

# Operating Instructions

**VACUUM RESEARCH**™ ThrottleMaster™

Throttle Valve Positioner



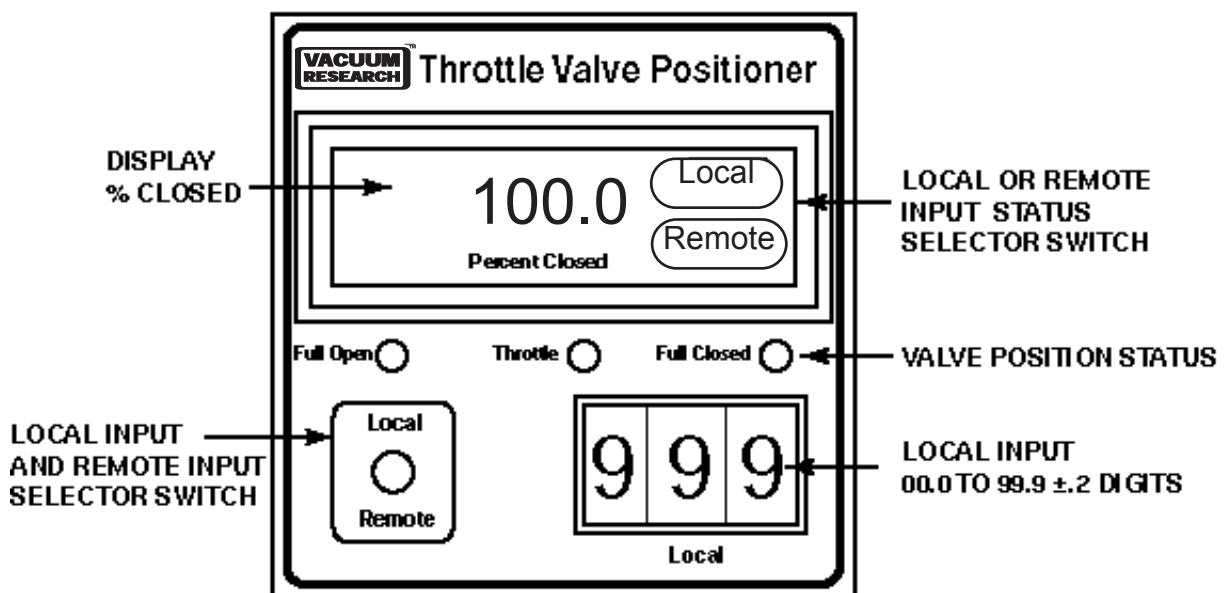
## Introduction

The Throttlemaster™ positioner/indicator drives a fast response servo motor to position the valve's gate carriage assembly from 0 to 100% of full travel using either a 0 to 10 vdc or a 4 to 20 mA signal depending on the design of your system. The motor may be a 1 phase or 3 phase type. Wiring diagrams for connection of the positioner/indicator to both types of motors are shown in this manual.

The rotary position sensor is mounted on the face of the motor housing and is directly coupled to the motor shaft to provide stepless resolution of the valve position. The balancing of the feedback signal positions the gate/carriage assembly along its full range of travel 0 to 100% to +/- .1%.

## Local and Remote Operation

The user can control the valve position from the positioner front panel or from a remote location. The Local / Remote Switch on the front panel of the Throttle Valve Positioner allows the user to select either:



1. "Local" control of valve position using the front panel three digit push button selector on the positioner front panel.

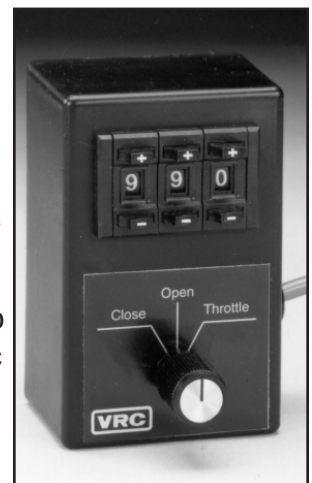
2. With the front panel toggle switch in the "Remote" position the valve will be controlled by a signal connected to the rear panel of the positioner.

a) This signal can be provided by the computer or PLC controlling the vacuum process.

b) The signal can be provided by the optional hand held remote pictured to the right. The hand held remote communication signal may be 0 to 10 vdc or 4 to 20 mA depending on cable length. Longer cable length requires a current loop signal to overcome the inherent cable resistance.

c) For 3 position operation, as is common for sputtering, the signal may come from any manually adjusted 0 to 10 VDC power supply.

d) The signal may be the 0 to 10 VDC output of a PID or other controller with an analog output.



Optional Hand Held Control: Full open, Full close or 0 to 99.9 % of Gate Carriage Travel

## 0 to 10 VDC or 4-20 mA Remote Input

The Remote Input can be either a 0 to 10 VDC or a 4 to 20 mA current loop signal to control the gate position of the valve gate from OPEN (00.0) to CLOSED (100.0). Positioners are shipped from the factory ready to accept a 0 to 10 VDC signal unless otherwise requested. VRC Hand held remote units are configured as 4 to 20 mA.

