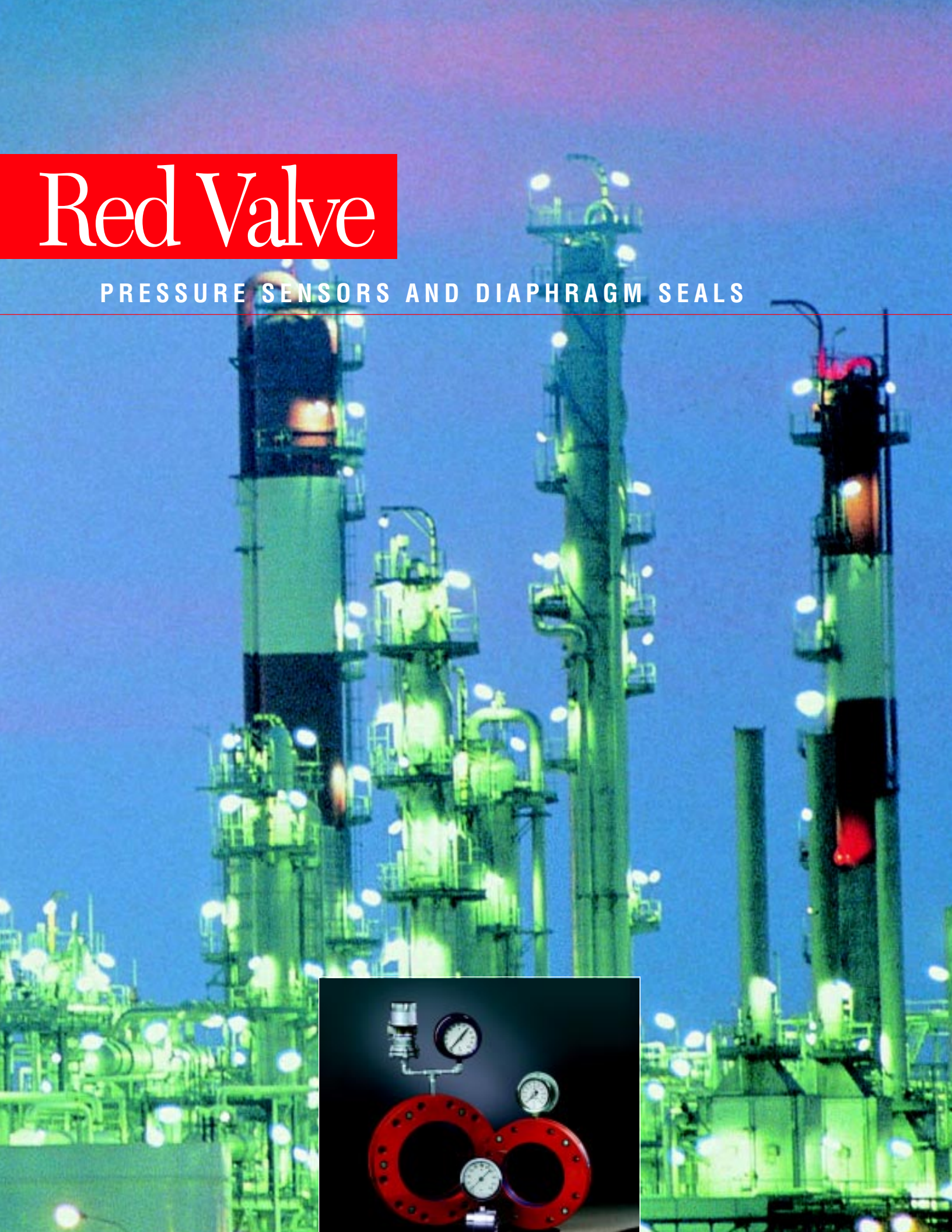


# Red Valve

PRESSURE SENSORS AND DIAPHRAGM SEALS



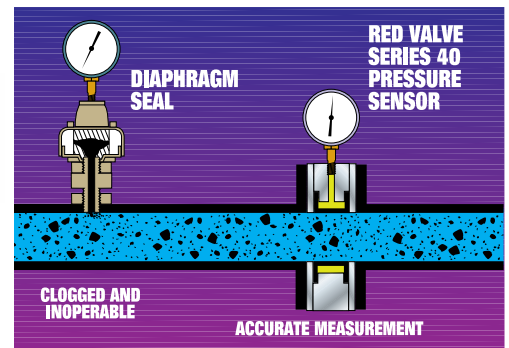
# Pressure Sensors

- ▶ **Protects and Isolates Instrumentation from Process Line**
- ▶ **Assures Accurate, Reliable Pressure Readings**
- ▶ **Self-Cleaning Flexing Action**
- ▶ **Won't Clog Like Traditional Diaphragm Seals**
- ▶ **Excellent for Filter Systems and Pump Protection**

