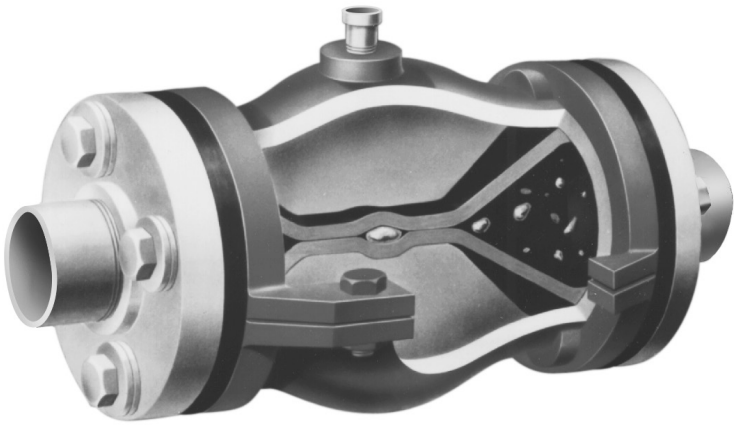
Type A Air Operated Pinch Valve
Installation, Operation and Maintenance Manual



The Red Valve Type A Air Operated Pinch Valve is a 100% full ported bi-directional valve designed for tough slurry applications. The elastomer sleeve closes on entrapped solids in the line. The flexing action of the sleeve breaks up any sediment or build-up in the valve, which makes the Type A a reliable low-maintenance valve.

A variety of elastomers are available to suit your specific needs. Along with the Standard Red Valve Sleeve, we offer Double Wall (DW), Reduced Port (RP), and Cone Sleeves for special applications.

Type A Valves are constructed having the same drilling pattern as ANSI 150# for ease of installation.

- Simple design
- No Packing to maintain, ever
- Cost effective
- No cavities or dead spots to bind valve operation
- Low maintenance

IMPORTANT

Please take a moment to review this manual. Before performing any maintenance on the valve be sure the pipeline has been depressurized. The improper installation or use of this product may result in personal injury, product failure, or reduced product life. Red Valve Co., Inc. can accept NO liability resulting from the improper use or installation of this product. If you have any questions or problems, please call the customer service department at (412) 279-0044. We appreciate your comments. Thank you for choosing Red Valve.

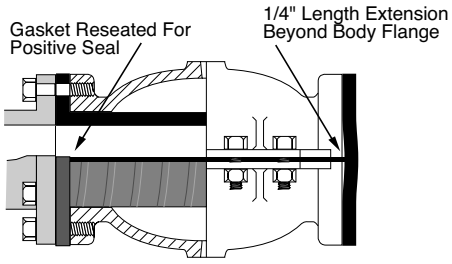
INSTALLATION

1. INSPECTION OF VALVE:

Check flange faces of pipe for rough/damaged areas. Pipeline flanges must be flat, properly spaced, and parallel to achieve proper seal. Use flat faced flanges. Raised face flanges are a frequent cause of valve sleeve failures.mPVC flanges may not seal properly, and are not recommended by Red Valve. If PVC flanges are used, metal back up rings should be placed behind the PVC flanges in order to prevent yielding. Typically, PVC flanges will yield before the valve will seal. Red Valve recommends that pipeline flanges are serrated approximately 1/16" at 90°, in order to prevent the "creep" of the rubber flange of the valve sleeve. **Flanges with an oversized I.D. can cut the sleeve flange, and are not recommended with the Type A Valve.** Grind or file any sharp edges of pipeline flange to prevent damage to the sleeve.

2. GASKETS:

The Type A Valve contains (2) strips of diamond seal gasket between the cast halves of the valve. As the gasket extrudes from the body, it may push the rubber flange away slightly from the cast body. DO NOT TRIM any excess gasket material, it will seat itself after bolting the valve into the pipeline, thus providing a positive seal.



CAUTION: do not use any sharp tools such as a crowbar or screwdriver on the rubber during installation. Sharp instruments can damage the flange face and cause possible leakage.

3. INSTALLING FLANGE BOLTS:

CAUTION: Only use flange bolts of the correct length so that the bolts do not bottom out in tapped holes.

