



## VK02 I/P MODULE INSTALLATION

### MODULE FUNCTION

The VK02 I/P MODULE converts a Model VP (pneumatic positioner) into a Model VE (electro-pneumatic) positioner. The Model VE Positioner is designed for use in General Purpose Locations, and is not approved for use in Hazardous Locations as classified by the NEC.

**WIRING MUST COMPLY WITH LOCAL CODES AND THE NATIONAL ELECTRICAL CODE (NEC)**

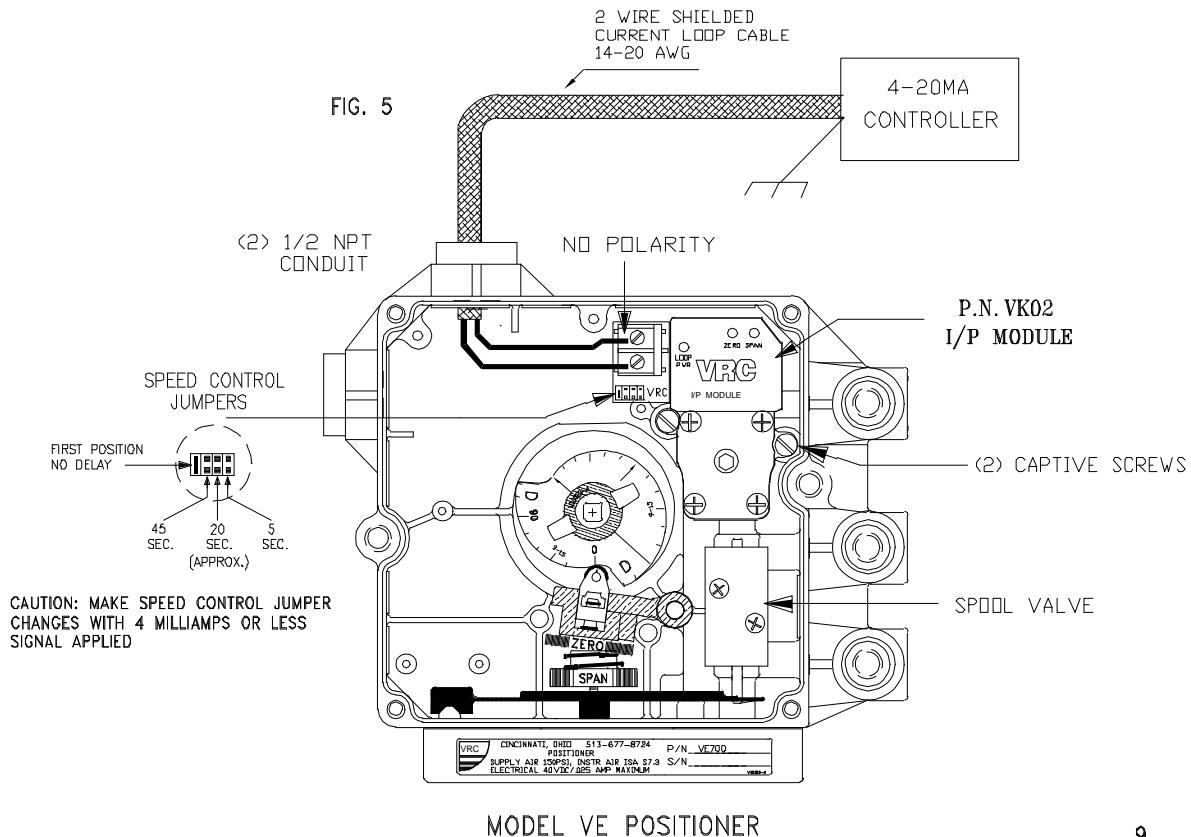
### INSTALLATION PROCEDURE

1. Reference figure 5.
2. Turn off supply air to the Positioner and remove cover.
3. Remove (2) 1/16 NPT pipe plugs located near the SPOOL VALVE.
4. Install (2) o-rings into o-ring glands (where pipe plugs were removed) provided in kit.