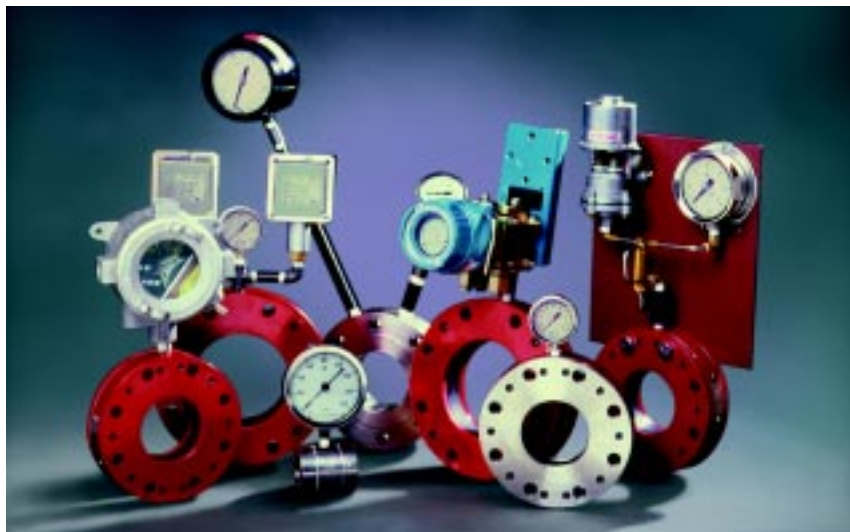


Red Valve's complete line of Pressure Sensors and Diaphragm Seals isolate and protect instrumentation from the process line, providing accurate, repeatable pressure measurement of slurries and corrosive fluids.

Reliable, accurate pressure readings are often difficult or even impossible to obtain on pipelines carrying slurries, solids, or chemical process slurries. For example, slurry and chemicals can clog and foul conventional Bourdon tubes in gauges, preventing effective pressure sensing.



**The Series 40 Pressure Sensor won't clog on slurries like traditional Diaphragm Seals**



Red Valve's complete line of pressure sensors are factory filled and calibrated with various customer specified instrumentation, including transmitters, pressure switches, gauges, vacuum gauges, and capillary tubing, in all domestic and international units of measure.

# Series 40

- ▶ Protects and isolates instrumentation
- ▶ Full 360° pressure reading
- ▶ Self-cleaning, flexing action
- ▶ Won't clog like traditional diaphragm seals
- ▶ Excellent pump protection



## Materials of Construction

- ▶ Carbon Steel Body – Non-wetted
- ▶ ANSI B16.5 Class 150 Flanges in Carbon Steel, 316 Stainless Steel, PVC, or Teflon® Coated Carbon Steel
- ▶ Sleeves Available in Pure Gum Rubber, Neoprene, Chlorobutyl, Buna-N, Hypalon®, Viton®, EPDM, White Food Grade Elastomers, Teflon® coated Buna-N, or Teflon® coated Viton®
- ▶ Fill Fluid; Ethylene Glycol & Water (200° F), Vegetable Oil (230° F), Silicone Oil (400° F)

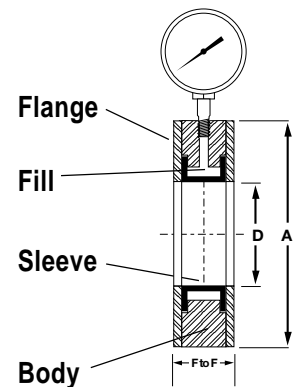
Red Valve Series 40 and Series 42 Pressure Sensors are the industry standards for protecting instrumentation, and assuring accurate, dependable pressure measurement of slurry and corrosive fluids.