The use of bolts which are too long and bottom out can crack or distort the body, causing permanent valve damage. Tighten all bolts uniformly on both side of the valve, so as to distribute pressure evenly around the sleeve flange. **(For complete information on bolting dimensions refer to the back cover of this IOM).**

4. VALVE ORIENTATION:

The Type A Valve can be installed in any direction in the pipeline. Air connection can be located in any position to permit ease of installation.

CAUTION: Do not introduce full pressure, unregulated plant air to the valve. Excess air pressure can result in premature valve failure. Refer to the back cover of this manual for correct working air pressure settings. Refer to Operation section for operating pressure.

5. TYPE A VALVES 8" AND LARGER:

Type A sleeves are available with 2-way closure. The sleeve is marked with a red stripe down each side. The red stripe should line up on the horizontal centerline of the valve, parallel to the diamond seal gasket. This will allow the sleeve to close in a 2-way vertical pattern.

NEVER... Cut excess gasket.	**NEVER...** Use sharp tools on rubber sleeve.	**NEVER...** Apply full pressure unregulated shop air.	Use MINIMUM air pressure to extend sleeve life.	**DO...** Use flat faced flanges.	**DO...** Tighten bolts evenly.

SPECIAL INSTRUCTION

SPECIAL INSTRUCTIONS FOR DOUBLE WALL SLEEVES:

DW Valves have double wall sleeves for triple life on severe abrasion. The extra thickness requires the next larger flange size on the valve body.

It is recommended that the sleeve I.D. be the same as the pipe I.D. This will require an oversize mating flange also be installed on the pipe (figure 1). This is easily done by using blind flanges and boring the I.D. to suit the existing pipe. For example, on a 6" flange, 4" bore DW valve, the mating flange would be a 6" blind flange bored out to slip over the 4" pipe (approximately 4-1/2" Dia.).

If it is not possible to match the pipe and sleeve I.D. as described above, the flanges will mate and the sleeve I.D. will protrude into the pipeline (Figure 2). For example a 6" flange 4" bore DW Valve bolted to a standard 6" flange on a 6" pipe.

To prevent bulging and premature breaking of the Type DW sleeve, a steel washer must be installed as shown (Figure #3). The steel washer should be 1/8" thick and have a phonographic flange finish on both surfaces. The washer I.D. should match the rubber I.D. The washer O.D. can equal the flange O.D. and bolt holes can be drilled through the washer. These washers are available from Red Valve Company.

SPECIAL INSTRUCTIONS FOR CONE AND VARIABLE ORIFICE SLEEVES:

Cone Sleeves and Variable Orifice Sleeves require proper directional orientation. The inlet side of the sleeve is appropriately marked with an inlet tag on the inlet flange flange o.d. The sleeve and valve body are appropriately marked with a flow direction arrow identifying the correct orientation. Severe system damage may occur if the sleeve is installed backwards.

OPERATION

THE MOST CRITICAL FACTOR FOR SUCCESSFUL OPERATION OF RED VALVE'S TYPE A IS USING A MINIMUM AMOUNT OF AIR PRESSURE TO OPERATE THE VALVE!

The amount of air pressure required to close the valve depends upon the line pressure of the pipeline.

Red Valve's standard Pure Gum Rubber sleeve requires 25 psi above line pressure for closure. An increase in plant air pressure may be required for some sleeve designs, depending upon the choice of elastomer.

NOTE: Air pressure must be vented from valve to permit opening.

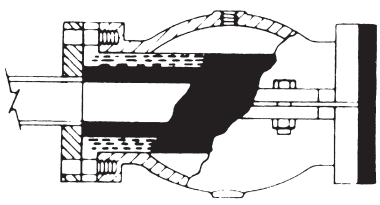


FIG. 1

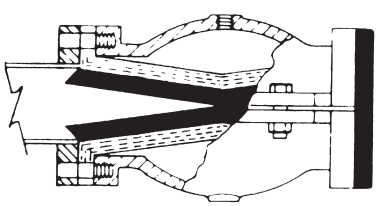


FIG. 2

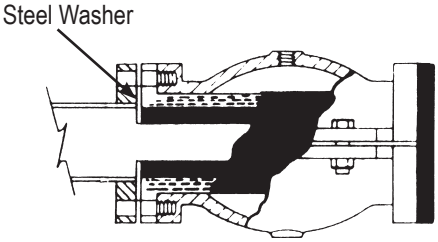


FIG. 3

MAINTENANCE

INSPECTION:
Valves should occasionally be inspected for damage and wear. The inspection period should be determined by the severity of the service and environment. If valves are periodically inspected and preventive maintenance done, the valve will last longer and operate better.

