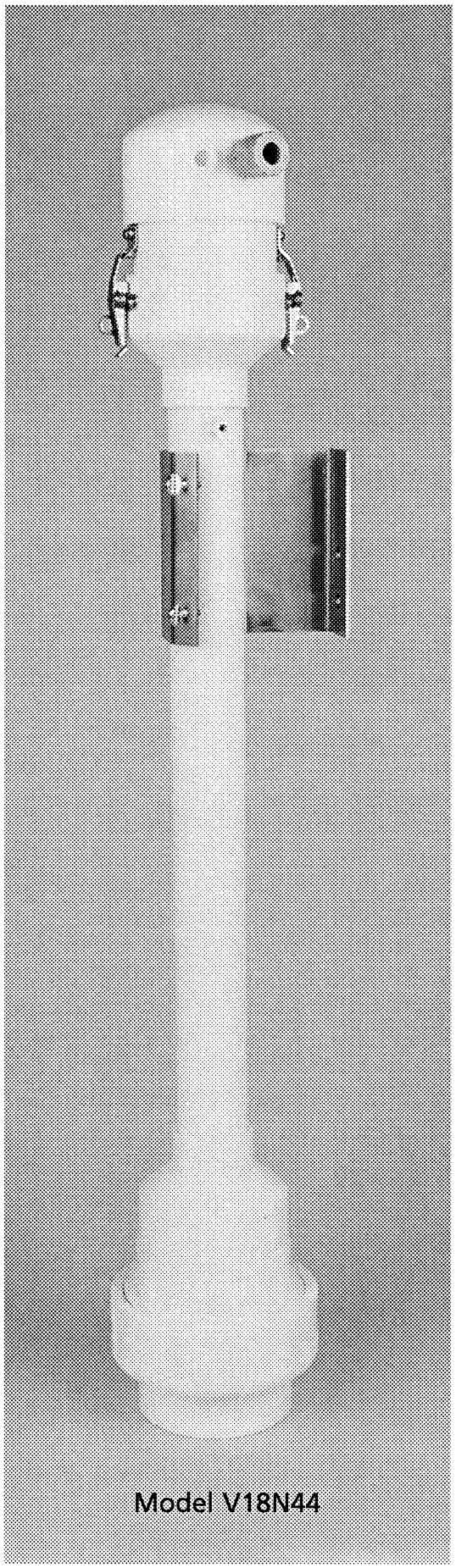


Model V18N44

VPAC™

Operation & Maintenance Manual

Pressure Activated Linear Control Switch

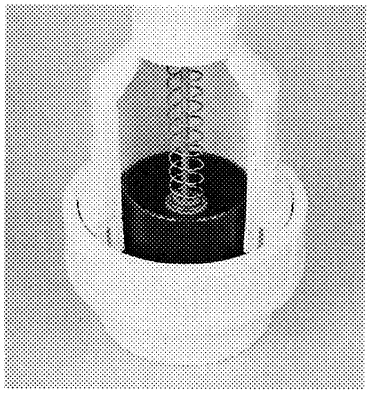
CSI controls

Getting Started Using Your VPAC

Congratulations! You now own a VPAC; an innovative and reliable pressure activated linear control switch for your liquid level control needs.

The housing is made completely of non-corrosive materials, and the operation is not affected by turbulent conditions, grease or floating debris.

Whether this is a new installation, or you are replacing existing float switches, we believe you'll find the VPAC is easy to install and maintain.



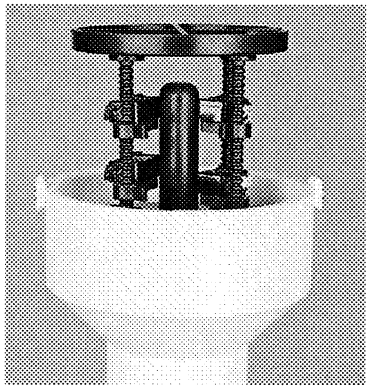


Figure 1

The Concept

The VPAC is compact and works within its own diameter, requiring no lateral movement. The key to its unique operation is in the "Rolling Diaphragm" assembly. The Rolling Diaphragm Assembly consists of a durable Nitrile® diaphragm, push-cup and load spring.