The line pressure is sensed 360° through the flexible rubber sleeve. The captive fluid is displaced through the pressure sensor body to the instrument's Bourdon tube. All instruments are isolated and protected from the process, assuring positive and accurate readings.

The full-faced, thru-bolted Series 40 installs directly in-line. Costly installation and maintenance of pipe stands and saddle welds, which are required when installing antiquated diaphragm seals, are eliminated.

The thru-bolted Series 40 can be mounted in any flow direction, submerged in a tank, or mounted with a blind flange as a dead end to monitor tank levels.

The Red Valve standard gauge is bottom mounted, with a 2½" diameter steel case; accuracy of this gauge is ±1% of the gauge reading. A 0 – 100 psi gauge is furnished as standard unless otherwise specified. 0 – 200 psi gauges are optional at no additional cost. All Red Valve Pressure Sensors and gauges are tested and calibrated through the mid-range to assure the highest level of accuracy. Pressure gauges, transmitters, transducers, recorders, differential pressure or vacuum switches are factory filled and mounted to the Series 40.



3

## DIMENSIONS SERIES 40

Size D	Outside Diameter A	Length F to F	100°F Working Pressure (psi) *	Weight (lbs)
1"	4½"	1⅞"	275	6
1½"	5"	1⅞"	275	8
2"	6"	1⅞"	275	12
2½"	7"	1⅞"	275	16
3"	7½"	1⅞"	275	18
4"	9"	2⅞"	275	27
5"	10"	2¼"	275	32
6"	11"	2¼"	275	37
8"	13½"	2½"	275	58

\* PVC Unit has Working Pressure of 200 psi; Higher Working Pressure Available.

# Series 48

- ▶ Wafer design reduces costs
- ▶ Protects and isolates instrumentation
- ▶ Fits 150 and 300 lb. flanges
- ▶ Lightweight design



4

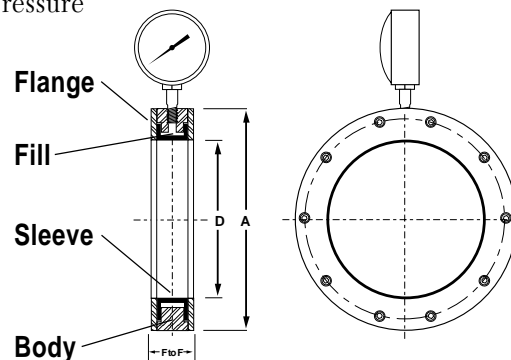
## Materials of Construction

- ▶ Carbon Steel Body
- ▶ Flanges Carbon Steel, 316 Stainless Steel, PVC, Teflon® Coated Carbon Steel
- ▶ Sleeves Available in Pure Gum Rubber, Neoprene, Chlorobutyl, Buna-N, Hypalon®, Viton®, EPDM, White Food Grade Elastomers, Teflon® coated Buna-N, or Teflon® coated Viton®
- ▶ Fill Fluid; Ethylene Glycol & Water (200° F), Vegetable Oil (230° F), Silicone Oil (400° F)

Red Valve's Series 48 Pressure Sensor protects and isolates instrumentation, eliminating plugging and fouling that can occur in slurry and hard-to-gauge liquid applications. The economical Series 48 is designed to fit inside the bolt pattern of the pipe flanges, allowing for ease of installation and reducing the size of the unit. Series 48 sensors are designed to fit Class 150 and 300 flange drilling, DIN, or BS NP10 piping systems.

Reliable, accurate instrument readings are often difficult or even impossible to obtain in pipelines carrying slurry, solids or chemical process. Standard diaphragm seals are vulnerable to plugging by debris or deposits and only give a pressure reading from one small area. With the Series 48 Pressure Sensor these problems are eliminated.

The principle of operation is that line pressure is sensed through a flexible rubber sleeve which is a full 360° circumference of the pipe I.D.. The captive fluid is displaced through the Series 48 Pressure Sensor body to the instrument's Bourdon tube. All instrumentation is protected from the process, which assures accurate, repeatable pressure readings.



