

Pure-Flo[®]

Value Switch Pack (VSP)

Maintenance Manual

This manual provides installation and maintenance instructions for the VALUE SWITCH PACK. This product is intended for use on ADVANTAGE[®] and ADVANTAGE[®] PISTON ACTUATOR (APA) operated diaphragm valves. If additional information is required, please contact:

ITT Industries, Pure-Flo Solutions Group
 33 Centerville Road
 Lancaster, PA 17603
 (717) 509-2200
 Attention: Sales Department

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WARNING

ITT INDUSTRIES VALVES AND VALVE ACTUATORS ARE DESIGNED AND MANUFACTURED USING GOOD WORKMANSHIP AND MATERIALS, AND THEY MEET ALL APPLICABLE INDUSTRY STANDARDS. THESE VALVES ARE AVAILABLE WITH COMPONENTS OF VARIOUS MATERIALS, AND THEY SHOULD BE USED ONLY IN SERVICES RECOMMENDED IN OUR PRODUCT CATALOG OR BY A COMPANY VALVE ENGINEER. MISAPPLICATION OF THE PRODUCT MAY RESULT IN INJURIES OR PROPERTY DAMAGE. A SELECTION OF VALVE COMPONENTS OF THE PROPER MATERIAL CONSISTENT WITH THE PARTICULAR PERFORMANCE REQUIREMENT, IS IMPORTANT FOR PROPER APPLICATION. **EXAMPLES OF THE MISAPPLICATION OR MISUSE OF ITT INDUSTRIES VALVES INCLUDE USE IN AN APPLICATION IN WHICH THE PRESSURE/TEMPERATURE RATING IS EXCEEDED OR FAILURE TO MAINTAIN VALVES AS RECOMMENDED.**

IF VALVE EXHIBITS ANY INDICATION OF LEAKAGE, DO NOT OPERATE. ISOLATE VALVE AND EITHER REPAIR OR REPLACE.

For more information, please contact:

Engineered Process Solutions Group Headquarters

33 Centerville Road, P.O. Box 6164
 Lancaster, PA 17603-2064 USA
 Or call: (800) 366-1111
 (717) 509-2200

Fax (717) 509-2336
 Website: www.ittpureflo.com
 E-mail: pureflo.custserv@itt.com

Pure-Flo California

110 B West Cochran
 Simi Valley, CA 93065
 Phone (800) 926-8884
 Phone (805) 520-7200
 Fax (805) 520-7205

Pure-Flo UK

Richards Street
 Kirkham, Lancashire
 PR4 2HU, England
 Phone +44 1772 682696
 Fax +44 1772 686006



0.0 GENERAL

0.1 Safety



The safety precautions in these operating instructions are specially marked with the standard symbol for danger when non-observance could result in personal injury, loss of life or property damage.

CAUTION!

Non-observance of these safety precautions can endanger the valve and its functions.

0.1.1 Qualifications and training of personnel

The personnel responsible for operation, maintenance, inspection and assembly must be appropriately qualified.

The operating company must precisely define the responsibilities, competence and supervision of the personnel. If the personnel lack the necessary knowledge, they are to be trained and instructed. If required this can be carried out by the manufacturer/supplier of the valve or accessory by order of the operating company. Furthermore, the operating company is to ensure that the contents of the operating instructions have been fully understood by the personnel.

0.1.2 Dangers through non-observance of the safety precautions

The non-observance of the safety precautions can result in the endangering of lives, the environment and the valve. The non-observance of the safety precautions can lead to the loss of all claims for damages.

Non-observance can result in the following:

- failure of important functions of the valve/plant.
- endangering of lives by electrical, mechanical and chemical influences.
- endangering the environment through leakage of dangerous materials.
- personal injury or property damage.

0.1.3 Safety awareness at work

Attention must be paid to the safety precautions in these operating instructions, the current national regulations concerning the prevention of accidents as well as any labor, company and safety-regulations of the operating company.

0.1.4 Safety precautions for the operating company/individual operator

- If hot or cold components of the valves or accessories are a source of danger, these components must be secured against contact by operating company.
- Contact guard for moving parts may not be removed when valve is in operation.