5. Install I/P MODULE using (2) captive screws provided.
6. Insure SIGNAL PORT is plugged and sealed using 1/8 NPT pipe plug provided in kit.
7. Terminate field wiring as shown below. No polarity need be observed. The connector is depluggable for wiring ease.
8. Turn on supply air and check calibration.

### SPEED CONTROL JUMPERS

1. The speed control jumpers slow the response of the Positioner to an input signal change.
2. Prior to changing the jumper selection, insure the signal input to the Positioner is set to 4 milli amps or less. **Changing the speed control jumper with more than 4 milli amps applied will cause an immediate change in valve position.**





## VK12 I/P MODULE INSTALLATION TYPE 22/06-65

### MODULE FUNCTION

The VK12 I/P Module changes a Model VP or VE positioner into a Model VI positioner. The Model VI positioner is designed for use in General purpose and Hazardous Locations as defined by the NEC.

### WIRING MUST COMPLY WITH LOCAL CODES AND THE NATIONAL ELECTRICAL CODE (NEC)

#### **WARNING:**

**FOR HAZARDOUS LOCATIONS APPLICATIONS**  
REFERENCE CONTROL DOCUMENTS NO. 900842/900843  
AVAILABLE BY CALLING VRC AT 513-677-8724/FAX 677-8731

### INSTALLATION PROCEDURE

**TOOLS REQUIRED:** Regular slotted screwdriver,  
3/16 hex key, 5/32 hex key (Allen wrenches)

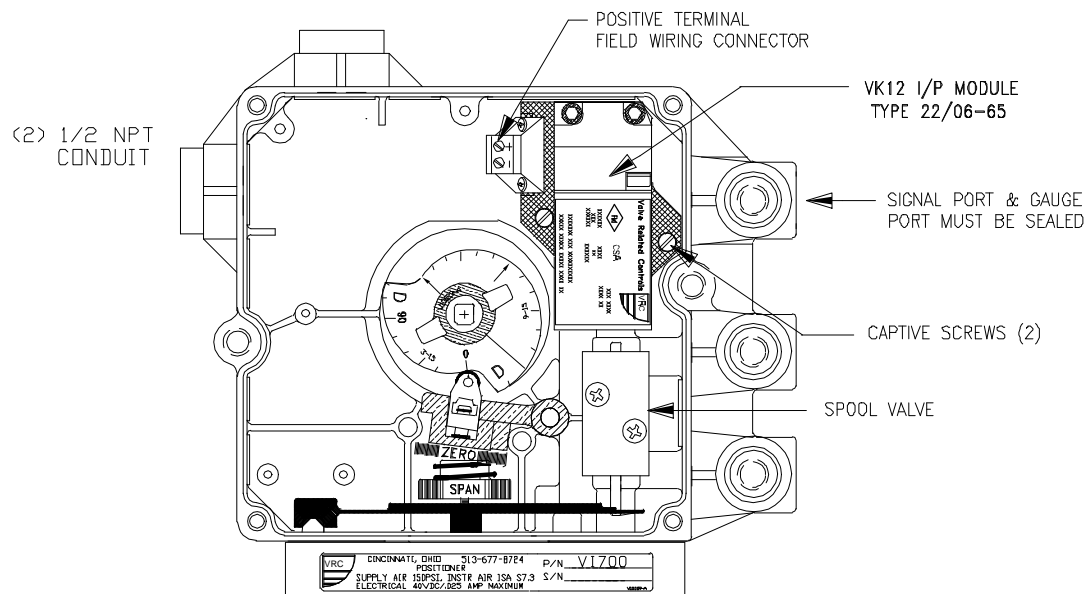
#### **Changing a Model VP into a VI Positioner**

1. Reference figure below.
2. Turn off supply air to the Positioner and remove cover.
3. Remove (2) 1/16 NPT pipe plugs located near the SPOOL VALVE.