## DIMENSIONS SERIES 48

Size D	Outside Diameter A	Length F to F	100°F Working Pressure (psi)*	Weight (lbs)
2"	4"	1 <sup>7</sup> / <sub>8</sub> "	720	3
2 <sup>1</sup> / <sub>2</sub> "	4 <sup>3</sup> / <sub>4</sub> "	1 <sup>7</sup> / <sub>8</sub> "	720	5
3"	5 <sup>1</sup> / <sub>4</sub> "	1 <sup>7</sup> / <sub>8</sub> "	720	6
4"	6 <sup>3</sup> / <sub>4</sub> "	2 <sup>1</sup> / <sub>8</sub> "	720	9
6"	8 <sup>5</sup> / <sub>8</sub> "	2 <sup>1</sup> / <sub>4</sub> "	720	12
8"	10 <sup>7</sup> / <sub>8</sub> "	2 <sup>1</sup> / <sub>2</sub> "	720	16
10"	13 <sup>1</sup> / <sub>4</sub> "	2 <sup>3</sup> / <sub>4</sub> "	720	22
12"	16"	3"	720	25
14"	17 <sup>5</sup> / <sub>8</sub> "	3"	720	50
16"	20"	3"	720	60
18"	21 <sup>1</sup> / <sub>2</sub> "	3"	720	70
20"	23 <sup>3</sup> / <sub>4</sub> "	3"	720	80
24"	28 <sup>1</sup> / <sub>8</sub> "	3"	720	115
30"	34 <sup>5</sup> / <sub>8</sub> "	3"	720	150
36"	41 <sup>1</sup> / <sub>8</sub> "	4"	720	248
42"	47 <sup>1</sup> / <sub>8</sub> "	4"	720	319
48"	54 <sup>3</sup> / <sub>8</sub> "	4"	720	392

\*PVC Unit has a Working Pressure of 200 psi; Higher Working Pressure Available.

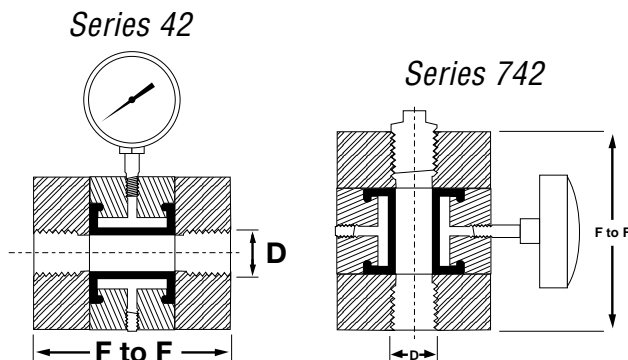
# Series 42/742 Diaphragm Seal

- ▶ Series 742 can be flushed or rodded clean without removal from line or disassembly
- ▶ Protects and isolates instrumentation from chemical or slurry plugging
- ▶ Lower installation and operating costs



## Materials of Construction

- ▶ Body (Non-Wetted) and Upper and Lower Case (Wetted) - Carbon Steel, 316 Stainless Steel, or PVC
- ▶ Sleeves Available in Pure Gum Rubber, Neoprene, Hypalon®, Chlorobutyl, Buna-N, Viton®, EPDM, Food Grade Elastomers, Teflon® coated Buna-N, or Teflon® coated Viton®
- ▶ Fill Fluid; Ethylene Glycol & Water (200° F), Vegetable Oil (230° F), Silicone Oil (400° F)



Red Valve's Series 42 Pressure Sensor and Series 742 Diaphragm Seal isolate and provide accurate instrument reading of gauges, transmitters, and pressure switches, making them ideal for use in chemical or slurry service. The Series 42 and Series 742 can be mounted in any flow direction, and have threaded ends manufactured to standard NPT pipetap dimensions for smaller pipelines. The principle of operation is simple. As process pressure is sensed by the 360° elastomer sleeve, the captive fluid transfers the process pressure to the instrument, providing a consistent, accurate reading.

The Series 742 offers a significant advantage over traditional diaphragm seals. When installed perpendicular to the pipeline, the Series 742 can be isolated so that in the event of plugging, the elastomer slurry ring area, which isolates the instrument, can be flushed (Figure 1) or rodded clean (Figure 2).