While the housing of the VPAC remains stationary, increases in the liquid level exert pressure on the "Rolling Diaphragm" and push-cup, which, in turn, drives a piston through a series of adjustable switches located in the head of the unit. As the liquid level decreases the "Load Spring" gradually returns the "Rolling Diaphragm" to the neutral position. In addition the tension of the "Load Spring" determines the overall diaphragm/piston travel to level ratio.

Four Step Installation

The VPAC is quick and easy to install in just four steps.

1. Set the Adjustable Level Switches

The standard VPAC comes complete with 4 adjustable switch assemblies. (Note: Up to 14 switch assemblies can be mounted to the switch track to facilitate multiple functions).

First determine which Model No. VPAC you have. This information is located on the serial tag inside the cap of the VPAC assembly. (Note: V18 = 18" switching range / V42 = 42" switching range). Release the latches, on the top cap of the unit, and remove said cap. (Note: You may notice some resistance in removing the cap due to the O-ring seal. Use of a twisting motion to remove the cap may be required).

With the cap removed, the switch track is readily accessible. It may be removed by gently lifting the assembly parallel with the piston away from the housing. Switch locations may be changed simply by snapping then in or out of the track assembly. (See figure 2) Note: When moving the switch assemblies, be certain to keep the switch orientation as indicated by the arrow in Figure 2 (switch on the top of the snap bracket).

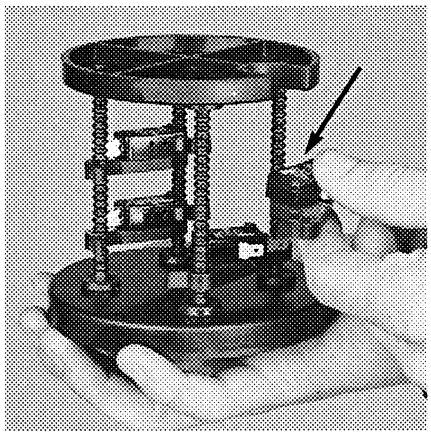


Figure 2

Using Table 1, refer to the "Setting" column that matches the Model No. of your VPAC. Read down the column until you reach the approximate setting, in inches, of the first switching level desired. Follow across the chart to the "Notch Setting" column. This number gives you the notch location, from the bottom of the track assembly, to snap your first switch.

Repeat this procedure for the remaining level switch settings. (Note: Arrange a similar number of switches on each side of the track assembly to avoid unbalanced piston movement).

Make note of wire colors utilized for each switching level for use in connecting switches to your system.

Note: The inches called out in Table 1 refer to Inches of liquid level above top of Union Nut.

2. Recommended Mounting of the VPAC

Special Note: If the rolling diaphragm assembly has been pushed up by some other method than water pressure (someone manually pushing on it) it will be necessary to reset the push cup in the bellofram. This can be done by inserting the VPAC into water to a depth equal to the full measurement range.

Setting Depth Model V18 (inches)	Setting Depth Model V42 (inches)	Notch Setting Number (from bottom of switch track)
7/8	2	1
1 3/4	4	2
2 5/8	6	3
3 1/2	8	4
4 3/8	10	5
5 1/4	12	6
6 1/8	14	7
7	16	8
7 7/8	18	9
8 3/4	20	10
9 5/8	22	11
10 1/2	24	12
11 3/8	26	13
12 1/4	28	14
13 1/8	30	15
14	32	16
14 7/8	34	17
15 3/4	36	18
16 5/8	38	19
17 1/2	40	20
18 3/8	42	21
***	***	22
***	***	23

Table 1

Mounting your VPAC is simple using the stainless steel mounting bracket (sold separately). To determine the recommended location for mounting the bracket, hold the VPAC with the top of the Union Nut at the level which you wish to start measurement. Once this position has been determined mount the bracket approximately 1/3 of the distance from the top of the VPAC. Refer to the "Typical Installation" sketch. Next install the VPAC assembly in the bracket and tighten the bolts. (CAUTION - Bolts should be snug only - Over tightening the bolts could damage the unit). If other means of mounting are utilized do not cut any holes in the housing.

2. Connecting The VPAC To Your System

Connecting your VPAC to an existing system or a brand new system couldn't be easier. The VPAC comes with the switches connected in the normally open contact. If your system requires normally closed contact(s) only one wire will need to be moved. (Refer to figures 3 and 4). Once the switches are wired, simply connect the loose color-coded ends into your control system.