CAUTION: Do not remove any valve parts or bolting with pressure in the line. It is easy to inspect the valve for obvious problems.

ELASTOMER SLEEVE REPLACEMENT:

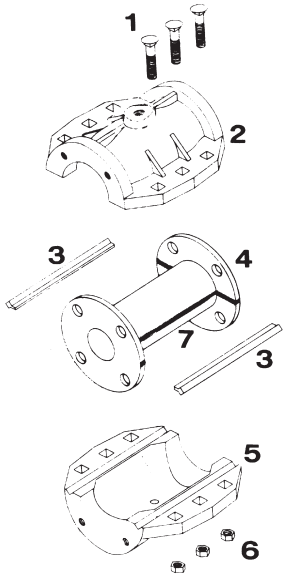
A spare replacement sleeve should be placed on order when this valve is placed in service.

When replacing the sleeve in the valve body, carefully inspect the diamond seal gaskets. If they are damaged, reorder new ones. Do not trim the diamond seal – it should extrude a minimum of 1/8" after rejoining the body halves.

Do not clean the body end flange surfaces with rough abrasive wheels, or else the serrations will be removed and flange leakage may result. Do not use Permatex or RTV silicone on the metal flange surface. These compounds will fill in the serrations and flange leakage may result.

PART DESCRIPTION

1. **CARRIAGE BOLTS**
2. **CAST BODY (top)**
3. **DIAMOND GASKET**
4. **SLEEVE**
5. **CAST BODY (bottom)**
6. **ZINC PLATED HEX NUTS**



STORAGE

If your Type A Valve is to be stored for a period of time prior to installation, the following storage guidelines will help preserve your valve and assure a trouble free installation.

1. Store valve in a clean, cool, dry location. Avoid exposure to light, electric motors, dirt or chemicals.
2. Grease flange threads of body to inhibit rust or corrosion.
3. Store valve to prevent other items from contacting sleeve or flanges to prevent possible damage.
4. Store this manual with valve, so that it is readily available at time of installation.

TROUBLESHOOTING GUIDE

SYMPTOM:
AIR LEAKAGE AT FLANGE
- Tighten body bolts beginning in center and working outward to both ends in order to extrude gasket material.
- Retighten all flange bolts.

SYMPTOM:
SLEEVE RUPTURE (At juncture of flange and body)
- Excess closing pressure.

SLEEVE RUPTURE (At mid point of sleeve)
- Water hammer or pressure surge.
- High velocity of abrasive media with valve cracked open.

SYMPTOM:
VALVE WILL NOT SEAL
- At low temperatures, hardness of the sleeve may exist. Actuate valve 25 to 50 times with pressure increased by 10 psi each time to "break in" sleeve.

SYMPTOM:
VALVE WILL NOT OPEN
- Air pressure not vented from body.

SYMPTOM:
CUTS ON FLANGE SURFACE
- Sharp I.D. of mating flange.
- Oversized I.D. of mating flange.

TYPE A PINCH VALVE CLOSING AND WORKING PRESSURES

VALVE SIZE	MAX WORKING PRESSURE (psi)	AIR CLOSING PRESSURE PURE GUM RUBBER SLEEVES	AIR CLOSING PRESSURE SYNTHETIC SLEEVE	AIR CLOSING PRESSURE VITON SLEEVE
1"	150	25	35	55
1-1/4"	150	25	35	55
1-1/2"	150	25	35	55
2"	150	25	35	55
3"	150	25	35	55
4"	150	28	38	58
5"	150	28	38	60
6"	150	30	40	60
8"	125	30	40	60
10"	100	32	43	63
12"	100	32	43	63
14"	75	32	43	63
16"	75	32	43	63
18"	50	34	45	63
20" x 24"	50	34	45	63
24" x 28"	50	34	45	65

* Air closing pressure should be added to the line pressure for complete closure.