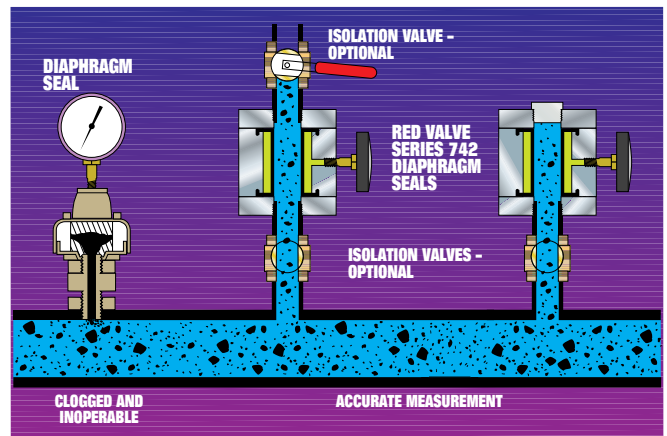
Series 42 Pressure Sensors and Series 742 Diaphragm Seals are available in sizes 1/2" through 2". The Series 42 features a top-mounted gauge, while the Series 742 is supplied with a standard back mounted gauge. A complete Series 742 Diaphragm Seal, including optional isolation ball valve, is available for immediate delivery.

5

## The Only Diaphragm Seal That Can Be Flushed Without Removal From The Line

Figure 1

Figure 2



## DIMENSIONS SERIES 42/742

Size D	Length F to F	Working* Pressure (psi)	Weight (lbs)
1/2"	27/8"	720	5
1"	33/8"	720	6
1 1/2"	33/8"	720	15
2"	33/8"	720	20

\* PVC Unit has Working Pressure of 200 psi; Higher Working Pressure Available.

# Series 44 Food Sensor

- ▶ **100% full port design; No voids or crevices**
- ▶ **Protects and isolates instrumentation**
- ▶ **Accurate, dependable pressure readings**
- ▶ **Quick disconnect end connections**



6

Red Valve's Series 44 Pressure Sensor isolates and protects instrumentation such as gauges, transmitters, and pressure switches from the process line, providing accurate, repeatable instrument measurement. The Series 44 Pressure Sensor is designed for the Food and Pharmaceutical and Biotech industries and is manufactured with FDA approved elastomers.

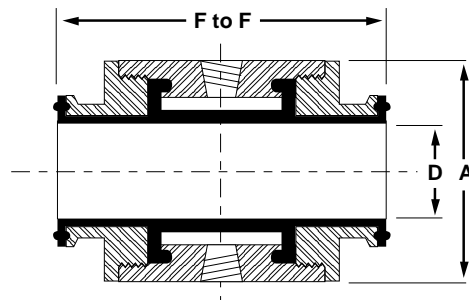
Reliable, accurate instrument readings are often difficult or even impossible to obtain on slurry pipelines carrying tomato skins, seeds, pharmaceutical powder, beans, etc. With the Series 44 Pressure Sensor, line pressure is sensed 360° through the flexible rubber sleeve. The captive fluid is displaced through the pressure sensor body to the instrument's Bourdon tube. The instruments are isolated and protected from the process, assuring positive and accurate readings.

With the Series 44 Food Grade Pressure Sensor, the flow media is isolated by the food grade elastomer sleeve, which extends around the tri-clamp ends. This full length extension eliminates any plugging, pockets, and voids that may occur. The standard liquid fill, vegetable oil, is kept to a minimum so that the pressure reading is not affected by the temperature. Fill liquids with higher temperature ratings are available.

The Series 44 Food Grade Pressure Sensor is available in sizes 3/4" to 3", and allows for easy installation and disassembly for cleaning. The Series 44 is provided with a 1/4" instrument connection.

## Materials of Construction

- ▶ **Type 316 Stainless Steel Body**
- ▶ **Food Grade Tri-Clover End Connections**
- ▶ **Sleeves Available in White Food Grade Buna-N, Chlorobutyl, Neoprene, Viton®, EPDM**
- ▶ **Vegetable Oil, Distilled Water, Silicone Oil**



## Dimensions Series 44

Size	Port D	Body Length F to F	Working O.D. A	Pressure (psi)	Weight (lbs)
1/2"	0.462"	4 <sup>9</sup> / <sub>16</sub> "	2 <sup>1</sup> / <sub>2</sub> "	250	2 <sup>1</sup> / <sub>4</sub>
3/4"	0.462"	4 <sup>9</sup> / <sub>16</sub> "	2 <sup>1</sup> / <sub>2</sub> "	250	2 <sup>1</sup> / <sub>4</sub>
1"	0.875"	3 <sup>13</sup> / <sub>16</sub> "	3"	250	3 <sup>1</sup> / <sub>4</sub>
1 <sup>1</sup> / <sub>2</sub> "	1.375"	3 <sup>13</sup> / <sub>16</sub> "	3"	250	4
2"	1.890"	3 <sup>13</sup> / <sub>16</sub> "	3 <sup>1</sup> / <sub>2</sub> "	250	5
3"	2.875"	3 <sup>13</sup> / <sub>16</sub> "	4 <sup>1</sup> / <sub>2</sub> "	150	7

