# RELAY MODE OPERATION  (VGC-V2)

VGC Relay Mode is used when opening and closing of the gate is performed by an external users relay and the open position is determined by the setting of the VGC control potentiometer. [2]

A pair of wires is run from terminals 1 and 5 of the 6 position screw terminal on the VGC control to the N.O. contact of the customer relay (see diagram below).

When this contact is open the gate will close and remain closed.

When the relay contact closes, the gate will open to the position set by the VGC potentiometer. The gate will follow the potentiometer as long as the relay contact remains closed.

When the relay contact opens, the gate will close. The setting of the potentiometer may be changed at this time but the gate will not open to the potentiometer position until the relay contact closes again.

If it is desired to also run the gate manually from the VGC control, the optional customer supplied toggle switch may be installed as shown in the figure below. When this toggle switch is closed, the gate may be set to any position, including fully closed, by using the VGC potentiometer. The VGC buttons are disabled and not used in this mode.
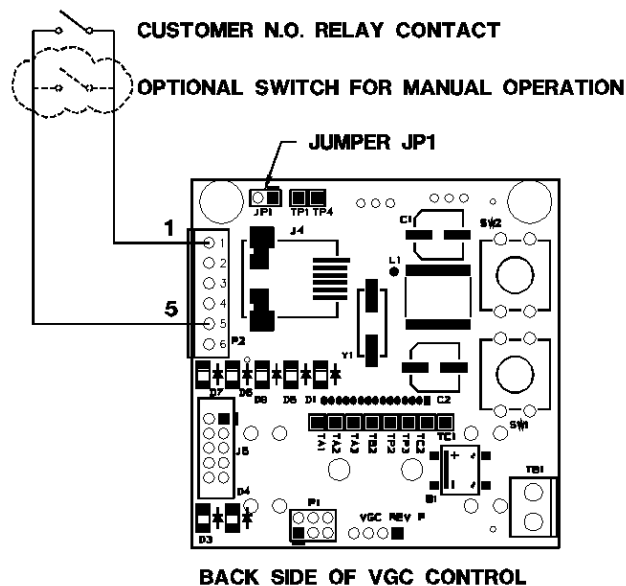


**VGC** Relay Mode wiring.

The wiring between the customer relay and the VGC control should be 24 ga. or heaver. Please contact our technical support group when a wire length greater than 50' is required.

> **Important:** Relay Mode must be turned on after gate installation using the VGC Menu and setting the network address to the special character "#". See the Control Menu section in this manual for setting the network address.

[2] **VGC firmware must be V1.21 or greater. Firmware is field upgradeable. Jumper JP1 must also be installed. Contact us for more information.**

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# NETWORK OPERATION

Network interfacing for PLC control of the VGC gate is covered in other manuals as referenced on the front cover of this manual. The intent of this section is only to cover the influence of the PLC on the VGC Control from the gate operator's standpoint.

When the PLC is only monitoring the gate, the gate operator can use the gate at will as explained in detail in this manual. The operator will have no indication that the PLC is monitoring the VGC gate.

Once the PLC takes control of the VGC the story changes. The LED, which up to this point was red or green, now turns orange indicating PLC now has control. The small bars at the bottom of the graphic display then show the PLC requested position, not the potentiometer position. The PLC has the same effect when the display is in numeric display mode. The gate operator can see all moves performed by the PLC but is unable to change the position of the gate.

Consult with your PLC integrator to understand how and when control should be transferred.

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## VGC Specifications

| VGC Drive Components | |
|---|---|
| Motor | .5 HP, 1750 RPM, 220 Volt 3 Phase 56 C-Face |
| Gear Reducer | 100:1 Worm gear, 1" dia. adjustable clutch driven shaft |
| Inverter input | 120 Volt, single phase. Full load current draw 9.6 Amp |
| **Gate Speed - Direct Shaft Drive, 11 Tooth Pinion** | |
| Gate travel speed | 2.4 In/Sec [1] |
| Gate force | Adjustable 0 to 1800 Lbs. (See Note.) |
| Travel | 1in. to over 100 ft. |
| **Operator Control Panel** | |
| Size | 3" x 3" x 1" deep |
| Power | Supplied by the inverter within 10 wire ribbon control cable |
| Display | 12 character, 2 line  LCD, Multicolored LED |
| Operators | OPEN & CLOSE pushbuttons, Positioning potentiometer |
| .Operating Temp. | 0° - 100° F Tested range. [2] |

Note: **1** Roller chain reductions may be used to increase force at the cost of speed.
    **2** LCD screen update slows down below 32° F but gate operation is not affected.