0.1.5 Safety precautions for maintenance, inspection and assembly

Work on externally actuated valves should only be carried out when the valve is removed from service. Valves that have been exposed to harmful media such as caustic chemicals must be decontaminated.

Upon completion of work, all safety and protective equipment must immediately be fitted again or reactivated.

0.1.6 Unauthorized reconstruction and manufacture of spare parts

Reconstruction or modification of the valve or accessory is only admissible after consultation with the manufacturer. Genuine spare parts and accessories authorized by the manufacturer serve to maintain safety. The use of other parts can annul all liability for the consequences.

0.1.7 Inadmissible modes of operation

The operational reliability of the valve or accessory supplied is only guaranteed when used as designated, as laid down in section 1.0. The operating limits given on the identification tag and in the data sheet may not be exceeded under any circumstances.

0.2 Transport and storage



The universally recognized technical standards and the regulations regarding prevention of accidents must be observed at all times when handling.

0.2.1 Transport

Goods to be carefully handled to prevent damage.

0.2.2 Unpacking

Check to ensure all contents are present and undamaged.

0.2.3 Storage

If the valve or accessory is not installed immediately following delivery, it must be properly stored.

Store in a clean dry room at constant temperature.

Storage over a longer period may necessitate individual moisture proof packing. This is dependent on the local conditions.

0.2.4 Return shipment

If the return shipment is required, contact manufacturer at the address listed on page 1 for specific instructions.



The operator of valves used for aggressive or toxic media such as caustic chemicals must ensure that these are well flushed and cleaned before being handed to the maintenance personnel. This is particularly important when returning to the product manufacturer. MSDS are required for authorization to return valves to the manufacturer.

1.0 VALUE SWITCH PACK

The switch package is not autoclavable; maximum temperature is 140°F, 60.0°C. Switches and Positioners cannot be used together.

CAUTION!

Retrofit - The switch package as received from the factory on valve assemblies is pre-set, only minimal adjustment is required to adapt to the actuator.

Refer to Figure 1 for all Bill of Material item references in this document.

1.1 Field mounting (Bio-Tek® through 2.00", DN 8 - 50)

1.1.1 Remove the four (4) stainless steel screws on the actuator top cover. Place the valve in the open position.

1.1.2 Remove the plastic plug from the indicating spindle.

1.1.3 Insure all o-rings (items 6, 14 and 15) are on the adapter (item 1/2) and lubricated with Dow #111. Slip the switch actuator rod (item 7/8/9/10), #10-24 UNC threads first, through item (1/2) until the threads are exposed. Apply Blue Loctite #242 to the threads of (7/8/9/10). Thread (7/8/9/10) into the actuator spindle until it shoulders.

1.1.4 Attach (1/2) to the upper cover using the appropriate fasteners (items 3 and 5 or item 4). The correct torque is 5.0 in-lbs (.56 N-m).

1.1.5 Thread the appropriate switch actuator(s) (item 11/12) onto (7/8/9/10).

1.1.6 Position the closed switch actuator (item 11) approximately 0.14" (4 turns) from end of threads and position the open switch actuator (11/12) approximately 0.25" (7 turns) below the top of the spindle, do not tighten the set screw (item 13).

1.1.7 Remove the switch package top cover (item 20); slide the sub assembly down over (1/2) using care not to damage the switch internals (specifically the mechanical switch levers). Position the conduit entrance in the location most desirable, press down and tighten the set screw (item 16) located on the side of the lower housing (item 25) to lock the unit in place. Note that (1/2) has two molded counterbores. Locating (16) in one of these holes provides maximum resistance to conduit rotation. The torque on (16) should not exceed 5.0 in-lbs. (.56 N-m).

1.1.8 Run field wires and conduit to the terminal strip located on the appropriate bracket assembly (item 22/23) using Figure 2 as a guide. Note that the terminal strip can be accessed by sliding it up the mating bracket. Verify the switches operate correctly by cycling the valve. See 1.2 for switch adjustment. Push the terminal strip on (22/23) down until the top of the terminal strip is approximately flush with the top of the mating bracket. Screw (20) onto (25).

Installation is complete.

