BV 3

ANDERSON GREENWOOD
H1RDC2
1/4” FNPT BLEED VALVE, 6000 PSI

ANGI PART NUMBER 330-07231

NO REBUILD KIT AVAILABLE

THIS PAGE LEFT INTENTIONALLY BLANK

Soft Seated Hand Valves – H1

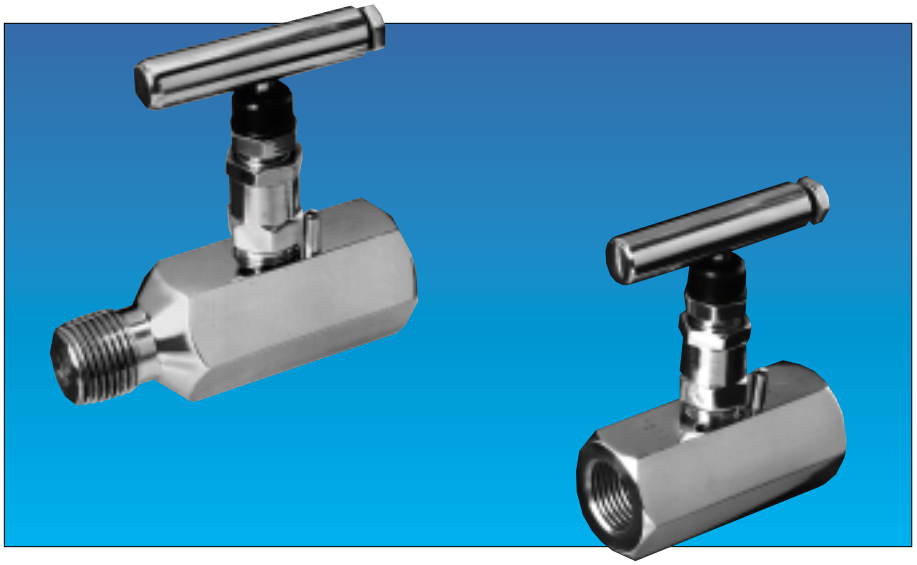
3/16-inch [4.8 mm] and 1/4-inch [6.4 mm] Orifice: 6000 and 10,000 psig [414 and 689 barg]

Product Overview

The H1 Series valves are designed for maximum system reliability. The design criteria includes repetitive bubble-tight closure, safety, and a long, trouble-free life with easy maintenance.

Anderson Greenwood utilizes a replaceable soft seat that gives premium tightness at closure, even in dirty service. The H1's straight-through rising plug design provides good regulation and high capacity with bi-directional flow, and is also roddable for easy cleaning.

These valves are standard with a variety of end connections, seat materials, and stem packing, in SS or CS, and are available with trim to meet the requirements of NACE MR0175-latest revision. All valves are 100 percent pressure tested with material traceability of the body available on request.



Features and Benefits

- **Replaceable soft seat** allows replacement of the soft seat insert without removing the valve from the line. It operates in dirty service with repetitive bubble-tight shutoff.
- **Packing below threads** prevents lubricant washout, thread corrosion, and keeps solids from entering the thread area, which can cause galling. It also prevents process contamination.
- **Adjustable Teflon® packing** adjusts easily: loosen jam nut, tighten bushing slightly, then retighten jam nut. Decreases packing replacement downtime and increases valve life.
- **Dust cover** prevents lubricant washout and keeps contaminants (dirt, rain, etc.) out of bonnet assembly.
- **Safety back seating** prevents stem blowout or accidental removal while in operation and provides a metal-to-metal secondary stem seal while in the full open position.
- **Chrome plating of 316 SS stem** prevents galling or freezing of stem threads when similar metals mate. CS valves use a 303 SS stem.
- **Rolled threads** provide additional thread strength. The stem, bonnet, and male NPT threads are rolled, not cut.
- **Mirror stem finish** burnished to a 16 RMS finish in the packing area enables smooth stem operation and extends packing life.
- **Straight-through flow path** provides high flow capacity, bi-directional flow, and rodding capabilities.
- **Body-to-bonnet seal** is metal-to-metal in constant compression below the bonnet threads. Prevents bonnet thread corrosion, eliminates possible tensile breakage of bonnet, and gives a reliable seal point.

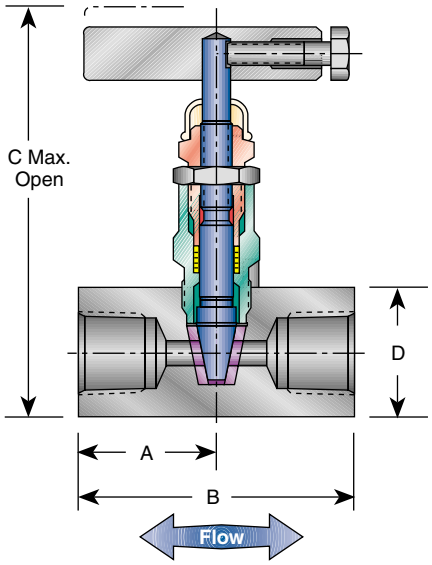
Note

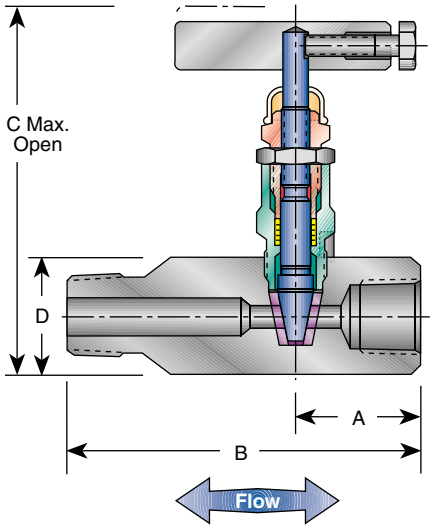
1. Teflon® is a registered trademark of the E.I. duPont de Nemours Company.

H1 Specifications

3/16-inch [4.8 mm] and 1/4-inch [6.4 mm] Orifice: 6000 psig [414 barg]

Dimensions, inches [mm]





FNPT by FNPT

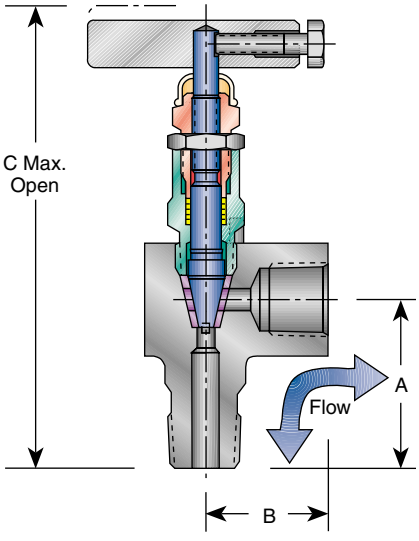
Valve[1]	A	B	C[2]	D
1/4" F x 1/4" F	1.05 [26.7]	2.10 [53.3]	3.70 [94.0]	1.00 [25.4]
1/2" F x 1/2" F	1.35 [34.3]	2.70 [68.6]	3.85 [97.8]	1.25 [31.7]

FNPT by MNPT

Valve[1]	A	B	C[2]	D
1/4" F x 1/4" M	1.18 [30.0]	3.50 [88.9]	3.70 [94.0]	1.00 [25.4]
1/4" F x 1/2" M	1.18 [30.0]	3.50 [88.9]	3.70 [94.0]	1.00 [25.4]
1/2" F x 1/2" M	1.35 [34.3]	3.50 [88.9]	3.85 [97.8]	1.25 [31.7]

Notes

1. Approximate valve weight: 1.3 lb [0.6 kg].
2. Valve C_V maximum
   3/16-inch [4.8 mm] – 0.83.
   1/4-inch [6.4 mm] – 1.40.



FNPT by MNPT (Angle)

Valve	A	B	C
1/2" F x 1/2" M	1.73 [43.9]	1.40 [35.6]	5.00 [127.0]

H1 Specifications

Standard Materials
H1 – 3⁄16-inch [4.8 mm] and 1⁄4-inch [6.4 mm] Orifice: 6000 psig [414 barg]

Valve	Body and Bonnet[1]	Stem	Packing[2]	Seat[3]
CS	A108	A581-303	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®
SS	A479-316	A276-316 Chrome Plated	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®
SG[4]	A479-316	Monel® 400	Teflon®	Delrin®

Standard Materials
H1 – 1⁄4-inch [6.4mm] Orifice: 10,000 psig [689 barg]

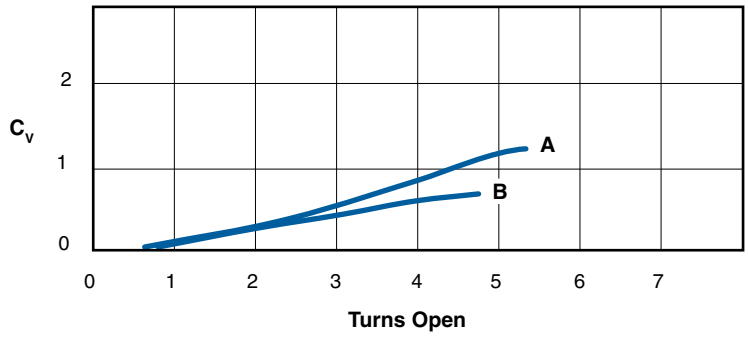
Valve	Body and Bonnet[1]	Stem	Packing[2]	Seat[3]
CS	A108	A581-303	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®
SS	A479-316	Monel® K500	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®
SG[4]	A479-316	Monel® K500	Teflon® or Viton® O-ring with Teflon® backup ring	Delrin®

Notes

1. CS is zinc cobalt plated to prevent corrosion.
2. Teflon® packing is patented.
3. PCTFE (Polychlorotrifluoroethylene is the exact equivalent of Kel-F®), PEEK, and Teflon® seats are also available.
4. SG (Sour Gas) meets the requirements of NACE MR0175-latest revision.
5. Monel® is a registered trademark of International Nickel Company.
6. Delrin® is a registered trademark of the E.I. duPont de Nemours Company.

H1 Specifications

Flow Characteristics – 3/16-inch [4.8 mm] and 1/4-inch [6.4 mm] Orifice



A = 1/4-inch [6.4 mm] orifice, valve C_V 1.4 maximum
B = 3/16-inch [4.8 mm] orifice, valve C_V .83 maximum

Formulas

Liquids

$$Q_L = C_V \sqrt{\frac{(P_1 - P_2)\ (62.4)}{\rho}}$$

Gases (Where $P_2 > .5P_1$)

$$Q_V = (23.18)\ C_V \sqrt{\frac{(P_1 - P_2)\ P_2}{(S.G.)\ T}}$$

Gases (Where $P_2 < .5P_1$)

$$Q_V = \frac{(11.59)\ P_1 C_V}{\sqrt{S.G.\ (T)}}$$

Where:

Q_L = Flow (gpm)

Q_V = Flow (scfm)

ρ = Density of Liquid (lb/ft³)

P_1 = Upstream Pressure (psia)

P_2 = Downstream Pressure (psia)

T = Flowing Temperature (°R)
(°R = °F + 460)

ρ (Water) = 62.4 lb/ft³ @ 60°F [16°C]

S.G. = Specific Gravity of Gas
(M.W. of Air/28.96)

S.G. Air = 1.000

S.G. Nitrogen = 0.967

S.G. Oxygen = 1.105

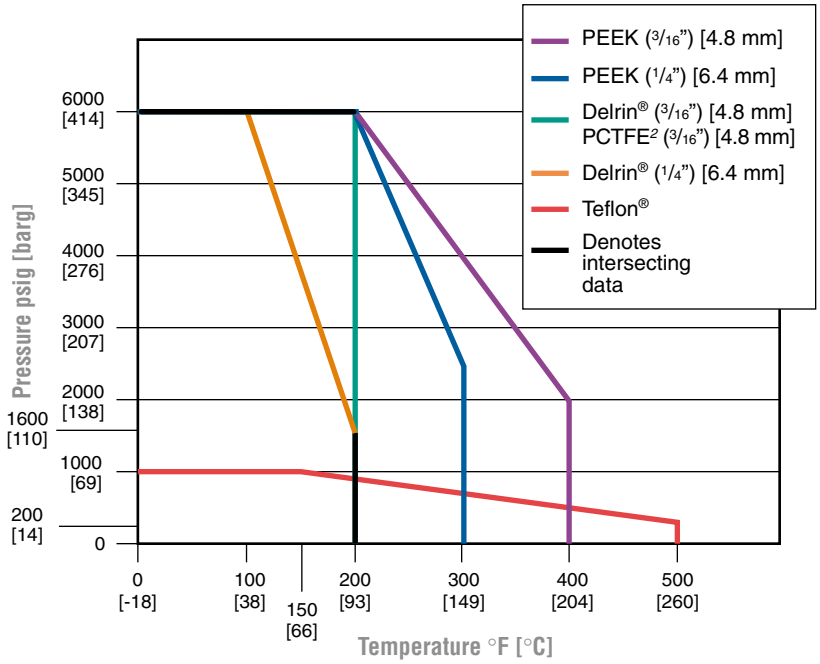
S.G. Helium = 0.138

S.G. Hydrogen = 0.0696

H1 Specifications

3/16-inch [4.8 mm] and 1/4-inch [6.4 mm] Orifice: 6000 psig [414 barg]

Pressure vs. Temperature



Pressure and Temperature Ratings

Valve	3/16-inch [4.8 mm] Orifice	
Delrin® and PCTFE[1] Seat	6000 psig @ 200°F	[414 barg @ 93°C]
PEEK Seat	6000 psig @ 200°F	[414 barg @ 93°C]
	2000 psig @ 400°F	[138 barg @ 204°C]
Teflon® Seat	1000 psig @ 150°F	[69 barg @ 66°C]
	200 psig @ 500°F	[14 barg @ 260°C]

Valve	1/4-inch [6.4 mm] Orifice	
Delrin® Seat	6000 psig @ 100°F	[414 barg @ 38°C]
	1600 psig @ 200°F	[110 barg @ 93°C]
PEEK Seat	6000 psig @ 200°F	[414 barg @ 93°C]
	2500 psig @ 300°F	[172 barg @ 149°C]

Note

1. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.

© 1998, Rev. 1999 Anderson Greenwood reserves the right to change product designs and specifications without notice.

H1 Specifications

3/16-inch [4.8 mm] and 1/4-inch [6.4 mm] Orifice: 6000 psig [414 barg]

Ordering Information

H1 V D S – 44Q – SG

Packing

V – Teflon®
R – Viton® O-ring with Teflon® backup ring

Seat

D – Delrin® (standard)
K – PCTFE[1]
E – PEEK
V – Teflon®

Material

C – CS
S – 316 SS
M – Monel® (Teflon® packed only)
Special alloys available on request.

Connections (Bidirectional)

3/16-inch [4.8 mm] Orifice

2 – 1/4-inch F x 1/4-inch F
22 – 1/4-inch F x 1/4-inch M
24 – 1/4-inch F x 1/2-inch M
4Q – 1/2-inch F x 1/2-inch F
44Q – 1/2-inch F x 1/2-inch M
44QA – 1/2-inch F x 1/2-inch M (Angle)

1/4-inch [6.4 mm] Orifice (Delrin® and PEEK Seats only)

4QR – 1/2-inch F x 1/2-inch F
44QR – 1/2-inch F x 1/2-inch M

Options

BL – Bonnet Lock Device (patent protected) (page 21)
PHB – Phenolic Black Round Handle
SG – Sour Gas meets the requirements of NACE MR0175-latest revision (316 SS only)
SP – Special Requirements - please specify

Note

1. PCTFE (Polychlorotrifluoroethylene) is the exact equivalent of Kel-F®.

© 1998, Rev. 1999 Anderson Greenwood reserves the right to change product designs and specifications without notice.

1.0 INTRODUCTION

Anderson, Greenwood and Co, commercial, hand valves and 3-valve manifolds are soft-seated with a *plug* configuration designed for general *service. The seat* is a rotating plug sealing on a replaceable seat insert. O-Ring stem seals or Teflon packing is available with a variety of end connections. For maximum pressure/temperature ratings see applicable valve assembly drawing.

2.0 INSTALLATION

2.1 Check hand valve body for flow arrow for proper flow orientation. If no flow arrow is stamped on the valve body, flow may be in either direction.

2.2 Check manifold nameplate, if so equipped, for schematic of valve arrangement and note which ports are for process connections and instrument connections.

2.3 *For all field* welds of pipe or tube to valves, it *is* recommended that the valve seat be in *the* partially open position during welding.

2.4 Immediately prior to valve installation, check the piping to which the valve is to be connected for cleanliness and freedom from foreign materials.

2.5 THREADED VALVE INSTALLATION

Threaded pipe joints depend on a good intimate fit between the *male and female* pipe threads, therefore the use of a thread sealant is recommended and the pipe fitting connections must be made up tight.

2.6 WELD JOINT VALVE INSTALLATION

Welded joints, properly made, provide a structural and metallurgical continuity between the pipe and the valve body. All welding should be in accordance with any Code or jurisdictional regulations applicable to the piping system construction and with complete and approved welding procedures.

Heat input should be kept to a minimum, by controlling the amperage and voltage to the lowest practical levels, A minimum travel speed of three (3) I.P.M. should be maintained and the interpass temperature should not exceed 200°F. The process employed should be GTAW with argon gas and a maximum diameter weld of 1/8".

3.0 ***OPERATION***

Valves which have been reasonably matched to a typical valve service application and properly installed in its piping system can expect to have a long service life with a minimum of attention. However, these valves have moving and wearing parts and depend on long term preservation of highly finished surfaces on these parts for *satisfactory valve performance.*

3.1 The use of a "cheater" to operate *the valve handle is not necessary and not* recommended. This practice can cause valve damage.

3.2 All valves have rising stems with right hand thread. Rotate the handle counter-clockwise to open and clockwise to close.

3.3 Bonnets with rising stems are provided with a backseat. Backseats in rising stem bonnets should be considered basically as stops to prevent overtravel when opening valves. It is recommended not to leave the upper stem in the backseat position. Note MSS SP-92, MSS Valve User Guide", paragraph 4.3.

3.4 OPERATION OF 2 VALVE MANIFOLD

The schematic for two valve manifolds is shown in Figure 3. These valves are designed for use on static pressure transmitters, switches or gauges.

3.4.1 In normal operation of the system the block valve between the process and instrument ports will be open and the calibration valve will, be closed.

3.4.2 To check zero, close the block valve to isolate the instrument from the system. Open the calibration valve to bleed the instrument pressure to atmospheric pressure. When fully vented, the instrument should show zero output. A threaded outlet is provided for field spot-check or reset of the instrument.

3.5 OPERATION OF 3-VALVE MANIFOLD

The schematic for the Ml, M4A & M4T manifold is illustrated in Figure 4. These manifolds are three valve units designed for use with differential pressure transmitters or other flow metering instruments. Two valves on the sides of the body are block valves for shutting off the high and low side connections to the d/p transmitter when the instrument is *to be adjusted or* removed from service. The third valve in the center of the body is an equalizing valve for *equalizing pressure on the two* sides of the instrument while readjusting.

3.5.1 In norma, operation of the system the two block valves will *be open and* the equalizer valve *will be closed.*

3.5.2 To readjust the instrument to zero, close the block valve to the low pressure *side (downstream sjde) of* the instrument and open the center valve to equalize the pressure on both sides of the instrument.

3.5.3 To return the instrument to service, close the equalizer *valve and open the block valve to the low* pressure sde of the instrument.

3.6 OPERATION OF M6D AND M19 MANIFOLDS

The schematic for the M6D and M19 manifold is shown in Figure 5. Both valves are used with flow metering instruments, however, the M19 *manifold is* designed specifically to be used with bellows meters. The two end valves are equalizer valves while the center valve is the vent. On the M19, the vent valve is a separate hand valve piped to the manifold body, where on the M6D, the vent valve is integral to the manifold. Block valves on both the M19 and M6D are offered as separate hand valves.

3.6.1 In normal operation of the system, the two block valves and the vent valve will be open and the two equalizer valves will be closed.

3.6.2 To readjust the instrument to zero, close the block valve on the low pressure side (downstream side) of *the instrument along* with the vent valve. Then open the two equalizer valves to equalize pressure *on both* sides of the instrument.

3.6.3 To return the instrument to service, close the two equalizer valves and open the block valve to the low pressure side of the instrument along with the vent valve.

4.0 HAND VALVE AND MANIFOLD MAINTENANCE

The important performance parameters are pressure boundary integrity, actuating force required and internal leak tightness. Maintenance should logically address the importance of preserving the performance parameters.

Valves which remain in one position for long periods of time may be subject to some degree of operability due to the loss of effective lubricants *in* threads, aging of packing, surface corrosion of moving parts or accumulation of harmful solids. In same applications it may be desirable to schedule periodic partial or full, cycle exercising of these valves.

4.1 Stern seal leakage usually results from seal *wear, and can* usually be corrected by tightening the bonnet bushing. Overtightening can cause high stem friction, accelerated wear and shortened stem seal life.

4.2 If stem seal replacement is needed, safe practice *requires* depressurizing the valve before removal of the bonnet bushing. Use of backseat to permit repacking under pressure should be considered unsafe.

4.3 STEM SEAL REPLACEMENT

Teflon packings do not often need replacement if, leakage occurs. Usually the leak can be stopped by tightening the bonnet bushing.

a. Refer to Figures 1 & 2 for part identifications.

b. Remove bonnet lock pin (item 10) from valve body by using heavy duty pliers or wire cutters.

c. Unscrew bonnet counter-clockwise to remove bonnet assembly from valve body.

d. Place bonnet assembly in soft-jawed vise to facilitate disassembly.

e. Remove handle (item 8) by loosening handle bolt (item 7).

f. Remove dust boot (item 6) from upper portion of bushing (item, 3).

g. Loosen jam nut (item 4) and unscrew bushing off stem and out of the bonnet,

h. Remove stem (item 1) from bonnet (item 2) by pushing it downward.

i. Remove stem seal (item 5) from the bonnet and back-up ring *(item 9) if so equipped.*

j. Clean all bonnet *assembly* parts with Acetone or Alcohol.

k. Inspect parts for damage, particularly the stern threads and plug end. Replace both stem and bonnet bushing if threads do not engage smoothly.

l. Lubricate the stem threads with the appropriate lubricant specified on the *assembly drawing.*

m. Insert the stem (item 1), threaded end first, into the end of the bonnet (item 2) that is threaded externally.

n. Push stem upward from the bottom of the bonnet.

o. Place the stem seal (item 5) over the threaded end of the stem and push it down into the body of the bonnet.

p, <u>For O-ring bonnet</u>, install back-up ring (item 9) into bonnet.

q. Lubricate the bushing (item 3) threads with the appropriate lubricant.

r. Install jam nut (item 4) onto bushing (item 3).

s. Place the bushing with jam nut over the stem and start the threads for both the stem and bonnet by hand. Screw the bushing down into the bonnet until it reaches the stem seal.

t. Place the boot (item 6) over the upper portion of the valve stem.

u. Place the handle (item 8) onto the upper portion of the stem and tighten handle bolt to 32 ft lb, Be careful not to bend the stem.

4.4 VALVE ASSEMBLY

a. Lightly lubricate the bonnet threads with the appropriate lubricant.

b. Place bonnet assembly into the seat cavity and screw the bonnet into the valve body by hand.

c. Tighten the bonnet to the proper torque value shown below using the preset torque wrench.

Carbon Steel.....32-38 ft lb
Stainless Steel ...35-40 ft 1b

d. For Teflon Packed Bonnets Onlv:

Tighten the bonnet bushing using a wrench. The bushing should be tightened snugly but not over-tightened. check the bushing tightness by *turning* the handle. If it feels too loose you may tighten the bushing more. If it feels too tight, the stem *seal must* be replaced and the bushing retightened.

The bushing tightness is a matter of both judgment and experience. The basic considerations axe:

Too Loose - the bonnet ;gill leak.

Too Tight - The handle will be hard to turn and the stem seal may be ruined.

e. For O-ring bonnet only, adjust jam nut to where it is .09 ± .03 below thread relief on bushing (ref. Figure 2) then screw bushing down till jam nut contacts bonnet.

f. Once the bushing is properly adjusted, tighten the jam nut(item 4) to lock the *bushing* in place.

g. Tap one bonnet lock pin into *one of the two holes that one* of the flats on *the* bonnet hex best centers over.

5.0 SEAT REPLACEMENT

If seat replacement is needed, safe practice requires depressuring the valve before removal, of the bonnet.

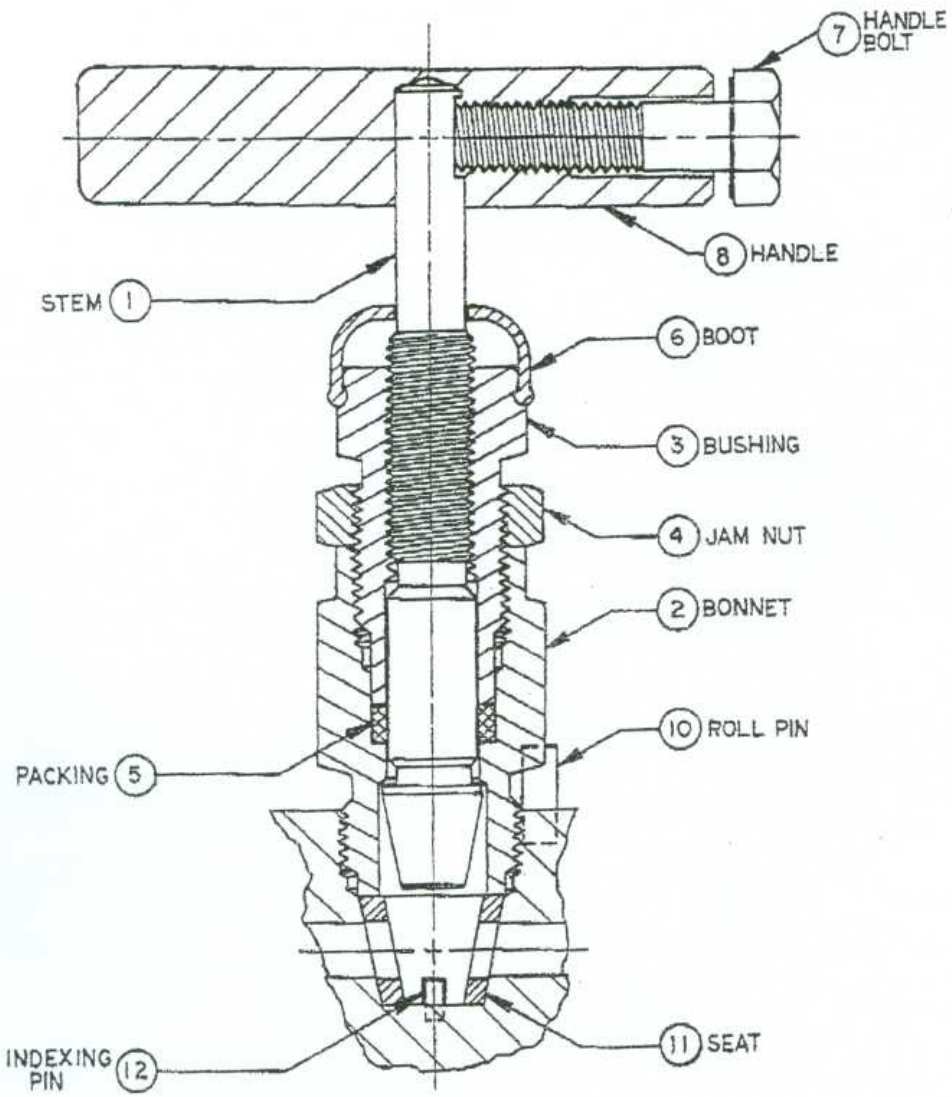
1. Refer to sEction 4.3 for bonnet removal.
2. Refer to Figures 1 and 2 for part identification.
3. Remove seat (item 11) from seat cavity. The seat may be removed from the seat cavity with any smooth surface bar, used as a pry box, inserted into one of *the* orifice holes *in* the seat.
4. *Clean seat* cavity *with* Acetone ox Alcohol.
5. Inspect seat cavity fon damage, such as *scratches that go from* one hole to the other or heavy corrosion *in the area where the seat goes. If seat cavity is damaged* the body must be *replaced.*
6. Make sure that *indexing* pin (item 12) is still *securely in*stalled into the hole in the bottom of the seat cavity.

7. Install new seat making sure that the notch in the side of the seat is centered over the indexing pin.

8. Install bonnet assembly back into body per Section 4.4.

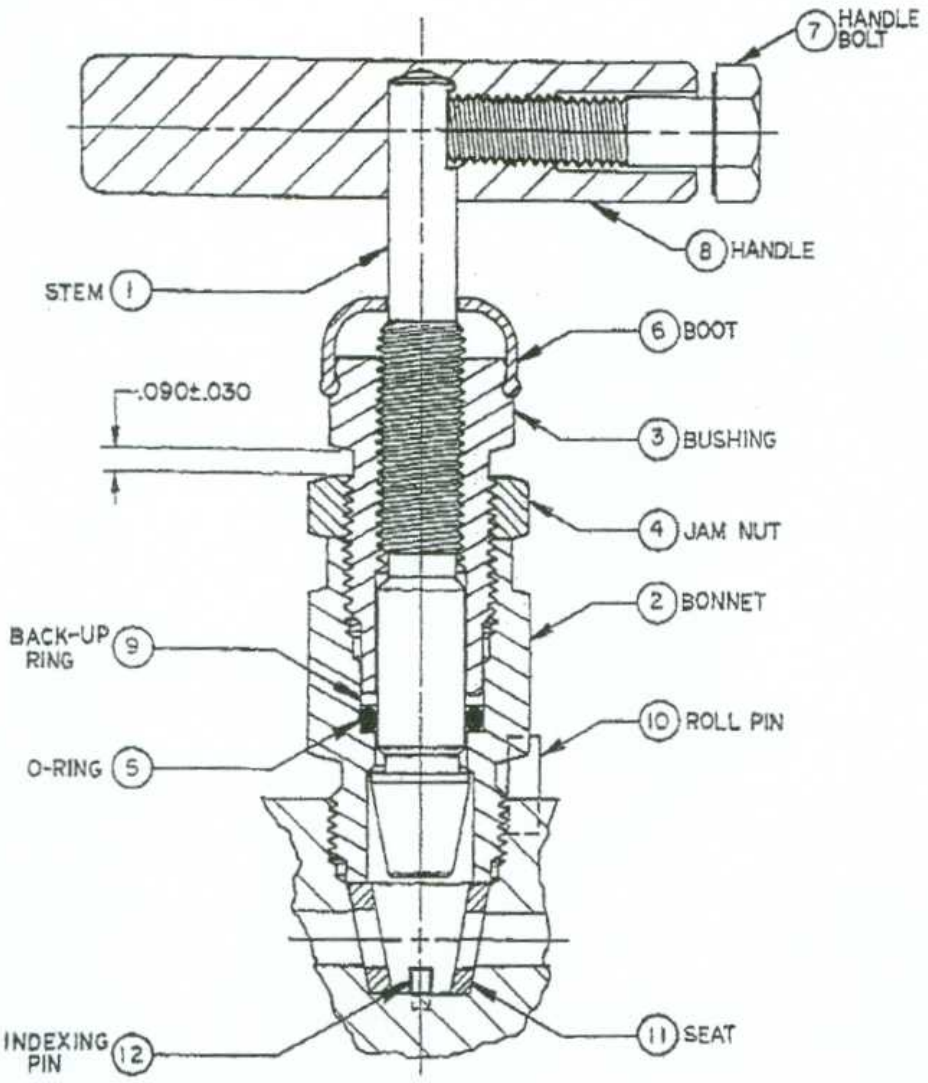
6.0 POST ASSEMBLY INSPECTION

Turn the handle to open and close the valve. Check for binding, *rubbing or any resistance to smooth operation.*



TEFLON PACKED BONNET

FIGURE 1



O-RING BONNET

FIGURE 2

BV 7

HOKE
6610M4Y

PURGE VALVE – ¼” MNPT 6000 PSI STAINLESS STEEL

ANGI PART NUMBER - 330-07281

NO REBUILD KIT AVAILABLE

THIS PAGE LEFT INTENTIONALLY BLANK

6600 SERIES BLEED VALVE

Purpose:

- Hoke 6600 Series Bleed Valves allow for quick, easy manual bleed off of system pressure

Typical Applications:

- Air, Hydraulic Systems or Natural Gas

Technical Data: 6610, 6660, 6670, and 6680 Series Bleed Valves:

- Maximum Operating Pressure: 6000 PSIG @ 70°F (414 Bar @ 21°C)
- Operating Temperature Range: -40° to 600°F (-40° to 316°C)
- End Connections: 1/4, 3/8, 1/2 inch Gyrolok®

Technical Data: 6631 Series Bleed Valves:

- Maximum Operating Pressure: 5000 PSIG @ 70°F (345 Bar @ 21°C)
- Operating Temperature Range: -20° to 425°F (-29° to 218°C)
- Orifice: .125 in. (3.2mm)
- End Connections: 1/4" NPT, 1/4" Tube Stub

Features:

- Compact Installation
- 316 Stainless Steel Construction
- Straight, Union, Elbow or Tee Flow Configurations
- Integral Tube Ends

Benefits:

- Safe
- Reliable
- Gyrolok® Fitting Connections Eliminate Pipe Thread Leak Paths

Operation Instructions: (For all but the 6631 Series Valves)

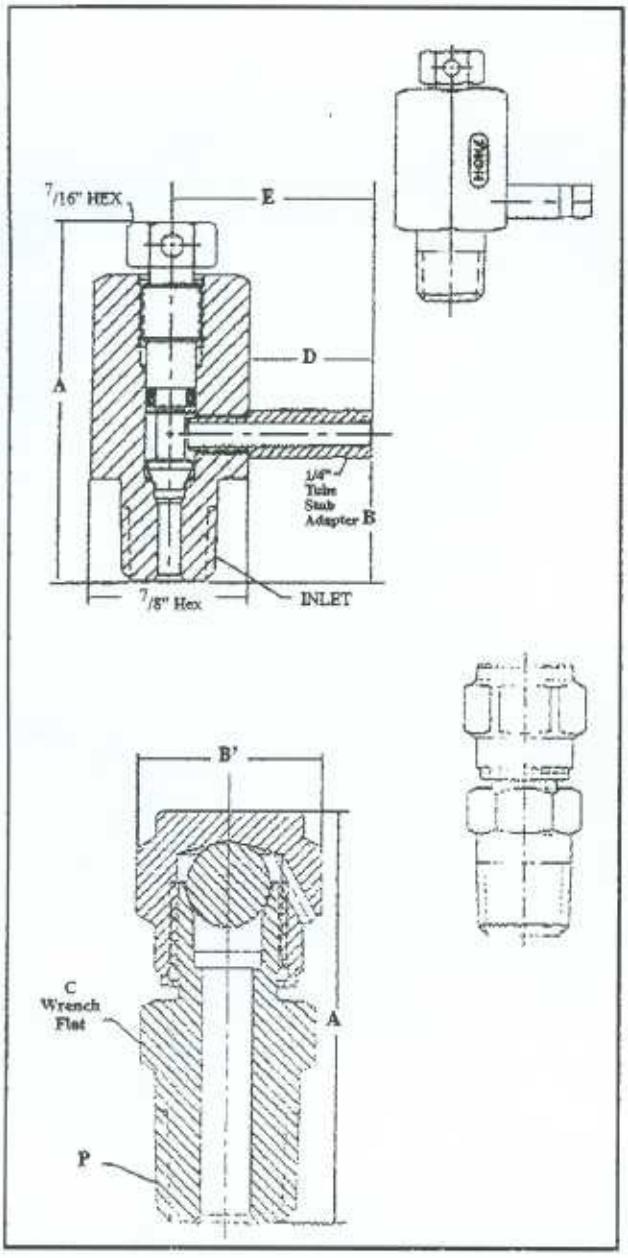
- Valve is operated by turning the bleed port nut with a wrench. Use appropriate back-up wrench to hold body, while turning bleed nut.
- As bleed nut is turned, pressure forces ball off seat. Pressure is vented through a hole drilled in the nut, angled back toward the body of the valve. Make sure flow is directed away from user.
- Those using the valves should wear protective clothing, especially goggles.
- No attempt should be made to repair or dismantle the valve.