# Applications

---

## Wastewater Treatment

Red Valve Pressure Sensors are used for such applications as sludge, raw sewage, grit, lime, and carbon. A sensor with a transmitter may be used on **positive displacement pumps** to shut down the pump if pressure is lost. On **filtration systems**, a sensor can be used to detect when a filter needs replaced.

## Chemical Industry



A wide range of elastomers is available to meet any chemical compatibility need, making Red Valve Pressure Sensors well suited for use in processing salts and other highly corrosive chemicals. Red Valve Pressure Sensors are also very effective on low

micron particle slurries which usually clog traditional gauges and saddle-type diaphragm seals.



## Pulp and Paper Mills

Pulp and Paper mills contain numerous slurry applications. Pressure Sensors are used in lines with pump liquors, fibers, carbonate slurries, digester pulp, wood chip slurries, lime and lime mud, salt cake, in soda recovery, and on the discharge side of clarification pumps.

## Mining

Common mining applications for Pressure Sensors are mine tailing lines, lime pumping, in acid baths, and on the discharge side of peristaltic pumps. The sleeve's flexing action prevents the build-up of solids in the sensor, allowing accurate, repeatable readings.

## Accessories

---

### Quick-Disconnect Instrumentation

Red Valve Pressure sensors can be equipped with a "dry" disconnect fitting between the sensor body and the instrumentation, allowing gauges to be easily removed without tools. Instrumentation can be removed if damaged without removing the sensor or shutting down the line. New instrumentation can be snapped into place with only minimal loss of accuracy, allowing the sensor to be kept in service until a shutdown can be scheduled.



Red Valve Pressure Sensors can be supplied with a wide range of instrumentation, including gauges, transmitters, and switches. Two different instruments can be mounted to the same gauge, and options include snubber/dampers, isolation valves and capillary tubing for remote mounting of the instrument.

## Specifications

---

### Series 40 Pressure Sensors

This specification cover Pressure Sensors and Gauge Isolator devices designed for isolating pipeline flow media from a gauge or instrument. The sensor shall be bolted directly into ANSI flanged pipelines. Face-to-face shall be no greater than a wafer style butterfly valve. Flanged sensors shall be full faced and have thru bolt holes to insure positive alignment in the pipeline. The outside diameter of flanged sensors shall be the same as the mating pipe flange.

The inside of the sensor shall provide uninterrupted flow. There shall be no dead spots or crevices and flow passage shall make the sensor self-cleaning. The Pressure Sensor shall measure pressure for 360° around the full inside circumference of the pipeline.

The sensing sleeve shall be retained by the sensor body, with no rubber exposed to the mating flanges. Pressure shall be transmitted to the gauge by a locked in and sealed fluid. The sensor shall have an auxiliary tapped and

# The World Leader In Pinch Valve Technology



Red Valve Company, Inc.

700 N. Bell Avenue  
Carnegie, PA 15106

PHONE:

412 279-0044

FAX:

412 278-7878

[www.redvalve.com](http://www.redvalve.com)

The information presented in this catalog is provided in good faith. Red Valve Company, Inc. reserves the right to modify or improve its design specifications without notice, and does not imply any guarantee or warranty for any of its products from reliance upon the information contained herein. All orders are subject to Red Valve's standard terms and warranty and are subject to final acceptance by Red Valve.

Viton and Hypalon are registered trademarks of DuPont Dow Elastomers. Teflon is a registered trademark of the DuPont Company. Redflex, Tideflex, Red Valve, and the Red Valve "rv" logo are registered trademarks of Red Valve Company, Inc.

© Red Valve Company, 1999, All Rights Reserved. Red Valve is a registered trademark of Red Valve Company, Inc.