1.2 Setting switches

1.2.1 Remove (20).

1.2.2 Place valve in full open position.

1.2.3 Connect a test device to the terminal strip on (22/23) for the OPEN switch.

The switch type, inductive proximity or dry contact mechanical, determines the type of test device required. Contact switches require a volt meter with resistance capability to verify continuity; inductive proximity switches cannot use this method. Proximity switches require an inductive proximity tester, such as Pepperl+Fuch's model #1-1350, which supplies a load and supply voltage to the switch. Inductive proximity switches must be energized with the correct load and supply voltage to sense the target.

Do not short the inductive proximity switch by directly connecting a power supply, irreparable and immediate damage can occur to the switch.

CAUTION!

1.2.4 Bio-Tek®-1.50" (DN 8 - 40) (Two switch actuator)

1.2.4.1 Verify that (16) is tight.

1.2.4.2 Thread (11/12) (2 turns) past the initial switch indication.

1.2.4.3 Lock in place with (13). Position (11/12) so that (13) is facing out for easy access.

1.2.5 2.00" (DN 50) (One switch actuator)

1.2.5.1 Do not set the switch in the open position; set the switch in closed position. Follow 1.2.4 with the valve in full closed position. Confirm OPEN switch functions in full open position only after setting the closed position.

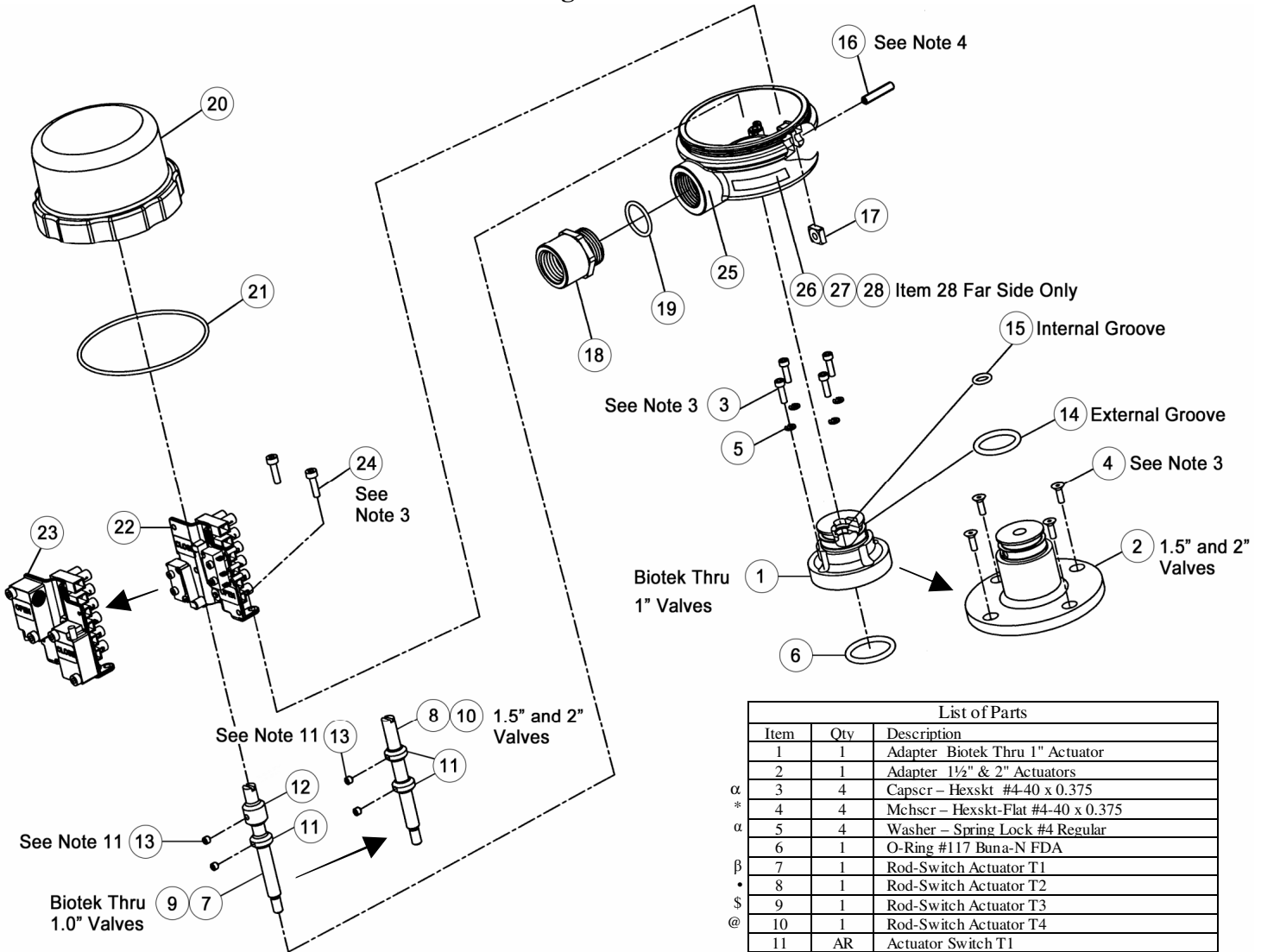
1.2.6 Place the valve in the full closed position and connect the appropriate test device to the terminal strip on (22/23) for valve CLOSE switch. Repeat section 1.2.4-1.2.5 for the valve CLOSE switch. Note that (11) must never hit (1/2) in the closed position with body attached.