4. Install (2) o-rings into o-ring glands (where pipe plugs were removed) provided in kit.
5. Install the VK12 I/P Module using the (2) captive screws.
6. Insure SIGNAL PORT is plugged and sealed using 1/8 NPT pipe plug provided in kit.
7. Terminate field wiring.
8. Turn on supply air and check calibration.

#### **Changing a Model VE into a VI Positioner**

1. Reference figure below.
2. Turn off supply air to the Positioner and remove cover.
3. Remove the VE I/P Module by unscrewing the (2) captive screws.
4. Install the VK12 I/P Module.
5. Insure SIGNAL PORT is plugged and sealed using 1/8 NPT pipe plug provided in kit.
6. Terminate field wiring.
7. Turn on supply air and check calibration.



MODEL VI POSITIONER



## LIMIT SWITCH MODULE INSTALLATION

### MODULE FUNCTION

The LIMIT SWITCH MODULE provides mechanical or proximity switch contacts for sensing Positioner shaft position, typically 0 and 90 degrees.

There are (2) modules available:

- S1 – mechanical switches 2 SPDT
- S2 – proximity switches 2 SPST

The Positioner can be ordered with the SWITCH MODULE and CAMS installed at the factory or S1 and S2 SWITCH MODULE kits are available for easy field installation.

### INSTALLATION PROCEDURE

1. Turn off all power and supply air to the Positioner.
2. Reference Figure 6.
3. Remove the WING NUT and FEEDBACK CAM.

NOTE: Prior to removing the FEEDBACK CAM, make note of the CAM position so as to reinstall it at the same position later.

4. Slide one of the SENSOR CAMS (spline side down) onto the MAIN SHAFT.

5. Slide the SPRING and second SENSOR CAM (spline side up) onto the MAIN SHAFT.

6. Thread the LOCK NUT onto the MAIN SHAFT, (spline side down). Tighten securely.

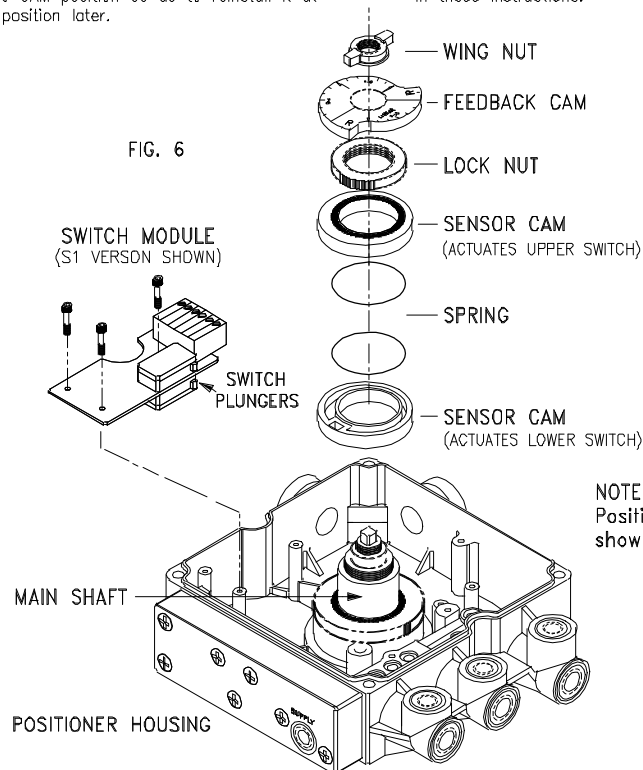
7. Reinstall the FEEDBACK CAM and WING NUT.

8. Install the SWITCH MODULE.

NOTE: Insure the switch plungers (S1 only) clear the SENSOR CAMS prior to tightening the fasteners. **DO NOT OVERTIGHTEN.**

### WIRING MUST COMPLY WITH LOCAL CODES AND THE NATIONAL ELECTRICAL CODE.

1. Attach the field wiring to the LIMIT SWITCH MODULE using the labels provided at the terminal block as a guide. Also SWITCH WIRING DIAGRAMS are included in these instructions.