PSB 11/99-10M



## SERIES 5200

Red Valve's 5200 Control Valve—offering maximum durability with precise control. The self-cleaning elastomer sleeve trim offers a 20:1 turndown ratio and 0.89 recovery factor, while eliminating cavitation and scaling and bridging of slurries.



## SERIES 75 PINCH VALVES

Our Manual Pinch Valve has the same face-to-face dimensions as gate, plug, and ball valves, and provides bubbletight, bi-directional shutoff. Full port, no packing to maintain ever.



## REDFLEX® EXPANSION JOINTS

Redflex® Expansion Joint, reducers, rubber pipe, vibration pipe, and rubber fittings are the industry standard. 1" - 96"



## FLEXGATE® SLURRY KNIFEGATE

Red Valve's Flexgate® Slurry Knifegate Valve is a heavy-duty, rugged valve engineered for operator dependability, low maintenance, and excellent abrasion resistance.



## AIR OPERATED

First introduced by Red Valve, the Type A, Miniflex, and Megaflex Pinch Valves are the most economical large- and small-diameter automatic valves on the market today. 1/8" - 72"



## SERIES 39

Designed with our revolutionary Tideflex® Check Valve technology, the Series 39 In-line Check Valve provides maintenance-free backflow prevention on slurries and other hard-to-handle flow media.



## TIDEFLEX® CHECK VALVES

The revolutionary Tideflex® Check Valve stands alone as the product of choice for backflow prevention, replacing high-maintenance flap gates. 1" - 96"



## EFFLUENT DIFFUSERS

Marine and inland installations the world over have proven that Tideflex® diffuser systems increase performance while eliminating maintenance.



## TIDEFLEX® TF-A

Our new Coarse Bubble Air Diffuser improves mixing by increasing jet velocity, while preventing backflow and plugging of the diffuser manifold.



## DOMEFLEX™

The new Domeflex™ Fine Bubble Diffuser uses an integrated check valve for backflow prevention, and a heavy-duty membrane that resists fouling and tearing.

Visit Red Valve's site on the worldwide web for the latest news and schedule of the Rolling Red Valve Road Show.



[www.redvalve.com](http://www.redvalve.com)

**Quick Fax Form • 412 279-7878**

**Pressure Sensor/Diaphragm Seal  
Ordering Information**

**Series**  40  42  44  48  742  
**Standard:** Steel Flange and Body, Buna-N Sleeve,  
 0 - 100 psi Gauge, Ethylene Glycol Fill Fluid

**Size :** \_\_\_\_\_

- Body Material**  Carbon Steel
- Flange Material**  Carbon Steel  
 316 Stainless Steel  PVC  
 Teflon® Coated Steel  CPVC
- Sleeve Material**  Buna-N  EPDM  Neoprene  
 Viton®  Teflon® Coated Buna-N  
 Food Grade Rubber
- Instrument**  2-1/2" Dial  
 0 - 60  0 - 100  0 - 200  
 ASCO Pressure Switch SBIIA/TE10A11  
 Pressure Range \_\_\_\_\_  
 Rosemount Pressure Transmitter 1151GP  
 Other \_\_\_\_\_
- Fill Fluid**  Ethylene Glycol  
 Vegetable Oil  Silicone Oil
- Miscellaneous**  
 Multiple Instruments/T Piping Connection  
 Other \_\_\_\_\_

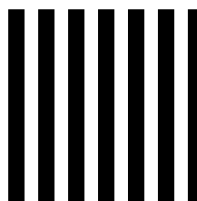
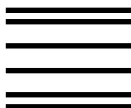
**Please send me literature on the following:**

- Complete Product Line  Tideflex® Check Valves  
 Manual Pinch Valves  Slurry Knifegate Valves  
 Control Valves  Redflex® Expansion Joints
- Have a local representative call
- Please quote me on \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- Name \_\_\_\_\_  
 Title \_\_\_\_\_  
 Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Telephone ( \_\_\_\_\_ ) \_\_\_\_\_

**BUSINESS REPLY MAIL**  
 FIRST CLASS PERMIT NO. 253 CARNEGIE, PA

Postage will be paid by addressee:

**Red Valve**  
 Company, Inc.  
 P.O. BOX 548  
 CARNEGIE PA 15106-9942



NO POSTAGE  
 NECESSARY  
 IF MAILED  
 IN THE  
 UNITED STATES