6600 SERIES BLEED VALVE

Part Number/Ordering Chart:

Series Designation	Configuration	End Type	End Size	Material
66 - Bleed Valve	10-Straight 31-Directed 60-Elbow 70-Union 80-Tee	G-Gyrolok H-Male NPT x Tube Stub M-Male NPT	4-1/4 in. 6-3/8 in. 8-1/2 in.	Y-316SS



6631 Series Bleed Valves:

Hoke's 6631 Bleed Valve allows the user to direct the bled fluid as desired. To operate simply turn the 7/16" nut with a wrench or the optional loose fit handle, part number 96706-103.

Part Number	Inlet	A (open)	B	D	E
6631H4Y	1/4 Male NPT	2 (51mm)	3/4 (19mm)	11/16 (17mm)	1 1/8 (29mm)
6631H84Y	1/2 Male NPT	2 1/8 (54mm)	29/32 (23mm)	11/16 (17mm)	1 1/8 (29mm)

6610, 6660, 6670, And 6680 Series Bleed Valves:

These Hoke Valves come in a variety of configurations including Straight, Elbow, Union, and Tee. See operating instructions and technical data on front cover.

Part Number	P Thread NPT	A Open	B' Hex	C Wrench Flat
6610M4Y	1/4	1 17/32 (39mm)	5/8	9/16
6610MGY	3/8	1 19/32 (40mm)	5/8	11/16
6610M8Y	1/2	1 13/16 (46mm)	5/8	7/8

• Dimensions for reference only and are subject to change without notice.

CV 24

MCMASTER CARR
4753K32

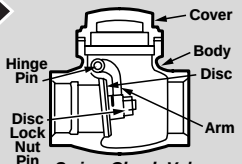
1/2” FNPT CHECK VALVE BRASS 200 PSI

ANGI PART NUMBER 336-07231

NO REBUILD KIT AVAILABLE

THIS PAGE LEFT INTENTIONALLY BLANK

About Check Valves



Swing Check Valve

Check valves have a disc, ball, poppet, or piston that opens when forward flow starts in the pipeline. When pressure drops, either gravity, back pressure, or a mechanical spring force the disc, ball, poppet, or piston back against its seat, preventing backflow. Most check valves are general service and suitable for air, water, oil, or gases (W.O.G.), subject to compatibility with the construction materials.

Cv factor (coefficient of volume) is the amount of water (in gpm) that will pass through a fully open valve at 1 psi with 1 specific gravity (60° F). For a pressure drop other than 1 psi, use this formula:

$$GPM = Cv\sqrt{\frac{\text{Pressure Drop}}{\text{Specific Gravity of the Liquid}}}$$

All valves have a metal-to-metal seat unless noted.

Cracking pressure is the minimum psi required to open a valve.

Spring-loaded (silent) check valves have a spring-assist mechanism (controlled by the flow) to open and close the valve. Flow resistance is moderate. For horizontal and vertical use.

Ball-check valves are primarily for handling viscous fluids. While fluid is flowing, the ball rotates constantly, equalizing wear on ball and valve seat. They offer little flow resistance. For horizontal and vertical use.

Swing-check valves have hinged discs or flaps that swing on a hinged pin. They offer little flow resistance. For horizontal and vertical use (when installed vertically, flow must be upward).

Horizontal-lift (gravity) check valves have a disc floating in the seat that rises by upward flow pressure. These have considerable flow resistance. For horizontal use.

Metal Check Valves

For information about pipe size, see pages 2-3.

Pipe OD to Pipe Size Conversions

Pipe OD	0.405″	0.540″	0.675″	0.840″	1.050″	1.315″	1.660″	1.900″	2.375″	2.875″	3.500″
Pipe Size	⅛″	¼″	⅜″	½″	¾″	1″	1¼″	1½″	2″	2½″	3″

Brass Spring-Loaded Poppet Check Valves



- Maximum Pressure: 200 psi (Steam: 125 psi)
- Cracking Pressure: 1 to 2 psi
- Maximum Temperature: 300° F

A spring-loaded conical-shaped poppet assures positive, easy seating. Poppet and spring are 300 series stainless steel.

Valve bodies are made of NSF61-accepted red brass. ***Brass*** is for steam service. ***Nickel-plated brass*** is for food and beverage service.

Connections: NPT female.

Pipe Size	O'all Lg.	Cv Factor	Brass	Nickel-Plated Brass
⅜″	2⅝″	2.56	4753K31	4753K22
½″	2¾″	2.69	4753K32	4753K28
¾″	3 9/16″	4.38	4753K33	4753K21
1″	3 11/16″	8.00	4753K34	4753K23
1¼″	4½″	16.00	4753K35	4753K25
1½″	4⅞″	17.10	4753K36	4753K27
2″	5 9/16″	27.50	4753K37	4753K29

Brass Spring-Loaded Poppet Check Valves with Rubber Seats



- Maximum Pressure: 200 psi
- Cracking Pressure: 1 psi
- Maximum Temperature: 225° F

Flexible conical-shaped rubber poppets help increase service life and allow positive seating. They perform better than O-ring and metal-seating check valves. Spring is Type 303 stainless steel.

The valves are made of NSF61-accepted red brass. ***Buna-S poppet*** is for air and water; use with submersible pumps and in irrigation applications. ***Buna-N poppet*** is for gasoline and oil.

Note: Not for compressed air. **Connections:** NPT female.

Pipe Size	O'all Lg.	Cv Factor	Buna-S Poppet	Buna-N Poppet
¾″	3 9/16″	4.38	7746K12	7746K32
1″	3 11/16″	8.00	7746K13	7746K33
1¼″	4½″	16.00	7746K14	7746K34
1½″	4⅞″	17.10	7746K15	7746K35
2″	5 9/16″	27.50	7746K16	7746K36

Brass Spring-Loaded Poppet Check Valves—Low-Cracking PSI


Female×Female


Male×Male

- Maximum Pressure: 1000 psi
- Cracking Pressure: 0.3 psi
- Maximum Temperature:
  Buna-N: 250° F
  Viton: 400° F

Engineered for sensitive applications, these valves feature an extra-low cracking pressure of just 0.3 psi. They also have a brass poppet, Type 304 stainless steel spring, and your choice of Buna-N or Viton seats.

Connections: NPTF (Dryseal).

Pipe Size	O'all Lg.	Cv Factor	Buna-N Seat	Viton Seat
Female×Female				
⅛″	1 7/32″	1.1	7775K11	7775K51
¼″	1¾″	1.1	7775K12	7775K52
⅜″	2 13/32″	5.5	7775K13	7775K53
½″	2½″	5.5	7775K14	7775K54
Male×Male				
⅛″	1⅛″	0.5	7775K21	7775K61
¼″	2 1/16″	1.1	7775K22	7775K62
⅜″	2 11/32″	5.5	7775K23	7775K63
½″	2½″	5.5	7775K24	7775K64

High-Pressure Spring-Loaded Ball and Poppet Check Valves


Ball-Check Valve

- Maximum Pressure:
  Brass: 2000 psi
  Carbon steel: 5000 psi
  Type 203 stainless steel: 5000 psi
- Cracking Pressure:
  ¼″ to ¾″ sizes: 1 to 2.5 psi
  1″ size: 3 to 5 psi
- Maximum Temperature: 200° F

These valves are at home in hydraulic applications. They have a Type 302 stainless steel spring and metal-to-metal seat. Ball-check valves (straight design) have a Type 440 stainless steel ball; poppet check valves (tee design) have a Type 302 stainless steel poppet. **Connections:** NPT female.

Pipe Size	O'all Lg.	Cv Factor	Brass	Carbon Steel	Type 203 Stainless Steel
Ball-Check Valves					
¼″	2″	1.47	4620K21	4620K41	4620K81
⅜″	2½″	3.30	4620K22	4620K42	4620K82
½″	2⅞″	3.60	4620K23	4620K43	4620K83
¾″	3¼″	5.41	4620K24	4620K44	4620K84
Poppet Check Valves					
1″	4½″	9.60	4620K25★	4620K45▲	

★ Naval bronze body. ▲ Ductile iron body.

High-Temperature Spring-Loaded Ball-Check Valves



- Maximum Pressure:
  Brass: 2000 psi
  Carbon Steel: 5000 psi
  Type 203 Stainless Steel: 5000 psi
- Cracking Pressure: 1 to 2.5 psi
- Maximum Temperature: 400° F

Our hex-shaped, ball-check valves are designed for high pressure and temperature applications. Ball is Type 440 stainless steel; spring is Type 302 stainless steel; seat is Viton with Teflon backup washer. **Connections:** NPTF (Dryseal) female.

Pipe Size	O'all Lg.	Cv Factor	Brass	Carbon Steel	Type 203 Stainless Steel
⅛″	1 15/32″	0.23	5010K71	5010K51	5010K61
¼″	2″	0.54	5010K72	5010K52	5010K62
⅜″	2¼″	0.83	5010K73	5010K53	5010K63
½″	2 21/32″	1.47	5010K74	5010K54	5010K64
¾″	2 15/16″	1.90	5010K46	5010K26	

THIS PAGE LEFT INTENTIONALLY BLANK

CV 44

HOKE
CVH-028

3/4” FNPT CHECK VALVE SS 6000 PSI
20 PSI CRACKING PRESSURE SPRING
W/ 90 DURO VITON O’ RING

ANGI PART NUMBER 336-07254

NO REBUILD KIT AVAILABLE

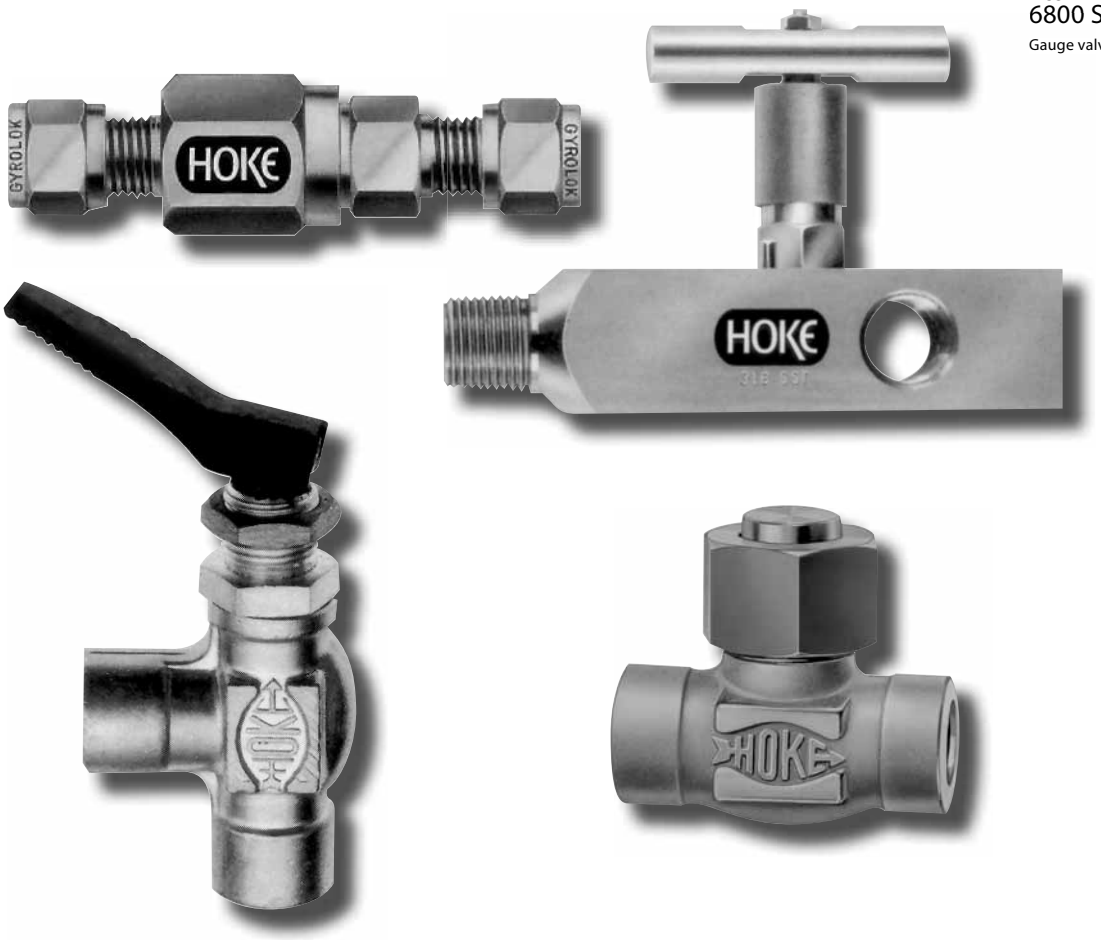
ORING CHECK VALVE 3/4” VITON 90 DURO – 761-07417

SPRING CHECK VALVE 3/4" – 650-07358

Fluid Control Components

Index

CVH Series 1
Check valves
XVH Series 5
Excess flow valves
6100/6200 Series 13
Check valves
691F Series 16
Check valves
R6000 Series 18
Adjustable relief valves
6600 Series 24
Bleed valves
6300 Series 27
Filter elements
1500 Series 29
Toggle valves
6800 Series 32
Gauge valves



fluid control

HOKE Incorporated
405 Centura Court • PO Box 4866 (29305) • Spartanburg, SC 29303
Phone (864) 574-7966 Fax (864) 587-5608
www.hoke.com • sales@hoke.com

CVH Series

Check Valves



The CVH Series Check Valves are engineered for a competitive price with no compromise of quality and performance to meet the growing requirements of instrumentation valves. The function of this valve series is to maintain system integrity by preventing back flow of a wide variety of fluids over a broad range of pressures.

Features & Specifications

- Rapid response
- Resilient o-ring seat provides cushioned, noise-free closing and zero leakage
- Floating o-ring design: o-ring is continually cleaned so contaminants do not prevent sealing
- Various materials of construction can be used with any liquid or gas service
- Various end connections can be assembled in any system or application
- Spring-loaded poppet can be mounted in any orientation
- Full flow with minimal restriction for maximum Cv rates
- Virtually maintenance free for maximum dependability
- Pressures up to 6000 psig (414 bar)
- Cracking pressure range is 0.5 to 20 psig (0 to 1 bar) ±10%
- Flow up to 7.4 Cv maximum
- Greater than 100,000 life cycles
- Special High Tolerance NPT Thread

Technical Data

Body Material*	316 stainless steel, Monel® R-405, Hastelloy® C-276
Operating Pressure Range	0 to 6000 psig (414 bar)
Temperature Range**	-65° F to +550° F (-54° C to +288° C)
Cv factors	0.32 to 7.4
Cracking Pressure Range	0.5 to 20 psig (0.035 to 1.379 bar) ± 10%
Leakage	External: zero Internal: Soft seat = zero
Connection sizes	⅛″ to 1″; 6mm to 25mm
Life Cycles	In excess of 100,000 cycles

** Consult factory for other materials*

*** Limited to +400° F (204° C) for ¾″ / 12 mm sizes and higher*

HOKE Incorporated
405 Centura Court • PO Box 4866 (29305) • Spartanburg, SC 29303
Phone (864) 574-7966 Fax (864) 587-5608
www.hoke.com • sales@hoke.com

CVH Series

Specifications

Operating Temperatures

Seal Material	Temperature (°F)	Temperature (°C)
Viton®	-20° to +400°	-29° to +204°
Fluorosilicone	-80° to +350°	-62° to +177°
Kalrez®*	-40° to +550°	-40° to +288°
Buna N	-65° to +275°	-54° to 135°

** Limited to +400° F (204° C) for ¾" / 12 mm sizes and higher*

Flow Rates

Fitting Size	⅛"	¼"/4mm	⅜"/6mm	½"/8mm	10mm	¾"/12mm	1"/16mm
fitting code*	–02	–04	–06	–08	–10	–12	–16
Cv FACTORS	0.32	0.79	1.71	3.08	3.87	7.38	7.38

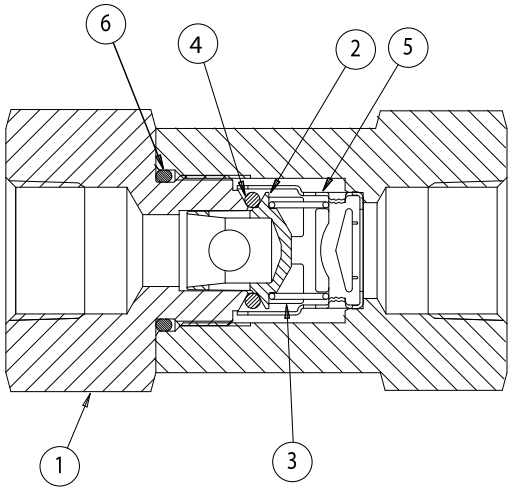
** See ordering matrix on page 9*

Materials of Constructions

	Part	Standard Materials (Others on Request)
1	Body* (outlet)	316 stainless steel
2	Poppet*	316 stainless steel
3	Spring*	302 stainless steel
4	O-ring*	Viton®
5	Spring guide	316 stainless steel
6	O-ring*†	Viton®

** wetted component*

† Applies to ¾" / 12mm sizes and higher

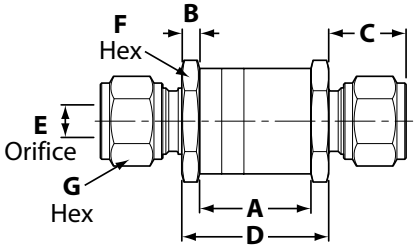


Dimensions

Gyrolok® Tube Fitting, Fractional

Fitting Code*	Fitting Size	A	B	C	D	E	F	G
–02	⅛"	0.83	0.20	0.67	1.23	0.09	27.0	0.67
–04	¼"/4mm	0.83	0.20	0.77	1.23	0.19	27.0	0.77
–06	⅜"/6mm	1.26	0.20	0.83	1.66	0.30	36.6	0.83
–08	½"/8mm	1.26	0.20	0.92	1.66	0.42	36.6	0.92
–12	¾"/12mm	2.05	0.50	0.97	3.05	0.66	63.5	0.97
–16	1"/16mm	2.05	0.50	1.08	3.05	0.66	63.5	1.08

** See ordering matrix on page 9*



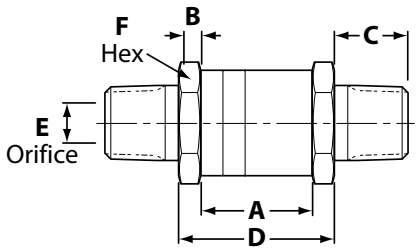
Gyrolok® Tube Fitting, Metric

Fitting Code*	Fitting Size	A	B	C	D	E	F	G
–04	¼"/4mm	21.08	5.08	17.9	31.30	2.44	27.0	17.9
–06	⅜"/6mm	21.08	5.08	19.5	31.30	3.96	27.0	19.5
–08	½"/8mm	21.08	5.08	19.1	31.30	5.94	27.0	19.1
–10	10mm	32.25	5.08	19.8	42.20	8.03	36.6	19.8
–12	¾"/12mm	32.25	5.08	23.4	42.20	10.01	36.6	23.4
–14	14mm	32.25	5.08	21.0	42.20	12.01	36.6	21.0
–16	1"/16mm	52.07	12.70	23.4	76.10	12.70	63.5	23.4
–18	18mm	52.07	12.70	24.6	76.10	15.88	63.5	24.6
–22	22mm	52.07	12.70	24.6	76.10	16.66	63.5	24.6
–25	25mm	52.07	12.70	27.4	76.10	16.66	63.5	27.4

** See ordering matrix on page 9*

CVH Series

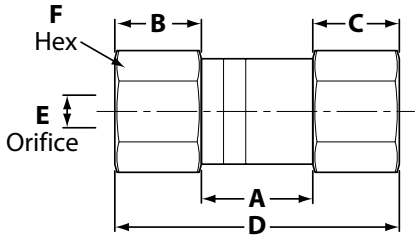
Dimensions



Male NPT, (Fractional)

Fitting Code*	Fitting Size	A	B	C	D	E	F
–02	⅛″	0.83	0.20	0.38	1.23	0.19	27.0
–04	¼″/4mm	0.83	0.20	0.56	1.23	0.19	27.0
–06	⅜″/6mm	1.26	0.20	0.56	1.66	0.39	36.6
–08	½″/8mm	1.26	0.20	0.75	1.66	0.42	36.6
–12	¾″/12mm	2.05	0.50	0.75	3.05	0.66	63.5
–16	1″/16mm	2.05	0.50	0.94	3.05	0.66	63.5

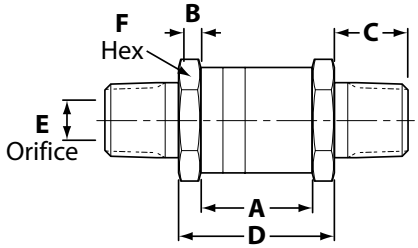
* *See ordering matrix on page 9*



Female NPT, (Fractional)

Fitting Code*	Fitting Size	A	B Inlet	C Outlet	D	E	F
–02	⅛″	0.98	0.62	0.62	2.22	0.19	27.0
–04	¼″/4mm	0.98	0.62	0.62	2.22	0.19	27.0
–06	⅜″/6mm	0.85	0.77	0.77	2.39	0.39	36.6
–08	½″/8mm	1.05	0.93	0.93	2.91	0.42	36.6
–12	¾″/12mm	0.95	1.08	1.08	3.11	0.66	63.5
–16	1″/16mm	1.16	1.37	1.37	3.90	0.66	63.5

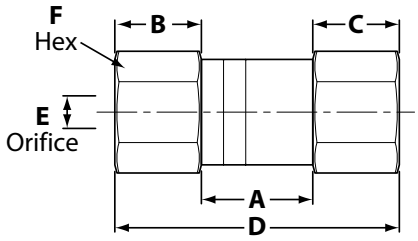
* *See ordering matrix on page 9*



Male British Tapered Pipe, (Fractional)

Fitting code*	Fitting Size	A	B Inlet	C Outlet	D	E	F
–02	⅛″	0.83	0.20	0.38	1.23	0.19	27.0
–04	¼″/4mm	0.83	0.20	0.56	1.23	0.19	27.0
–06	⅜″/6mm	1.26	0.20	0.56	1.66	0.39	36.6
–08	½″/8mm	1.26	0.20	0.75	1.66	0.42	36.6
–12	¾″/12mm	2.05	0.50	0.75	3.05	0.66	63.5
–16	1″/16mm	2.05	0.50	0.94	3.05	0.66	63.5

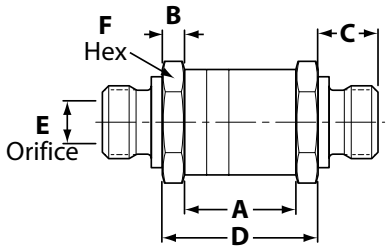
* *See ordering matrix on page 9*



Female British Tapered Pipe, (Fractional)

Fitting Code*	Fitting Size	A	B Inlet	C Outlet	D	E	F
–02	⅛″	0.74	0.63	0.63	2.00	0.19	27.0
–04	¼″/4mm	0.99	0.88	0.88	2.75	0.19	27.0
–06	⅜″/6mm	1.04	0.98	0.98	3.00	0.39	36.6
–08	½″/8mm	1.31	1.25	1.25	3.81	0.42	36.6
–12	¾″/12mm	1.22	1.56	1.56	4.34	0.66	63.5
–16	1″/16mm	1.46	1.80	1.80	5.06	0.66	63.5

* *See ordering matrix on page 9*



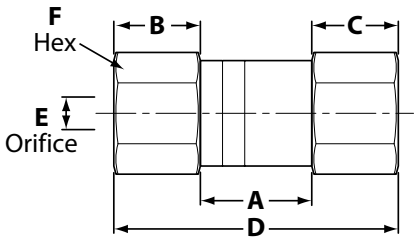
Male British Parallel Pipe, (Fractional)

Fitting Code*	Fitting Size	A	B	C	D	E	F
–02	⅛″	0.83	0.20	0.38	1.59	0.19	27.0
–04	¼″/4mm	0.83	0.20	0.56	1.95	0.19	27.0
–06	⅜″/6mm	1.26	0.20	0.58	2.42	0.39	36.6
–08	½″/8mm	1.26	0.20	0.67	2.60	0.42	36.6
–12	¾″/12mm	2.05	0.50	0.75	3.55	0.66	63.5
–16	1″/16mm	2.05	0.50	0.83	3.71	0.66	63.5

* *See ordering matrix on page 9*

CVH Series

Dimensions



Female British Parallel Pipe, (Fractional)

Fitting Code*	Fitting Size	A	B Inlet	C Outlet	D	E	F
–02	⅛″	1.15	0.66	0.66	2.47	0.19	27.0
–04	¼″/4mm	1.16	0.89	0.89	2.94	0.19	27.0
–06	⅜″/6mm	1.03	1.04	1.04	3.11	0.39	36.6
–08	½″/8mm	1.27	1.17	1.17	3.61	0.42	36.6
–12	¾″/12mm	1.17	1.51	1.51	4.19	0.66	63.5
–16	1″/16mm	1.37	1.61	1.61	4.59	0.66	63.5

** See ordering matrix below*

How to Order

Standard items in bold

CVH G 4 Y 3 1 S

FITTING TYPE
- F Female NPT
- G Gyrolok® tube fitting, fractional
- J Male British parallel pipe
- K Female British parallel pipe
- M Male NPT
- Q Male British tapered pipe
- T Female British tapered pipe
- Z Gyrolok® tube fitting, metric

FITTING SIZE

	Fractional	Metric
2	⅛″	N/A
4	¼″	4mm
6	⅜″	6mm
8	½″	8mm
10	N/A	10mm
12	¾″	12mm
14	N/A	14mm
16	1″	16mm
18	N/A	18mm
22	N/A	22mm
25	N/A	25mm

CLEANING OPTIONS
- **S Standard**
- O Oxygen cleaning

SEAL MATERIALS
- 1 Viton®
- 2 Buna-N (not for oxygen service)
- 3 Fluorosilicone
- 4 Kalrez®

CRACK PRESSURE
- 1 0.5 psig (0.04 bar)
- 2 1.0 psig (0.07 bar)
- 3 3.0 psig (0.21 bar)
- 4 10 psig (0.83 bar)
- 5 20 psig (1.38 bar)

BODY MATERIAL
- **Y 316 stainless steel (standard)**
- H Hastelloy® C–276
- M Monel® R-405

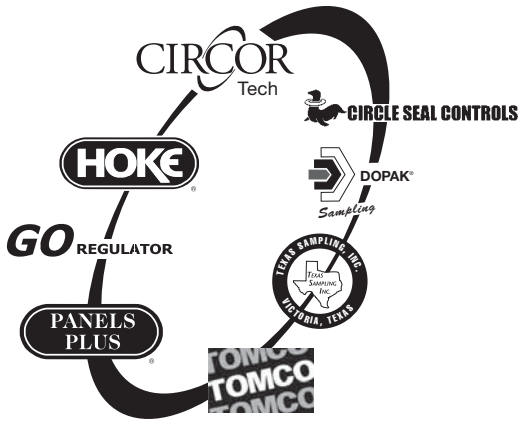
Please consult HOKE Incorporated or your local distributor for information on special connections, o-rings, operating pressures and temperature ranges.

For Your Safety

It is solely the responsibility of the system designer and user to select products suitable for their specific application requirements and to ensure proper installation, operation, and maintenance of these products. Material compatibility, product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or property damage.

Gyrolok® is a registered trademark of HOKE Incorporated.
Monel® is a registered trademark of Special Metals Corporation.
Hastelloy® is a registered trademark of Haynes International, Inc.
Kalrez® and Viton® are registered trademarks of DuPont Dow Elastomers.

CIRCOR
Instrumentation Technologies



Hoke • GO Regulator • Tomco • CIRCOR Tech

405 Centura Court • PO Box 4866 (29305)
Spartanburg, SC 29303
Tel (864) 574-7966 • Fax (864) 587-5608
www.circortechnologies.com

Hoke Controls / Panels Plus
2054 Francis St.
Ontario, CA 91761
Tel (909) 923-3770
Fax (909) 923-2550
www.circor-panelsplus.com

Texas Sampling, Inc
3706 Rio Grande
Victoria, Texas 77901
Tel (361) 575-8087
Fax (361) 575-8157
www.texassampling.com

CIRCOR Instrumentation Technologies
Central Europe
Leeuwenhoekweg 24
2661 CZ Bergschenhoek
The Netherlands
Tel +31 10 4206011 • Fax +31 10 4566774
www.circortechnologies.com

Dopak Inc.
9572 Kempwood
Houston, Texas 77080
Tel (713) 460-8311
Fax (713) 460-8578
www.dopak.com

Circle Seal Controls
2301 Wardlow Circle
Corona, CA 92880
Tel (951) 270-6200
Fax (951) 270-6201
www.circlesealcontrols.com

Hoke GmbH
Weitzesweg 11
Postfach 1541
D-61118 Bad Vilbel-Dortelweil
Germany
Tel +49 6101 82 56 0
Fax +49 6101 82 56 40
www.hoke.de

CIRCOR Instrumentation Technologies

CIRCOR Instrumentation Technologies (CIT) is a product group of CIRCOR International (NYSE: CIR), specializing in fluid process control solutions with orifice sizes typically up to 1″. Our main product lines include ball, needle, packless, diaphragm, solenoid, and metering valves, pressure regulators, quick couplers, Gyrolok® compression tube fittings, and fully integrated sampling systems.

CIT markets primarily to the petrochemical, refining, power generation, food and beverage, semiconductor, and pharmaceutical industries, and to OEM's. CIT separates itself from the competition by offering highly engineered components manufactured to exacting standards and a variety of custom options.

79020 • 04/10 • APS92

THIS PAGE LEFT INTENTIONALLY BLANK

CAD DRAWING - NO MANUAL REVISIONS ALLOWED

THIS DWG FOR REF ONLY. ARTICLES DESCRIBED HEREIN ARE EITHER PATENTED OR PROPRIETARY OR DIRECTLY RELATED TO ARTICLES WHICH ARE PATENTED OR PROPRIETARY. PARTIAL COPYING OR REPRODUCTION OF THIS ARTICLE IS PROHIBITED.

DWG NO. CVH-028 SHT 1

REVISIONS

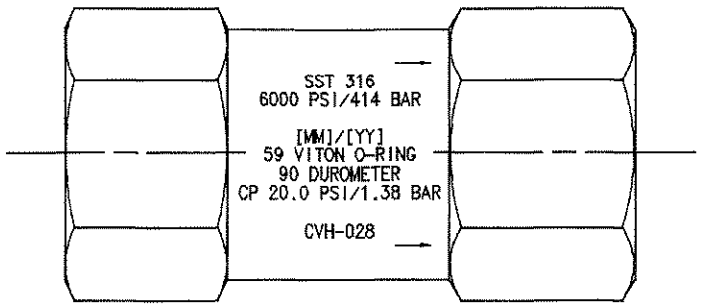
REV	DESCRIPTION	DATE	APPROVED
-	RELEASE PER ECO 30055	05/02/11	SLG
A	REVISED PER ECO 30160	05/05/02	MW
B	REVISED PER ECO 30195	05/05/26	MW

CVH-028 CONSISTS OF:
(ITEM BALLOONS PER CVH DWG)

1. END P/N 121330-12-103
2. BODY P/N 121331-12-103
3. POPPET P/N 121341-103
4. SPRING P/N 121344-20
5. SPRING GUIDE P/N 121347
6. O-RING P/N 58-211-59
7. O-RING P/N 58-218-17

NOTES:

1. ASSEMBLY AND TECHNICAL DATA PER CVH DRAWING REV D PER ECO 30022.
2. MARK ASSY PER VIEW BELOW.
3. BASIC MATERIAL: SST 316
4. THIS ASSEMBLY SAME AS CVH52F12YS EXCEPT NEW ITEM 6.



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS IN INCHES
REMOVE BURRS
FILLET RADII .005 TO .035
MACHINE FINISH 125
DRILL POINTS STD
TOLERANCES ARE:
DECIMALS: .XX = ±.010
.XXX = ±.005
ANGLES: ±1°
CONCENTRICITY .010 DIA
DO NOT SCALE DRAWING

APPROVALS		DATE
DRAWN	MH	05/02/11
CHECKED	SLG	05/02/11
APPROVED	RA	05/02/14

INITIAL USAGE (REF ONLY)

CAD FILE: CVH-028

HOKE INC

TITLE
CHECK VALVE, 20 PSI CRACKING PRESSURE
3/4 FEMALE NPT CONNECTIONS

SIZE	CAGE CODE	DWG NO.	REV
A	28968	CVH-028	B

SCALE	CALC. WT	ACT. WT	SHEET
NONE			1 OF 1

THIS PAGE LEFT INTENTIONALLY BLANK

CV 55

HOKE
CVH-025

3/8” FNPT CHECK VALVE, SS, 6000 PSI
20 PSI CRACKING PRESSURE SPRING,
W/ 90 DURO VITON O’RING

ANGI PART NUMBER 336-07266

POPPET CHECK VALVE 3/8 – 700-07943

O’RING CHECK VALVE 3/8, 90 DURO VITON – 761-07384

SPRING – 650-07356

THIS PAGE LEFT INTENTIONALLY BLANK

CAD DRAWING - NO MANUAL REVISIONS ALLOWED

DWG NO. CVH-025 SHT 1

THIS DWG FOR REF ONLY. ARTICLES DESCRIBED HEREIN ARE EITHER PATENTED OR PROPRIETARY OR DIRECTLY RELATED TO ARTICLES WHICH ARE PATENTED OR PROPRIETARY. PARTIAL COPYING OR REPRODUCTION OF THIS ARTICLE IS PROHIBITED.