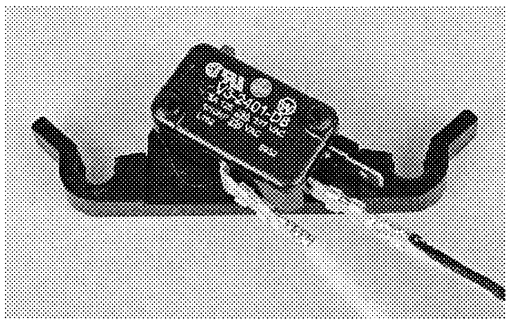


Figure 3
Normally Open Setting

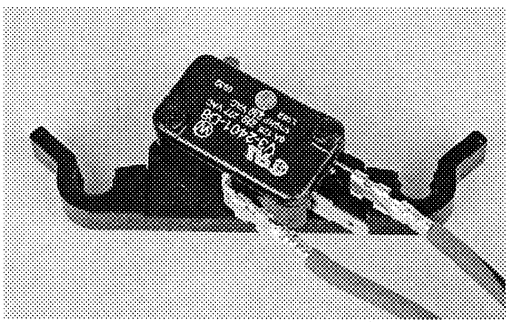


Figure 4
Normally Closed Setting

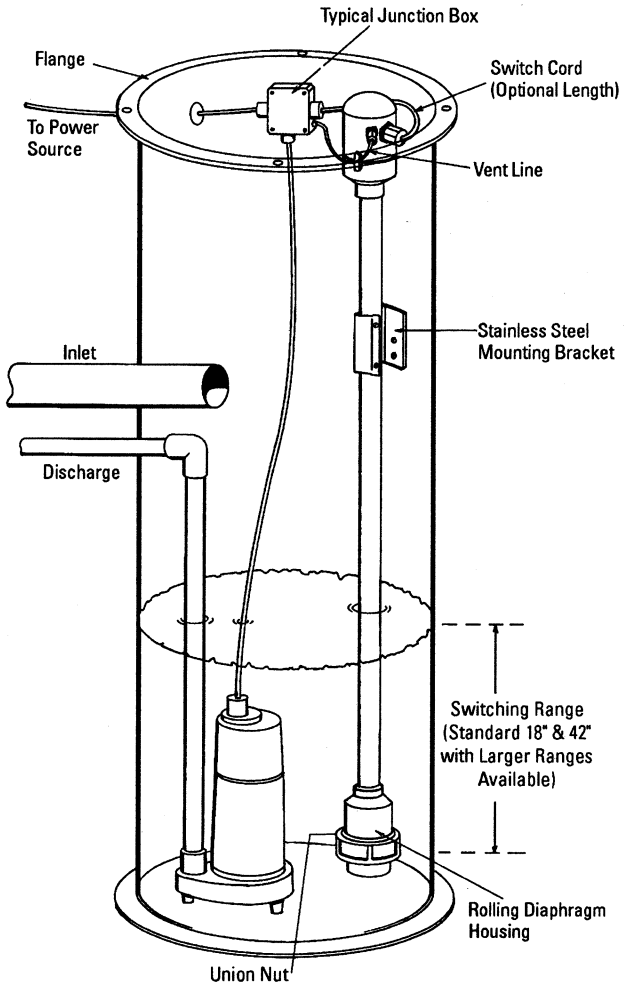
4. Ensuring Proper Venting

Your VPAC came with a vent tube already attached. ***The VPAC must be properly vented in order to operate correctly!*** Simply run the free end of the vent tube to a clean, dry unobstructed air source. Once this is done you have successfully installed your VPAC!

Replacing Bellofram Diaphragm

The bellofram is a durable Nitrile® diaphragm. It should last the lifetime of your VPAC. However, if it should become cut or punctured by a sharp object it will need to be replaced for the VPAC to continue to work properly. To replace the bellofram, first unscrew the union nut. Next, pull off the bottom seal plate and the old bellofram. Place the new bellofram in the bottom seal plate. Lastly place the bottom seal plate and bellofram back over the push cup, and then screw the union nut back on to the top seal plate.