## LIMIT SWITCH MODULE ADJUSTMENT PROCEDURE AND WIRING DIAGRAMS

### ADJUSTMENT PROCEDURE

This procedure assumes the Positioner is mounted on an actuator and the FEEDBACK CAM is at 0 degrees when 3 psi signal pressure is applied and rotates to 90 degrees when 15 psi signal is applied.

Each switch is independently adjusted by changing the appropriate SENSOR CAM position on the MAIN SHAFT.

**MATERIAL REQUIRED:** Ohmmeter or continuity tester.

1. Connect the ohmmeter to the LOWER switch terminals.

NOTE: When S1 mechanical switches are being adjusted, connect the meter to the C (common) and N.O. (normally open) terminals.

2. Turn on supply air and apply 3 psi signal air. (4MA for electro-pneumatic units)

3. Adjust the LOWER switch by lifting and rotating the LOWER SENSOR CAM until the switch indicates ON at the ohmmeter.

4. By increasing then decreasing signal air pressure insure the switch turns OFF as the actuator moves away from 0 degrees, then turns back ON as the unit rotates back toward 0 degrees.

5. Repeat steps 2, 3 and 4 as needed.

6. Change the meter connections to the UPPER switch terminals.

NOTE: When S1 mechanical switches are being adjusted, connect the meter to the C (common) and N.O. (normally open) terminals.

7. Apply 15 psi signal air.

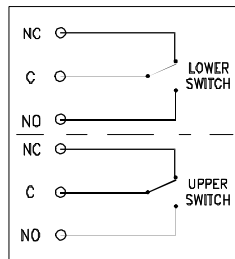
8. Adjust the UPPER switch by depressing and rotating the UPPER SENSOR CAM until the switch indicates ON at the ohmmeter.

9. By decreasing then increasing signal air pressure, insure the switch turns OFF as the actuator moves away from 90 degrees, then turns back ON as the unit rotates back toward 90 degrees.

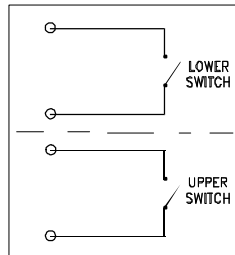
10. Repeat steps 7, 8 and 9 as needed.

11. As a final check, rotate the actuator throughout its range and verify the limit switches are set properly.

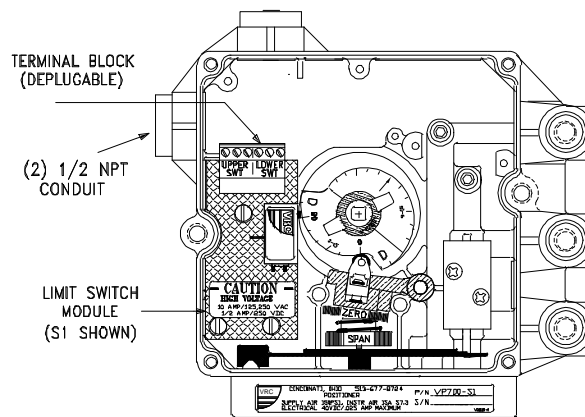
S1 LIMIT SWITCH MODULE  
WIRING DIAGRAM



S2 LIMIT SWITCH MODULE  
WIRING DIAGRAM



POSITIONER WITH MODULE INSTALLED



MODEL VP700-S1



## T1 4-20 MILLIAMP TRANSMITTER MODULE INSTALLATION AND CALIBRATION

### MODULE FUNCTION

The T1 TRANSMITTER MODULE is designed to give a 4-20 milliamp linear output signal with 0-90 degrees Positioner shaft rotation. The unit is environmentally sealed and loop powered. The T1 transmitter is designed for use in General Purpose Locations and is not approved for use in Hazardous Locations as classified by the NEC.