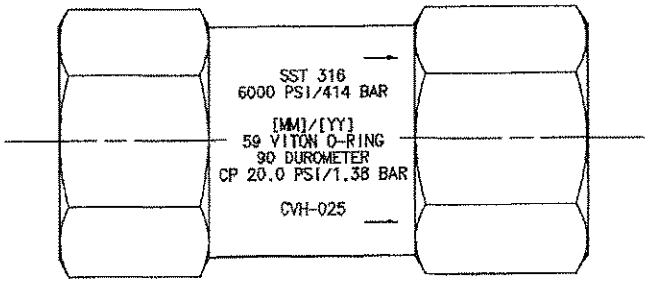
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
-	RELEASE PER ECO 30055	05/02/11	SLG
A	REVISED PER ECO 30195	05/05/26	MW

CVH-025 CONSISTS OF:
(ITEM BALLOONS PER CVH DWG)

1. END P/N 40287-6T1
2. BODY P/N 40288-6T1
3. POPPET P/N A253T1
4. SPRING P/N -255-20
5. BAND P/N 40271-8A1W
6. BAND P/N 40271-8A1Y
7. SPRING GUIDE P/N 40436-8T1
8. O-RING P/N 58-112-59
9. SHROUD P/N A250T1

NOTES:

1. ASSEMBLY AND TECHNICAL DATA PER CVH DRAWING REV C PER ECO 18573C.
2. MARK ASSY PER VIEW BELOW.
3. BASIC MATERIAL: SST 316
4. THIS ASSEMBLY SAME AS CVHY06F06F32200AOH EXCEPT NEW ITEM 8.



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS IN INCHES
REMOVE BURRS
FILLET RADII .005 TO .035
MACHINE FINISH 125
DRILL POINTS STD
TOLERANCES ARE:
DECIMALS: .XX = ±.010
.XXX = ±.005
ANGLES: ±1°
CONCENTRICITY .010 DIA
DO NOT SCALE DRAWING

APPROVALS		DATE
DRAWN	MH	05/02/11
CHECKED	SLG	05/02/11
APPROVED	RA	05/02/14

INITIAL USAGE (REF ONLY)

CAD FILE: CVH-025

HOKE INC

TITLE
CHECK VALVE, 20 PSI CRACKING PRESSURE
3/8 FEMALE NPT CONNECTIONS

SIZE	CAGE CODE	DWG NO.	REV
A	28968	CVH-025	A

SCALE NONE | CALC. WT | ACT. WT | SHEET 1 OF 1

THIS PAGE LEFT INTENTIONALLY BLANK

F 101

FINITE
MS8S-10CVG

SAE-32 MS8S FILTER W/GRADE 10 COALESCING ELEMENT

ANGI PART NUMBER – 772-07274

ELEMENT - 770-07320

THIS PAGE LEFT INTENTIONALLY BLANK

800 PSIG Pressure Filters

M-Series

PET bottle blowing plants rely on the filtration protection of the M-Series to meet stringent standards for contact with food and beverage containers.



Finite's M-Series provides the needed filtration for a wide variety of compressed air/gas applications. Varied porting and connection styles, along with a robust design make this an extremely versatile filter. It is a perfect fit for interstage filtration applications for multistage, high pressure gas compressors. The aluminum heads and drawn aluminum bowls are compatible with special gases such as argon, hydrogen, compressed natural gas and helium. This housing design minimizes the problem of porosity often present with housings made by die casting.



Specifications:

Model Number	Port Size NPT	Max. Pressure	Max. Temp.	Materials of Construction				Sump Capacity	Weight	Dimensions	
				Head	Internals	Bowl	Seals			Length	Width
MN1S	1/4"	800 PSIG (55 bar)	175°F (79°C)	Machined Aluminum	Stainless Steel/Plastic	Aluminum	Buna-N	5.1 oz. (150 ml)	1.83 lbs. (0.83 kgs.)	7.89" (200 mm)	3.06" (78 mm)
MN1L	1/4"	800 PSIG (55 bar)	175°F (79°C)	Machined Aluminum	Stainless Steel/Plastic	Aluminum	Buna-N	4.7 oz. (140 ml)	2.19 lbs. (0.99 kgs.)	10.28" (261 mm)	3.06" (78 mm)
MN15S	3/8"	800 PSIG (55 bar)	175°F (79°C)	Machined Aluminum	Stainless Steel/Plastic	Aluminum	Buna-N	5.1 oz. (150 ml)	1.82 lbs. (0.82 kgs.)	7.89" (200 mm)	3.06" (78 mm)
MN15L	3/8"	800 PSIG (55 bar)	175°F (79°C)	Machined Aluminum	Stainless Steel/Plastic	Aluminum	Buna-N	4.7 oz. (140 ml)	2.17 lbs. (0.98 kgs.)	10.28" (261 mm)	3.06" (78 mm)
MN2S	1/2"	800 PSIG (55 bar)	175°F (79°C)	Machined Aluminum	Stainless Steel/Plastic	Aluminum	Buna-N	5.1 oz. (150 ml)	1.80 lbs. (0.82 kgs.)	7.89" (200 mm)	3.06" (78 mm)
MN2L	1/2"	800 PSIG (55 bar)	175°F (79°C)	Machined Aluminum	Stainless Steel/Plastic	Aluminum	Buna-N	4.7 oz. (140 ml)	2.15 lbs. (0.98 kgs.)	10.28" (261 mm)	3.06" (78 mm)
MN3S	3/4"	800 PSIG (55 bar)	175°F (79°C)	Machined Aluminum	Stainless Steel/Plastic	Aluminum	Buna-N	9.1 oz. (270 ml)	5.01 lbs. (2.27 kgs.)	10.83" (275 mm)	4.55" (116 mm)
MN4S	1"	800 PSIG (55 bar)	175°F (79°C)	Machined Aluminum	Stainless Steel/Plastic	Aluminum	Buna-N	9.1 oz. (270 ml)	4.90 lbs. (2.22 kgs.)	10.83" (275 mm)	4.55" (116 mm)
MN4L	1"	800 PSIG (55 bar)	175°F (79°C)	Machined Aluminum	Stainless Steel/Plastic	Aluminum	Buna-N	9.1 oz. (270 ml)	5.54 lbs. (2.51 kgs.)	14.36" (365 mm)	4.55" (116 mm)
MN8S	2"	800 PSIG (55 bar)	175°F (79°C)	Sand Cast Aluminum	Aluminum	Aluminum	Buna-N	14.9 oz. (440 ml)	10.37 lbs. (4.71 kgs.)	18.60" (472 mm)	5.91" (150 mm)

How to Order:

Series Name	Port Type	Port Size	Bowl	-	Element Grade	Element Type	End Seal	Accessories
M	**N** (NPT) **T** (BSPT) **F** (BSPF)	**1** (1/4") **15** (3/8") **2** (1/2") **3** (3/4") **4** (1") **8** (2")	**S** (Standard) **L** (Long) Note: L is not available for 3/4" and 2" port size housings		**4** **6** **8** **10**	**C** (Coalescer)	1/4" - 1" port size: Leave blank for no end seal or **U** (Urethane) 2" port size: **V** (Fluorocarbon)	**N** (No Accessories) **G** (Gauge) Standard on 2" port
					4 **6** **8** **10**	**Q** (Coalescer with built-in prefilter)	**U** (Urethane) Standard on all sizes	
					Leave blank	**100WS**	1/4" - 1" port size: **U** (Urethane) For 2" leave blank (standard fluorocarbon end seals)	
					Leave blank	**7CVP** (only available on 2" port)	Leave blank (standard fluorocarbon end seals)	
					Leave blank	**3P** (Pleated Cellulose) Particulate element	1/4" - 1" port size: **U** (Urethane) 2" port size: **V** (Fluorocarbon)	
					Leave Blank	**A** (Adsorber)	1/4" - 1" port size: **U** (Urethane) 2" port size: **V** (Fluorocarbon)	

Examples: MN2S-6QUG
MN3L-3PUN
MN8S-6CVG
MN8S-7CVPG



This (**G**) option is a great way to monitor pressure drop and determine when to replace the filter element.

Mounting brackets available: MB-2 (1/4" - 1/2" port size)
BK-3 (3/4" - 1" port size)

How to Order Replacement Elements:

Housings are sold with one element. Build your own replacement element with the chart below:

Housing	Element Grade and Type	Element Size
M_1S M_15S M_2S	*C,*CU,*QU, 3PU, AU, 100WSU	10-025
M_1L M_15L M_2L	*C,*CU,*QU, 3PU, AU, 100WSU	10-050 (for 100WSU use 10-025)
M_3S M_4S	*C,*CU,*QU, 3PU, AU, 100WSU	15-060
M_4L	*C,*CU,*QU, 3PU, AU, 100WSU	15-095 (for 100WSU use 15-060)
M_8S	*CV,*QU, 3PV, AV, 100WS, 7CVP	25-130

Note: _insert port type. See How to Order above for more information.

1. Determine the housing you have by choosing from the "Housing" column on the chart.

2. Determine the element type and grade you need. *Insert grades 4,6,8 or 10 for C, CU, CV or QU. See page 6-7 for more detail on grade selection.

3. Determine the corresponding element size by choosing from the "Element Size" column on the chart.

4. Combine "Element Grade and Type" designation with "Element Size" to get element part number.

Ex: 3PU10-025 or 6CU10-025

Element box quantity depends on media type selected.

For M-Series Flow Rates... see next page!



M-Series (800 PSIG) Flow Rates (SCFM):

Filter Housing	Media Grade	100 PSIG	250 PSIG	500 PSIG	800 PSIG
M_1S	4C/4Q	11	25	49	78
	6C/6Q	15	35	67	107
	7CVP	NA	NA	NA	NA
	8C/8Q	20	46	90	142
	10C/10Q	25	58	112	178
	3P	25	58	112	178
	100WS	50	115	224	355
	A	15	35	67	107
M_1L	4C/4Q	23	53	103	163
	6C/6Q	30	69	135	213
	7CVP	NA	NA	NA	NA
	8C/8Q	41	95	184	291
	10C/10Q	50	115	224	355
	3P	50	115	224	355
	100WS	50	115	224	355
	A	30	69	135	213
M_15S	4C/4Q	15	35	67	107
	6C/6Q	20	46	90	142
	7CVP	NA	NA	NA	NA
	8C/8Q	27	62	121	192
	10C/10Q	33	76	148	235
	3P	33	76	148	235
	100WS	66	152	296	469
	A	20	46	90	142
M_15L	4C/4Q	30	69	135	213
	6C/6Q	40	92	179	285
	7CVP	NA	NA	NA	NA
	8C/8Q	55	127	247	391
	10C/10Q	66	152	296	469
	3P	66	152	296	469
	100WS	66	152	296	469
	A	40	92	179	285
M_2S	4C/4Q	19	44	85	135
	6C/6Q	25	57	112	178
	7CVP	NA	NA	NA	NA
	8C/8Q	34	78	153	242
	10C/10Q	42	97	189	299
	3P	42	97	189	299
	100WS	83	192	372	590
	A	25	58	112	178

Filter Housing	Media Grade	100 PSIG	250 PSIG	500 PSIG	800 PSIG
M_2L	4C/4Q	38	88	171	270
	6C/6Q	50	115	224	355
	7CVP	NA	NA	NA	NA
	8C/8Q	68	157	305	483
	10C/10Q	83	192	372	590
	3P	83	192	372	590
	100WS	83	192	372	590
	A	50	115	224	355
M_3S	4C/4Q	61	141	274	434
	6C/6Q	80	185	359	569
	7CVP	NA	NA	NA	NA
	8C/8Q	109	252	489	775
	10C/10Q	133	307	597	946
	3P	133	307	597	946
	100WS	133	307	597	946
	A	80	184	359	569
M_4S	4C/4Q	76	175	341	541
	6C/6Q	100	231	449	711
	7CVP	NA	NA	NA	NA
	8C/8Q	136	314	610	967
	10C/10Q	166	383	745	1181
	3P	166	383	745	1181
	100WS	232	535	1041	1650
	A	100	231	449	711
M_4L	4C/4Q	106	245	476	754
	6C/6Q	140	323	628	995
	7CVP	NA	NA	NA	NA
	8C/8Q	191	441	857	1358
	10C/10Q	232	535	1041	1650
	3P	232	535	1041	1650
	100WS	232	535	1041	1650
	A	140	323	628	995
M_8S	4C/4Q	260	600	1167	1849
	6C/6Q	350	808	1571	2489
	7CVP	600	1385	2692	4267
	8C/8Q	465	1073	2087	3307
	10C/10Q	600	1385	2692	4267
	3P	600	1385	2692	4267
	100WS	600	1385	2692	4267
	A	350	808	1571	2489

Note: _insert port type. See How to Order on page 11 for more information.

THIS PAGE LEFT INTENTIONALLY BLANK

F 170

FINITE
JS3B-WSN

FILTER – 12 JS3B STAINLESS STEEL SEPARATOR
ELEMENT 100 MICRON 550
CNG @ 125F
1292 SCFM @ 1000 PSI
3840 SCFM @ 3000 PSI

ANGI PART NUMBER – 772-07300

ELEMENT - 772-07317





aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding





High Pressure Compressed Air and Gas Filters

J-Series High Efficiency Filters / CNG and Alternative Fuel Filters

Bulletin 1300-250/USA



Parker

ENGINEERING YOUR SUCCESS.

Finite J-Series High Pressure Filters

Why do high pressure systems need filtration?

High pressure compressors are used in a variety of applications. Many owners, operators and designers of high pressure compressed air or gas systems rely on Parker's Finite Filter Operation for high efficiency filters. End users of high pressure compressed air, such as scuba divers and fire rescue workers, depend on high quality breathable air.



Throughout the stages of compression many contaminants can enter into the system. Excessive amounts of liquid aerosols, primarily lube oil carryover and solid particulate contamination are common in high pressure systems. In addition, higher temperature levels are possible and may cause liquid oils to varnish. This contamination can lead to poor component performance and wear that may lead to unscheduled maintenance. Even submicronic contaminants in compressed air or gas systems can foul multistage compressors, increase maintenance costs or eventually impacting your final product.

Parker's Finite Filter Operation offers a variety of high pressure compressed air and gas filters. With our wide range of elements, we have a solution for every stage of compression, as well as at the point of use. Whether you are storing high pressure air or gas or using a continuous flow, count on Parker to protect your equipment from contamination. Parker Finite is the solution to ending high pressure contamination fouling.

Parker's Finite Filter Operation's J-Series Filters are designed to filter contaminants such as rust, pipe scale, compressor lube oil, and water from compressed gases. These filters are often used in high pressure compressed natural gas (CNG) systems, not only as inter-stage filters in the multi-stage compression of the gas, but also in the storage and delivery of the gas for CNG powered vehicles.



Parker's varied media choices remove up to 99.995% of both solid and liquid aerosols, and contaminants as small as 0.01 microns in size. An activated carbon media is also available which removes oil vapor. This stage of filtration is often used as the final filter before the storage of high pressure breathing air used by scuba divers, firefighters, and others that utilize portable breathing devices.

The filter housings and the replaceable elements used in this product line have an extremely robust construction, specially designed for use in system pressures up to 5000 psig. Five housing sizes and two thread styles (NPT or SAE) are available with connections ranging from 1/4" to 2"; temperatures up to 350°F, and flows up to 26,000 SCFM at 5000 PSIG.

J-Series High Pressure Filters

- CNG, alternative fuel and breathing air filters
- Pressures to 5000 PSIG
- Spheroidal Graphite Cast iron
- Coalescing, particulate and adsorption filter elements available

Filter Element Features

Parker Finite offers six filter media grades ensuring that we now have the correct media choice for nearly any application requirement.

Available are coalescing grades with 95% to 99.995% efficiency and pleated or UNI-CAST coalescing media designs. Additionally, a bulk liquid separator, a particulate removal and oil vapor removal choices are standard offerings.

Each element uses a retention clip design that ensures the element is seated and sealed properly. This built-in, fail-safe feature will eliminate any possibility of contaminant by-pass and is unique amongst high pressure filters.

Each element is composed of internal and external plated carbon steel retainers which provide the element with a 75+ PSID burst rating. Each element also features a bore seal interface with the housing, an anti-vibration shoulder, and an integrated standoff which minimizes the likelihood of any movement of the element, even during severe system pulsations.

Element standoff lengths were designed for each housing size to allow an optimal volume of liquid contaminant to be collected in the filter's quiet zone, further minimizing any chance of contaminant carryover.



Filter Housing Features

- Robust, spheroidal graphite-cast iron offers higher mechanical strength, improved ductility, and increased shock resistance.
- Head to bowl bore seal ensures greater seal integrity.
- Threaded mounting holes on top of filter head allow each size to be easily panel mounted when line mounting is not an option.
- Engraved flow direction arrow in filter's head notifies the user of proper flow direction. One direction flow for all media choices reduces the possibility of a housing being installed improperly.
- The SG cast iron head and steel bowl are nickel plated for corrosion resistance. The completed assembly is finished with a UV stable epoxy powder paint that will allow the filter to stand-up to harsh outdoor conditions.
- An imprinted aluminum part number.
- SAE-6 steel drain plug with positive o-ring seal installed. This port also allows the easy installation of Finite's JDK5000H or JDK5000V high pressure drain kits which allow the safe removal of liquid contamination at system pressures.
- Bowls are designed to be easily tightened or loosened with a standard metric socket wrench.
- Bowls feature a slotted positional locator which enables the element to be positively retained.
- Low bowl removal clearance.





Element Types and Media Grade Options

Coalescers:
Removes: Oil, water, liquids

Coalescing elements are specially designed for the removal of liquid contaminants from gaseous flows. These media types flow from the inside of the element to the outside. Coalesced liquid collects in the bowl where it is drained, while clean air or gas exits the housing through the outlet port. Particulate contaminants are captured and held in the media.



Type C
The Finite UNI-CAST coalescing elements are made of epoxy saturated borosilicate glass microfiber and includes a polyester drain layer. (1)(2)(3)



Type 7CVP
This pleated coalescer is made of fluorocarbon saturated borosilicate glass microfiber and includes a polyester drain layer. (1)(2)(3)

Water Separator:
Removes: Bulk liquids

In this element, the gas or liquid flows from the inside of the element to the outside



Type WS
The Finite water separator element is composed of wrapped stainless steel mesh. (1)(2)(3)

Adsorber:
Removes: Oil vapor (odor)

Adsorption elements are used to remove vapors (hydrocarbon or water) that are not removed by the coalescing filter. Hydrocarbon vapors collect in the element, while clean air exits the housing through the outlet port. In this element, the air or gas flows from the inside of the element to the outside



Type A
Our Type A media is wrapped activated carbon. This element has a galvanized carbon steel inner retainer and a stainless steel perforated metal outer retaining layer. (2)(3)

Particulate:
Removes: Solid contaminants

Particulate filters in the J-Series flow from the inside of the element to the outsidee. Particles collect in the element, while the clean air exits through the outlet port.



Type 3P
This 3 micron absolute rated pleated element is made of cellulose. (1)(2)(3)

Notes:
1 Each element is ratained internally and externally with galvanized carbon steel pergorated metal.
2 A nitrile back-up ring is used to position the fluorocarbon o-ring utilized on this element.
3 Top and bottom end caps are made of glass filled nylon to ensure durability.

Media Grades and Specifications:

Finite media grades determine the filtration efficiency. Capture efficiencies are available up to 99.995%. Micron ratings range from 0.01 to 3 micron. The columns on the right note both the wet and dry pressure drops.

Grade Designation	Media Type	Removes...	Max. Oil Coalescing Efficiency	Micron Carryover ppm[1]	Rating (um)	Additional Pressure Pressure Drop Media Dry (PSID)	Drop Media Wet[2] (PSID)
4C	Coalescing	Liquid from Gas	99.995%	0.003	0.01	1.25	3-4
7CP	Coalescing	Liquid from Gas	99.5%	0.09	0.5	0.25	0.5-0.7
10C	Coalescing	Liquid from Gas	95%	0.85	1.0	0.5	0.5
WS	Bulk Separator	Bulk Liquid from Gas	99+%[3]	N.A.	100	<0.25	<0.25
3P	Particulate	Solids from Gas	N.A.	N.A.	3.0	0.25	N.A.
A	Adsorbor	Vapor from Gas	99+%[4]	N.A.	3.0	1.0	N.A.

[1]Tested per ISO 12500-1 at 40 ppm inlet.
[2]Add dry + wet columns for total pressure drop.
[3]Bulk liquid removal efficiency..
[4]Oil vapor removal efficiency is given for A media.

Applications:

High Pressure (HP) Filter Applications							
Test Air for HP Hydraulics	10C / 7C						
Inter-stage HP Compressor	WS / 10C						
CNG Compressor Outlet	10C	→	4C				
CNG Storage Cascades	10C	→	4C				
CNG Dispensers	10C	→	4C				
Breathing Air / SCUBA	10C	→	4C	→	A		
High Pressure "Zero Air"	10C	→	4C	→	4C	→	A
Bulk Liquid contamination	WS	→	7C	→	4C		
Bulk solid Contamination	3P	→	7C	→	4C		
HP Air / Gas Dryer Protection	10C / 7C	→	4C	→	Dryer	→	7C / 3P
Food Applications / Odor Removal	10C / 7C	→	4C	→	A		



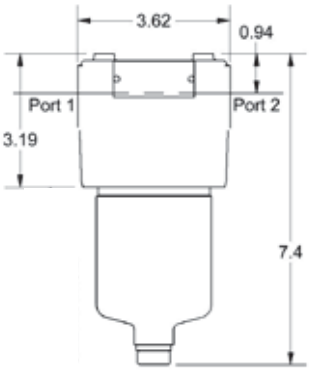
Flow Rates:

Choose Filter Size to find the corresponding flow rates

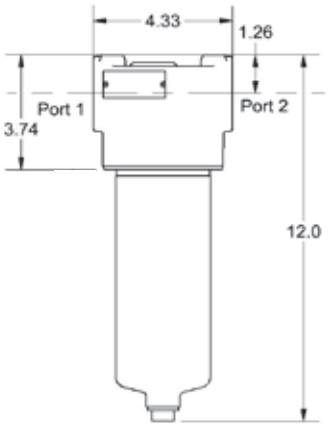
J-Series Flow Rates (SCFM)

Model	Port	Filter Type	100 PSIG	1000 PSIG	1500 PSIG	2000 PSIG	2500 PSIG	3000 PSIG	3500 PSIG	4000 PSIG	4500 PSIG	5000 PSIG
J_1A	1/4"	4C, A	15	135	200	265	330	395	460	525	590	655
		7CP, 10C, 3P, WS	30	265	395	525	660	790	920	1050	1180	1310
J_2A	1/2"	4C, A	25	220	330	440	550	655	765	875	985	1095
		7CP, 10C, 3P, WS	50	440	660	880	1095	1315	1530	1750	1970	2185
J_2B	1/2"	4C, A	35	310	460	615	765	920	1070	1225	1380	1530
		7CP, 10C, 3P, WS	80	710	1055	1405	1755	2105	2450	2800	3150	3500
J_3B	3/4"	4C, A	60	530	790	1055	1315	1575	1840	2100	2360	2525
		7DP, 10C, 3P, WS	130	1150	1715	2285	2850	3415	3985	4550	5115	5685
J_4C	1"	4C, A	90	795	1190	1580	1975	2365	2760	3150	3540	3935
		7CP, 10C, 3P, WS	200	1770	2640	3515	4385	5255	6130	7000	7870	8745
J_6D	1-1/2"	4C, A	180	1590	2375	3160	3945	4730	5515	6300	7085	7870
		7CP, 10C, 3P, WS	400	3540	5280	7025	8770	10515	12255	14000	15745	17490
J_8E	2"	4C, A	275	2435	3630	4830	6030	7230	8425	9625	10825	12025
		7CP, 10C, 3P, WS	600	5310	7925	10540	13155	15770	18385	21000	23615	26230

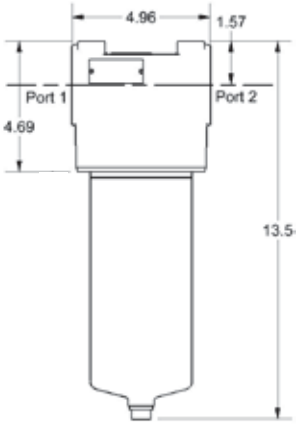
Note: These rates are based on compressed air flow. For CNG, these flows can be multiplied by a factor of 1.2.



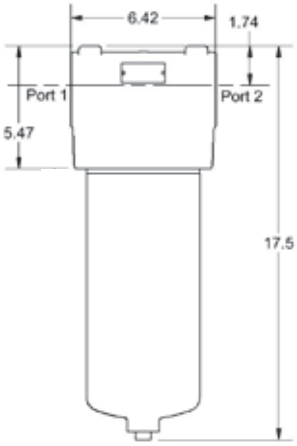
J_A Series



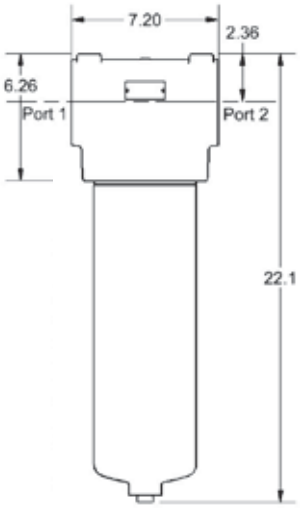
J_B Series



J_C Series



J_D Series



J_E Series

Specifications:

Model	J_1A	J_2A	J_2B	J_3B	J_4C	J_6D	J_8E
Port Size (N=NPT)	1/4" NPT	1/2"NPT	1/2"NPT	3/4" NPT	1"NPT	1-1/2"NPT	2" NPT
Port Size (S=SAE)	SAE-4	SAE-8	SAE-8	SAE-12	SAE-16	SAE-24	SAE-32
Max. Pressure	5000 PSIG	5000 PSIG	5000 PSIG	5000 PSIG	5000 PSIG	5000 PSIG	5000 PSIG
Max. Temperature	350°F	350°F	350°F	350°F	350°F	350°F	350°F
Head	SG Iron*	SG Iron*	SG Iron*	SG Iron*	SG Iron*	SG Iron*	SG Iron*
Bowl	Steel	Steel	Steel	Steel	Steel	Steel	Steel
Seals:	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon
Backing Ring	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile
Sump Volume	50 mL	50 mL	180 mL	180 mL	230 mL	500 mL	500 mL
Weight	9.0 lbs.	9.0 lbs.	13.0 lbs.	13.0 lbs.	21.0 lbs.	45.0 lbs.	67.0 lbs.
Port to Port	3.62"	3.62"	4.33"	4.33"	4.96"	6.42"	7.2"
Height	7.4"	7.4"	12.0"	12.0"	13.5"	17.5"	22.1"
Clearance	1.76"	1.76"	2.11"	2.11"	2.47"	2.94"	2.94"
Drain Port	SAE-6	SAE-6	SAE-6	SAE-6	SAE-6	SAE-6	SAE-6
Socket / Bowl Removal	1-1/16" HEX	1-1/16" HEX	1-1/2 HEX	1-1/2 HEX	1-1/2 HEX	1-1/2 HEX	1-1/2 HEX
Head / Bowl Torque	15-20 ft-lbs.	15-20 ft-lbs.	25-30 ft-lbs.	25-30 ft-lbs.	25-30 ft-lbs.	60-70 ft-lbs.	60-70 ft-lbs.

*Note: SG Iron is an abbreviation for Spheroidal Graphite Cast Iron

High Pressure Drains and Gauge:

JDK5000H	Horizontal Drain Kit 5000 psig
JDK5000V	Vertical Drain Kit 5000 psig
BDPI-25	Differential Pressure Gauge and Bracket

Note: Replacement Element supplied with o-ring and lube tube.

Member of

New to Come

ISO 9001:2000

How To Order
Part Numbers for Complete Assemblies:

Use the steps below to build your own part number.
For any permutation not mentioned below, please consult factory at 1-800-521-4357.

J	N	1	A	-	4	N
Series Name	Thread	Port Size	= Housing Size		Media Grade	Accessories
J	N - NPT	1 (1/4")	= A		4C	N = None
	S - SAE	2 (1/2")	= A		10C	Available
		2 (1/2")	= B		7CP	
		3 (3/4")	= B		WS	
		4 (1")	= C		3P	
		6 (1-1/2")	= D		A	
		8 (2")	= E			

Examples:

JN2A-4CN, JS6D-WSN, JN3B-3PN

Replacement Element Part Numbers:

Media Grade/Type	Series	Housing Size	Kit
4C	J	A	K
10C		B	
7CP		C	
WS		D	
3P		E	
A			

Examples:

4CJAK, WSJDK, 3PJBK



J-Series filters are used in a number of applications, ranging from breathing air for scuba divers, to high-pressure hydraulic circuit testing, to a variety of uses in the alternative fuel industry.









Worldwide Filtration Manufacturing Locations

North America

Compressed Air Treatment

Filtration & Separation/Balston
Haverhill, MA
978 858 0505
www.parker.com/balston

Filtration & Separation/Finite
Oxford, MI
248 628 6400
www.parker.com/finitefilter

Purification, Dehydration & Filtration Division
Lancaster, NY
716 685 4040
www.parker.com/pdf

Sales Office
Charlotte, NC
704 921 9303
www.parker.com/pdf

Engine Filtration & Water Purification

Racor
Modesto, CA
209 521 7860
www.parker.com/racor

Racor
Holly Springs
662 252 2656
www.parker.com/racor

Racor
Beaufort, SC
843 846 3200
www.parker.com/racor

Racor – Village Marine Tec.
Gardena, CA
310 516 9911
desalination.parker.com

Hydraulic Filtration

Hydraulic Filter
Metamora, OH
419 644 4311
www.parker.com/hydraulicfilter

Process Filtration

Process Advanced Filtration
Oxnard, CA
805 604 3400
www.parker.com/processfiltration

Europe

Compressed Air Treatment

domnick hunter Industrial
England NE
+44 (0) 191 402 9000,
www.domnickhunter.com

Hiross Zander
Padova Business Unit
Angelo di Piove Padova, Italy
+39 049 9712 111
www.parker.com/hzd

Hiross Zander
Essen Business Unit
Essen, Germany
T +49 2054 9340, F +49 2054 934164
www.parker.com/hzd

Parker Gas Separations
Etten- Leur, Netherlands
+31 76 508 5300

Engine Filtration & Water Purification

Racor
England
+44 (0) 1924 487000,
www.parker.com/rfde

Racor Research & Development
Stuttgart Germany
+49 (0)711 7071 290-0
www.parker.com/racor

Hydraulic Filtration

Hydraulic Filter
Arnhem, Holland
+31 26 3760376
www.parker.com/eurofilt

Urjala Operation
Urjala as Finland
+358 20 753 2500
www.parker.com/fi

Condition Monitoring Center
Norfolk IP 24 1HP England
+44 1842 763299
www.parker.com/cmc

Process Filtration

domnick hunter Process
DH3 2SF England
T +44 (0) 191 410 5121
www.domnickhunter.com

Asia Pacific

Australia
NSW 2154, Australia
+61 2 9634 777
www.parker.com/australia

China
Shanghai 101206 China
+86 21 5031 2525
www.parker.com/china

India
Mahape, Navi Mumbai 400 709 India
T +91 22 5613 7081, 82, 83, 84, 85
www. parker.com/india

Japan
Yokohama-shi, 244-0003 Japan
T +81 45 870 1522
www.parker.com/japan

Korea
Hwaseong-City Gyeonggi-Do, Korea
T +82 31 359 0771
www.parker.com/korea

Singapore
Singapore 619 702
T +65 6887 6300
www.parker.com/singapore

Thailand
Bangkok 10250 Thailand
T +66 2717 8140
www.parker.com/thailand

Latin America

Parker Comercio Ltda.
Filtration Division
Sao Jose dos Campos
CEP 12225-390 SP Brazil
+55 12 4009 3500
www.parker.com/br

Pan American Division - Miami
Miami, FL
305 470 8800
www.parker.com/panam

Africa

Aeroport Kempton Park,
1620 South Africa
+27 11 9610700
www.parker.com/eu

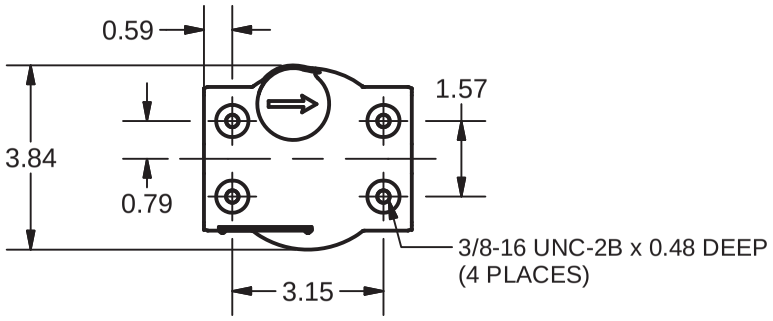
© 2011 Parker Hannifin Corporation. Product names are trademarks or registered trademarks of their respective companies.

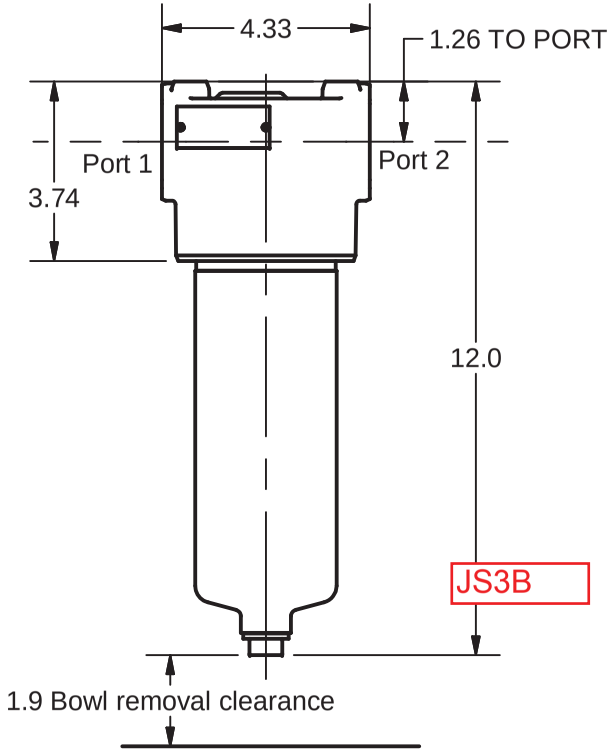
Bulletin 1300-250/USA 3/11

Parker Hannifin Corporation
Filtration and Separation Division
500 S. Glaspie Street
Oxford, MI 48371
phone 248 628 1850, fax 248 628 1850
1 800 521 4357 (US & Canada)
www.cngfiltration.com

ALL DIMENSIONS ARE FOR REFERENCE ONLY. OBTAIN A CERTIFIED DRAWING FROM THE FACTORY PRIOR TO USING DIMENSIONS FOR DESIGN PURPOSES.