Typical VPAC Installation



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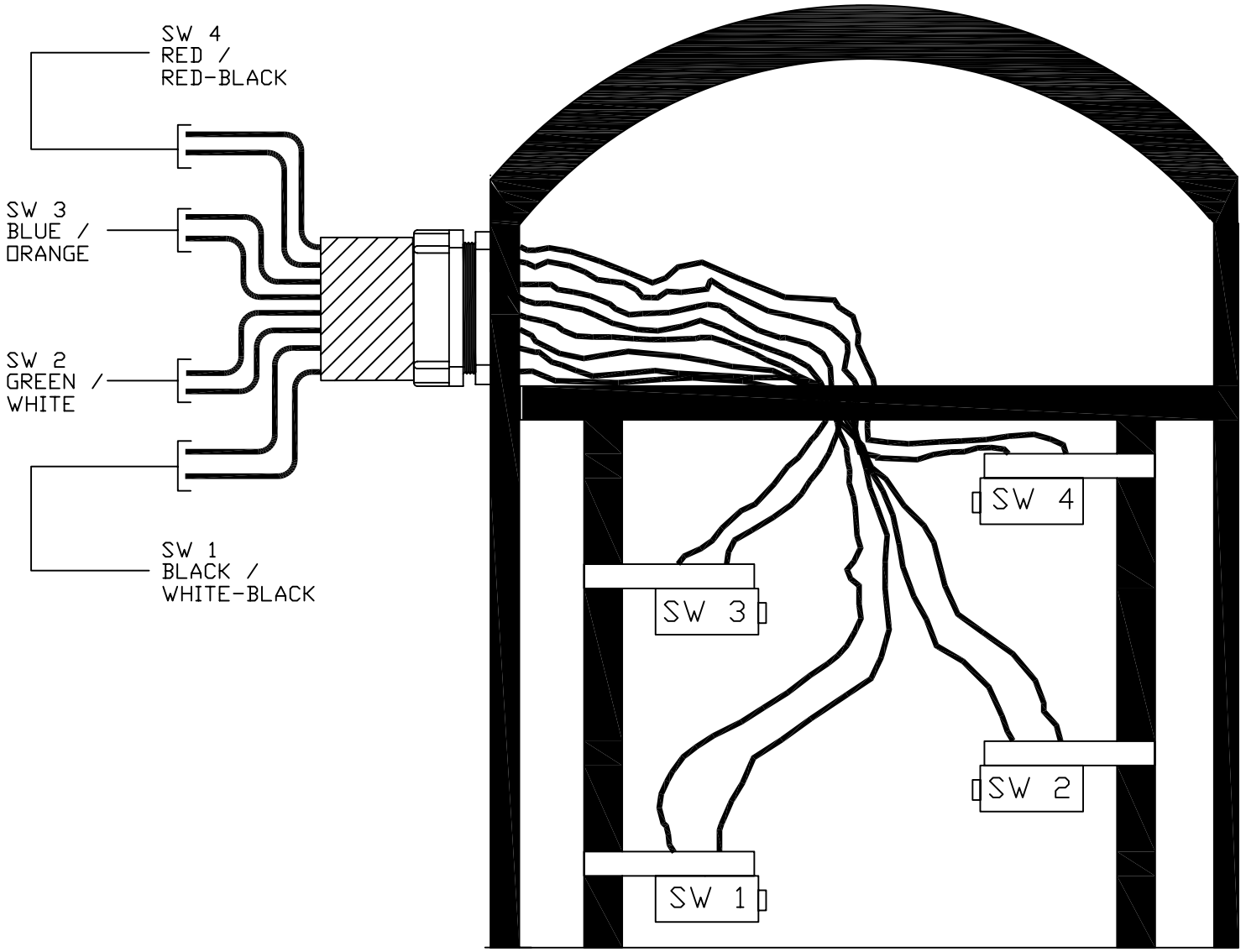

Notes:
1) Level Switches Must Be Rated A Minimum Of 2 Amps @ 120 Volts
2) Torque 1/2" Field Terminals To 20 In. Lbs. 3/8" To 20 In. Lbs.
3) Field Wiring Must Be 60°C Copper Wire Minimum.
4) ------- = Items Not Supplied In Panel

CSI controls

CSI CONTROLS
V-PAC WIRING DRAWING

DRWN.	DATE	SHEET 1 OF 1
BCW	6/4/08	DRWG. NO. B-CSIVPAC