### Follow the steps below to program your Valve Positioner to operate from a 4 to 20 mA remote signal

1. Unplug the AC line power and black and green connectors from the rear panel of the Throttle Valve Positioner.
2. Using slotted screwdriver, remove 2 screws from the top front and 4 screws from the bottom of the outer case.
3. Slide outer case back towards the rear.
4. Locate the 4 position DIP SWITCH which is located towards the rear, and under the fuse. Configure as shown for 4 to 20 mA.
5. Connect a 20 mA signal to the rear panel terminal and adjust "OFFSET" pot on the rear panel until the display reads 99.9 to 100.0%.

	DIP Switch Number			
	1	2	3	4
0 to 10 Volt DC	OFF	OFF	ON	ON
4 TO 20 mA	ON	ON	OFF	ON

Note: When using a VRC Hand Held Positioner the remote input settings for the dip switch must be set to the 4 to 20 mA settings.

### To return to 0 to 10 Volt signal follow these steps:

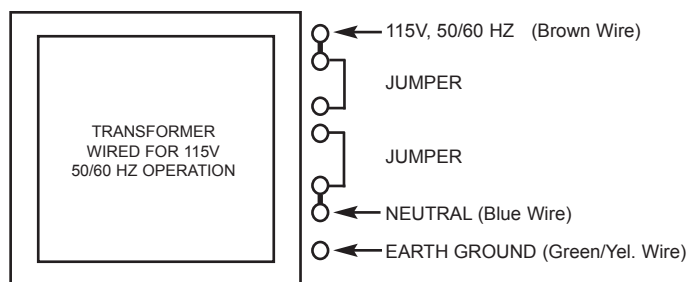
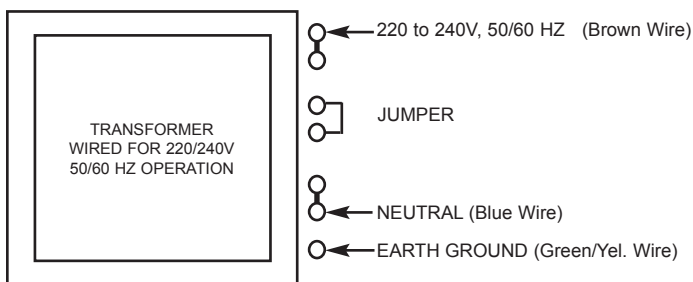
1. Configure the dip switch as shown for 0 to 10 VDC.
2. Connect a 10 Volt DC signal to the rear panel terminal and adjust "OFFSET" so the display reads 99.9 to 100.0%.

## Relay Setpoints

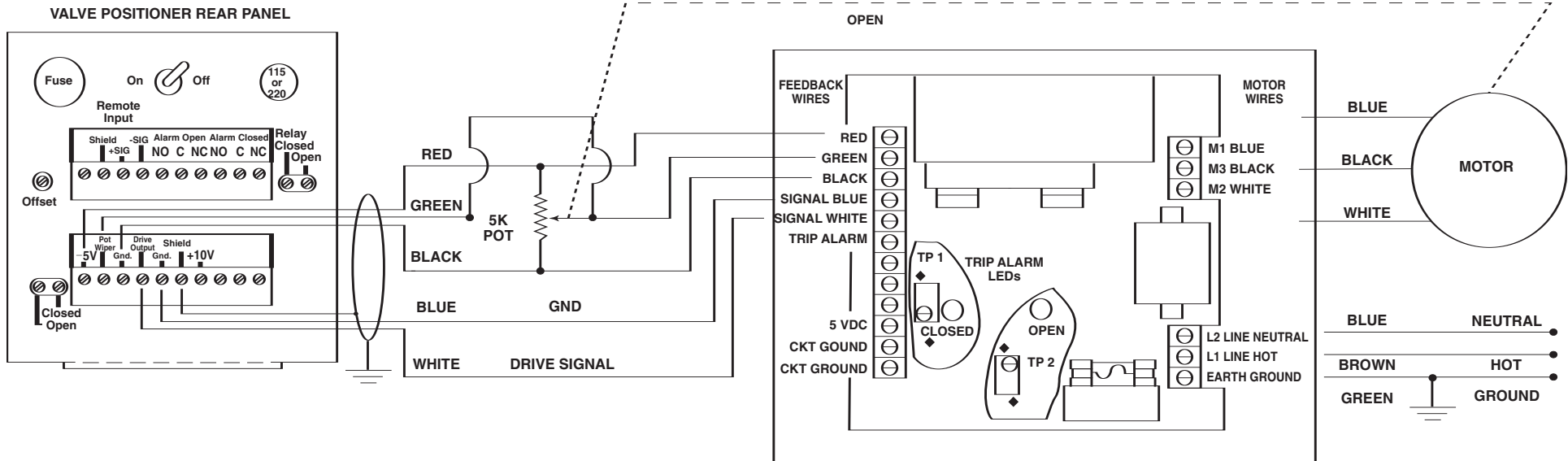
Relay setpoints are adjustable over the entire range from 0 to 100% of valve position travel. Factory settings are 0% for full open and 100% for full closed valve travel. The adjustments are located on the rear panel.