SYM	ECO	DATE
-	0009885	01-25-2011





UNIT: INCHES

ASSEMBLY NUMBER: J_ _B

PORT TYPE & SIZE NOMENCLATURE
NPT PORTS: JN2B = 1/2" NPT, JN3B = 3/4" NPT
SAE PORTS: JS2B = SAE-8 (3/4-16), JS3B = SAE-12 (1-1/16-12)

DRAIN: SAE-6 (9/16-18), PLUG INCLUDED
MAXIMUM PRESSURE: 5,000 PSIG
MAXIMUM TEMPERATURE (HOUSING ONLY): 350°F
MAX. DIFFERENTIAL PRESSURE AT ELEMENT REPLACEMENT: 10 PSID
SUMP CAPACITY: 180 ML
MOUNTING: LINE MOUNTED, VERTICAL AS SHOWN, MOUNTING HOLES PROVIDED
ASSEMBLY WEIGHT: 13.0 LBS

MATERIALS
HEAD: NICKEL-PLATED SG IRON
BOWL: NICKEL-PLATED STEEL
DRAIN PLUG: ZINC-PLATED STEEL
SEALS: FLUOROCARBON
NON-WETTED BACKING RING: NITRILE RUBBER
FILTER ELEMENT: SEE ELEMENT SPECIFICATION DRAWING

Housing P/N	Element Kit P/N	Media Type	Rated Flow at 100 PSIG	Rated Flow at 3000 PSIG	Rated Flow at 5000 PSIG
J_2B	4CJBK	Coalescer	35 SCFM	920 SCFM	1530 SCFM
	10CJBK	Pre-Coalescer	80 SCFM	2105 SCFM	3500 SCFM
	7CPJBK	Pleated Coalescer	80 SCFM	2105 SCFM	3500 SCFM
	WSJBK	SS Liquid Separator	80 SCFM	2105 SCFM	3500 SCFM
	3PJBK	Particulate Interceptor	80 SCFM	2105 SCFM	3500 SCFM
	AJBK	Activated Carbon Adsorber	35 SCFM	920 SCFM	1530 SCFM
J_3B	4CJBK	Coalescer	60 SCFM	1575 SCFM	2525 SCFM
	10CJBK	Pre-Coalescer	130 SCFM	3415 SCFM	5685 SCFM
	7CPJBK	Pleated Coalescer	130 SCFM	3415 SCFM	5685 SCFM
	WSJBK	SS Liquid Separator	130 SCFM	3415 SCFM	5685 SCFM
	3PJBK	Particulate Interceptor	130 SCFM	3415 SCFM	5685 SCFM
	AJBK	Activated Carbon Adsorber	60 SCFM	1575 SCFM	2525 SCFM

FILTRATION AND SEPARATION DIVISION	DR BY DDA	DATE 11/12/2010	DRAWING No. J__B SERIES-300	SIZE A
TITLE J__B-SERIES SPEC. DRAWING	CHK BY	SCALE 1/4		

F 171

FINITE
JS3B-10CN

FILTER – 12 JS3B GRADE 10 COALESCING ELEMENT
5500 PSI “ANGI SPECIAL” WHITE BODY
CNG @ 125F
1292 SCFM @ 1000 PSI
3840 SCFM @ 3000 PSI

ANGI PART NUMBER – 772-07301

ELEMENT - 772-07318





aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding





High Pressure Compressed Air and Gas Filters

J-Series High Efficiency Filters / CNG and Alternative Fuel Filters

Bulletin 1300-250/USA



Parker

ENGINEERING YOUR SUCCESS.

Finite J-Series High Pressure Filters

Why do high pressure systems need filtration?

High pressure compressors are used in a variety of applications. Many owners, operators and designers of high pressure compressed air or gas systems rely on Parker's Finite Filter Operation for high efficiency filters. End users of high pressure compressed air, such as scuba divers and fire rescue workers, depend on high quality breathable air.



Throughout the stages of compression many contaminants can enter into the system. Excessive amounts of liquid aerosols, primarily lube oil carryover and solid particulate contamination are common in high pressure systems. In addition, higher temperature levels are possible and may cause liquid oils to varnish. This contamination can lead to poor component performance and wear that may lead to unscheduled maintenance. Even submicronic contaminants in compressed air or gas systems can foul multistage compressors, increase maintenance costs or eventually impacting your final product.

Parker's Finite Filter Operation offers a variety of high pressure compressed air and gas filters. With our wide range of elements, we have a solution for every stage of compression, as well as at the point of use. Whether you are storing high pressure air or gas or using a continuous flow, count on Parker to protect your equipment from contamination. Parker Finite is the solution to ending high pressure contamination fouling.

Parker's Finite Filter Operation's J-Series Filters are designed to filter contaminants such as rust, pipe scale, compressor lube oil, and water from compressed gases. These filters are often used in high pressure compressed natural gas (CNG) systems, not only as inter-stage filters in the multi-stage compression of the gas, but also in the storage and delivery of the gas for CNG powered vehicles.



Parker's varied media choices remove up to 99.995% of both solid and liquid aerosols, and contaminants as small as 0.01 microns in size. An activated carbon media is also available which removes oil vapor. This stage of filtration is often used as the final filter before the storage of high pressure breathing air used by scuba divers, firefighters, and others that utilize portable breathing devices.

The filter housings and the replaceable elements used in this product line have an extremely robust construction, specially designed for use in system pressures up to 5000 psig. Five housing sizes and two thread styles (NPT or SAE) are available with connections ranging from 1/4" to 2"; temperatures up to 350°F, and flows up to 26,000 SCFM at 5000 PSIG.

J-Series High Pressure Filters

- CNG, alternative fuel and breathing air filters
- Pressures to 5000 PSIG
- Spheroidal Graphite Cast iron
- Coalescing, particulate and adsorption filter elements available

Filter Element Features

Parker Finite offers six filter media grades ensuring that we now have the correct media choice for nearly any application requirement.

Available are coalescing grades with 95% to 99.995% efficiency and pleated or UNI-CAST coalescing media designs. Additionally, a bulk liquid separator, a particulate removal and oil vapor removal choices are standard offerings.

Each element uses a retention clip design that ensures the element is seated and sealed properly. This built-in, fail-safe feature will eliminate any possibility of contaminant by-pass and is unique amongst high pressure filters.

Each element is composed of internal and external plated carbon steel retainers which provide the element with a 75+ PSID burst rating. Each element also features a bore seal interface with the housing, an anti-vibration shoulder, and an integrated standoff which minimizes the likelihood of any movement of the element, even during severe system pulsations.

Element standoff lengths were designed for each housing size to allow an optimal volume of liquid contaminant to be collected in the filter's quiet zone, further minimizing any chance of contaminant carryover.



Filter Housing Features

- Robust, spheroidal graphite-cast iron offers higher mechanical strength, improved ductility, and increased shock resistance.
- Head to bowl bore seal ensures greater seal integrity.
- Threaded mounting holes on top of filter head allow each size to be easily panel mounted when line mounting is not an option.
- Engraved flow direction arrow in filter's head notifies the user of proper flow direction. One direction flow for all media choices reduces the possibility of a housing being installed improperly.
- The SG cast iron head and steel bowl are nickel plated for corrosion resistance. The completed assembly is finished with a UV stable epoxy powder paint that will allow the filter to stand-up to harsh outdoor conditions.
- An imprinted aluminum part number.
- SAE-6 steel drain plug with positive o-ring seal installed. This port also allows the easy installation of Finite's JDK5000H or JDK5000V high pressure drain kits which allow the safe removal of liquid contamination at system pressures.
- Bowls are designed to be easily tightened or loosened with a standard metric socket wrench.
- Bowls feature a slotted positional locator which enables the element to be positively retained.
- Low bowl removal clearance.





Element Types and Media Grade Options

Coalescers:
Removes: Oil, water, liquids

Coalescing elements are specially designed for the removal of liquid contaminants from gaseous flows. These media types flow from the inside of the element to the outside. Coalesced liquid collects in the bowl where it is drained, while clean air or gas exits the housing through the outlet port. Particulate contaminants are captured and held in the media.



Type C
The Finite UNI-CAST coalescing elements are made of epoxy saturated borosilicate glass microfiber and includes a polyester drain layer. (1)(2)(3)



Type 7CVP
This pleated coalescer is made of fluorocarbon saturated borosilicate glass microfiber and includes a polyester drain layer. (1)(2)(3)

Water Separator:
Removes: Bulk liquids

In this element, the gas or liquid flows from the inside of the element to the outside



Type WS
The Finite water separator element is composed of wrapped stainless steel mesh. (1)(2)(3)

Adsorber:
Removes: Oil vapor (odor)

Adsorption elements are used to remove vapors (hydrocarbon or water) that are not removed by the coalescing filter. Hydrocarbon vapors collect in the element, while clean air exits the housing through the outlet port. In this element, the air or gas flows from the inside of the element to the outside



Type A
Our Type A media is wrapped activated carbon. This element has a galvanized carbon steel inner retainer and a stainless steel perforated metal outer retaining layer. (2)(3)

Particulate:
Removes: Solid contaminants

Particulate filters in the J-Series flow from the inside of the element to the outsidee. Particles collect in the element, while the clean air exits through the outlet port.



Type 3P
This 3 micron absolute rated pleated element is made of cellulose. (1)(2)(3)

Notes:
1 Each element is ratained internally and externally with galvanized carbon steel pergorated metal.
2 A nitrile back-up ring is used to position the fluorocarbon o-ring utilized on this element.
3 Top and bottom end caps are made of glass filled nylon to ensure durability.

Media Grades and Specifications:

Finite media grades determine the filtration efficiency. Capture efficiencies are available up to 99.995%. Micron ratings range from 0.01 to 3 micron. The columns on the right note both the wet and dry pressure drops.

Grade Designation	Media Type	Removes...	Max. Oil Coalescing Efficiency	Micron Carryover ppm[1]	Rating (um)	Additional Pressure Pressure Drop Media Dry (PSID)	Drop Media Wet[2] (PSID)
4C	Coalescing	Liquid from Gas	99.995%	0.003	0.01	1.25	3-4
7CP	Coalescing	Liquid from Gas	99.5%	0.09	0.5	0.25	0.5-0.7
10C	Coalescing	Liquid from Gas	95%	0.85	1.0	0.5	0.5
WS	Bulk Separator	Bulk Liquid from Gas	99+%[3]	N.A.	100	<0.25	<0.25
3P	Particulate	Solids from Gas	N.A.	N.A.	3.0	0.25	N.A.
A	Adsorbor	Vapor from Gas	99+%[4]	N.A.	3.0	1.0	N.A.

[1]Tested per ISO 12500-1 at 40 ppm inlet.
[2]Add dry + wet columns for total pressure drop.
[3]Bulk liquid removal efficiency..
[4]Oil vapor removal efficiency is given for A media.

Applications:

High Pressure (HP) Filter Applications							
Test Air for HP Hydraulics	10C / 7C						
Inter-stage HP Compressor	WS / 10C						
CNG Compressor Outlet	10C	→	4C				
CNG Storage Cascades	10C	→	4C				
CNG Dispensers	10C	→	4C				
Breathing Air / SCUBA	10C	→	4C	→	A		
High Pressure "Zero Air"	10C	→	4C	→	4C	→	A
Bulk Liquid contamination	WS	→	7C	→	4C		
Bulk solid Contamination	3P	→	7C	→	4C		
HP Air / Gas Dryer Protection	10C / 7C	→	4C	→	Dryer	→	7C / 3P
Food Applications / Odor Removal	10C / 7C	→	4C	→	A		



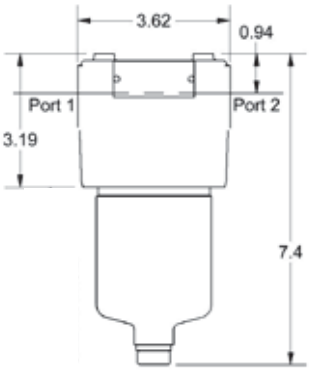
Flow Rates:

Choose Filter Size to find the corresponding flow rates

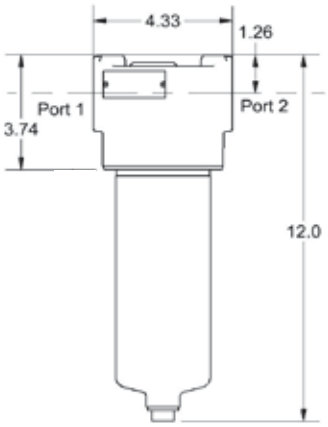
J-Series Flow Rates (SCFM)

Model	Port	Filter Type	100 PSIG	1000 PSIG	1500 PSIG	2000 PSIG	2500 PSIG	3000 PSIG	3500 PSIG	4000 PSIG	4500 PSIG	5000 PSIG
J_1A	1/4"	4C, A	15	135	200	265	330	395	460	525	590	655
		7CP, 10C, 3P, WS	30	265	395	525	660	790	920	1050	1180	1310
J_2A	1/2"	4C, A	25	220	330	440	550	655	765	875	985	1095
		7CP, 10C, 3P, WS	50	440	660	880	1095	1315	1530	1750	1970	2185
J_2B	1/2"	4C, A	35	310	460	615	765	920	1070	1225	1380	1530
		7CP, 10C, 3P, WS	80	710	1055	1405	1755	2105	2450	2800	3150	3500
J_3B	3/4"	4C, A	60	530	790	1055	1315	1575	1840	2100	2360	2525
		7DP, 10C, 3P, WS	130	1150	1715	2285	2850	3415	3985	4550	5115	5685
J_4C	1"	4C, A	90	795	1190	1580	1975	2365	2760	3150	3540	3935
		7CP, 10C, 3P, WS	200	1770	2640	3515	4385	5255	6130	7000	7870	8745
J_6D	1-1/2"	4C, A	180	1590	2375	3160	3945	4730	5515	6300	7085	7870
		7CP, 10C, 3P, WS	400	3540	5280	7025	8770	10515	12255	14000	15745	17490
J_8E	2"	4C, A	275	2435	3630	4830	6030	7230	8425	9625	10825	12025
		7CP, 10C, 3P, WS	600	5310	7925	10540	13155	15770	18385	21000	23615	26230

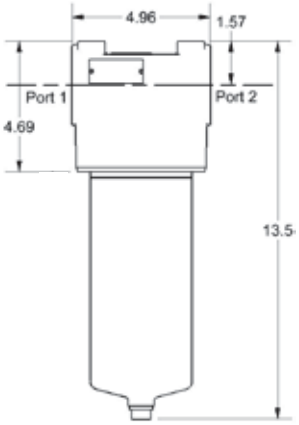
Note: These rates are based on compressed air flow. For CNG, these flows can be multiplied by a factor of 1.2.



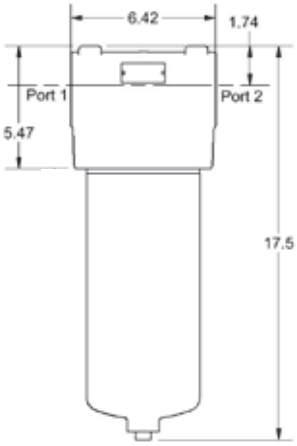
J_A Series



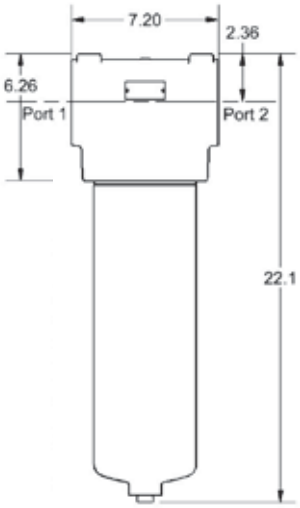
J_B Series



J_C Series



J_D Series



J_E Series

Specifications:

Model	J_1A	J_2A	J_2B	J_3B	J_4C	J_6D	J_8E
Port Size (N=NPT)	1/4" NPT	1/2"NPT	1/2"NPT	3/4" NPT	1"NPT	1-1/2"NPT	2" NPT
Port Size (S=SAE)	SAE-4	SAE-8	SAE-8	SAE-12	SAE-16	SAE-24	SAE-32
Max. Pressure	5000 PSIG	5000 PSIG	5000 PSIG	5000 PSIG	5000 PSIG	5000 PSIG	5000 PSIG
Max. Temperature	350°F	350°F	350°F	350°F	350°F	350°F	350°F
Head	SG Iron*	SG Iron*	SG Iron*	SG Iron*	SG Iron*	SG Iron*	SG Iron*
Bowl	Steel	Steel	Steel	Steel	Steel	Steel	Steel
Seals:	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon
Backing Ring	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile
Sump Volume	50 mL	50 mL	180 mL	180 mL	230 mL	500 mL	500 mL
Weight	9.0 lbs.	9.0 lbs.	13.0 lbs.	13.0 lbs.	21.0 lbs.	45.0 lbs.	67.0 lbs.
Port to Port	3.62"	3.62"	4.33"	4.33"	4.96"	6.42"	7.2"
Height	7.4"	7.4"	12.0"	12.0"	13.5"	17.5"	22.1"
Clearance	1.76"	1.76"	2.11"	2.11"	2.47"	2.94"	2.94"
Drain Port	SAE-6	SAE-6	SAE-6	SAE-6	SAE-6	SAE-6	SAE-6
Socket / Bowl Removal	1-1/16" HEX	1-1/16" HEX	1-1/2 HEX	1-1/2 HEX	1-1/2 HEX	1-1/2 HEX	1-1/2 HEX
Head / Bowl Torque	15-20 ft-lbs.	15-20 ft-lbs.	25-30 ft-lbs.	25-30 ft-lbs.	25-30 ft-lbs.	60-70 ft-lbs.	60-70 ft-lbs.

*Note: SG Iron is an abbreviation for Spheroidal Graphite Cast Iron

High Pressure Drains and Gauge:

JDK5000H	Horizontal Drain Kit 5000 psig
JDK5000V	Vertical Drain Kit 5000 psig
BDPI-25	Differential Pressure Gauge and Bracket

Note: Replacement Element supplied with o-ring and lube tube.

Member of

New to Come

ISO 9001:2000

How To Order
Part Numbers for Complete Assemblies:

Use the steps below to build your own part number.
For any permutation not mentioned below, please consult factory at 1-800-521-4357.

J	N	1	A	-	4	N
Series Name	Thread	Port Size	= Housing Size		Media Grade	Accessories
J	N - NPT	1 (1/4")	= A		4C	N = None
	S - SAE	2 (1/2")	= A		10C	Available
		2 (1/2")	= B		7CP	
		3 (3/4")	= B		WS	
		4 (1")	= C		3P	
		6 (1-1/2")	= D		A	
		8 (2")	= E			

Examples:

JN2A-4CN, JS6D-WSN, JN3B-3PN

Replacement Element Part Numbers:

Media Grade/Type	Series	Housing Size	Kit
4C	J	A	K
10C		B	
7CP		C	
WS		D	
3P		E	
A			

Examples:

4CJAK, WSJDK, 3PJBK



J-Series filters are used in a number of applications, ranging from breathing air for scuba divers, to high-pressure hydraulic circuit testing, to a variety of uses in the alternative fuel industry.









Worldwide Filtration Manufacturing Locations

North America

Compressed Air Treatment

Filtration & Separation/Balston
Haverhill, MA
978 858 0505
www.parker.com/balston

Filtration & Separation/Finite
Oxford, MI
248 628 6400
www.parker.com/finitefilter

Purification, Dehydration & Filtration Division
Lancaster, NY
716 685 4040
www.parker.com/pdf

Sales Office
Charlotte, NC
704 921 9303
www.parker.com/pdf

Engine Filtration & Water Purification

Racor
Modesto, CA
209 521 7860
www.parker.com/racor

Racor
Holly Springs
662 252 2656
www.parker.com/racor

Racor
Beaufort, SC
843 846 3200
www.parker.com/racor

Racor – Village Marine Tec.
Gardena, CA
310 516 9911
desalination.parker.com

Hydraulic Filtration

Hydraulic Filter
Metamora, OH
419 644 4311
www.parker.com/hydraulicfilter

Process Filtration

Process Advanced Filtration
Oxnard, CA
805 604 3400
www.parker.com/processfiltration

Europe

Compressed Air Treatment

domnick hunter Industrial
England NE
+44 (0) 191 402 9000,
www.domnickhunter.com

Hiross Zander
Padova Business Unit
Angelo di Piove Padova, Italy
+39 049 9712 111
www.parker.com/hzd

Hiross Zander
Essen Business Unit
Essen, Germany
T +49 2054 9340, F +49 2054 934164
www.parker.com/hzd

Parker Gas Separations
Etten- Leur, Netherlands
+31 76 508 5300

Engine Filtration & Water Purification

Racor
England
+44 (0) 1924 487000,
www.parker.com/rfde

Racor Research & Development
Stuttgart Germany
+49 (0)711 7071 290-0
www.parker.com/racor

Hydraulic Filtration

Hydraulic Filter
Arnhem, Holland
+31 26 3760376
www.parker.com/eurofilt

Urjala Operation
Urjala as Finland
+358 20 753 2500
www.parker.com/fi

Condition Monitoring Center
Norfolk IP 24 1HP England
+44 1842 763299
www.parker.com/cmc

Process Filtration

domnick hunter Process
DH3 2SF England
T +44 (0) 191 410 5121
www.domnickhunter.com

Asia Pacific

Australia
NSW 2154, Australia
+61 2 9634 777
www.parker.com/australia

China
Shanghai 101206 China
+86 21 5031 2525
www.parker.com/china

India
Mahape, Navi Mumbai 400 709 India
T +91 22 5613 7081, 82, 83, 84, 85
www. parker.com/india

Japan
Yokohama-shi, 244-0003 Japan
T +81 45 870 1522
www.parker.com/japan

Korea
Hwaseong-City Gyeonggi-Do, Korea
T +82 31 359 0771
www.parker.com/korea

Singapore
Singapore 619 702
T +65 6887 6300
www.parker.com/singapore

Thailand
Bangkok 10250 Thailand
T +66 2717 8140
www.parker.com/thailand

Latin America

Parker Comercio Ltda.
Filtration Division
Sao Jose dos Campos
CEP 12225-390 SP Brazil
+55 12 4009 3500
www.parker.com/br

Pan American Division - Miami
Miami, FL
305 470 8800
www.parker.com/panam

Africa

Aeroport Kempton Park,
1620 South Africa
+27 11 9610700
www.parker.com/eu

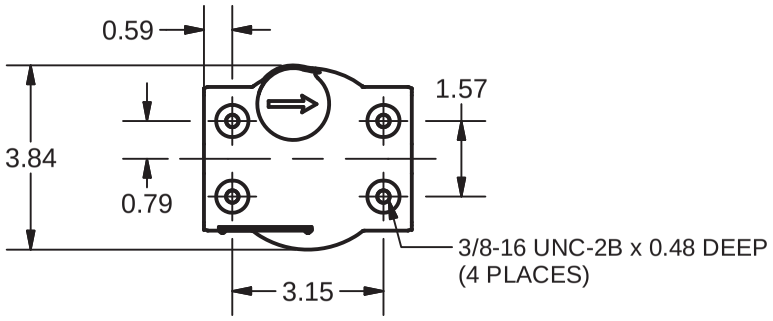
© 2011 Parker Hannifin Corporation. Product names are trademarks or registered trademarks of their respective companies.

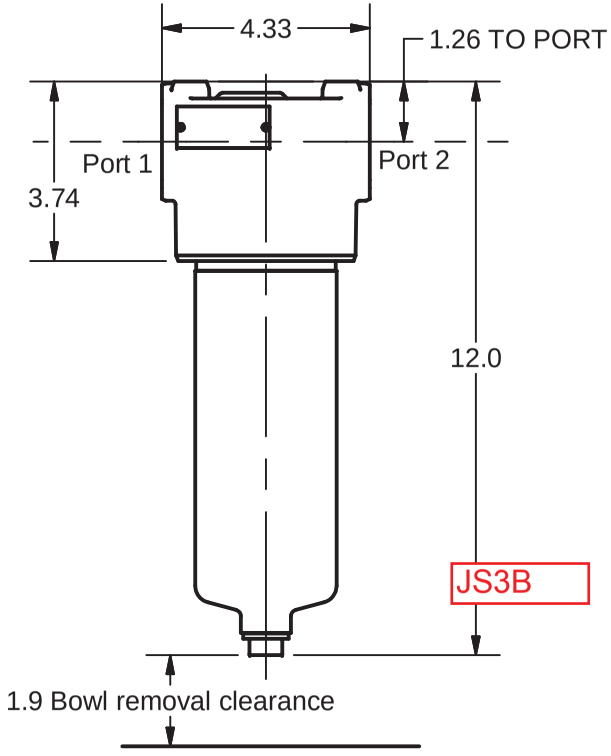
Bulletin 1300-250/USA 3/11

Parker Hannifin Corporation
Filtration and Separation Division
500 S. Glaspie Street
Oxford, MI 48371
phone 248 628 1850, fax 248 628 1850
1 800 521 4357 (US & Canada)
www.cngfiltration.com

ALL DIMENSIONS ARE FOR REFERENCE ONLY. OBTAIN A CERTIFIED DRAWING FROM THE FACTORY PRIOR TO USING DIMENSIONS FOR DESIGN PURPOSES.

SYM	ECO	DATE
-	0009885	01-25-2011





UNIT: INCHES

ASSEMBLY NUMBER: J_ _B

PORT TYPE & SIZE NOMENCLATURE
NPT PORTS: JN2B = 1/2" NPT, JN3B = 3/4" NPT
SAE PORTS: JS2B = SAE-8 (3/4-16), JS3B = SAE-12 (1-1/16-12)

DRAIN: SAE-6 (9/16-18), PLUG INCLUDED
MAXIMUM PRESSURE: 5,000 PSIG
MAXIMUM TEMPERATURE (HOUSING ONLY): 350°F
MAX. DIFFERENTIAL PRESSURE AT ELEMENT REPLACEMENT: 10 PSID
SUMP CAPACITY: 180 ML
MOUNTING: LINE MOUNTED, VERTICAL AS SHOWN, MOUNTING HOLES PROVIDED
ASSEMBLY WEIGHT: 13.0 LBS

MATERIALS
HEAD: NICKEL-PLATED SG IRON
BOWL: NICKEL-PLATED STEEL
DRAIN PLUG: ZINC-PLATED STEEL
SEALS: FLUOROCARBON
NON-WETTED BACKING RING: NITRILE RUBBER
FILTER ELEMENT: SEE ELEMENT SPECIFICATION DRAWING

Housing P/N	Element Kit P/N	Media Type	Rated Flow at 100 PSIG	Rated Flow at 3000 PSIG	Rated Flow at 5000 PSIG
J_2B	4CJBK	Coalescer	35 SCFM	920 SCFM	1530 SCFM
	10CJBK	Pre-Coalescer	80 SCFM	2105 SCFM	3500 SCFM
	7CPJBK	Pleated Coalescer	80 SCFM	2105 SCFM	3500 SCFM
	WSJBK	SS Liquid Separator	80 SCFM	2105 SCFM	3500 SCFM
	3PJBK	Particulate Interceptor	80 SCFM	2105 SCFM	3500 SCFM
	AJBK	Activated Carbon Adsorber	35 SCFM	920 SCFM	1530 SCFM
J_3B	4CJBK	Coalescer	60 SCFM	1575 SCFM	2525 SCFM
	10CJBK	Pre-Coalescer	130 SCFM	3415 SCFM	5685 SCFM
	7CPJBK	Pleated Coalescer	130 SCFM	3415 SCFM	5685 SCFM
	WSJBK	SS Liquid Separator	130 SCFM	3415 SCFM	5685 SCFM
	3PJBK	Particulate Interceptor	130 SCFM	3415 SCFM	5685 SCFM
	AJBK	Activated Carbon Adsorber	60 SCFM	1575 SCFM	2525 SCFM

FILTRATION AND SEPARATION DIVISION	DR BY DDA	DATE 11/12/2010	DRAWING No. J__B SERIES-300	SIZE A
TITLE J__B-SERIES SPEC. DRAWING	CHK BY	SCALE 1/4		

F 172

FINITE
JS3B-4CN

FILTER – 12 JS3B GRADE 4 COALESCING ELEMENT
5500 PSI “ANGI SPECIAL” WHITE BODY
CNG @ 125F
596 SCFM @ 1000 PSI
1772 SCFM @ 3000 PSI

ANGI PART NUMBER – 772-07302

ELEMENT - 772-07319





aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding





High Pressure Compressed Air and Gas Filters

J-Series High Efficiency Filters / CNG and Alternative Fuel Filters

Bulletin 1300-250/USA



Parker

ENGINEERING YOUR SUCCESS.

Finite J-Series High Pressure Filters

Why do high pressure systems need filtration?

High pressure compressors are used in a variety of applications. Many owners, operators and designers of high pressure compressed air or gas systems rely on Parker's Finite Filter Operation for high efficiency filters. End users of high pressure compressed air, such as scuba divers and fire rescue workers, depend on high quality breathable air.



Throughout the stages of compression many contaminants can enter into the system. Excessive amounts of liquid aerosols, primarily lube oil carryover and solid particulate contamination are common in high pressure systems. In addition, higher temperature levels are possible and may cause liquid oils to varnish. This contamination can lead to poor component performance and wear that may lead to unscheduled maintenance. Even submicronic contaminants in compressed air or gas systems can foul multistage compressors, increase maintenance costs or eventually impacting your final product.

Parker's Finite Filter Operation offers a variety of high pressure compressed air and gas filters. With our wide range of elements, we have a solution for every stage of compression, as well as at the point of use. Whether you are storing high pressure air or gas or using a continuous flow, count on Parker to protect your equipment from contamination. Parker Finite is the solution to ending high pressure contamination fouling.

Parker's Finite Filter Operation's J-Series Filters are designed to filter contaminants such as rust, pipe scale, compressor lube oil, and water from compressed gases. These filters are often used in high pressure compressed natural gas (CNG) systems, not only as inter-stage filters in the multi-stage compression of the gas, but also in the storage and delivery of the gas for CNG powered vehicles.



Parker's varied media choices remove up to 99.995% of both solid and liquid aerosols, and contaminants as small as 0.01 microns in size. An activated carbon media is also available which removes oil vapor. This stage of filtration is often used as the final filter before the storage of high pressure breathing air used by scuba divers, firefighters, and others that utilize portable breathing devices.

The filter housings and the replaceable elements used in this product line have an extremely robust construction, specially designed for use in system pressures up to 5000 psig. Five housing sizes and two thread styles (NPT or SAE) are available with connections ranging from 1/4" to 2"; temperatures up to 350°F, and flows up to 26,000 SCFM at 5000 PSIG.

J-Series High Pressure Filters

- CNG, alternative fuel and breathing air filters
- Pressures to 5000 PSIG
- Spheroidal Graphite Cast iron
- Coalescing, particulate and adsorption filter elements available

Filter Element Features

Parker Finite offers six filter media grades ensuring that we now have the correct media choice for nearly any application requirement.

Available are coalescing grades with 95% to 99.995% efficiency and pleated or UNI-CAST coalescing media designs. Additionally, a bulk liquid separator, a particulate removal and oil vapor removal choices are standard offerings.

Each element uses a retention clip design that ensures the element is seated and sealed properly. This built-in, fail-safe feature will eliminate any possibility of contaminant by-pass and is unique amongst high pressure filters.

Each element is composed of internal and external plated carbon steel retainers which provide the element with a 75+ PSID burst rating. Each element also features a bore seal interface with the housing, an anti-vibration shoulder, and an integrated standoff which minimizes the likelihood of any movement of the element, even during severe system pulsations.

Element standoff lengths were designed for each housing size to allow an optimal volume of liquid contaminant to be collected in the filter's quiet zone, further minimizing any chance of contaminant carryover.



Filter Housing Features

- Robust, spheroidal graphite-cast iron offers higher mechanical strength, improved ductility, and increased shock resistance.
- Head to bowl bore seal ensures greater seal integrity.
- Threaded mounting holes on top of filter head allow each size to be easily panel mounted when line mounting is not an option.
- Engraved flow direction arrow in filter's head notifies the user of proper flow direction. One direction flow for all media choices reduces the possibility of a housing being installed improperly.
- The SG cast iron head and steel bowl are nickel plated for corrosion resistance. The completed assembly is finished with a UV stable epoxy powder paint that will allow the filter to stand-up to harsh outdoor conditions.
- An imprinted aluminum part number.
- SAE-6 steel drain plug with positive o-ring seal installed. This port also allows the easy installation of Finite's JDK5000H or JDK5000V high pressure drain kits which allow the safe removal of liquid contamination at system pressures.
- Bowls are designed to be easily tightened or loosened with a standard metric socket wrench.
- Bowls feature a slotted positional locator which enables the element to be positively retained.
- Low bowl removal clearance.





Element Types and Media Grade Options

Coalescers:
Removes: Oil, water, liquids

Coalescing elements are specially designed for the removal of liquid contaminants from gaseous flows. These media types flow from the inside of the element to the outside. Coalesced liquid collects in the bowl where it is drained, while clean air or gas exits the housing through the outlet port. Particulate contaminants are captured and held in the media.



Type C
The Finite UNI-CAST coalescing elements are made of epoxy saturated borosilicate glass microfiber and includes a polyester drain layer. (1)(2)(3)



Type 7CVP
This pleated coalescer is made of fluorocarbon saturated borosilicate glass microfiber and includes a polyester drain layer. (1)(2)(3)

Water Separator:
Removes: Bulk liquids

In this element, the gas or liquid flows from the inside of the element to the outside



Type WS
The Finite water separator element is composed of wrapped stainless steel mesh. (1)(2)(3)

Adsorber:
Removes: Oil vapor (odor)

Adsorption elements are used to remove vapors (hydrocarbon or water) that are not removed by the coalescing filter. Hydrocarbon vapors collect in the element, while clean air exits the housing through the outlet port. In this element, the air or gas flows from the inside of the element to the outside



Type A
Our Type A media is wrapped activated carbon. This element has a galvanized carbon steel inner retainer and a stainless steel perforated metal outer retaining layer. (2)(3)

Particulate:
Removes: Solid contaminants

Particulate filters in the J-Series flow from the inside of the element to the outsidee. Particles collect in the element, while the clean air exits through the outlet port.



Type 3P
This 3 micron absolute rated pleated element is made of cellulose. (1)(2)(3)

Notes:
1 Each element is ratained internally and externally with galvanized carbon steel pergorated metal.
2 A nitrile back-up ring is used to position the fluorocarbon o-ring utilized on this element.
3 Top and bottom end caps are made of glass filled nylon to ensure durability.

Media Grades and Specifications:

Finite media grades determine the filtration efficiency. Capture efficiencies are available up to 99.995%. Micron ratings range from 0.01 to 3 micron. The columns on the right note both the wet and dry pressure drops.

Grade Designation	Media Type	Removes...	Max. Oil Coalescing Efficiency	Micron Carryover ppm[1]	Rating (um)	Additional Pressure Pressure Drop Media Dry (PSID)	Drop Media Wet[2] (PSID)
4C	Coalescing	Liquid from Gas	99.995%	0.003	0.01	1.25	3-4
7CP	Coalescing	Liquid from Gas	99.5%	0.09	0.5	0.25	0.5-0.7
10C	Coalescing	Liquid from Gas	95%	0.85	1.0	0.5	0.5
WS	Bulk Separator	Bulk Liquid from Gas	99+%[3]	N.A.	100	<0.25	<0.25
3P	Particulate	Solids from Gas	N.A.	N.A.	3.0	0.25	N.A.
A	Adsorbor	Vapor from Gas	99+%[4]	N.A.	3.0	1.0	N.A.