**WIRING MUST COMPLY WITH LOCAL CODES AND THE NATIONAL ELECTRICAL CODE (NEC)**

### INSTALLATION PROCEDURE

1. Reference figure 7.
2. Rotate the Positioner shaft to the 0 degree point.

**NOTE:** Installation into a VRC model VE Positioner (electro-pneumatic) requires the I/P module be removed and reinstalled after the Transmitter has been installed.

3. Install the TRANSMITTER MODULE into the Positioner with the MODULE GEAR ARROW pointed at the Positioner MAIN SHAFT.
4. Before completely tightening the (2) captive fasteners, push the MODULE toward the MAIN SHAFT to fully engage the two gears. A loose engagement of the two gears will cause poor MODULE performance. Tighten the fasteners when the gears are fully engaged. **DO NOT OVERTIGHTEN.**

5. The MODULE has a "depluggable" wiring terminal. Pull the terminal plug loose and terminate field wiring. **NO POLARITY NEED BE OBSERVED.** Reinstall the terminal plug. The LED will light when power is applied.

### CALIBRATION

1. With the Positioner at the 0 degree point on the FEEDBACK CAM, adjust the MODULE "ZERO" pot for 4 milliamp output.
2. Rotate the Positioner to the 90 degree point by applying 15 PSI signal pressure or 20 milliamp signal to the I/P MODULE (VE model).
3. Adjust the TRANSMITTER MODULE for 20 milliamp output by adjusting the SPAN pot.
4. Repeat steps 1 thru 3 as necessary due to interaction of ZERO and SPAN adjustments.

**NOTE:** The output from the TRANSMITTER MODULE is jumper selectable to give a 20 to 4 milliamp output signal with 0 to 90 degree rotation. Simply move the two (2) MODULE jumpers to the "R" position and recalibrate the ZERO pot.

**NOTE:** For Reverse acting applications, refer to Fig. 7A for proper orientation of the Transmitter Module gear. The Jumpers must be moved to the "R" selection also.

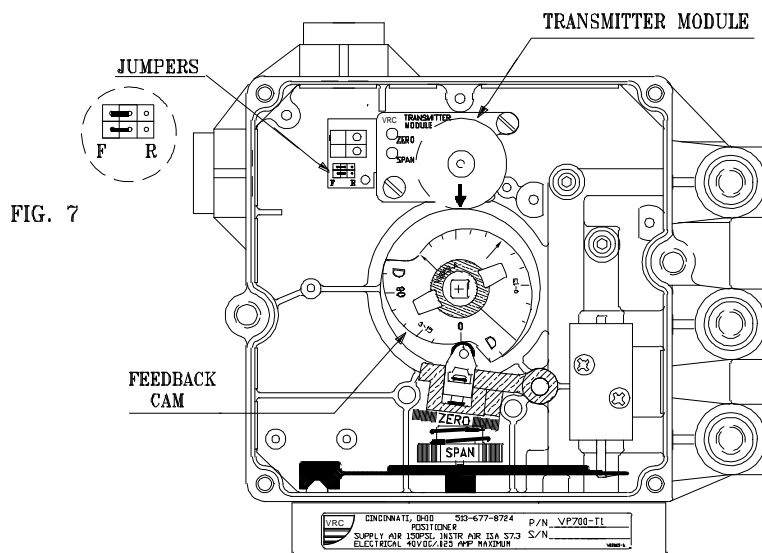


FIG. 7

POSITIONER MODEL VP700-T1

### ORIENTATION OF TRANSMITTER FOR REVERSE ACTING

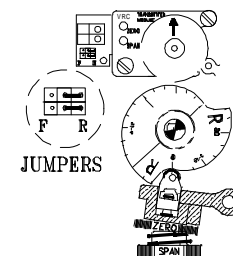


FIG. 7A