To adjust the setpoints select "Local" with the front panel toggle switch, and with the front panel pushbuttons move the valve to the position at which you wish the alarm relay to change state. Then, slowly turn the rear panel adjustment potentiometer until you hear the relay click. Resume normal operation. Anytime that the valve reaches the value you have selected the SPDT relay will change state.

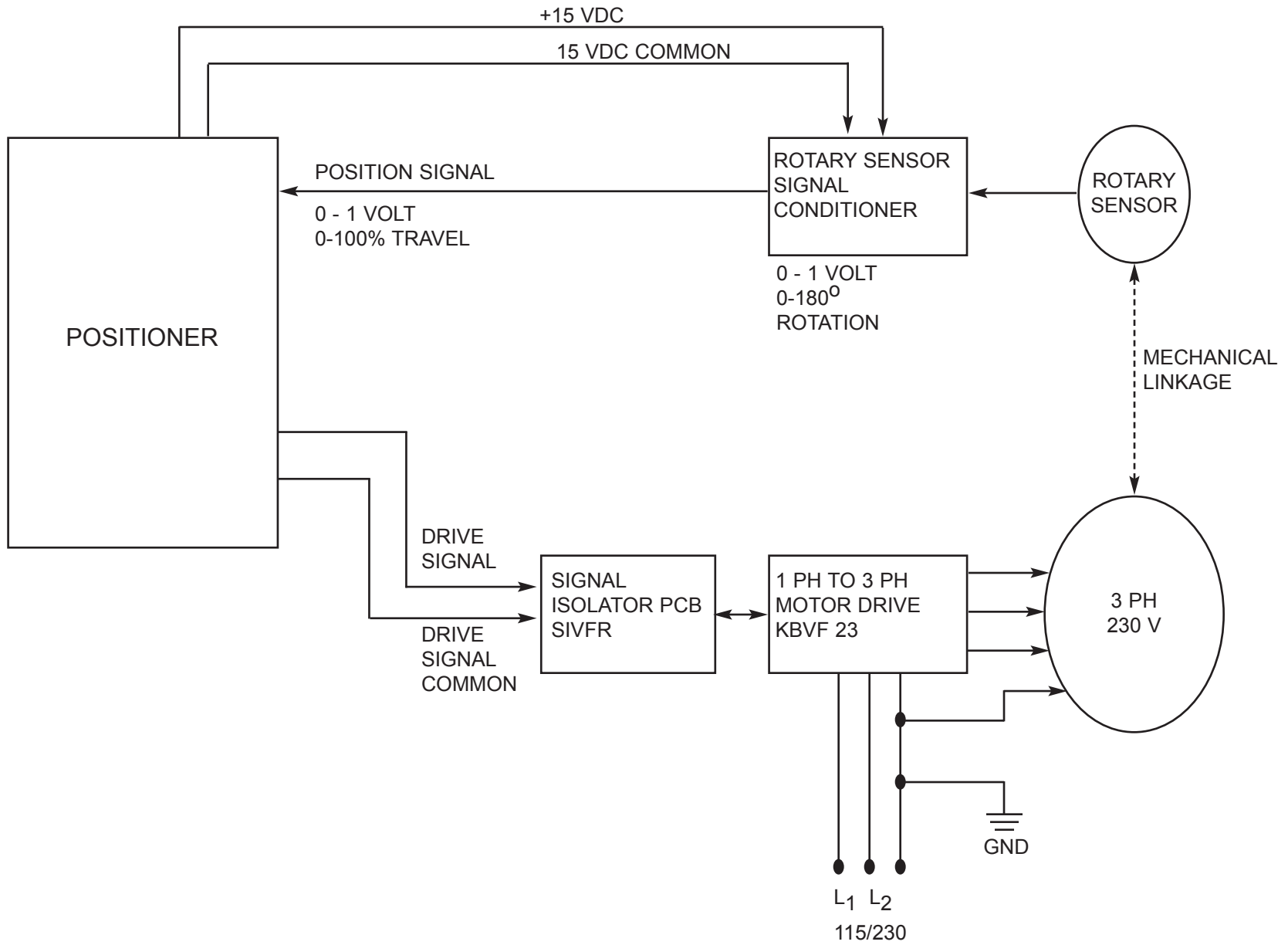
## Valve Positioner 115/220 V Operation (motor voltage must be specified at time of ordering)



# Wiring Diagram for Positioner to SinglePhase Motor



# Signal Block Diagram for Positioner to Three Phase Motor



# Wiring Diagram for Positioner to Three Phase Motor