[1]Tested per ISO 12500-1 at 40 ppm inlet.
[2]Add dry + wet columns for total pressure drop.
[3]Bulk liquid removal efficiency..
[4]Oil vapor removal efficiency is given for A media.

Applications:

High Pressure (HP) Filter Applications							
Test Air for HP Hydraulics	10C / 7C						
Inter-stage HP Compressor	WS / 10C						
CNG Compressor Outlet	10C	→	4C				
CNG Storage Cascades	10C	→	4C				
CNG Dispensers	10C	→	4C				
Breathing Air / SCUBA	10C	→	4C	→	A		
High Pressure "Zero Air"	10C	→	4C	→	4C	→	A
Bulk Liquid contamination	WS	→	7C	→	4C		
Bulk solid Contamination	3P	→	7C	→	4C		
HP Air / Gas Dryer Protection	10C / 7C	→	4C	→	Dryer	→	7C / 3P
Food Applications / Odor Removal	10C / 7C	→	4C	→	A		



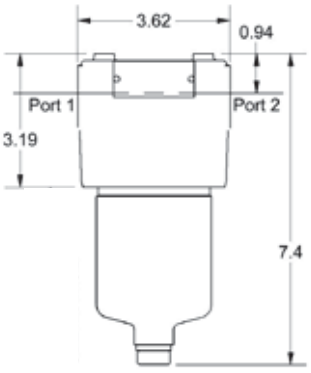
Flow Rates:

Choose Filter Size to find the corresponding flow rates

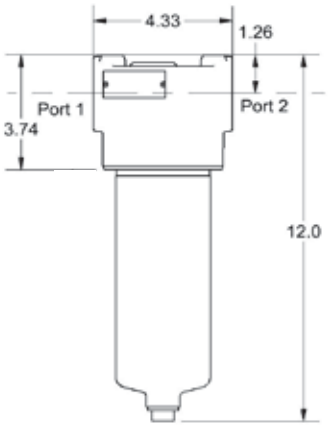
J-Series Flow Rates (SCFM)

Model	Port	Filter Type	100 PSIG	1000 PSIG	1500 PSIG	2000 PSIG	2500 PSIG	3000 PSIG	3500 PSIG	4000 PSIG	4500 PSIG	5000 PSIG
J_1A	1/4"	4C, A	15	135	200	265	330	395	460	525	590	655
		7CP, 10C, 3P, WS	30	265	395	525	660	790	920	1050	1180	1310
J_2A	1/2"	4C, A	25	220	330	440	550	655	765	875	985	1095
		7CP, 10C, 3P, WS	50	440	660	880	1095	1315	1530	1750	1970	2185
J_2B	1/2"	4C, A	35	310	460	615	765	920	1070	1225	1380	1530
		7CP, 10C, 3P, WS	80	710	1055	1405	1755	2105	2450	2800	3150	3500
J_3B	3/4"	4C, A	60	530	790	1055	1315	1575	1840	2100	2360	2525
		7DP, 10C, 3P, WS	130	1150	1715	2285	2850	3415	3985	4550	5115	5685
J_4C	1"	4C, A	90	795	1190	1580	1975	2365	2760	3150	3540	3935
		7CP, 10C, 3P, WS	200	1770	2640	3515	4385	5255	6130	7000	7870	8745
J_6D	1-1/2"	4C, A	180	1590	2375	3160	3945	4730	5515	6300	7085	7870
		7CP, 10C, 3P, WS	400	3540	5280	7025	8770	10515	12255	14000	15745	17490
J_8E	2"	4C, A	275	2435	3630	4830	6030	7230	8425	9625	10825	12025
		7CP, 10C, 3P, WS	600	5310	7925	10540	13155	15770	18385	21000	23615	26230

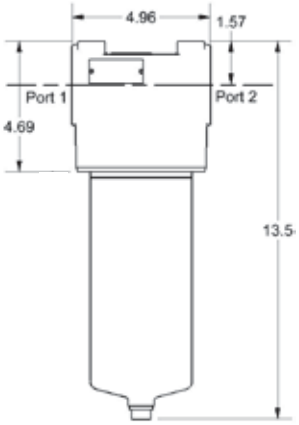
Note: These rates are based on compressed air flow. For CNG, these flows can be multiplied by a factor of 1.2.



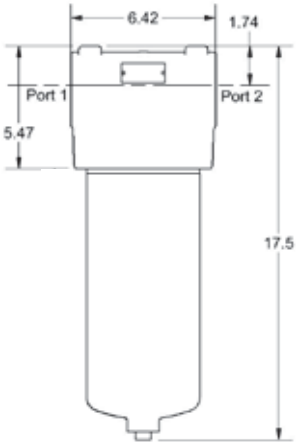
J_A Series



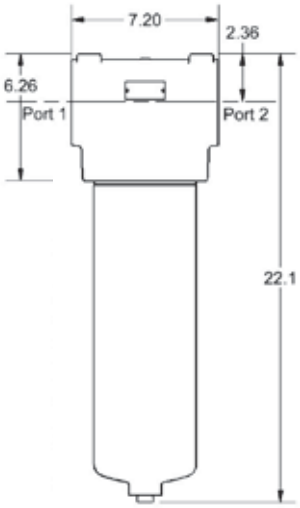
J_B Series



J_C Series



J_D Series



J_E Series

Specifications:

Model	J_1A	J_2A	J_2B	J_3B	J_4C	J_6D	J_8E
Port Size (N=NPT)	1/4" NPT	1/2"NPT	1/2"NPT	3/4" NPT	1"NPT	1-1/2"NPT	2" NPT
Port Size (S=SAE)	SAE-4	SAE-8	SAE-8	SAE-12	SAE-16	SAE-24	SAE-32
Max. Pressure	5000 PSIG	5000 PSIG	5000 PSIG	5000 PSIG	5000 PSIG	5000 PSIG	5000 PSIG
Max. Temperature	350°F	350°F	350°F	350°F	350°F	350°F	350°F
Head	SG Iron*	SG Iron*	SG Iron*	SG Iron*	SG Iron*	SG Iron*	SG Iron*
Bowl	Steel	Steel	Steel	Steel	Steel	Steel	Steel
Seals:	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon
Backing Ring	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile
Sump Volume	50 mL	50 mL	180 mL	180 mL	230 mL	500 mL	500 mL
Weight	9.0 lbs.	9.0 lbs.	13.0 lbs.	13.0 lbs.	21.0 lbs.	45.0 lbs.	67.0 lbs.
Port to Port	3.62"	3.62"	4.33"	4.33"	4.96"	6.42"	7.2"
Height	7.4"	7.4"	12.0"	12.0"	13.5"	17.5"	22.1"
Clearance	1.76"	1.76"	2.11"	2.11"	2.47"	2.94"	2.94"
Drain Port	SAE-6	SAE-6	SAE-6	SAE-6	SAE-6	SAE-6	SAE-6
Socket / Bowl Removal	1-1/16" HEX	1-1/16" HEX	1-1/2 HEX	1-1/2 HEX	1-1/2 HEX	1-1/2 HEX	1-1/2 HEX
Head / Bowl Torque	15-20 ft-lbs.	15-20 ft-lbs.	25-30 ft-lbs.	25-30 ft-lbs.	25-30 ft-lbs.	60-70 ft-lbs.	60-70 ft-lbs.

*Note: SG Iron is an abbreviation for Spheroidal Graphite Cast Iron

High Pressure Drains and Gauge:

JDK5000H	Horizontal Drain Kit 5000 psig
JDK5000V	Vertical Drain Kit 5000 psig
BDPI-25	Differential Pressure Gauge and Bracket

Note: Replacement Element supplied with o-ring and lube tube.

Member of

New to Come

ISO 9001:2000

How To Order
Part Numbers for Complete Assemblies:

Use the steps below to build your own part number.
For any permutation not mentioned below, please consult factory at 1-800-521-4357.

J	N	1	A	-	4	N
Series Name	Thread	Port Size	= Housing Size		Media Grade	Accessories
J	N - NPT	1 (1/4")	= A		4C	N = None
	S - SAE	2 (1/2")	= A		10C	Available
		2 (1/2")	= B		7CP	
		3 (3/4")	= B		WS	
		4 (1")	= C		3P	
		6 (1-1/2")	= D		A	
		8 (2")	= E			

Examples:

JN2A-4CN, JS6D-WSN, JN3B-3PN

Replacement Element Part Numbers:

Media Grade/Type	Series	Housing Size	Kit
4C	J	A	K
10C		B	
7CP		C	
WS		D	
3P		E	
A			

Examples:

4CJAK, WSJDK, 3PJBK



J-Series filters are used in a number of applications, ranging from breathing air for scuba divers, to high-pressure hydraulic circuit testing, to a variety of uses in the alternative fuel industry.









Worldwide Filtration Manufacturing Locations

North America

Compressed Air Treatment

Filtration & Separation/Balston
Haverhill, MA
978 858 0505
www.parker.com/balston

Filtration & Separation/Finite
Oxford, MI
248 628 6400
www.parker.com/finitefilter

Purification, Dehydration & Filtration Division
Lancaster, NY
716 685 4040
www.parker.com/pdf

Sales Office
Charlotte, NC
704 921 9303
www.parker.com/pdf

Engine Filtration & Water Purification

Racor
Modesto, CA
209 521 7860
www.parker.com/racor

Racor
Holly Springs
662 252 2656
www.parker.com/racor

Racor
Beaufort, SC
843 846 3200
www.parker.com/racor

Racor – Village Marine Tec.
Gardena, CA
310 516 9911
desalination.parker.com

Hydraulic Filtration

Hydraulic Filter
Metamora, OH
419 644 4311
www.parker.com/hydraulicfilter

Process Filtration

Process Advanced Filtration
Oxnard, CA
805 604 3400
www.parker.com/processfiltration

Europe

Compressed Air Treatment

domnick hunter Industrial
England NE
+44 (0) 191 402 9000,
www.domnickhunter.com

Hiross Zander
Padova Business Unit
Angelo di Piove Padova, Italy
+39 049 9712 111
www.parker.com/hzd

Hiross Zander
Essen Business Unit
Essen, Germany
T +49 2054 9340, F +49 2054 934164
www.parker.com/hzd

Parker Gas Separations
Etten- Leur, Netherlands
+31 76 508 5300

Engine Filtration & Water Purification

Racor
England
+44 (0) 1924 487000,
www.parker.com/rfde

Racor Research & Development
Stuttgart Germany
+49 (0)711 7071 290-0
www.parker.com/racor

Hydraulic Filtration

Hydraulic Filter
Arnhem, Holland
+31 26 3760376
www.parker.com/eurofilt

Urjala Operation
Urjala as Finland
+358 20 753 2500
www.parker.com/fi

Condition Monitoring Center
Norfolk IP 24 1HP England
+44 1842 763299
www.parker.com/cmc

Process Filtration

domnick hunter Process
DH3 2SF England
T +44 (0) 191 410 5121
www.domnickhunter.com

Asia Pacific

Australia
NSW 2154, Australia
+61 2 9634 777
www.parker.com/australia

China
Shanghai 101206 China
+86 21 5031 2525
www.parker.com/china

India
Mahape, Navi Mumbai 400 709 India
T +91 22 5613 7081, 82, 83, 84, 85
www. parker.com/india

Japan
Yokohama-shi, 244-0003 Japan
T +81 45 870 1522
www.parker.com/japan

Korea
Hwaseong-City Gyeonggi-Do, Korea
T +82 31 359 0771
www.parker.com/korea

Singapore
Singapore 619 702
T +65 6887 6300
www.parker.com/singapore

Thailand
Bangkok 10250 Thailand
T +66 2717 8140
www.parker.com/thailand

Latin America

Parker Comercio Ltda.
Filtration Division
Sao Jose dos Campos
CEP 12225-390 SP Brazil
+55 12 4009 3500
www.parker.com/br

Pan American Division - Miami
Miami, FL
305 470 8800
www.parker.com/panam

Africa

Aeroport Kempton Park,
1620 South Africa
+27 11 9610700
www.parker.com/eu

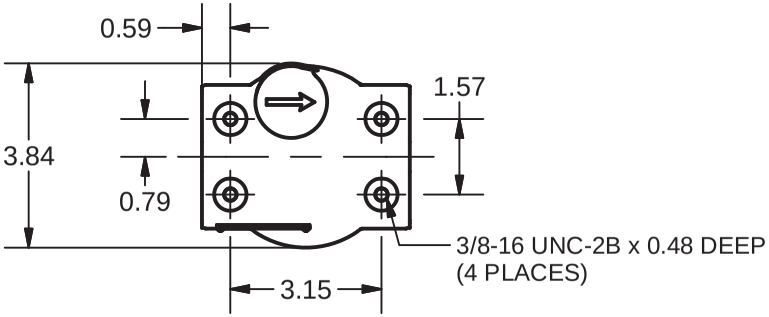
© 2011 Parker Hannifin Corporation. Product names are trademarks or registered trademarks of their respective companies.

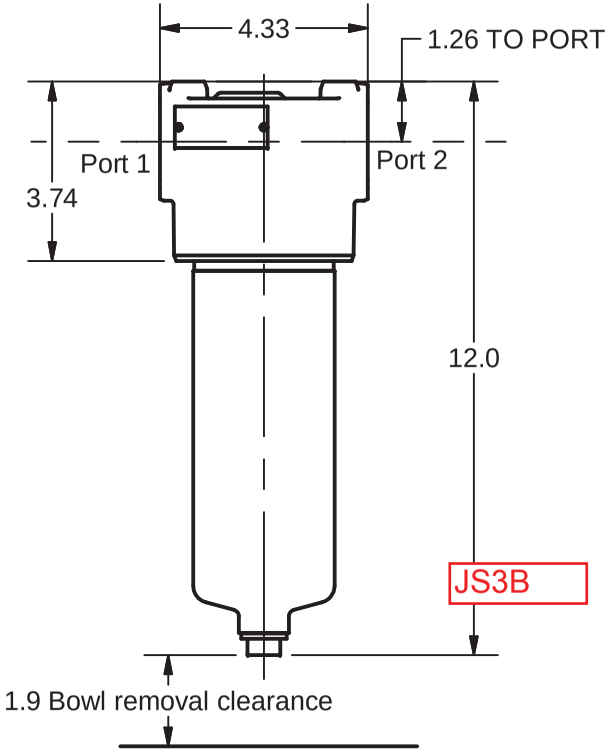
Bulletin 1300-250/USA 3/11

Parker Hannifin Corporation
Filtration and Separation Division
500 S. Glaspie Street
Oxford, MI 48371
phone 248 628 1850, fax 248 628 1850
1 800 521 4357 (US & Canada)
www.cngfiltration.com

ALL DIMENSIONS ARE FOR REFERENCE ONLY. OBTAIN A CERTIFIED DRAWING FROM THE FACTORY PRIOR TO USING DIMENSIONS FOR DESIGN PURPOSES.

SYM	ECO	DATE
-	0009885	01-25-2011





UNIT: INCHES

ASSEMBLY NUMBER: J_ _B

PORT TYPE & SIZE NOMENCLATURE
NPT PORTS: JN2B = 1/2" NPT, JN3B = 3/4" NPT
SAE PORTS: JS2B = SAE-8 (3/4-16), JS3B = SAE-12 (1-1/16-12)

DRAIN: SAE-6 (9/16-18), PLUG INCLUDED
MAXIMUM PRESSURE: 5,000 PSIG
MAXIMUM TEMPERATURE (HOUSING ONLY): 350°F
MAX. DIFFERENTIAL PRESSURE AT ELEMENT REPLACEMENT: 10 PSID
SUMP CAPACITY: 180 ML
MOUNTING: LINE MOUNTED, VERTICAL AS SHOWN, MOUNTING HOLES PROVIDED
ASSEMBLY WEIGHT: 13.0 LBS

MATERIALS
HEAD: NICKEL-PLATED SG IRON
BOWL: NICKEL-PLATED STEEL
DRAIN PLUG: ZINC-PLATED STEEL
SEALS: FLUOROCARBON
NON-WETTED BACKING RING: NITRILE RUBBER
FILTER ELEMENT: SEE ELEMENT SPECIFICATION DRAWING

Housing P/N	Element Kit P/N	Media Type	Rated Flow at 100 PSIG	Rated Flow at 3000 PSIG	Rated Flow at 5000 PSIG
J_2B	4CJBK	Coalescer	35 SCFM	920 SCFM	1530 SCFM
	10CJBK	Pre-Coalescer	80 SCFM	2105 SCFM	3500 SCFM
	7CPJBK	Pleated Coalescer	80 SCFM	2105 SCFM	3500 SCFM
	WSJBK	SS Liquid Separator	80 SCFM	2105 SCFM	3500 SCFM
	3PJBK	Particulate Interceptor	80 SCFM	2105 SCFM	3500 SCFM
	AJBK	Activated Carbon Adsorber	35 SCFM	920 SCFM	1530 SCFM
J_3B	4CJBK	Coalescer	60 SCFM	1575 SCFM	2525 SCFM
	10CJBK	Pre-Coalescer	130 SCFM	3415 SCFM	5685 SCFM
	7CPJBK	Pleated Coalescer	130 SCFM	3415 SCFM	5685 SCFM
	WSJBK	SS Liquid Separator	130 SCFM	3415 SCFM	5685 SCFM
	3PJBK	Particulate Interceptor	130 SCFM	3415 SCFM	5685 SCFM
	AJBK	Activated Carbon Adsorber	60 SCFM	1575 SCFM	2525 SCFM

FILTRATION AND SEPARATION DIVISION	DR BY DDA	DATE 11/12/2010	DRAWING No. J__B SERIES-300	SIZE A
TITLE J__B-SERIES SPEC. DRAWING	CHK BY	SCALE 1/4		

F 173

FINITE
JS4C-WSN

FILTER - SAE-16 JS4C STAINLESS STEEL
MATERIAL = CAST IRON HEAD & CARBON STEEL BODY
SEPARATOR ELEMENT
100 MICRON 5500 PSI
1988 SCFM @ 1000 PSI
5907 SCFM @ 3000 PSI
8846 SCFM @ 4500 PSI
CNG @ 125F

ANGI PART NUMBER – 772-07303

ELEMENT - 772-07323





aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding





High Pressure Compressed Air and Gas Filters

J-Series High Efficiency Filters / CNG and Alternative Fuel Filters

Bulletin 1300-250/USA



Parker

ENGINEERING YOUR SUCCESS.

Finite J-Series High Pressure Filters

Why do high pressure systems need filtration?

High pressure compressors are used in a variety of applications. Many owners, operators and designers of high pressure compressed air or gas systems rely on Parker's Finite Filter Operation for high efficiency filters. End users of high pressure compressed air, such as scuba divers and fire rescue workers, depend on high quality breathable air.



Throughout the stages of compression many contaminants can enter into the system. Excessive amounts of liquid aerosols, primarily lube oil carryover and solid particulate contamination are common in high pressure systems. In addition, higher temperature levels are possible and may cause liquid oils to varnish. This contamination can lead to poor component performance and wear that may lead to unscheduled maintenance. Even submicronic contaminants in compressed air or gas systems can foul multistage compressors, increase maintenance costs or eventually impacting your final product.

Parker's Finite Filter Operation offers a variety of high pressure compressed air and gas filters. With our wide range of elements, we have a solution for every stage of compression, as well as at the point of use. Whether you are storing high pressure air or gas or using a continuous flow, count on Parker to protect your equipment from contamination. Parker Finite is the solution to ending high pressure contamination fouling.

Parker's Finite Filter Operation's J-Series Filters are designed to filter contaminants such as rust, pipe scale, compressor lube oil, and water from compressed gases. These filters are often used in high pressure compressed natural gas (CNG) systems, not only as inter-stage filters in the multi-stage compression of the gas, but also in the storage and delivery of the gas for CNG powered vehicles.



Parker's varied media choices remove up to 99.995% of both solid and liquid aerosols, and contaminants as small as 0.01 microns in size. An activated carbon media is also available which removes oil vapor. This stage of filtration is often used as the final filter before the storage of high pressure breathing air used by scuba divers, firefighters, and others that utilize portable breathing devices.

The filter housings and the replaceable elements used in this product line have an extremely robust construction, specially designed for use in system pressures up to 5000 psig. Five housing sizes and two thread styles (NPT or SAE) are available with connections ranging from 1/4" to 2"; temperatures up to 350°F, and flows up to 26,000 SCFM at 5000 PSIG.

J-Series High Pressure Filters

- CNG, alternative fuel and breathing air filters
- Pressures to 5000 PSIG
- Spheroidal Graphite Cast iron
- Coalescing, particulate and adsorption filter elements available

Filter Element Features

Parker Finite offers six filter media grades ensuring that we now have the correct media choice for nearly any application requirement.

Available are coalescing grades with 95% to 99.995% efficiency and pleated or UNI-CAST coalescing media designs. Additionally, a bulk liquid separator, a particulate removal and oil vapor removal choices are standard offerings.

Each element uses a retention clip design that ensures the element is seated and sealed properly. This built-in, fail-safe feature will eliminate any possibility of contaminant by-pass and is unique amongst high pressure filters.

Each element is composed of internal and external plated carbon steel retainers which provide the element with a 75+ PSID burst rating. Each element also features a bore seal interface with the housing, an anti-vibration shoulder, and an integrated standoff which minimizes the likelihood of any movement of the element, even during severe system pulsations.

Element standoff lengths were designed for each housing size to allow an optimal volume of liquid contaminant to be collected in the filter's quiet zone, further minimizing any chance of contaminant carryover.



Filter Housing Features

- Robust, spheroidal graphite-cast iron offers higher mechanical strength, improved ductility, and increased shock resistance.
- Head to bowl bore seal ensures greater seal integrity.
- Threaded mounting holes on top of filter head allow each size to be easily panel mounted when line mounting is not an option.
- Engraved flow direction arrow in filter's head notifies the user of proper flow direction. One direction flow for all media choices reduces the possibility of a housing being installed improperly.
- The SG cast iron head and steel bowl are nickel plated for corrosion resistance. The completed assembly is finished with a UV stable epoxy powder paint that will allow the filter to stand-up to harsh outdoor conditions.
- An imprinted aluminum part number.
- SAE-6 steel drain plug with positive o-ring seal installed. This port also allows the easy installation of Finite's JDK5000H or JDK5000V high pressure drain kits which allow the safe removal of liquid contamination at system pressures.
- Bowls are designed to be easily tightened or loosened with a standard metric socket wrench.
- Bowls feature a slotted positional locator which enables the element to be positively retained.
- Low bowl removal clearance.





Element Types and Media Grade Options

Coalescers:
Removes: Oil, water, liquids

Coalescing elements are specially designed for the removal of liquid contaminants from gaseous flows. These media types flow from the inside of the element to the outside. Coalesced liquid collects in the bowl where it is drained, while clean air or gas exits the housing through the outlet port. Particulate contaminants are captured and held in the media.



Type C
The Finite UNI-CAST coalescing elements are made of epoxy saturated borosilicate glass microfiber and includes a polyester drain layer. (1)(2)(3)



Type 7CVP
This pleated coalescer is made of fluorocarbon saturated borosilicate glass microfiber and includes a polyester drain layer. (1)(2)(3)

Water Separator:
Removes: Bulk liquids

In this element, the gas or liquid flows from the inside of the element to the outside



Type WS
The Finite water separator element is composed of wrapped stainless steel mesh. (1)(2)(3)

Adsorber:
Removes: Oil vapor (odor)

Adsorption elements are used to remove vapors (hydrocarbon or water) that are not removed by the coalescing filter. Hydrocarbon vapors collect in the element, while clean air exits the housing through the outlet port. In this element, the air or gas flows from the inside of the element to the outside



Type A
Our Type A media is wrapped activated carbon. This element has a galvanized carbon steel inner retainer and a stainless steel perforated metal outer retaining layer. (2)(3)

Particulate:
Removes: Solid contaminants

Particulate filters in the J-Series flow from the inside of the element to the outsidee. Particles collect in the element, while the clean air exits through the outlet port.



Type 3P
This 3 micron absolute rated pleated element is made of cellulose. (1)(2)(3)

Notes:
1 Each element is ratained internally and externally with galvanized carbon steel pergorated metal.
2 A nitrile back-up ring is used to position the fluorocarbon o-ring utilized on this element.
3 Top and bottom end caps are made of glass filled nylon to ensure durability.

Media Grades and Specifications:

Finite media grades determine the filtration efficiency. Capture efficiencies are available up to 99.995%. Micron ratings range from 0.01 to 3 micron. The columns on the right note both the wet and dry pressure drops.

Grade Designation	Media Type	Removes...	Max. Oil Coalescing Efficiency	Micron Carryover ppm[1]	Rating (um)	Additional Pressure Pressure Drop Media Dry (PSID)	Drop Media Wet[2] (PSID)
4C	Coalescing	Liquid from Gas	99.995%	0.003	0.01	1.25	3-4
7CP	Coalescing	Liquid from Gas	99.5%	0.09	0.5	0.25	0.5-0.7
10C	Coalescing	Liquid from Gas	95%	0.85	1.0	0.5	0.5
WS	Bulk Separator	Bulk Liquid from Gas	99+%[3]	N.A.	100	<0.25	<0.25
3P	Particulate	Solids from Gas	N.A.	N.A.	3.0	0.25	N.A.
A	Adsorbor	Vapor from Gas	99+%[4]	N.A.	3.0	1.0	N.A.

[1]Tested per ISO 12500-1 at 40 ppm inlet.
[2]Add dry + wet columns for total pressure drop.
[3]Bulk liquid removal efficiency..
[4]Oil vapor removal efficiency is given for A media.

Applications:

High Pressure (HP) Filter Applications							
Test Air for HP Hydraulics	10C / 7C						
Inter-stage HP Compressor	WS / 10C						
CNG Compressor Outlet	10C	→	4C				
CNG Storage Cascades	10C	→	4C				
CNG Dispensers	10C	→	4C				
Breathing Air / SCUBA	10C	→	4C	→	A		
High Pressure "Zero Air"	10C	→	4C	→	4C	→	A
Bulk Liquid contamination	WS	→	7C	→	4C		
Bulk solid Contamination	3P	→	7C	→	4C		
HP Air / Gas Dryer Protection	10C / 7C	→	4C	→	Dryer	→	7C / 3P
Food Applications / Odor Removal	10C / 7C	→	4C	→	A		



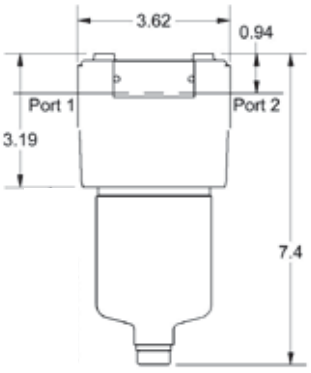
Flow Rates:

Choose Filter Size to find the corresponding flow rates

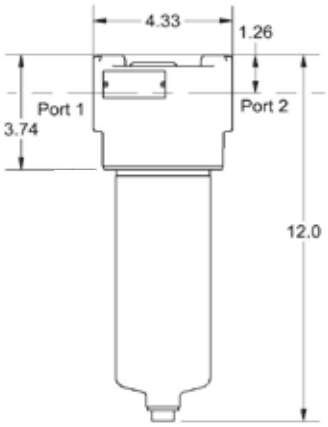
J-Series Flow Rates (SCFM)

Model	Port	Filter Type	100 PSIG	1000 PSIG	1500 PSIG	2000 PSIG	2500 PSIG	3000 PSIG	3500 PSIG	4000 PSIG	4500 PSIG	5000 PSIG
J_1A	1/4"	4C, A	15	135	200	265	330	395	460	525	590	655
		7CP, 10C, 3P, WS	30	265	395	525	660	790	920	1050	1180	1310
J_2A	1/2"	4C, A	25	220	330	440	550	655	765	875	985	1095
		7CP, 10C, 3P, WS	50	440	660	880	1095	1315	1530	1750	1970	2185
J_2B	1/2"	4C, A	35	310	460	615	765	920	1070	1225	1380	1530
		7CP, 10C, 3P, WS	80	710	1055	1405	1755	2105	2450	2800	3150	3500
J_3B	3/4"	4C, A	60	530	790	1055	1315	1575	1840	2100	2360	2525
		7DP, 10C, 3P, WS	130	1150	1715	2285	2850	3415	3985	4550	5115	5685
J_4C	1"	4C, A	90	795	1190	1580	1975	2365	2760	3150	3540	3935
		7CP, 10C, 3P, WS	200	1770	2640	3515	4385	5255	6130	7000	7870	8745
J_6D	1-1/2"	4C, A	180	1590	2375	3160	3945	4730	5515	6300	7085	7870
		7CP, 10C, 3P, WS	400	3540	5280	7025	8770	10515	12255	14000	15745	17490
J_8E	2"	4C, A	275	2435	3630	4830	6030	7230	8425	9625	10825	12025
		7CP, 10C, 3P, WS	600	5310	7925	10540	13155	15770	18385	21000	23615	26230

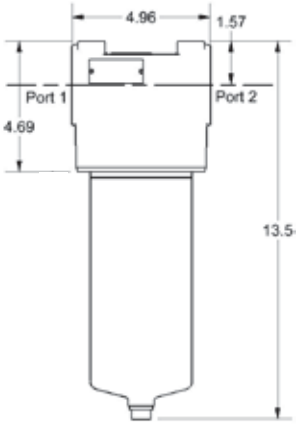
Note: These rates are based on compressed air flow. For CNG, these flows can be multiplied by a factor of 1.2.



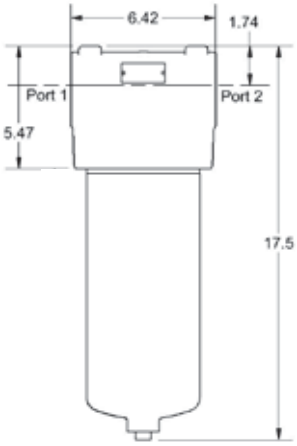
J_A Series



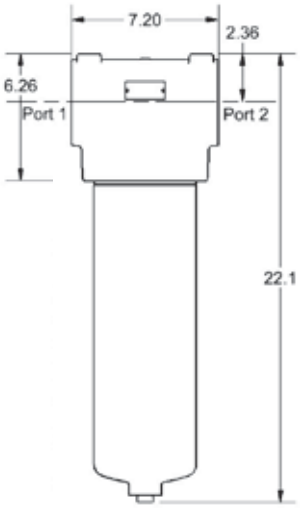
J_B Series



J_C Series



J_D Series



J_E Series

Specifications:

Model	J_1A	J_2A	J_2B	J_3B	J_4C	J_6D	J_8E
Port Size (N=NPT)	1/4" NPT	1/2"NPT	1/2"NPT	3/4" NPT	1"NPT	1-1/2"NPT	2" NPT
Port Size (S=SAE)	SAE-4	SAE-8	SAE-8	SAE-12	SAE-16	SAE-24	SAE-32
Max. Pressure	5000 PSIG	5000 PSIG	5000 PSIG	5000 PSIG	5000 PSIG	5000 PSIG	5000 PSIG
Max. Temperature	350°F	350°F	350°F	350°F	350°F	350°F	350°F
Head	SG Iron*	SG Iron*	SG Iron*	SG Iron*	SG Iron*	SG Iron*	SG Iron*
Bowl	Steel	Steel	Steel	Steel	Steel	Steel	Steel
Seals:	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon
Backing Ring	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile
Sump Volume	50 mL	50 mL	180 mL	180 mL	230 mL	500 mL	500 mL
Weight	9.0 lbs.	9.0 lbs.	13.0 lbs.	13.0 lbs.	21.0 lbs.	45.0 lbs.	67.0 lbs.
Port to Port	3.62"	3.62"	4.33"	4.33"	4.96"	6.42"	7.2"
Height	7.4"	7.4"	12.0"	12.0"	13.5"	17.5"	22.1"
Clearance	1.76"	1.76"	2.11"	2.11"	2.47"	2.94"	2.94"
Drain Port	SAE-6	SAE-6	SAE-6	SAE-6	SAE-6	SAE-6	SAE-6
Socket / Bowl Removal	1-1/16" HEX	1-1/16" HEX	1-1/2 HEX	1-1/2 HEX	1-1/2 HEX	1-1/2 HEX	1-1/2 HEX
Head / Bowl Torque	15-20 ft-lbs.	15-20 ft-lbs.	25-30 ft-lbs.	25-30 ft-lbs.	25-30 ft-lbs.	60-70 ft-lbs.	60-70 ft-lbs.

*Note: SG Iron is an abbreviation for Spheroidal Graphite Cast Iron

High Pressure Drains and Gauge:

JDK5000H	Horizontal Drain Kit 5000 psig
JDK5000V	Vertical Drain Kit 5000 psig
BDPI-25	Differential Pressure Gauge and Bracket

Note: Replacement Element supplied with o-ring and lube tube.

Member of

New to Come

ISO 9001:2000

How To Order
Part Numbers for Complete Assemblies:

Use the steps below to build your own part number.
For any permutation not mentioned below, please consult factory at 1-800-521-4357.

J	N	1	A	-	4	N
Series Name	Thread	Port Size	= Housing Size		Media Grade	Accessories
J	N - NPT	1 (1/4")	= A		4C	N = None
	S - SAE	2 (1/2")	= A		10C	Available
		2 (1/2")	= B		7CP	
		3 (3/4")	= B		WS	
		4 (1")	= C		3P	
		6 (1-1/2")	= D		A	
		8 (2")	= E			

Examples:

JN2A-4CN, JS6D-WSN, JN3B-3PN

Replacement Element Part Numbers:

Media Grade/Type	Series	Housing Size	Kit
4C	J	A	K
10C		B	
7CP		C	
WS		D	
3P		E	
A			

Examples:

4CJAK, WSJDK, 3PJBK



J-Series filters are used in a number of applications, ranging from breathing air for scuba divers, to high-pressure hydraulic circuit testing, to a variety of uses in the alternative fuel industry.