1.3 Operation

For switch package models containing mechanical snap switches, contact "bounce" may occur during operation. This characteristic can be eliminated through electrical filters or software. Consult the factory for more information.

Installation

Figure 1



Notes

1. Stake all fasteners with Loctite Blue #242.
2. Lubricate all o-Rings with Dow #111.
3. Torque fasteners to 4-6 in-lb (.45-.68 N-m).
4. Torque should not exceed 5 in-lb (.56 N-m).
- α 5. Biotek thru 1" valves only.
- * 6. 1.5" and 2" valves only.
- β 7. Use with Biotek, .5", .75" valve.
- \$ 8. Use with 1" valve.
- 9. Use with 1.5" valve.
- @ 10. Use with 2" valve.
11. Orient towards item 18.

List of Parts		
Item	Qty	Description
1	1	Adapter Biotek Thru 1" Actuator
2	1	Adapter 1½" & 2" Actuators
α 3	4	Capscr - Hexskt #4-40 x 0.375
* 4	4	Mchscr - Hexskt-Flat #4-40 x 0.375
α 5	4	Washer - Spring Lock #4 Regular
6	1	O-Ring #117 Buna-N FDA
β 7	1	Rod-Switch Actuator T1
• 8	1	Rod-Switch Actuator T2
\$ 9	1	Rod-Switch Actuator T3
@ 10	1	Rod-Switch Actuator T4
11	AR	Actuator Switch T1
12	AR	Actuator Switch T2
13	AR	Screw-Hex Soc Set CP #6-32 x 0.125
14	1	O-Ring #116 Buna-N FDA
15	1	O-Ring #110 Buna-N FDA
16	1	Screw-Hex Soc Set KNCP #8-32 x 0.75
17	1	Nut-Square #8-32
18	1	Adapter ½" - NPT
19	1	O-Ring #16 Buna-N FDA
20	1	Housing Swpk VSP Upr
21	1	O-Ring #037 Buna-N FDA
22	1	Brkt Assy Switch
23	1	Brkt Assy Prox
24	2	Capscr - Hexskt M3-8 x 12
25	1	Housing Swpk VSP Lwr
26	AR	Label Swpk North America
27	AR	Label Swpk European
28	AR	Label Warning

Wiring Diagram

Figure 2

FACTORY	FIELD	FACTORY	FIELD	FACTORY	FIELD
OPEN COM ● 1 ●		CLOSE SIG ● 1 ●		CLOSE + ● 1 ●	
OPEN NO ● 2 ●		CLOSE + ● 2 ●		CLOSE - ● 2 ●	
OPEN NC ● 3 ●		CLOSE - ● 3 ●		BLANK ● 3 ●	
CLOSE NC ● 4 ●		OPEN - ● 4 ●		OPEN + ● 4 ●	
CLOSE NO ● 5 ●		OPEN + ● 5 ●		OPEN - ● 5 ●	
CLOSE COM ● 6 ●		OPEN SIG ● 6 ●		BLANK ● 6 ●	

VSPG30, VSPTS48

VSPP

VSPN, VSPZ