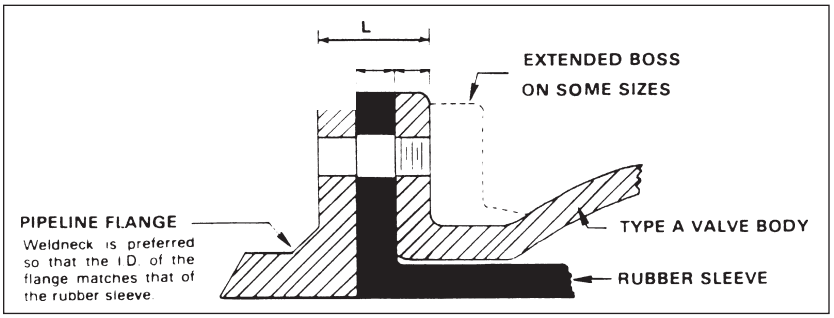
TYPE A FLANGE BOLTING SPECIFICATIONS

VALVE SIZE	NO. OF BOLTS	BOLT CIRCLE DIAMETER	THREAD SIZE	ELASTOMER SLEEVE FLANGE THICKNESS A	METAL BODY FLANGE THICKNESS B	BOLT TORQUE (ft. lbs)
1"	4	3-1/8"	1/2" - 13 NC	1/2"	1/2"	25
1-1/4"	4	3-7/8"	1/2" - 13 NC	1/2"	5/8"	30
1-1/2"	4	3-7/8"	1/2" - 13 NC	1/2"	11/16"	30
2"	4	4-3/4"	5/8" - 11 NC	1/2"	3/4"	55
2-1/2"	4	5-1/2"	5/8" - 11 NC	1/2"	7/8"	70
3"	4	6"	5/8" - 11 NC	3/4"	7/8"	75
4"	8	7-1/2"	5/8" - 11 NC	3/4"	1"	50
5"	8	8-1/2"	3/4" - 10 NC	3/4"	15/16"	65
6"	8	9-1/2"	3/4" - 10 NC	1"	1-1/8"	85
8"	8	11-3/4'	3/4" - 10 NC	1"	1-1/8"	100
10"	12	14-1/4"	7/8" - 9 NC	1"	1-3/16"	85
12"	12	17"	7/8" - 9 NC	1"	1-1/4"	125
14"	12	18-3/4"	1" - 8 NC	1"	1-3/8"	130
16"	16	21-1/4"	1" - 8 NC	1"	1-7/16"	115
18"	16	22-3/4"	1-1/8" - 7 NC	1-1/2"	1-3/4"	120
20" x 24"*	20	29-1/2"	1-1/8" - 7 NC	1-1/2"	1-7/8"	175
24" x 28"**	28	34"	1-1/4" - 7 NC	1-1/2"	2"	175

- Torque values are suggested minimum values.
- Torque all flange bolts in a star pattern. First to 50% of tabulated values, then re-torque to 100% of tabulated values. If greater torque is required, continue re-torquing in increments of 50% of tabulated values.

* Valve size 20" has 24" extended flange.
**Valve size 24" has 28" extended flange.

- Variables such as surface finish on bolt threads, type of anti-sieze compound used, and surface finish of the mating flanges all have an effect on the minimum torque required to obtain a leak tight flange seal.
- Use of a high quality anti-sieze compound on all bolt threads is recommended.



Red Valve®

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For items proven to be defective within the warranty period, your exclusive remedy under this limited warranty is repair or replacement of the defective item, at Seller’s option, FCA Incoterms 2020 Seller’s facility with removal, transportation, and installation at your cost.

Products or parts manufactured by others but furnished by Seller are not covered by this limited warranty. Seller may provide repair or replacement for other’s products or parts only to the extent provided in and honored by the original manufacturer’s warranty to Seller, in each case subject to the limitations contained in the original manufacturer’s warranty.

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This limited warranty is voided by any misuse, modification, abuse or alteration of Seller’s product or part, accident, fire, flood or other Act of God, or your failure to pay entire contract price when due.

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February 2023