Worldwide Filtration Manufacturing Locations

North America

Compressed Air Treatment

Filtration & Separation/Balston
Haverhill, MA
978 858 0505
www.parker.com/balston

Filtration & Separation/Finite
Oxford, MI
248 628 6400
www.parker.com/finitefilter

Purification, Dehydration & Filtration Division
Lancaster, NY
716 685 4040
www.parker.com/pdf

Sales Office
Charlotte, NC
704 921 9303
www.parker.com/pdf

Engine Filtration & Water Purification

Racor
Modesto, CA
209 521 7860
www.parker.com/racor

Racor
Holly Springs
662 252 2656
www.parker.com/racor

Racor
Beaufort, SC
843 846 3200
www.parker.com/racor

Racor – Village Marine Tec.
Gardena, CA
310 516 9911
desalination.parker.com

Hydraulic Filtration

Hydraulic Filter
Metamora, OH
419 644 4311
www.parker.com/hydraulicfilter

Process Filtration

Process Advanced Filtration
Oxnard, CA
805 604 3400
www.parker.com/processfiltration

Europe

Compressed Air Treatment

domnick hunter Industrial
England NE
+44 (0) 191 402 9000,
www.domnickhunter.com

Hiross Zander
Padova Business Unit
Angelo di Piove Padova, Italy
+39 049 9712 111
www.parker.com/hzd

Hiross Zander
Essen Business Unit
Essen, Germany
T +49 2054 9340, F +49 2054 934164
www.parker.com/hzd

Parker Gas Separations
Etten- Leur, Netherlands
+31 76 508 5300

Engine Filtration & Water Purification

Racor
England
+44 (0) 1924 487000,
www.parker.com/rfde

Racor Research & Development
Stuttgart Germany
+49 (0)711 7071 290-0
www.parker.com/racor

Hydraulic Filtration

Hydraulic Filter
Arnhem, Holland
+31 26 3760376
www.parker.com/eurofilt

Urjala Operation
Urjala as Finland
+358 20 753 2500
www.parker.com/fi

Condition Monitoring Center
Norfolk IP 24 1HP England
+44 1842 763299
www.parker.com/cmc

Process Filtration

domnick hunter Process
DH3 2SF England
T +44 (0) 191 410 5121
www.domnickhunter.com

Asia Pacific

Australia
NSW 2154, Australia
+61 2 9634 777
www.parker.com/australia

China
Shanghai 101206 China
+86 21 5031 2525
www.parker.com/china

India
Mahape, Navi Mumbai 400 709 India
T +91 22 5613 7081, 82, 83, 84, 85
www. parker.com/india

Japan
Yokohama-shi, 244-0003 Japan
T +81 45 870 1522
www.parker.com/japan

Korea
Hwaseong-City Gyeonggi-Do, Korea
T +82 31 359 0771
www.parker.com/korea

Singapore
Singapore 619 702
T +65 6887 6300
www.parker.com/singapore

Thailand
Bangkok 10250 Thailand
T +66 2717 8140
www.parker.com/thailand

Latin America

Parker Comercio Ltda.
Filtration Division
Sao Jose dos Campos
CEP 12225-390 SP Brazil
+55 12 4009 3500
www.parker.com/br

Pan American Division - Miami
Miami, FL
305 470 8800
www.parker.com/panam

Africa

Aeroport Kempton Park,
1620 South Africa
+27 11 9610700
www.parker.com/eu

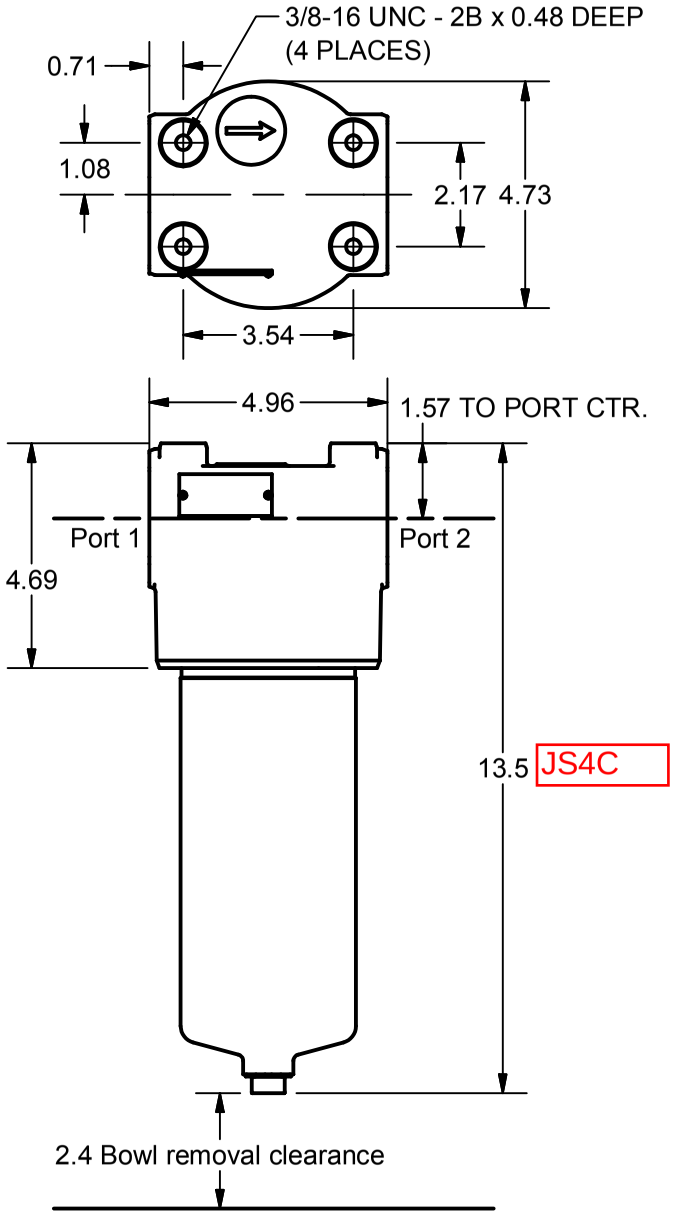
© 2011 Parker Hannifin Corporation. Product names are trademarks or registered trademarks of their respective companies.

Bulletin 1300-250/USA 3/11

Parker Hannifin Corporation
Filtration and Separation Division
500 S. Glaspie Street
Oxford, MI 48371
phone 248 628 1850, fax 248 628 1850
1 800 521 4357 (US & Canada)
www.cngfiltration.com

ALL DIMENSIONS ARE FOR REFERENCE ONLY. OBTAIN A CERTIFIED DRAWING FROM THE FACTORY PRIOR TO USING DIMENSIONS FOR DESIGN PURPOSES.

SYM	ECO	DATE
-	0009885	01-25-2011



ASSEMBLY NUMBER: J_4C

PORT TYPE & SIZE NOMENCLATURE
NPT PORT: JN4C = 1" NPT
SAE PORT: JS4C = SAE-16 (1-5/16-12)

DRAIN: SAE-6 (9/16-18), PLUG INCLUDED
MAXIMUM PRESSURE: 5,000 PSIG
MAXIMUM TEMPERATURE (HOUSING ONLY): 350°F
MAX. DIFFERENTIAL PRESSURE AT ELEMENT REPLACEMENT: 10 PSID
SUMP CAPACITY: 230 ML
MOUNTING: LINE MOUNTED, VERTICAL AS SHOWN, MOUNTING HOLES PROVIDED
ASSEMBLY WEIGHT: 21.0 LBS

MATERIALS
HEAD: NICKEL-PLATED SG IRON
BOWL: NICKEL-PLATED STEEL
DRAIN PLUG: ZINC-PLATED STEEL
SEALS: FLUOROCARBON
NON-WETTED BACKING RING: NITRILE RUBBER
FILTER ELEMENT: SEE ELEMENT SPECIFICATION DRAWING

Housing P/N	Element Kit P/N	Media Type	Rated Flow at 100 PSIG	Rated Flow at 3000 PSIG	Rated Flow at 5000 PSIG
J_4C	4CJCK	Coalescer	90 SCFM	2365 SCFM	3935 SCFM
	10CJCK	Pre-Coalescer	200 SCFM	5255 SCFM	8745 SCFM
	7CPJCK	Pleated Coalescer	200 SCFM	5255 SCFM	8745 SCFM
	WSJCK	SS Liquid Separator	200 SCFM	5255 SCFM	8745 SCFM
	3PJCK	Particulate Interceptor	200 SCFM	5255 SCFM	8745 SCFM
	AJCK	Activated Carbon Adsorber	90 SCFM	2365 SCFM	3935 SCFM

UNIT: INCHES

FILTRATION AND SEPARATION DIVISION	DR BY DDA	DATE 11/12/2010	DRAWING No. J__C SERIES-300	SIZE A
TITLE J__C-SERIES SPEC. DRAWING	CHK BY	SCALE 1/4		

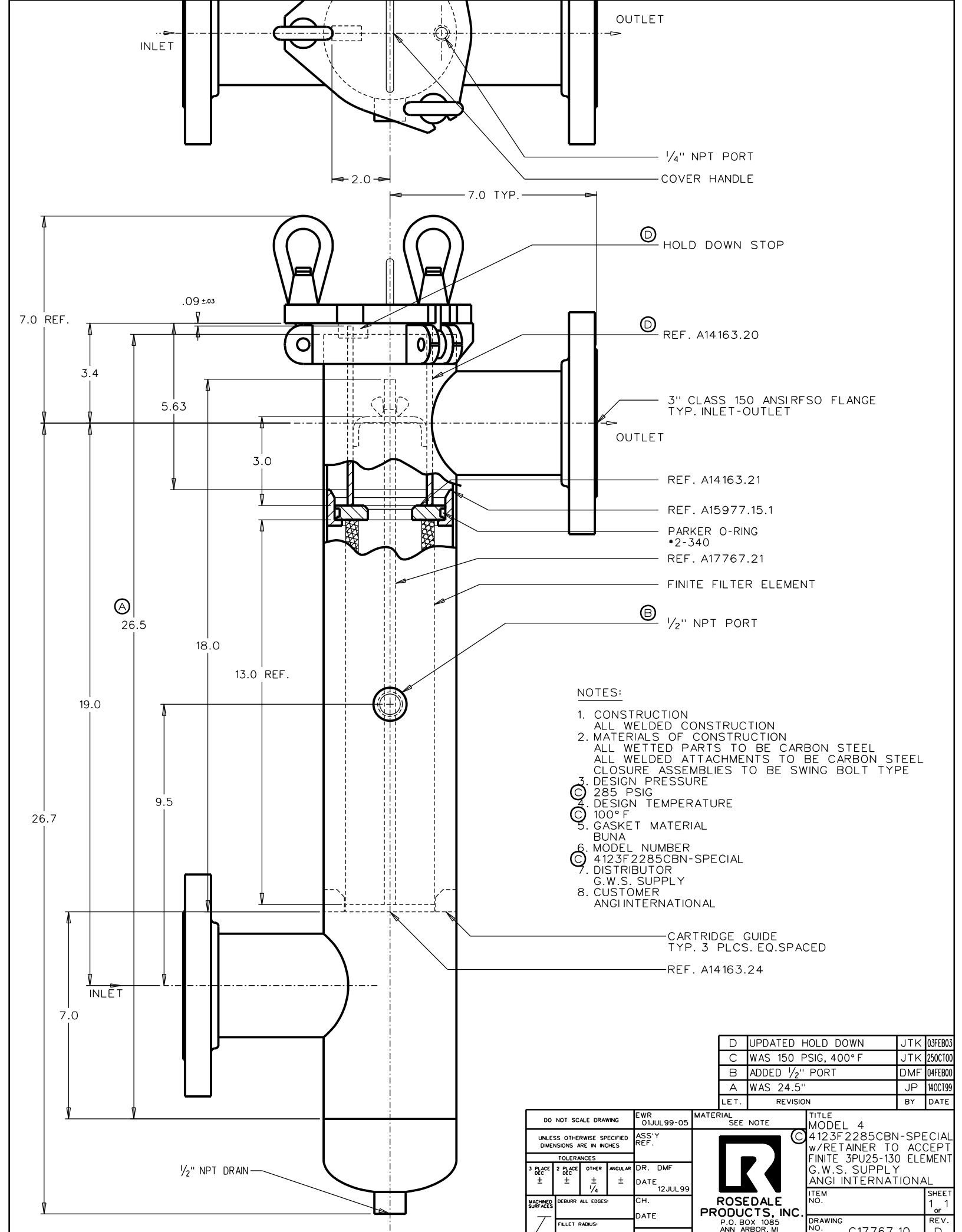
F 38

ROSEDALE
G4123F2285-CBN

3” CLASS 150 FILTER FLOOR MOUNTED
W/ NO ELEMENT

ANGI PART NUMBER 770-07257

THIS PAGE LEFT INTENTIONALLY BLANK



NOTES:

1. CONSTRUCTION
   ALL WELDED CONSTRUCTION
2. MATERIALS OF CONSTRUCTION
   ALL WETTED PARTS TO BE CARBON STEEL
   ALL WELDED ATTACHMENTS TO BE CARBON STEEL
   CLOSURE ASSEMBLIES TO BE SWING BOLT TYPE
3. DESIGN PRESSURE
   C 285 PSIG
4. DESIGN TEMPERATURE
   C 100° F
5. GASKET MATERIAL
   BUNA
6. MODEL NUMBER
   C 4123F2285CBN-SPECIAL
7. DISTRIBUTOR
   G.W.S. SUPPLY
8. CUSTOMER
   ANGI INTERNATIONAL

LET.	REVISION	BY	DATE
D	UPDATED HOLD DOWN	JTK	03FEB03
C	WAS 150 PSIG, 400° F	JTK	25OCT00
B	ADDED 1/2" PORT	DMF	04FEB00
A	WAS 24.5"	JP	14OCT99

DO NOT SCALE DRAWING
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES: 3 PLACE DEC ±, 2 PLACE DEC ±, OTHER ±1/4, ANGULAR ±
MACHINED SURFACES
DEBURR ALL EDGES:
FILLET RADIUS:

EWR 01JUL99-05
ASS'Y REF.
DR. DMF
DATE 12JUL99
CH.
DATE
SCALE 1/2

MATERIAL SEE NOTE

ROSEDALE PRODUCTS, INC.
P.O. BOX 1085
ANN ARBOR, MI
48106

TITLE
MODEL 4
C 4123F2285CBN-SPECIAL
w/RETAINER TO ACCEPT
FINITE 3PU25-130 ELEMENT
G.W.S. SUPPLY
ANGI INTERNATIONAL

ITEM NO.
SHEET 1 OF 1
DRAWING NO. C17767.10
REV. D

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

ROSEDALE PRODUCTS, INC.

MODEL 4

Table of Contents

I. Installation 2

II. Operation 3

III. Spare Parts List 4

Rosedale Engineering Standards are the property of Rosedale Products, Inc. A Rosedale standard or copy thereof shall not be distributed (except with express approval of Rosedale Products, Inc.) to any individual or firm beyond the intended recipient firm or individual. Firms or individuals acting contrary to the above may be subject to suit, ineligibility for continued or future employment, or removal from Rosedale's "Approved Manufacturers and Specialty Contractors List".

I. Installation

Please remove all shipping and crating materials carefully. Be sure to remove the plugs from the inlet and outlet openings. Dispose of all crating materials safely.

The Model 4 Filter unit is capable of having several different piping variations based upon the outlet style of your unit. The inlet service line should be connected to the inlet flange or NPT coupling located near the top of the unit (above the basket level).

The outlet service line should be connected to the outlet flange or coupling, located near the middle or bottom of the unit depending upon the style of your unit (below basket level).

There are two 1/4" NPT ports on the shell and one 1/4" NPT port on the cover of the Model 6 Filter (Note: The model 4-6 has only one 1/4" NPT port, located in the cover.) These ports can remain plugged or used for pressure gauges or special fittings as your application requires.

Some installations require electrical grounding of all equipment, be sure to provide adequate grounding where necessary.

After completing installation be sure to double check connections for integrity. Your Model 4 Filter unit has been factory pressure tested leak free, therefore, any seepage problems usually occur from improper installation connections.

You are now ready to install the filter basket and bag. Remove cover by loosening the cover eyenuts. The eyenuts in the slotted corners should be loosened sufficiently to swing free. Loosen the third eyenut sufficiently to allow the top cover and closure assembly to swing away from the top of the unit.

Place the basket into the filter housing, make sure the basket flange is firmly seated on top of the basket collar.

Insert bag into the bag basket making sure filter bag ring is firmly seated on top of the basket flange. For best results, be sure filter bag is installed fully extended to the bottom of the basket.

Before replacing cover assembly, inspect cover seal gasket (replacing as necessary). Close cover and alternately tighten the three clamp assemblies evenly to ensure a leak proof seal between the cover and housing body. Torque closure assemblies to a minimum of 125 inch-lbs. Higher torque may be required depending on your application and filter condition.

Your Rosedale Model 4 is now ready for operation!

Rosedale Engineering Standards are the property of Rosedale Products, Inc. A Rosedale standard or copy thereof shall not be distributed (except with express approval of Rosedale Products, Inc.) to any individual or firm beyond the intended recipient firm or individual. Firms of individuals acting contrary to the above may be subject to suit, ineligibility for continued or future employment, or removal Rosedale's "Approved Manufacturers and Specialty Contractors List".

II. Operation

Filter System Start-Up Procedure:

Prior to turning on the flow to the inlet service, please make the following checks:

1. Check inside filter unit to be sure basket and filter bag (if applicable) are in housing and do not require cleaning or replacement. If necessary install a clean filter basket and bag (if applicable).

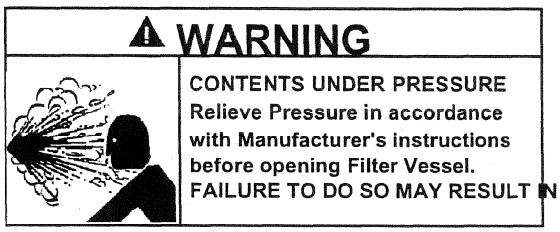
2. Check that filter unit cover is securely fastened to housing. You are now ready to open the flow to the inlet service line. Slowly open the inlet service line approximately 25% of normal operational flow (open slowly as not to displace filter bag inside the housing). After filter unit is pressurized and vented, slowly open outlet service line unit valve until completely open. Complete opening of inlet service line until desired flow rate is reached.

Once the desired service flow has been established, the filter will operate efficiently until dirty. However, under no circumstances should more than *15 PSI Differential Pressure* through the filter be obtained. Operating the filter unit with a high differential may cause filter bags to rupture and/or cause damage to filter system and downstream equipment.

To prevent excessive drop through the filter unit, regular inspection of the filter media is required. Monitoring of differential pressure through the housing can be utilized as a means of determining whether or not the filter media needs cleaning or replacement.

When it becomes necessary to clean or replace filter media, follow the procedure outlined below:

1. First close the flow from the inlet service line.
2. Close the flow to the outlet service line. (In some applications closing flow to outlet is not required.)
3. Relieve the pressure from the filter unit.



4. Drain housing sufficiently to access filter basket.
5. Remove cover by loosening the cover eyenuts. The eyenuts in the slotted corners should be loosened sufficiently to swing free. Loosen the third eyenut sufficiently to allow the top cover and closure assembly to swing away from the top of the unit.
6. Remove filter basket and clean thoroughly, remove the filter bag (if applicable) and throw away. (Cleaning and reusing the filter bag is not recommended.)

Rosedale Engineering Standards are the property of Rosedale Products, Inc. A Rosedale standard or copy thereof shall not he distributed (except with express approval of Rosedale Products, Inc.) to any individual or firm beyond the intended recipient firm or individual. Firms of individuals acting contrary to the above may be subject to **suit,** *ineligibility for continued or future employment, or removal Rosedale's "Approved Manufacturers and Specialty Contractors List".*

7. Remove debris and sludge from inside the inlet portion of housing to avoid interference with cover seal or flow of fluid being filtered.
8. Remove basket seal (if applicable) and inspect, replace if necessary.
9. Install clean filter basket and filter bag (if applicable). Place the basket into the filter housing, make sure the basket flange is firmly seated on the basket collar. If applicable, insert bag on top of the bag basket flange making sure filter bag ring is firmly seated inside the basket flange. For best results, be sure filter bag is installed fully extended to the bottom of the basket.
10. Inspect cover gasket for cuts or other signs of failure and make sure it is properly seated.
11. Move cover back into position, and alternately tighten the three clamp assemblies evenly to ensure a leak proof seal between cover and housing body. Torque closure assemblies to a minimum of $125^{\text{inch-lbs}}$. Higher torque may be required depending on your application and filter condition..

Your Rosedale Model 4 Filter unit is now ready for operation. Refer to filter system start-up procedure.

Rosedale Engineering Standards are the property of Rosedale Products, Inc. A Rosedale standard or copy thereof shall not be distributed (except with express approval of Rosedale Products, Inc.) to any individual or firm beyond the intended recipient firm or individual. firms of individuals acting contrary to the above may be subject to suit, ineligibility for continued or future employment, or removal Rosedale's "Approved Manufacturers and Specialty Contractors List".

THIS PAGE LEFT INTENTIONALLY BLANK

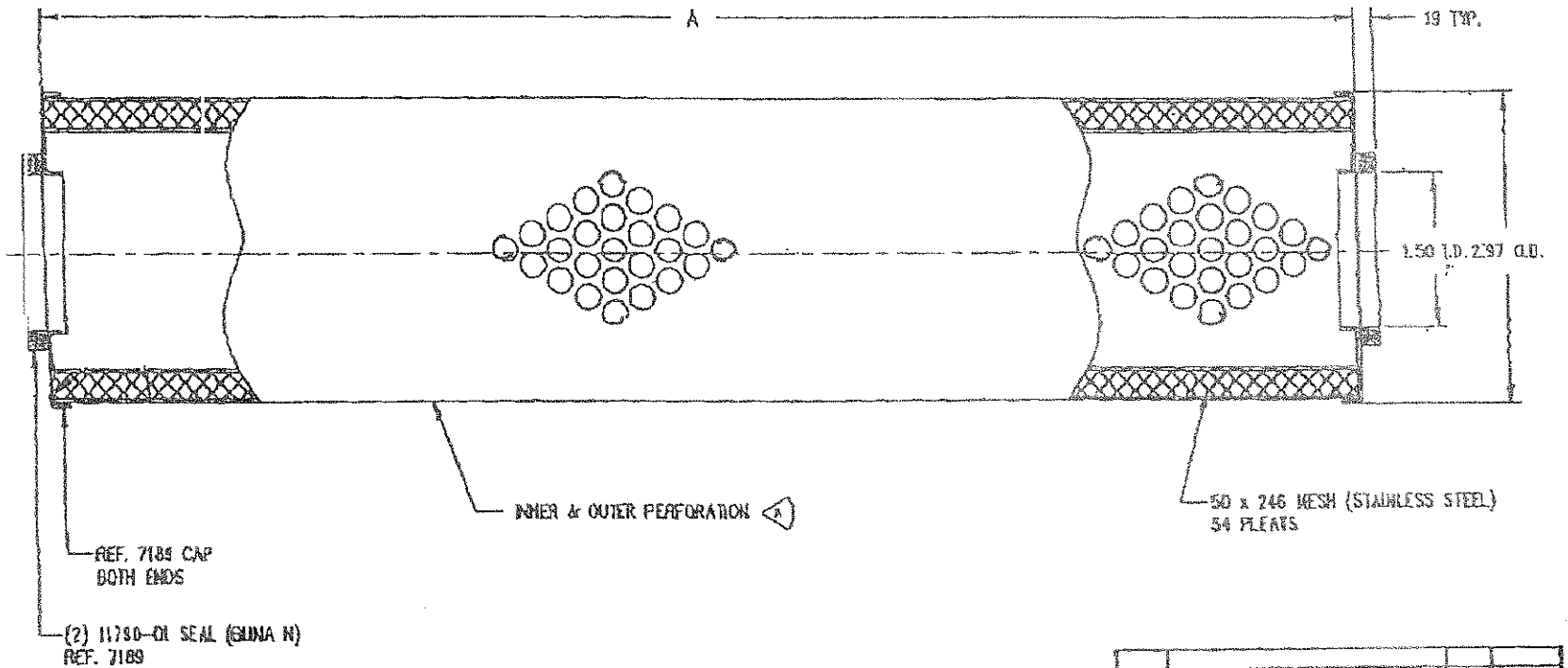
F 52

ROSEDALE
C-2867

ELEMENT-13x30x150 98/105 MICRON SS FINE MESH

ANGI PART NUMBER 770-07283

THIS PAGE LEFT INTENTIONALLY BLANK



	PART NO.	DIM "A"	
F30 — C-2857	8807	13"	50 x 246 mesh
F31 — C-2858	8808	18"	50 x 246 mesh
F52 — C-2867	8807	13"	30X150
F67 — C-2864	8808	18"	30 X 150

LETTER	REVISION	BY	DATE
A	ADDED BUNA PERFORATION (PER INSTRUCT)	C DAY	05-03-99

DO NOT SCALE DRAWING — DESIG FILE DWG. 10-98 — ASSY REF — MATERIAL: — TITLE ELEMENT

DR. C DAY DATE 05-03-99 — CHK. DATE — SCALE FULL

RFQ-3152 — PART NO. 8807 / 8808 — DRAWING NO. 11790-10 — REV. A

THIS PAGE LEFT INTENTIONALLY BLANK

G 22

WIKA
50394771

0-200 PSI/BAR PRESSURE GAUGE

ANGI PART NUMBER 741-07240

THIS PAGE LEFT INTENTIONALLY BLANK

WIKA

Industrial Gauges

Type 23X.53



Liquid Fillable

- Stainless Steel Case & Crimp Ring
- Welded Case-to-Socket Connection
- Field Liquid-Fillable

Type 232.53 - Dry case
Type 233.53 - Liquid filled case

The rugged construction of WIKA Type 23X.53 stainless steel gauges provides resistance to the most corrosive media and environments. These gauges feature 316 stainless steel wetted parts and a 304 stainless steel case and crimped ring, and can be liquid-filled in the field.

Standard Features

- **Nominal Case Size:** 2" (53 mm), 2½" (68 mm), 4" (100 mm)
- **Case Material:** 304 stainless steel
- **Wetted Parts:** 316 SS
- **Window Type & Material:** 2½" Polycarbonate; 4" Acrylic
- **Removable Window:** No
- **Dial Material:** White aluminum
- **Bezel Ring Type & Material:** Crimp on SS polished
- **Liquid Fillable Gauge:** Yes
- **Case-to-Socket O-ring Material:** Welded
- **"Other" Gaskets/O-ring Types & Materials:** Window gasket, BUNA-N
- **Pointer Material/Type:** Black aluminum
- **Adjustable Pointer:** No
- **Accuracy:** ±1.5% of span (2" & 2½"); (4") ± 1.0% of span-ASME B40.100 Grade 1A
- **Connection locations:** LM (Lower Mount), CBM (Center Back Mount) & LBM (Lower Back Mount) (4" only)
- **Media Operating Temperature:** 212°F
- **Ambient Operating Temperature:** -40°F to 140°F dry; -4°F to 140°F glycerine case fill; -40°F to 140°F silicone case fill

Available Options
"Dampened Movement" Option: Yes, (N/A on 2½" CBM or 2" LM/CBM) & LBM
U-Clamp Bracket: Yes (CBM only)
Front Flange: Yes (CBM & LBM only)
Rear Flange: Yes (LM, CBM & LBM)
Restrictor: Yes
Safety Glass Window: No
Instrument Glass Window (flat glass): No
Drag Pointer (maximum reading indicator): Yes
Cleaned for Use in Oxygen Service: Yes
Panel Mount Kit: Yes (see front flange or u-clamp option)
Magnetic or Inductive Contact Switches: No
Receiver Gauge Scales: Yes
Special Connection: Limited to wrench flat area

Type	232.53				
Connection	LM	CBM			
Conn. Size	1/4" NPT				
Size	2½"				
Pressure Scale[1]	PSI	PSI	PSI/BAR	PSI/KPA	PSI/KG/CM²
30" Hg	9768777	9768394			
30"-0-15 PSI					
30"-0-30 PSI	9768769	9768386			
30"-0-60 PSI	9768750	9768378			
30"-0-100 PSI					
30"-0-160 PSI	9768742	9768360			
30"-0-200 PSI					
15 PSI	9768734	9768351			
30 PSI	9768726	9768343			
60 PSI	9768718	9768335	8992848	8993089	8992962
100 PSI	9768700	9768327	8992856	8993097	8992970
160 PSI	9768696	9768319	8992865	8993101	8992988
200 PSI	9768688	9768300	8992873	8993119	8992996
300 PSI	9768670	9768297	8992881	8993127	8993004
400 PSI	9768661	9768289			
600 PSI	9768653	9768270	9779685	9779693	
800 PSI					
1,000 PSI	9768645	9768262	8992899	8993135	8993012
1,500 PSI	9768637	9768254	8992903	8993144	8993020
2,000 PSI	9768629	9768246	8992911	8993152	8993038
3,000 PSI	9768610	9768238	8992929	8993160	8993046
5,000 PSI	9768602	9768220	8992937	8993178	8993055
6,000 PSI		8993208	8992945	8993186	8993063
10,000 PSI	9768599	9768211	8992954	8993195	8993071
15,000 PSI		9779715	9776715		9779731

[1]"PSI/BAR" denotes dual scale; PSI outside in black, BAR inside in red; "PSI/KPA" denotes dual scale; PSI outside in black, KPA inside in red; "PSI/KG/CM²" denotes dual scale; PSI outside in black, KG/CM² inside in red. Note: Vacuum scale: 30" Hg outside in black; 760 mm Hg inside in red. [2]

Note: For options not shown - consult your WIKA Distributor or the Factory.

Data sheet: 23X.53

For liquid filled gauges, add "-829" to part numbers above for 2½" size or "-834" for 4" size.

Items shown with part numbers indicate readily available standard WIKA products. Items shown without part numbers are available on special order.

WIKA

Type	232.53- liquid fillable		
Connection	LM	LM	LBM
Conn. Size	1/4" NPT	1/2" NPT	
Size	4"		
Pressure Scale	PSI	PSI	PSI
30" Hg	9767576	9768459	9737057
30"-0-15 PSI	9737910	9768467	9737065
30"-0-30 PSI	9767398	9768475	9737073
30"-0-60 PSI	9767401	9768483	9737081
30"-0-100 PSI	9737898	9737880	9737090
30"-0-160 PSI	9767410	9768491	9737103
30"-0-200 PSI	9737901	9768505	9737111
30"-0-300 PSI	4260147		
30"-0-400 PSI	4260155		
15 PSI	9767428	9768513	9737120
30 PSI	9767436	9768521	9737138
60 PSI	9767444	9768530	9737146
100 PSI	9767452	9768548	9737154
160 PSI	9767460	9768556	9737162
200 PSI	9767479	9768564	9737170
300 PSI	9767487	9768572	9737189
400 PSI	9767495	9768580	9737197
600 PSI	9767509	9768963	9737200
800 PSI			9737219
1,000 PSI	9767517	9768858	9737227
1,500 PSI		9768866	9737235
2,000 PSI		9768807	9737243
3,000 PSI		9768874	9737251
5,000 PSI		9768823	9737260
10,000 PSI		9768831	9737278
15,000 PSI		9768840	9737286

Type	233.53- glycerine filled				
Connection	LM		LM	LBM	CBM
Conn. Size	1/4" NPT		1/2" NPT		1/4" NPT
Size	2½"	4"	4"		2½"
Pressure Scale	PSI	PSI	PSI	PSI	PSI
30" Hg	9833646	9833124	9833328	9831504	9833310
30"-0-15 PSI		9831775	9833336	9831512	
30"-0-30 PSI	9833638	9832993	9833345	9831520	9833302
30"-0-60 PSI	9833620	9833000	9833353	9831538	9833298
30"-0-100 PSI		9831759	9831741	9831546	
30"-0-160 PSI	9833612	9833018	9833361	9831555	9833280
30"-0-200 PSI		9831767	9833379	9831563	
30"-0-300 PSI					
30"-0-400 PSI					
15 PSI	9833604	9833026	9833387	9831571	9833272
30 PSI	9833590	9833035	9833395	9831589	9833264
60 PSI	9833582	9833043	9833409	9831597	9833255
100 PSI	9833574	9833051	9833417	9831601	9833247
160 PSI	9833565	9833069	9833425	9831619	9833239
200 PSI	9833557	9833077	9833434	9831627	9833221
300 PSI	9833549	9833085	9833442	9831635	9833213
400 PSI	9833531	9833094	9833450	9831644	9833205
600 PSI	9833523	9833107	9833727	9831652	9833191
800 PSI					
1,000 PSI	9833515	9833115	9833697	9831678	9833183
1,500 PSI	9833506		9833701	9831686	9833175
2,000 PSI	9833493		9833655	9831695	9833166
3,000 PSI	9833485		9833719	9831708	9833158
5,000 PSI	9833476		9833663	9831716	9833140
10,000 PSI	9833468		9833671	9831725	9833132
15,000 PSI			9833689	9831733	

Type	232.53- Stock Gauges with Ammonia Scales	
Size	2 ½"	4"
Connection	LM	
Conn. Size	1/4" NPT	
30"-0-150 PSI / 84°F	9797144	9797127
30"-0-300 PSI / 126°F	9797152	9797135

G 23

WIKA
50395670

0-300 PSI/BAR PRESSURE GAUGE

ANGI PART NUMBER 741-07241

THIS PAGE LEFT INTENTIONALLY BLANK

WIKA

Industrial Gauges

Type 23X.53

Liquid Fillable



- Stainless Steel Case & Crimp Ring
- Welded Case-to-Socket Connection
- Field Liquid-Fillable

Type 232.53 - Dry case
Type 233.53 - Liquid filled case

The rugged construction of WIKA Type 23X.53 stainless steel gauges provides resistance to the most corrosive media and environments. These gauges feature 316 stainless steel wetted parts and a 304 stainless steel case and crimped ring, and can be liquid-filled in the field.

Standard Features

- **Nominal Case Size:** 2" (53 mm), 2½" (68 mm), 4" (100 mm)
- **Case Material:** 304 stainless steel
- **Wetted Parts:** 316 SS
- **Window Type & Material:** 2½" Polycarbonate; 4" Acrylic
- **Removable Window:** No
- **Dial Material:** White aluminum
- **Bezel Ring Type & Material:** Crimp on SS polished
- **Liquid Fillable Gauge:** Yes
- **Case-to-Socket O-ring Material:** Welded
- **"Other" Gaskets/O-ring Types & Materials:** Window gasket, BUNA-N
- **Pointer Material/Type:** Black aluminum
- **Adjustable Pointer:** No
- **Accuracy:** ±1.5% of span (2" & 2½"); (4") ± 1.0% of span-ASME B40.100 Grade 1A
- **Connection locations:** LM (Lower Mount), CBM (Center Back Mount) & LBM (Lower Back Mount) (4" only)
- **Media Operating Temperature:** 212°F
- **Ambient Operating Temperature:** -40°F to 140°F dry; -4°F to 140°F glycerine case fill; -40°F to 140°F silicone case fill

Available Options
"Dampened Movement" Option: Yes, (N/A on 2½" CBM or 2" LM/CBM) & LBM
U-Clamp Bracket: Yes (CBM only)
Front Flange: Yes (CBM & LBM only)
Rear Flange: Yes (LM, CBM & LBM)
Restrictor: Yes
Safety Glass Window: No
Instrument Glass Window (flat glass): No
Drag Pointer (maximum reading indicator): Yes
Cleaned for Use in Oxygen Service: Yes
Panel Mount Kit: Yes (see front flange or u-clamp option)
Magnetic or Inductive Contact Switches: No
Receiver Gauge Scales: Yes
Special Connection: Limited to wrench flat area

Type	232.53				
Connection	LM	CBM			
Conn. Size	1/4" NPT				
Size	2½"				
Pressure Scale[1]	PSI	PSI	PSI/BAR	PSI/KPA	PSI/KG/CM²
30" Hg	9768777	9768394			
30"-0-15 PSI					
30"-0-30 PSI	9768769	9768386			
30"-0-60 PSI	9768750	9768378			
30"-0-100 PSI					
30"-0-160 PSI	9768742	9768360			
30"-0-200 PSI					
15 PSI	9768734	9768351			
30 PSI	9768726	9768343			
60 PSI	9768718	9768335	8992848	8993089	8992962
100 PSI	9768700	9768327	8992856	8993097	8992970
160 PSI	9768696	9768319	8992865	8993101	8992988
200 PSI	9768688	9768300	8992873	8993119	8992996
300 PSI	9768670	9768297	8992881	8993127	8993004
400 PSI	9768661	9768289			
600 PSI	9768653	9768270	9779685	9779693	
800 PSI					
1,000 PSI	9768645	9768262	8992899	8993135	8993012
1,500 PSI	9768637	9768254	8992903	8993144	8993020
2,000 PSI	9768629	9768246	8992911	8993152	8993038
3,000 PSI	9768610	9768238	8992929	8993160	8993046
5,000 PSI	9768602	9768220	8992937	8993178	8993055
6,000 PSI		8993208	8992945	8993186	8993063
10,000 PSI	9768599	9768211	8992954	8993195	8993071
15,000 PSI		9779715	9776715		9779731

[1]"PSI/BAR" denotes dual scale; PSI outside in black, BAR inside in red; "PSI/KPA" denotes dual scale; PSI outside in black, KPA inside in red; "PSI/KG/CM²" denotes dual scale; PSI outside in black, KG/CM² inside in red. Note: Vacuum scale: 30" Hg outside in black; 760 mm Hg inside in red. [2]

Note: For options not shown - consult your WIKA Distributor or the Factory.

Data sheet: 23X.53

For liquid filled gauges, add "-829" to part numbers above for 2½" size or "-834" for 4" size.

Items shown with part numbers indicate readily available standard WIKA products. Items shown without part numbers are available on special order.

WIKA

Type	232.53- liquid fillable		
Connection	LM	LM	LBM
Conn. Size	1/4" NPT	1/2" NPT	
Size	4"		
Pressure Scale	PSI	PSI	PSI
30" Hg	9767576	9768459	9737057
30"-0-15 PSI	9737910	9768467	9737065
30"-0-30 PSI	9767398	9768475	9737073
30"-0-60 PSI	9767401	9768483	9737081
30"-0-100 PSI	9737898	9737880	9737090
30"-0-160 PSI	9767410	9768491	9737103
30"-0-200 PSI	9737901	9768505	9737111
30"-0-300 PSI	4260147		
30"-0-400 PSI	4260155		
15 PSI	9767428	9768513	9737120
30 PSI	9767436	9768521	9737138
60 PSI	9767444	9768530	9737146
100 PSI	9767452	9768548	9737154
160 PSI	9767460	9768556	9737162
200 PSI	9767479	9768564	9737170
300 PSI	9767487	9768572	9737189
400 PSI	9767495	9768580	9737197
600 PSI	9767509	9768963	9737200
800 PSI			9737219
1,000 PSI	9767517	9768858	9737227
1,500 PSI		9768866	9737235
2,000 PSI		9768807	9737243
3,000 PSI		9768874	9737251
5,000 PSI		9768823	9737260
10,000 PSI		9768831	9737278
15,000 PSI		9768840	9737286

Type	233.53- glycerine filled				
Connection	LM		LM	LBM	CBM
Conn. Size	1/4" NPT		1/2" NPT		1/4" NPT
Size	2½"	4"	4"		2½"
Pressure Scale	PSI	PSI	PSI	PSI	PSI
30" Hg	9833646	9833124	9833328	9831504	9833310
30"-0-15 PSI		9831775	9833336	9831512	
30"-0-30 PSI	9833638	9832993	9833345	9831520	9833302
30"-0-60 PSI	9833620	9833000	9833353	9831538	9833298
30"-0-100 PSI		9831759	9831741	9831546	
30"-0-160 PSI	9833612	9833018	9833361	9831555	9833280
30"-0-200 PSI		9831767	9833379	9831563	
30"-0-300 PSI					
30"-0-400 PSI					
15 PSI	9833604	9833026	9833387	9831571	9833272
30 PSI	9833590	9833035	9833395	9831589	9833264
60 PSI	9833582	9833043	9833409	9831597	9833255
100 PSI	9833574	9833051	9833417	9831601	9833247
160 PSI	9833565	9833069	9833425	9831619	9833239
200 PSI	9833557	9833077	9833434	9831627	9833221
300 PSI	9833549	9833085	9833442	9831635	9833213
400 PSI	9833531	9833094	9833450	9831644	9833205
600 PSI	9833523	9833107	9833727	9831652	9833191
800 PSI					
1,000 PSI	9833515	9833115	9833697	9831678	9833183
1,500 PSI	9833506		9833701	9831686	9833175
2,000 PSI	9833493		9833655	9831695	9833166
3,000 PSI	9833485		9833719	9831708	9833158
5,000 PSI	9833476		9833663	9831716	9833140
10,000 PSI	9833468		9833671	9831725	9833132
15,000 PSI			9833689	9831733	

Type	232.53- Stock Gauges with Ammonia Scales	
Size	2 ½"	4"
Connection	LM	
Conn. Size	1/4" NPT	
30"-0-150 PSI / 84°F	9797144	9797127
30"-0-300 PSI / 126°F	9797152	9797135

G 25

WIKA
9779685-0002

0-600 PSI/BAR PRESSURE GAUGE

ANGI PART NUMBER 741-07243

THIS PAGE LEFT INTENTIONALLY BLANK

WIKA

Industrial Gauges

Type 23X.53



Liquid Fillable

- Stainless Steel Case & Crimp Ring
- Welded Case-to-Socket Connection
- Field Liquid-Fillable

Type 232.53 - Dry case
Type 233.53 - Liquid filled case

The rugged construction of WIKA Type 23X.53 stainless steel gauges provides resistance to the most corrosive media and environments. These gauges feature 316 stainless steel wetted parts and a 304 stainless steel case and crimped ring, and can be liquid-filled in the field.

Standard Features

- **Nominal Case Size:** 2" (53 mm), 2½" (68 mm), 4" (100 mm)
- **Case Material:** 304 stainless steel
- **Wetted Parts:** 316 SS
- **Window Type & Material:** 2½" Polycarbonate; 4" Acrylic
- **Removable Window:** No
- **Dial Material:** White aluminum
- **Bezel Ring Type & Material:** Crimp on SS polished
- **Liquid Fillable Gauge:** Yes
- **Case-to-Socket O-ring Material:** Welded
- **"Other" Gaskets/O-ring Types & Materials:** Window gasket, BUNA-N
- **Pointer Material/Type:** Black aluminum
- **Adjustable Pointer:** No
- **Accuracy:** ±1.5% of span (2" & 2½"); (4") ± 1.0% of span-ASME B40.100 Grade 1A
- **Connection locations:** LM (Lower Mount), CBM (Center Back Mount) & LBM (Lower Back Mount) (4" only)
- **Media Operating Temperature:** 212°F
- **Ambient Operating Temperature:** -40°F to 140°F dry; -4°F to 140°F glycerine case fill; -40°F to 140°F silicone case fill

Available Options
"Dampened Movement" Option: Yes, (N/A on 2½" CBM or 2" LM/CBM) & LBM
U-Clamp Bracket: Yes (CBM only)
Front Flange: Yes (CBM & LBM only)
Rear Flange: Yes (LM, CBM & LBM)
Restrictor: Yes
Safety Glass Window: No
Instrument Glass Window (flat glass): No
Drag Pointer (maximum reading indicator): Yes
Cleaned for Use in Oxygen Service: Yes
Panel Mount Kit: Yes (see front flange or u-clamp option)
Magnetic or Inductive Contact Switches: No
Receiver Gauge Scales: Yes
Special Connection: Limited to wrench flat area

Type	232.53				
Connection	LM	CBM			
Conn. Size	1/4" NPT				
Size	2½"				
Pressure Scale[1]	PSI	PSI	PSI/BAR	PSI/KPA	PSI/KG/CM²
30" Hg	9768777	9768394			
30"-0-15 PSI					
30"-0-30 PSI	9768769	9768386			
30"-0-60 PSI	9768750	9768378			
30"-0-100 PSI					
30"-0-160 PSI	9768742	9768360			
30"-0-200 PSI					
15 PSI	9768734	9768351			
30 PSI	9768726	9768343			
60 PSI	9768718	9768335	8992848	8993089	8992962
100 PSI	9768700	9768327	8992856	8993097	8992970
160 PSI	9768696	9768319	8992865	8993101	8992988
200 PSI	9768688	9768300	8992873	8993119	8992996
300 PSI	9768670	9768297	8992881	8993127	8993004
400 PSI	9768661	9768289			
600 PSI	9768653	9768270	9779685	9779693	
800 PSI					
1,000 PSI	9768645	9768262	8992899	8993135	8993012
1,500 PSI	9768637	9768254	8992903	8993144	8993020
2,000 PSI	9768629	9768246	8992911	8993152	8993038
3,000 PSI	9768610	9768238	8992929	8993160	8993046
5,000 PSI	9768602	9768220	8992937	8993178	8993055
6,000 PSI		8993208	8992945	8993186	8993063
10,000 PSI	9768599	9768211	8992954	8993195	8993071
15,000 PSI		9779715	9776715		9779731

[1]"PSI/BAR" denotes dual scale; PSI outside in black, BAR inside in red; "PSI/KPA" denotes dual scale; PSI outside in black, KPA inside in red; "PSI/KG/CM²" denotes dual scale; PSI outside in black, KG/CM² inside in red. Note: Vacuum scale: 30" Hg outside in black; 760 mm Hg inside in red. [2]

Note: For options not shown - consult your WIKA Distributor or the Factory.

Data sheet: 23X.53

For liquid filled gauges, add "-829" to part numbers above for 2½" size or "-834" for 4" size.

Items shown with part numbers indicate readily available standard WIKA products. Items shown without part numbers are available on special order.

WIKA

Type	232.53- liquid fillable		
Connection	LM	LM	LBM
Conn. Size	1/4" NPT	1/2" NPT	
Size	4"		
Pressure Scale	PSI	PSI	PSI
30" Hg	9767576	9768459	9737057
30"-0-15 PSI	9737910	9768467	9737065
30"-0-30 PSI	9767398	9768475	9737073
30"-0-60 PSI	9767401	9768483	9737081
30"-0-100 PSI	9737898	9737880	9737090
30"-0-160 PSI	9767410	9768491	9737103
30"-0-200 PSI	9737901	9768505	9737111
30"-0-300 PSI	4260147		
30"-0-400 PSI	4260155		
15 PSI	9767428	9768513	9737120
30 PSI	9767436	9768521	9737138
60 PSI	9767444	9768530	9737146
100 PSI	9767452	9768548	9737154
160 PSI	9767460	9768556	9737162
200 PSI	9767479	9768564	9737170
300 PSI	9767487	9768572	9737189
400 PSI	9767495	9768580	9737197
600 PSI	9767509	9768963	9737200
800 PSI			9737219
1,000 PSI	9767517	9768858	9737227
1,500 PSI		9768866	9737235
2,000 PSI		9768807	9737243
3,000 PSI		9768874	9737251
5,000 PSI		9768823	9737260
10,000 PSI		9768831	9737278
15,000 PSI		9768840	9737286

Type	233.53- glycerine filled				
Connection	LM		LM	LBM	CBM
Conn. Size	1/4" NPT		1/2" NPT		1/4" NPT
Size	2½"	4"	4"		2½"
Pressure Scale	PSI	PSI	PSI	PSI	PSI
30" Hg	9833646	9833124	9833328	9831504	9833310
30"-0-15 PSI		9831775	9833336	9831512	
30"-0-30 PSI	9833638	9832993	9833345	9831520	9833302
30"-0-60 PSI	9833620	9833000	9833353	9831538	9833298
30"-0-100 PSI		9831759	9831741	9831546	
30"-0-160 PSI	9833612	9833018	9833361	9831555	9833280
30"-0-200 PSI		9831767	9833379	9831563	
30"-0-300 PSI					
30"-0-400 PSI					
15 PSI	9833604	9833026	9833387	9831571	9833272
30 PSI	9833590	9833035	9833395	9831589	9833264
60 PSI	9833582	9833043	9833409	9831597	9833255
100 PSI	9833574	9833051	9833417	9831601	9833247
160 PSI	9833565	9833069	9833425	9831619	9833239
200 PSI	9833557	9833077	9833434	9831627	9833221
300 PSI	9833549	9833085	9833442	9831635	9833213
400 PSI	9833531	9833094	9833450	9831644	9833205
600 PSI	9833523	9833107	9833727	9831652	9833191
800 PSI					
1,000 PSI	9833515	9833115	9833697	9831678	9833183
1,500 PSI	9833506		9833701	9831686	9833175
2,000 PSI	9833493		9833655	9831695	9833166
3,000 PSI	9833485		9833719	9831708	9833158
5,000 PSI	9833476		9833663	9831716	9833140
10,000 PSI	9833468		9833671	9831725	9833132
15,000 PSI			9833689	9831733	

Type	232.53- Stock Gauges with Ammonia Scales	
Size	2 ½"	4"
Connection	LM	
Conn. Size	1/4" NPT	
30"-0-150 PSI / 84°F	9797144	9797127
30"-0-300 PSI / 126°F	9797152	9797135

G 27

WIKA
8992929-0003

0-3000 PSI/BAR PRESSURE GAUGE

ANGI PART NUMBER 741-07245

THIS PAGE LEFT INTENTIONALLY BLANK

WIKA

Industrial Gauges

Type 23X.53



Liquid Fillable

- Stainless Steel Case & Crimp Ring
- Welded Case-to-Socket Connection
- Field Liquid-Fillable

Type 232.53 - Dry case
Type 233.53 - Liquid filled case

The rugged construction of WIKA Type 23X.53 stainless steel gauges provides resistance to the most corrosive media and environments. These gauges feature 316 stainless steel wetted parts and a 304 stainless steel case and crimped ring, and can be liquid-filled in the field.

Standard Features

- **Nominal Case Size:** 2" (53 mm), 2½" (68 mm), 4" (100 mm)
- **Case Material:** 304 stainless steel
- **Wetted Parts:** 316 SS
- **Window Type & Material:** 2½" Polycarbonate; 4" Acrylic
- **Removable Window:** No
- **Dial Material:** White aluminum
- **Bezel Ring Type & Material:** Crimp on SS polished
- **Liquid Fillable Gauge:** Yes
- **Case-to-Socket O-ring Material:** Welded
- **"Other" Gaskets/O-ring Types & Materials:** Window gasket, BUNA-N
- **Pointer Material/Type:** Black aluminum
- **Adjustable Pointer:** No
- **Accuracy:** ±1.5% of span (2" & 2½"); (4") ± 1.0% of span-ASME B40.100 Grade 1A
- **Connection locations:** LM (Lower Mount), CBM (Center Back Mount) & LBM (Lower Back Mount) (4" only)
- **Media Operating Temperature:** 212°F
- **Ambient Operating Temperature:** -40°F to 140°F dry; -4°F to 140°F glycerine case fill; -40°F to 140°F silicone case fill

Available Options
"Dampened Movement" Option: Yes, (N/A on 2½" CBM or 2" LM/CBM) & LBM
U-Clamp Bracket: Yes (CBM only)
Front Flange: Yes (CBM & LBM only)
Rear Flange: Yes (LM, CBM & LBM)
Restrictor: Yes
Safety Glass Window: No
Instrument Glass Window (flat glass): No
Drag Pointer (maximum reading indicator): Yes
Cleaned for Use in Oxygen Service: Yes
Panel Mount Kit: Yes (see front flange or u-clamp option)
Magnetic or Inductive Contact Switches: No
Receiver Gauge Scales: Yes
Special Connection: Limited to wrench flat area

Type	232.53				
Connection	LM	CBM			
Conn. Size	1/4" NPT				
Size	2½"				
Pressure Scale[1]	PSI	PSI	PSI/BAR	PSI/KPA	PSI/KG/CM²
30" Hg	9768777	9768394			
30"-0-15 PSI					
30"-0-30 PSI	9768769	9768386			
30"-0-60 PSI	9768750	9768378			
30"-0-100 PSI					
30"-0-160 PSI	9768742	9768360			
30"-0-200 PSI					
15 PSI	9768734	9768351			
30 PSI	9768726	9768343			
60 PSI	9768718	9768335	8992848	8993089	8992962
100 PSI	9768700	9768327	8992856	8993097	8992970
160 PSI	9768696	9768319	8992865	8993101	8992988
200 PSI	9768688	9768300	8992873	8993119	8992996
300 PSI	9768670	9768297	8992881	8993127	8993004
400 PSI	9768661	9768289			
600 PSI	9768653	9768270	9779685	9779693	
800 PSI					
1,000 PSI	9768645	9768262	8992899	8993135	8993012
1,500 PSI	9768637	9768254	8992903	8993144	8993020
2,000 PSI	9768629	9768246	8992911	8993152	8993038
3,000 PSI	9768610	9768238	8992929	8993160	8993046
5,000 PSI	9768602	9768220	8992937	8993178	8993055
6,000 PSI		8993208	8992945	8993186	8993063
10,000 PSI	9768599	9768211	8992954	8993195	8993071
15,000 PSI		9779715	9776715		9779731

[1]"PSI/BAR" denotes dual scale; PSI outside in black, BAR inside in red; "PSI/KPA" denotes dual scale; PSI outside in black, KPA inside in red; "PSI/KG/CM²" denotes dual scale; PSI outside in black, KG/CM² inside in red. Note: Vacuum scale: 30" Hg outside in black; 760 mm Hg inside in red. [2]

Note: For options not shown - consult your WIKA Distributor or the Factory.

Data sheet: 23X.53

For liquid filled gauges, add "-829" to part numbers above for 2½" size or "-834" for 4" size.

Items shown with part numbers indicate readily available standard WIKA products. Items shown without part numbers are available on special order.

WIKA

Type	232.53- liquid fillable		
Connection	LM	LM	LBM
Conn. Size	1/4" NPT	1/2" NPT	
Size	4"		
Pressure Scale	PSI	PSI	PSI
30" Hg	9767576	9768459	9737057
30"-0-15 PSI	9737910	9768467	9737065
30"-0-30 PSI	9767398	9768475	9737073
30"-0-60 PSI	9767401	9768483	9737081
30"-0-100 PSI	9737898	9737880	9737090
30"-0-160 PSI	9767410	9768491	9737103
30"-0-200 PSI	9737901	9768505	9737111
30"-0-300 PSI	4260147		
30"-0-400 PSI	4260155		
15 PSI	9767428	9768513	9737120
30 PSI	9767436	9768521	9737138
60 PSI	9767444	9768530	9737146
100 PSI	9767452	9768548	9737154
160 PSI	9767460	9768556	9737162
200 PSI	9767479	9768564	9737170
300 PSI	9767487	9768572	9737189
400 PSI	9767495	9768580	9737197
600 PSI	9767509	9768963	9737200
800 PSI			9737219
1,000 PSI	9767517	9768858	9737227
1,500 PSI		9768866	9737235
2,000 PSI		9768807	9737243
3,000 PSI		9768874	9737251
5,000 PSI		9768823	9737260
10,000 PSI		9768831	9737278
15,000 PSI		9768840	9737286

Type	233.53- glycerine filled				
Connection	LM		LM	LBM	CBM
Conn. Size	1/4" NPT		1/2" NPT		1/4" NPT
Size	2½"	4"	4"		2½"
Pressure Scale	PSI	PSI	PSI	PSI	PSI
30" Hg	9833646	9833124	9833328	9831504	9833310
30"-0-15 PSI		9831775	9833336	9831512	
30"-0-30 PSI	9833638	9832993	9833345	9831520	9833302
30"-0-60 PSI	9833620	9833000	9833353	9831538	9833298
30"-0-100 PSI		9831759	9831741	9831546	
30"-0-160 PSI	9833612	9833018	9833361	9831555	9833280
30"-0-200 PSI		9831767	9833379	9831563	
30"-0-300 PSI					
30"-0-400 PSI					
15 PSI	9833604	9833026	9833387	9831571	9833272
30 PSI	9833590	9833035	9833395	9831589	9833264
60 PSI	9833582	9833043	9833409	9831597	9833255
100 PSI	9833574	9833051	9833417	9831601	9833247
160 PSI	9833565	9833069	9833425	9831619	9833239
200 PSI	9833557	9833077	9833434	9831627	9833221
300 PSI	9833549	9833085	9833442	9831635	9833213
400 PSI	9833531	9833094	9833450	9831644	9833205
600 PSI	9833523	9833107	9833727	9831652	9833191
800 PSI					
1,000 PSI	9833515	9833115	9833697	9831678	9833183
1,500 PSI	9833506		9833701	9831686	9833175
2,000 PSI	9833493		9833655	9831695	9833166
3,000 PSI	9833485		9833719	9831708	9833158
5,000 PSI	9833476		9833663	9831716	9833140
10,000 PSI	9833468		9833671	9831725	9833132
15,000 PSI			9833689	9831733	

Type	232.53- Stock Gauges with Ammonia Scales	
Size	2 ½"	4"
Connection	LM	
Conn. Size	1/4" NPT	
30"-0-150 PSI / 84°F	9797144	9797127
30"-0-300 PSI / 126°F	9797152	9797135

G 33

WIKA
50405179

0-1000 PSI/BAR PRESSURE GAUGE

ANGI PART NUMBER 741-07251

THIS PAGE LEFT INTENTIONALLY BLANK

WIKA

Industrial Gauges

Type 23X.53



Liquid Fillable

- Stainless Steel Case & Crimp Ring
- Welded Case-to-Socket Connection
- Field Liquid-Fillable

Type 232.53 - Dry case
Type 233.53 - Liquid filled case

The rugged construction of WIKA Type 23X.53 stainless steel gauges provides resistance to the most corrosive media and environments. These gauges feature 316 stainless steel wetted parts and a 304 stainless steel case and crimped ring, and can be liquid-filled in the field.

Standard Features

- **Nominal Case Size:** 2" (53 mm), 2½" (68 mm), 4" (100 mm)
- **Case Material:** 304 stainless steel
- **Wetted Parts:** 316 SS
- **Window Type & Material:** 2½" Polycarbonate; 4" Acrylic
- **Removable Window:** No
- **Dial Material:** White aluminum
- **Bezel Ring Type & Material:** Crimp on SS polished
- **Liquid Fillable Gauge:** Yes
- **Case-to-Socket O-ring Material:** Welded
- **"Other" Gaskets/O-ring Types & Materials:** Window gasket, BUNA-N
- **Pointer Material/Type:** Black aluminum
- **Adjustable Pointer:** No
- **Accuracy:** ±1.5% of span (2" & 2½"); (4") ± 1.0% of span-ASME B40.100 Grade 1A
- **Connection locations:** LM (Lower Mount), CBM (Center Back Mount) & LBM (Lower Back Mount) (4" only)
- **Media Operating Temperature:** 212°F
- **Ambient Operating Temperature:** -40°F to 140°F dry; -4°F to 140°F glycerine case fill; -40°F to 140°F silicone case fill

Available Options
"Dampened Movement" Option: Yes, (N/A on 2½" CBM or 2" LM/CBM) & LBM
U-Clamp Bracket: Yes (CBM only)
Front Flange: Yes (CBM & LBM only)
Rear Flange: Yes (LM, CBM & LBM)
Restrictor: Yes
Safety Glass Window: No
Instrument Glass Window (flat glass): No
Drag Pointer (maximum reading indicator): Yes
Cleaned for Use in Oxygen Service: Yes
Panel Mount Kit: Yes (see front flange or u-clamp option)
Magnetic or Inductive Contact Switches: No
Receiver Gauge Scales: Yes
Special Connection: Limited to wrench flat area

Type	232.53				
Connection	LM	CBM			
Conn. Size	1/4" NPT				
Size	2½"				
Pressure Scale[1]	PSI	PSI	PSI/BAR	PSI/KPA	PSI/KG/CM²
30" Hg	9768777	9768394			
30"-0-15 PSI					
30"-0-30 PSI	9768769	9768386			
30"-0-60 PSI	9768750	9768378			
30"-0-100 PSI					
30"-0-160 PSI	9768742	9768360			
30"-0-200 PSI					
15 PSI	9768734	9768351			
30 PSI	9768726	9768343			
60 PSI	9768718	9768335	8992848	8993089	8992962
100 PSI	9768700	9768327	8992856	8993097	8992970
160 PSI	9768696	9768319	8992865	8993101	8992988
200 PSI	9768688	9768300	8992873	8993119	8992996
300 PSI	9768670	9768297	8992881	8993127	8993004
400 PSI	9768661	9768289			
600 PSI	9768653	9768270	9779685	9779693	
800 PSI					
1,000 PSI	9768645	9768262	8992899	8993135	8993012
1,500 PSI	9768637	9768254	8992903	8993144	8993020
2,000 PSI	9768629	9768246	8992911	8993152	8993038
3,000 PSI	9768610	9768238	8992929	8993160	8993046
5,000 PSI	9768602	9768220	8992937	8993178	8993055
6,000 PSI		8993208	8992945	8993186	8993063
10,000 PSI	9768599	9768211	8992954	8993195	8993071
15,000 PSI		9779715	9776715		9779731

[1]"PSI/BAR" denotes dual scale; PSI outside in black, BAR inside in red; "PSI/KPA" denotes dual scale; PSI outside in black, KPA inside in red; "PSI/KG/CM²" denotes dual scale; PSI outside in black, KG/CM² inside in red. Note: Vacuum scale: 30" Hg outside in black; 760 mm Hg inside in red. [2]

Note: For options not shown - consult your WIKA Distributor or the Factory.

Data sheet: 23X.53

For liquid filled gauges, add "-829" to part numbers above for 2½" size or "-834" for 4" size.

Items shown with part numbers indicate readily available standard WIKA products. Items shown without part numbers are available on special order.

WIKA

Type	232.53- liquid fillable		
Connection	LM	LM	LBM
Conn. Size	1/4" NPT	1/2" NPT	
Size	4"		
Pressure Scale	PSI	PSI	PSI
30" Hg	9767576	9768459	9737057
30"-0-15 PSI	9737910	9768467	9737065
30"-0-30 PSI	9767398	9768475	9737073
30"-0-60 PSI	9767401	9768483	9737081
30"-0-100 PSI	9737898	9737880	9737090
30"-0-160 PSI	9767410	9768491	9737103
30"-0-200 PSI	9737901	9768505	9737111
30"-0-300 PSI	4260147		
30"-0-400 PSI	4260155		
15 PSI	9767428	9768513	9737120
30 PSI	9767436	9768521	9737138
60 PSI	9767444	9768530	9737146
100 PSI	9767452	9768548	9737154
160 PSI	9767460	9768556	9737162
200 PSI	9767479	9768564	9737170
300 PSI	9767487	9768572	9737189
400 PSI	9767495	9768580	9737197
600 PSI	9767509	9768963	9737200
800 PSI			9737219
1,000 PSI	9767517	9768858	9737227
1,500 PSI		9768866	9737235
2,000 PSI		9768807	9737243
3,000 PSI		9768874	9737251
5,000 PSI		9768823	9737260
10,000 PSI		9768831	9737278
15,000 PSI		9768840	9737286

Type	233.53- glycerine filled				
Connection	LM		LM	LBM	CBM
Conn. Size	1/4" NPT		1/2" NPT		1/4" NPT
Size	2½"	4"	4"		2½"
Pressure Scale	PSI	PSI	PSI	PSI	PSI
30" Hg	9833646	9833124	9833328	9831504	9833310
30"-0-15 PSI		9831775	9833336	9831512	
30"-0-30 PSI	9833638	9832993	9833345	9831520	9833302
30"-0-60 PSI	9833620	9833000	9833353	9831538	9833298
30"-0-100 PSI		9831759	9831741	9831546	
30"-0-160 PSI	9833612	9833018	9833361	9831555	9833280
30"-0-200 PSI		9831767	9833379	9831563	
30"-0-300 PSI					
30"-0-400 PSI					
15 PSI	9833604	9833026	9833387	9831571	9833272
30 PSI	9833590	9833035	9833395	9831589	9833264
60 PSI	9833582	9833043	9833409	9831597	9833255
100 PSI	9833574	9833051	9833417	9831601	9833247
160 PSI	9833565	9833069	9833425	9831619	9833239
200 PSI	9833557	9833077	9833434	9831627	9833221
300 PSI	9833549	9833085	9833442	9831635	9833213
400 PSI	9833531	9833094	9833450	9831644	9833205
600 PSI	9833523	9833107	9833727	9831652	9833191
800 PSI					
1,000 PSI	9833515	9833115	9833697	9831678	9833183
1,500 PSI	9833506		9833701	9831686	9833175
2,000 PSI	9833493		9833655	9831695	9833166
3,000 PSI	9833485		9833719	9831708	9833158
5,000 PSI	9833476		9833663	9831716	9833140
10,000 PSI	9833468		9833671	9831725	9833132
15,000 PSI			9833689	9831733	

Type	232.53- Stock Gauges with Ammonia Scales	
Size	2 ½"	4"
Connection	LM	
Conn. Size	1/4" NPT	
30"-0-150 PSI / 84°F	9797144	9797127
30"-0-300 PSI / 126°F	9797152	9797135

G 57

WIKA
4272016
0-10,000 PSI/BAR PRESSURE GAUGE

ANGI PART NUMBER 741-07289

THIS PAGE LEFT INTENTIONALLY BLANK

WIKA

Industrial Gauges

Type 23X.53



Liquid Fillable

- Stainless Steel Case & Crimp Ring
- Welded Case-to-Socket Connection
- Field Liquid-Fillable

Type 232.53 - Dry case
Type 233.53 - Liquid filled case

The rugged construction of WIKA Type 23X.53 stainless steel gauges provides resistance to the most corrosive media and environments. These gauges feature 316 stainless steel wetted parts and a 304 stainless steel case and crimped ring, and can be liquid-filled in the field.

Standard Features

- **Nominal Case Size:** 2" (53 mm), 2½" (68 mm), 4" (100 mm)
- **Case Material:** 304 stainless steel
- **Wetted Parts:** 316 SS
- **Window Type & Material:** 2½" Polycarbonate; 4" Acrylic
- **Removable Window:** No
- **Dial Material:** White aluminum
- **Bezel Ring Type & Material:** Crimp on SS polished
- **Liquid Fillable Gauge:** Yes
- **Case-to-Socket O-ring Material:** Welded
- **"Other" Gaskets/O-ring Types & Materials:** Window gasket, BUNA-N
- **Pointer Material/Type:** Black aluminum
- **Adjustable Pointer:** No
- **Accuracy:** ±1.5% of span (2" & 2½"); (4") ± 1.0% of span-ASME B40.100 Grade 1A
- **Connection locations:** LM (Lower Mount), CBM (Center Back Mount) & LBM (Lower Back Mount) (4" only)
- **Media Operating Temperature:** 212°F
- **Ambient Operating Temperature:** -40°F to 140°F dry; -4°F to 140°F glycerine case fill; -40°F to 140°F silicone case fill

Available Options
"Dampened Movement" Option: Yes, (N/A on 2½" CBM or 2" LM/CBM) & LBM
U-Clamp Bracket: Yes (CBM only)
Front Flange: Yes (CBM & LBM only)
Rear Flange: Yes (LM, CBM & LBM)
Restrictor: Yes
Safety Glass Window: No
Instrument Glass Window (flat glass): No
Drag Pointer (maximum reading indicator): Yes
Cleaned for Use in Oxygen Service: Yes
Panel Mount Kit: Yes (see front flange or u-clamp option)
Magnetic or Inductive Contact Switches: No
Receiver Gauge Scales: Yes
Special Connection: Limited to wrench flat area

Type	232.53				
Connection	LM		CBM		
Conn. Size	1/4" NPT				
Size	2½"				
Pressure Scale[1]	PSI	PSI	PSI/BAR	PSI/KPA	PSI/KG/CM²
30" Hg	9768777	9768394			
30"-0-15 PSI					
30"-0-30 PSI	9768769	9768386			
30"-0-60 PSI	9768750	9768378			
30"-0-100 PSI					
30"-0-160 PSI	9768742	9768360			
30"-0-200 PSI					
15 PSI	9768734	9768351			
30 PSI	9768726	9768343			
60 PSI	9768718	9768335	8992848	8993089	8992962
100 PSI	9768700	9768327	8992856	8993097	8992970
160 PSI	9768696	9768319	8992865	8993101	8992988
200 PSI	9768688	9768300	8992873	8993119	8992996
300 PSI	9768670	9768297	8992881	8993127	8993004
400 PSI	9768661	9768289			
600 PSI	9768653	9768270	9779685	9779693	
800 PSI					
1,000 PSI	9768645	9768262	8992899	8993135	8993012
1,500 PSI	9768637	9768254	8992903	8993144	8993020
2,000 PSI	9768629	9768246	8992911	8993152	8993038
3,000 PSI	9768610	9768238	8992929	8993160	8993046
5,000 PSI	9768602	9768220	8992937	8993178	8993055
6,000 PSI		8993208	8992945	8993186	8993063
10,000 PSI	9768599	9768211	8992954	8993195	8993071
15,000 PSI		9779715	9776715		9779731

[1]"PSI/BAR" denotes dual scale; PSI outside in black, BAR inside in red; "PSI/KPA" denotes dual scale; PSI outside in black, KPA inside in red; "PSI/KG/CM²" denotes dual scale; PSI outside in black, KG/CM² inside in red. Note: Vacuum scale: 30" Hg outside in black; 760 mm Hg inside in red. [2]

Note: For options not shown - consult your WIKA Distributor or the Factory.

Data sheet: 23X.53

For liquid filled gauges, add "-829" to part numbers above for 2½" size or "-834" for 4" size.

Items shown with part numbers indicate readily available standard WIKA products. Items shown without part numbers are available on special order.

WIKA

Type	232.53- liquid fillable		
Connection	LM	LM	LBM
Conn. Size	1/4" NPT	1/2" NPT	
Size	4"		
Pressure Scale	PSI	PSI	PSI
30" Hg	9767576	9768459	9737057
30"-0-15 PSI	9737910	9768467	9737065
30"-0-30 PSI	9767398	9768475	9737073
30"-0-60 PSI	9767401	9768483	9737081
30"-0-100 PSI	9737898	9737880	9737090
30"-0-160 PSI	9767410	9768491	9737103
30"-0-200 PSI	9737901	9768505	9737111
30"-0-300 PSI	4260147		
30"-0-400 PSI	4260155		
15 PSI	9767428	9768513	9737120
30 PSI	9767436	9768521	9737138
60 PSI	9767444	9768530	9737146
100 PSI	9767452	9768548	9737154
160 PSI	9767460	9768556	9737162
200 PSI	9767479	9768564	9737170
300 PSI	9767487	9768572	9737189
400 PSI	9767495	9768580	9737197
600 PSI	9767509	9768963	9737200
800 PSI			9737219
1,000 PSI	9767517	9768858	9737227
1,500 PSI		9768866	9737235
2,000 PSI		9768807	9737243
3,000 PSI		9768874	9737251
5,000 PSI		9768823	9737260
10,000 PSI		9768831	9737278
15,000 PSI		9768840	9737286

Type	233.53- glycerine filled				
Connection	LM		LM	LBM	CBM
Conn. Size	1/4" NPT		1/2" NPT		1/4" NPT
Size	2½"	4"	4"		2½"
Pressure Scale	PSI	PSI	PSI	PSI	PSI
30" Hg	9833646	9833124	9833328	9831504	9833310
30"-0-15 PSI		9831775	9833336	9831512	
30"-0-30 PSI	9833638	9832993	9833345	9831520	9833302
30"-0-60 PSI	9833620	9833000	9833353	9831538	9833298
30"-0-100 PSI		9831759	9831741	9831546	
30"-0-160 PSI	9833612	9833018	9833361	9831555	9833280
30"-0-200 PSI		9831767	9833379	9831563	
30"-0-300 PSI					
30"-0-400 PSI					
15 PSI	9833604	9833026	9833387	9831571	9833272
30 PSI	9833590	9833035	9833395	9831589	9833264
60 PSI	9833582	9833043	9833409	9831597	9833255
100 PSI	9833574	9833051	9833417	9831601	9833247
160 PSI	9833565	9833069	9833425	9831619	9833239
200 PSI	9833557	9833077	9833434	9831627	9833221
300 PSI	9833549	9833085	9833442	9831635	9833213
400 PSI	9833531	9833094	9833450	9831644	9833205
600 PSI	9833523	9833107	9833727	9831652	9833191
800 PSI					
1,000 PSI	9833515	9833115	9833697	9831678	9833183
1,500 PSI	9833506		9833701	9831686	9833175
2,000 PSI	9833493		9833655	9831695	9833166
3,000 PSI	9833485		9833719	9831708	9833158
5,000 PSI	9833476		9833663	9831716	9833140
10,000 PSI	9833468		9833671	9831725	9833132
15,000 PSI			9833689	9831733	

Type	232.53- Stock Gauges with Ammonia Scales	
Size	2 ½"	4"
Connection	LM	
Conn. Size	1/4" NPT	
30"-0-150 PSI / 84°F	9797144	9797127
30"-0-300 PSI / 126°F	9797152	9797135

LLS 17

KENCO ENGINEERING
KLCM – 09

OIL LEVEL SWITCH 9.5 PSI

ANGI PART NUMBER 485-07239

REBUILD KIT – GASKET/SEALS FOR KLCM SERIES – 761-07493

THIS PAGE LEFT INTENTIONALLY BLANK



OPERATING PRINCIPLE FOR OIL LEVEL CONTROLLERS

Kenco oil level controllers are designed to control a constant oil level in the crankcase of stationary engines, compressors, and mechanical lubricator boxes. The Kenco oil controller works in conjunction with an overhead oil supply system which feeds the oil level controller. As the oil is consumed, the oil controller supplies the required oil. The oil controller controls the amount of oil in the crankcase by a float controlled valve. The valve opens and closes as oil is needed in the crankcase to provide a constant oil level.

OPERATING PRINCIPLE FOR OIL LEVEL SWITCHES

Oil level switches are designed as a safety device for the stationary engine or compressor. The oil level switch monitors the oil level in the crankcase. The level within the crankcase directly corresponds with the oil level in the oil level switch housing. The engine or compressor constantly consumes the oil from the crankcase. If the oil level in the crankcase drops past the designated level, the switch will trip and trigger an alarm.

FEATURES

-Reduces maintenance by maintaining a constant oil level

-Protects against lubrication failure

-Controller mechanism fully removable without draining oil.

-Easy view convex sight window

-Low to high pressure applications

-Oil inlet allows for piping configurations from any direction

-Oil outlets on either side of housing and in the bottom to allow for various piping configurations

-Easy access to switch float through 3/8" vent hole in top of housing for simple testing of switch operation

-Direct mount adapters eliminate equalizing problems and reduce installation costs

-Group B explosion proof certification for hydrogen gas environments now available on KLCE/KHL/KSHL/KSLL/KES

-Oil level controllers for synthetic oil applications now available

APPLICATIONS

- Stationary engines
- Stationary compressors
- Mechanical lubricators
- Pumps



LOCATION COURTESY OF SCFM COMPRESSION SYSTEMS, TULSA OKLAHOMA

Featured at top KLCE-48-FS is an oil level controller with an electric switch in an explosion proof enclosure with a direct mounting bracket for an Ariel compressor, with re safe valves.

Featured on cover: KLCE-9-FS is an oil level controller with an electric switch in an explosion proof enclosure with a slotted universal mounting adapter, with re safe valves. A 1618 low ow meter is also installed in this application.

Featured at right: KLCE-24 is an oil level controller with an electric switch in an explosion proof enclosure with a direct mounting bracket for an Ariel compressor.

MODEL SPECIFICATIONS

MODEL KLCM OIL LEVEL CONTROLLER WITH SWITCH IN CSA® TYPE 4 ENCLOSURE

Application of Model KCLM:
The Kenco KLCM utilizes the operating principles of both the oil level controller and the electric switch. The switch may be wired either normally open or normally closed.

Applications:
Intrinsically safe applications with an approved safety barrier.

Standard Materials of Construction:
Valve Seat: Nitrile (Fluorocarbon also available)
Housing and Valve Orifice Material: Aluminum
Float Material: Closed Cell Polyurethane
Oil Inlet Screen: 20 Mesh Brass Cloth
Sight Window: U.V. Stabilized Clear Polycarbonate

Process Connections:
Inlet Connection Size: 1/2" FNPT
Outlet Connection Size: (3) 3/4" FNPT

Oil Inlet Data:
Static Head Pressure Range: 2 –15 Feet
High Pressure Models-
HP-A: 5-35 psi
HP-B: 36-70 psi

Minimum Flow Rate Test Results:
(Standard unit tested at 32°F, SAE 30)
2' Head: 1.141 GPH
4' Head: 2.122 GPH
7' Head:2.853 GPH
12' Head:3.043 GPH
(HP-A Unit Tested at 20°F, SAE 30)
5 psi- 0.163 GPH
20 psi-0.266 GPH
(HP-B unit tested at 55°F, SAE 30)
70 psi- 0.277 GPH

Electric Switch Specifications:
Switch Trip Point: 3/4" Drop
Switch Rating: 10 amp, 125/250 VAC or VDC
Max. Temp: 180°F/ 82°C
Electrical Connection Size: 1/2" FNPT
Circuitry: Single Pole Double Throw
Switch Test Button Standard

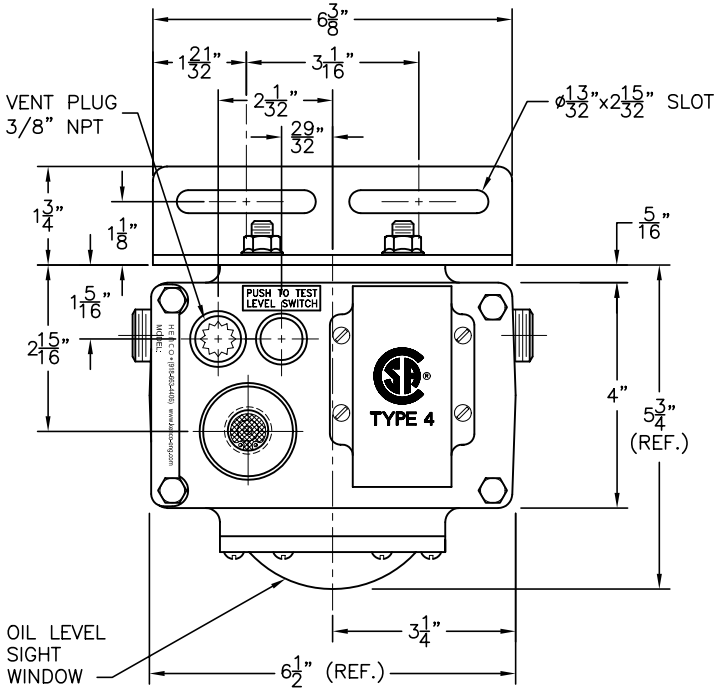
Wire Color Code:
Red: Normally Closed
Blue: Normally Open
White: Common

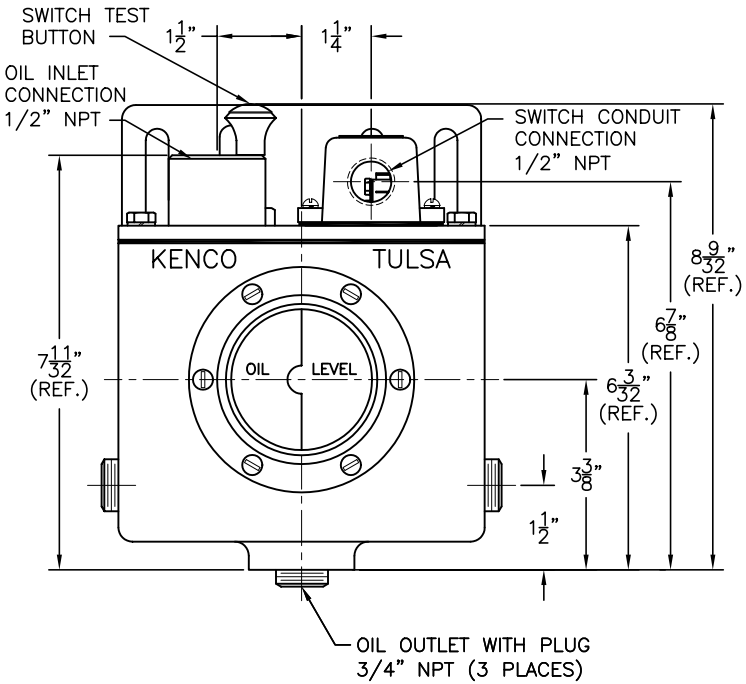
Also Available:
SYN: Synthetic Oil Applications - Call Kenco with Specific Gravity

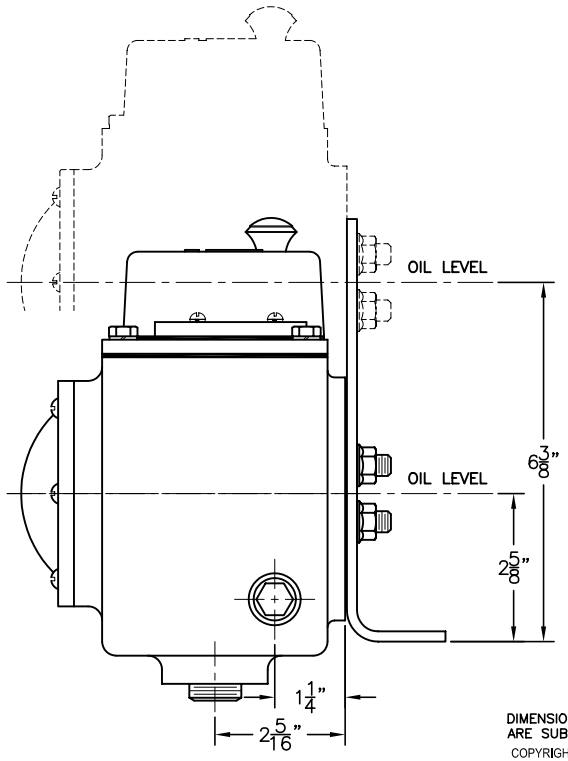


Class III, Type 4

MODEL KLCM-9







DIMENSION ARE FOR REFERENCE PURPOSES ONLY AND ARE SUBJECT TO CHANGE AT ANY TIME WITHOUT NOTICE.
COPYRIGHT © 2003-KENCO INTERNATIONAL, INC.-ALL RIGHTS RESERVED

REV.	DATE	BY	ECN	EXPLANATION:

KENCO ENGINEERING COMPANY
TULSA, OKLAHOMA

CONTROLLER, OIL LEVEL WITH MOUNT
(OUTLINE DRAWING) MODEL KLCM-9

DATE: 02-03-03	SHEET: 1 OF 1	DRAWING NUMBER
DRN. BY: DS	CHKD. BY:	C-44749
SCALE: NONE	REVISION:	

THIS PAGE LEFT INTENTIONALLY BLANK

KENCO ENGINEERING COMPANY

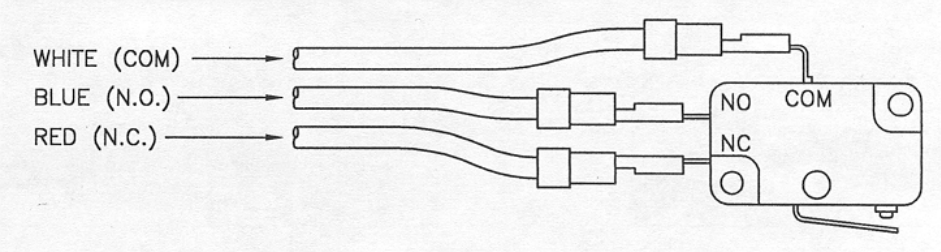
INSTALLATION INSTRUCTIONS FOR MODEL KLCM OIL LEVEL CONTROLLERS WITH ADAPTERS (INCLUDING HIGH PRESSURE MODELS)

Note: For fire safe oil level controllers (LCM-FS) see additional instructions in this work sheet covering installation of fire safe valves.

I. SWITCH SPECIFICATIONS:

Class III, Type 4

Figure 1: Model LCM Switch Wire Color Code



Electrical Ratings:

10 AMP, 125/250 VAC
0.5 AMP, 125 VDC
0.25 AMP, 250 VDC
1/8 HP, 125 VDC
¼ HP, 250 VAC
125 VAC "L"Lamp Load

Circuitry: Single Pole Double Throw

Note: Switch trip point is factory set at a ¾" drop . For adjustment instructions, please consult the factory.

II. INSTALLATION AND MAINTENANCE INSTRUCTIONS FOR OIL INLET VALVE:

- **Connect the oil supply line to the oil inlet on the oil level controller. The minimum recommended supply line is ¾" I.D. The supply line must be clean and it is recommended that it be flushed with solvent before installation.**
- **Connect the oil supply line to the oil supply tank. If there is no existing valve at the tank or the existing supply outlet, a shut-off valve should be placed in the line to prevent oil loss when cleaning the inlet screen or filter.**
- **For high pressure models HP-A, pressure range must be between 5 psi and 34 psi. For high pressure units HP-B , pressure range must be between 35 psi and 70 psi.**
- **The oil inlet valve is adjusted to maintain the oil level at the center of the sight glass. Low or high levels are often caused by two problems:**
  1. **Excessive oil inlet pressure, which will cause the unit to overfill.**
  2. **Improper equalizing lines between the crankcase and the controller will also result in improper levels.**

Note: Low pressure models require a minimum of 2' of head pressure and a maximum of 15' of oil inlet head pressure.

III. INSTALLATION INSTRUCTIONS FOR UNITS WITH ADAPTERS:

OIL LEVEL CONTROLLERS WITH –1 (Clark MA & CFA) –2 (Clark HMB & TMB), -3 (Clark RA, HRA, HBA, HCA, HLA, TLA), -6 (Cooper-Bessemer GMW), -7 (Cooper-Bessemer GMV), -8 (Cooper-Bessemer GMX), -16, -16-R, -16-6.25 (Cooper-Bessemer BMV & 275) AND FS OPTIONS

- **Remove the visual oil gauge assembly from the engine and replace it with the oil level controller and adapter assembly supplied with a gasket and mounting bolts when applicable.**

OIL LEVEL CONTROLLERS WITH –4 (Ingersoll-Rand SVG & KVS), -5 (Ingersoll-Rand KVG) AND FS OPTIONS

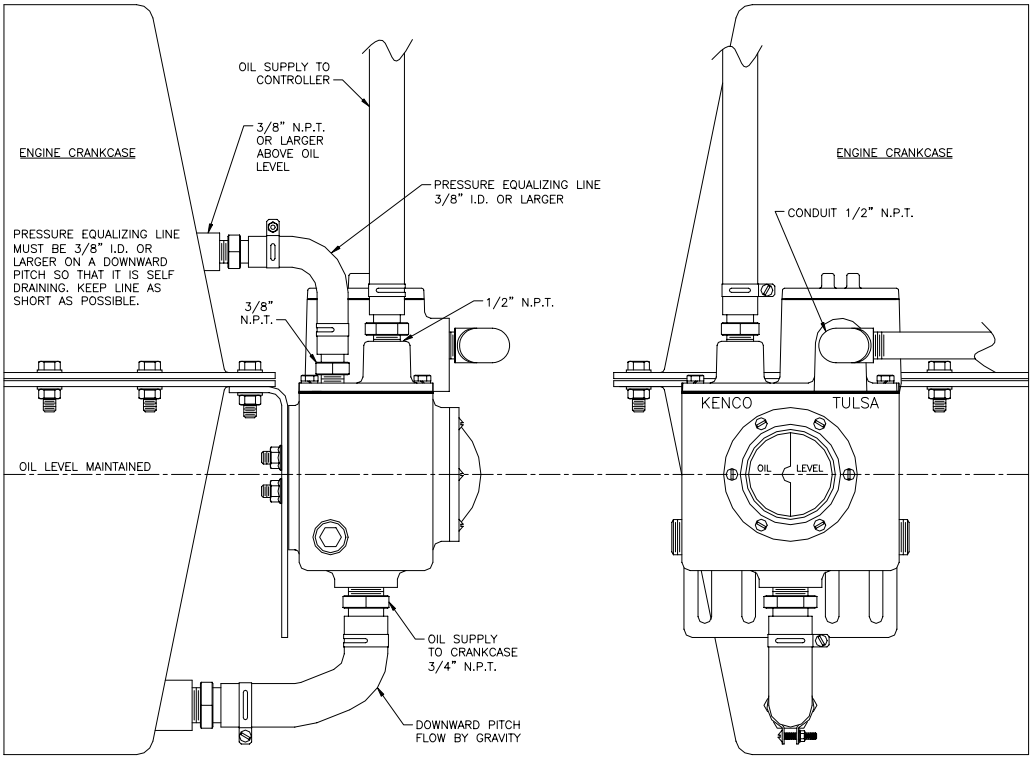
- **Remove the visual oil gauge assembly from the engine and replace it with the oil level controller and adapter assembly supplied with a gasket and mounting bolts when applicable.**
- **If an equalizing exists for the engine sight glass and detach the equalizing line from the sight glass while still attached to the engine.**
- **Install the oil controller and then reattach the equalizing line to the vent located at the top of the adapter.**

Note: It is important to insure that there are no loops in this line for it must be trap free and self draining.

OIL LEVEL CONTROLLERS WITH –9 (Universal adapter), -10(Slotted universal adapter),-12 (Pole mounted adapter) AND –FS OPTIONS

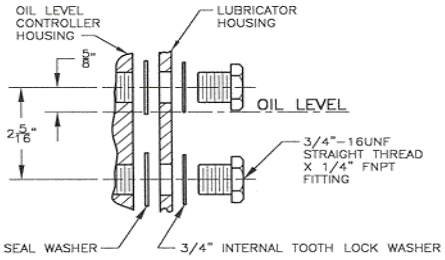
- **Set the controller so that the centerline of the sight window corresponds to the desired oil level in the crankcase.**
- **Mount the controller close to the crankcase and connect the hose from the ¾" outlet located on the controller to the crankcase. NOTE: The outlet port on the oil level controller must be located below the oil level in the crankcase.**
- **An equalizing line must be used between the controller and crankcase in order to equalize the pressure. The tubing must be a minimum of 1/2" I.D. and must be kept under 2 feet. DO NOT loop this line. It must be trap free and self draining, with a downward pitch flow by gravity.**

Figure 2: Typical Mount of –9 Adapter



OIL LEVEL CONTROLLER WITH –11 AND –11-FS OPTION (for Mechanical Lubricators): See Figure 3

Figure 3



- **Drill holes in the lubricator housing as shown, and mount the controller with the inlet located on the top side using the seal washers and mounting bolts provided.**
- **Place the seal washers between the controller and the lubricator housing.**

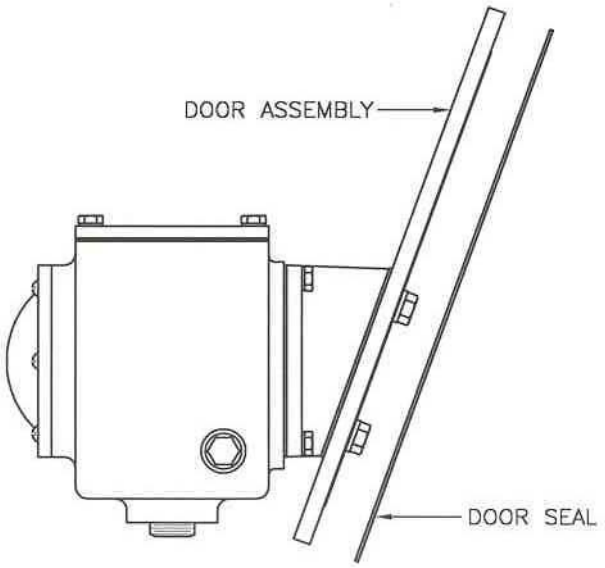
OIL LEVEL CONTROLLER WITH –14 AND –14 –FS OPTION (White Compressor)

- **Remove the triangular blind flange located on the compressor and mount the controller assembly in its place.**

OIL LEVEL CONTROLLER WITH –17 (Waukesha VHP Engines F2895, F3251, F5108, L5790 & L7042), -18 (-17 w/ meter), -27 (for newer Waukesha engines same as –17), –37 (Waukesha P9390), -38 (same as –37 w/ meter), -47(Waukesha VGF L36 and P 48 Engines) and –FS OPTIONS

- **Remove the cast aluminum inspection door from the engine. Remove the clamp bar from the old door.**
- **For –17, -18, -37, -38 install the o-ring into the groove of the Kenco door and replace the clamp bar on the back side of the door using the 5/8" bolts and the stat-o-seals supplied by Kenco.**
- **For –27, install the o-ring into the groove of the Kenco door and replace the clamp bar on the back side of the door using the 7/16" bolts and the stat-o-seals supplied by Kenco.**
- **For –47, mount the inspection door with the bolts, seal washers, and gasket provided.**
- **For –17, -27, -37, -38, place the controller assembly into the inspection port of the engine and tighten the center bolt(s) down.**
- **Install the equalizing line between the controller cover plate and the door (Tubing and connectors supplied by Kenco).**
- **Place the controller assembly into the inspection port of the engine and tighten the center bolt(s) down.**
- **Install oil inlet line into the controller oil valve or the meter inlet port.**
- **NOTE: For the –18 model, refer to the additional instructions supplied with the 1618 Kenco Low Flow meter.**

Figure 4: -Door Assembly for –17, -18, -27, -37, -38, -47



OIL LEVEL CONTROLLER WITH -24 (Ariel Compressor JGB, JGE, JGH, JGK, JGR, JGT, JGV, & JGW) and -48 (Ariel compressor JGC & JGD) AND –FS OPTIONS

- **Remove the sight glass located on the crankcase and replace it with the oil controller assembly using the mounting bolts and gasket supplied with the unit.**

IV. INSTALLATION INSTRUCTIONS FOR FIRE SAFE VALVES: See Figure 5 below

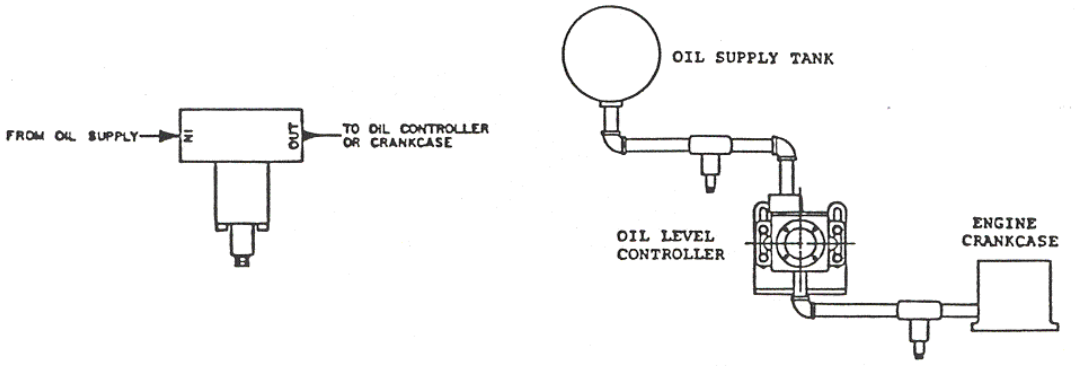
MODEL 50-FS AND 75-FS (PATENT NO. 3,877,476)

NOTE: All lines between thermal valves, supply tanks and the controller must be made of steel. DO NOT use rubber hose. The lines should be 3/4" I.D.

- **The eutectic fuse element should always be in a downward position to help the element melt when heat is applied to the valve.**
- **The 50-FS valve has 1/2" FNPT threads and should be installed in the oil supply line as close to the controller as possible. Meters, filters and pressure regulators should be installed between the controller and the 50-FS.**
- **The 75-FS valve has 3/4" FNPT threads and should be located as close to the crankcase as possible and the oil outlet line should be a minimum ¾" I.D. to insure adequate oil flow to the crankcase.**

NOTE: The 75-FS valve is not required when using –FS adapters other than –9 and –12.

FIGURE 5: FIRE SAFE VALVE INSTALLATION



V. START-UP PROCEDURES

- **Flush the supply system and supply line with solvent to remove all burrs and construction debris.**
- **Insure that the oil supply tank is full.**
- **After the engine has been running for 1 hour, visually check the oil level in the sight glass. The oil level should be in the center of the sight glass.**
- **With the engine running, check the crankcase oil level. It should be the same as the oil level in the oil controller. If not, check the installation of the equalizing line (if applicable) see instruction for the equalizing line at –9.**
- **Check all piping connections for leaks and repair as needed.**

VI .SIX MONTH SUGGESTED MAINTENANCE PLAN

Oil Valve Service

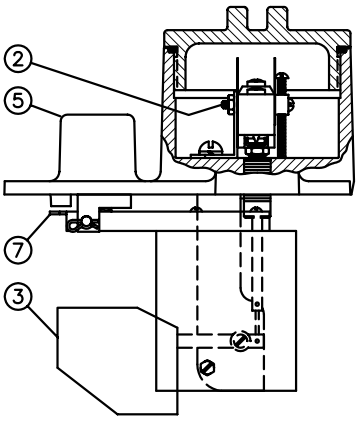
- **Close the oil supply valve and discount the oil inlet supply line.**
- **Place a pan under the controller to catch the oil from the oil supply line.**
- **Remove the inlet oil housing and clean the screen.**
- **Once the screen is clean, reassemble and open the oil supply valve.**

Note: Dispose of oil in a proper container.

Switch Service

- **Test switches to insure that the switches are operating correctly.**
- **Shut the engine off.**
- **Disconnect the equalizing line (if applicable).**
- **Place a blunt rod through the vent hole on the cover plate and depress the oil float.**
- **Observe the engine panel to determine if the switches make and break contact.**
- **If the switch is functioning properly, replace the equalizing line or vent plug.**
- **If the switch does not function, it must be replaced (refer to a replacement parts list).**

REPLACEMENT KITS



KLCE Replacement Parts Kits

Kit 1: Replacement Kit Of All Working Parts
Order #RK-KLCE

Consists of:
1-Complete Cover Plate Assembly As Shown Above
1-Cover Plate Gasket
4-Mounting Bolts
4-Lock Washers
1-Vent Plug

Kit 2: Switch Kit
Order #MS-KLCE

Consists of:
1-Switch Assembly With Bracket
1-Switch Bracket Isolator
2-Mounting Screws
2-Lock Washers

Kit 3: Switch Float Kit
Order #MF-KLCE

Consists of:
1-Switch Float Assembly With Bracket
2-Mounting Screws
1-Switch Push Rod Retainer Wire

Kit 4: Controller Gasket / Seal Kit
Order #GS-KLCE

Consists of:
1-Cover Plate Gasket
1-Sight Window O-Ring Seal
1-Oil Inlet Float Seal
1-Switch Enclosure O-Ring Seal
1-Switch Push Rod O-Ring Seal

Kit 5: Oil Inlet Housing Kit
Order #OI-KLCE

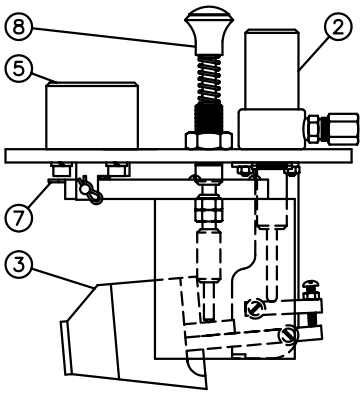
Consists of:
1-Oil Inlet Screen
1-Screen Retainer Ring

Kit 6: Controller Housing Sight Window Kit
Order #GL-KLC

Consists of:
1-Sight Window
1-Sight Window O-Ring Seal
6-Mounting Screws

Kit 7: Oil Inlet Float Kit
Order #OF-KLC

Consists of:
1-Float Assembly
1-Clevis Pin
1-Hitch Pin Clip



KLCP Replacement Parts Kits

Kit 1: Replacement Kit Of All Working Parts
Order #RK-KLCP

Consists of:
1-Complete Cover Plate Assembly As Shown Above
1-Cover Plate Gasket
4-Mounting Bolts
4-Lock Washers
1-Vent Plug

Kit 2: Air Valve Kit
Order #AV-KLCP

Consists of:
1-Complete Air Valve Assembly
1-Exhaust Ring
1-Exhaust Ring O-Ring Seal
1-Air Exhaust Connector
1-Actuator Rod

Kit 3: Air Valve Float Kit
Order #AF-KLCP

Consists of:
1-Air Valve Float Assembly With Bracket
2-Mounting Screws
2-Hexagon Nuts

Kit 4: Controller Gasket / Seal Kit
Order #GS-KLCP

Consists of:
1-Cover Plate Gasket
1-Sight Window O-Ring Seal
1-Oil Inlet Float Seal
1-Oil Inlet Housing O-Ring Seal
1-Air Valve Internal O-Ring Seal
1-Test Button Push Rod O-Ring Seal
1-Air Valve Exhaust Ring O-Ring Seal

Kit 5: Oil Inlet Housing Kit
Order #OI-KLC

Consists of:
1-Oil Inlet Screen
1-Screen Retainer Ring
1-Oil Inlet Housing
1-Housing O-Ring Seal
3-Mounting Screws
3-Lock Washers

Kit 6: Controller Housing Sight Window Kit
Order #GL-KLC

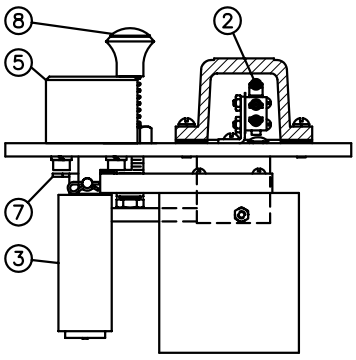
Consists of:
1-Sight Window
1-Sight Window O-Ring Seal
6-Mounting Screws

Kit 7: Oil Inlet Float Kit
Order #OF-KLC

Consists of:
1-Float Assembly
1-Clevis Pin
1-Hitch Pin Clip

Kit 8: Test Button Kit
Order #TB-KLCP

Consists of:
1-Complete Test Button Assembly



KLCM Replacement Parts Kits

Kit 1: Replacement Kit Of All Working Parts
Order #RK-KLCM

Consists of:
1-Complete Cover Plate Assembly As Shown Above
1-Cover Plate Gasket
4-Mounting Bolts
4-Mounting Bolt O-Ring Seals
1-Vent Plug

Kit 2: Switch Kit
Order #MS-KLCM

Consists of:
1-Switch Assembly with Bracket
2-Switch Assembly Mounting Screws
1-Switch Enclosure Gasket
4-Switch Enclosure Mounting Screws
4-Lock Washers

Kit 3: Switch Float Kit
Order #MF-KLCM

Consists of:
1-Switch Float Assembly With Bracket
2-Mounting Screws
1-Switch Push Rod Retainer Wire

Kit 4: Controller Gasket / Seal Kit
Order #GS-KLCM

Consists of:
1-Cover Plate Gasket
1-Sight Window O-Ring Seal
1-Oil Inlet Float Seal
1-Oil Inlet Housing O-Ring Seal
1-Switch Push Rod O-Ring Seal
1-Test Button Push Rod O-Ring Seal
1-Switch Enclosure Gasket
4-Mounting Bolt O-Ring Seals

Kit 5: Oil Inlet Housing Kit
Order #OI-KLC

Consists of:
1-Oil Inlet Screen
1-Screen Retainer Ring
1-Oil Inlet Housing
1-Housing O-Ring Seal
3-Mounting Screws
3-Lock Washers

Kit 6: Controller Housing Sight Window Kit
Order #GL-KLC

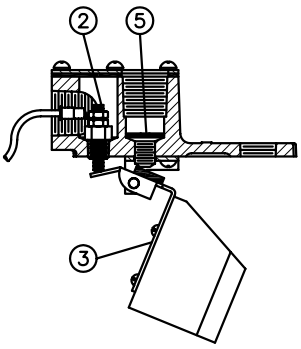
Consists of:
1-Sight Window
1-Sight Window O-Ring Seal
6-Mounting Screws

Kit 7: Oil Inlet Float Kit
Order #OF-KLC

Consists of:
1-Float Assembly
1-Clevis Pin
1-Hitch Pin Clip

Kit 8: Test Button Kit
Order #TB-KLCM

Consists of:
1-Complete Test Button Assembly



512/512-TB Replacement Parts Kits

Kit 1A: 512 Replacement Kit Of All Working Parts
Order #RK-512

Consists of:
1-Complete Cover Plate Assembly As Shown Above
1-Cover Plate Gasket
4-Mounting Bolts
4-Lock Washers
1-Vent Plug

Kit 1B: 512-TB Replacement Kit Of All Working Parts
Order #RK-512-TB

Consists of:
1-Complete Cover Plate Assembly As Shown Above Except With Test Button
1-Cover Plate Gasket
4-Mounting Bolts
4-Lock Washers
1-Vent Plug

Kit 2: Switch Kit
Order #MS-512

Consists of:
1-Insulator Bushing
1-Set Screw
2-Hexagon Nuts
1-Ring Terminal

Kit 3: Switch Float Kit
Order #MF-512
Order #MF-K512

Consists of:
1-Float Assembly
1-Clevis Pin
1-Hitch Pin Clip

Kit 4A: 512 Gasket / Seal Kit
Order #GS-512

Consists of:
1-Cover Plate Gasket Set
1-Sight Window O-Ring Seal
1-Oil Inlet Float Seal

Kit 4B: 512-TB Gasket / Seal Kit
Order #GS-512-TB

Consists of:
1-Cover Plate Gasket Set
1-Sight Window O-Ring Seal
1-Oil Inlet Float Seal
1-Test Button O-Ring Seal

Kit 5: Oil Inlet Housing Kit
Order #OI-512
Order #OI-K512

Consists of:
1-Oil Inlet Screen
1-Screen Retainer Ring

Kit 6: Controller Housing Sight Window Kit
Order #GL-512

Consists of:
1-Sight Window
1-Sight Window O-Ring Seal
4-Mounting Screws

Kit 7: 512-TB Test Button Kit
Order #TB-512

Consists of:
1-Complete Test Button Assembly

THIS PAGE LEFT INTENTIONALLY BLANK

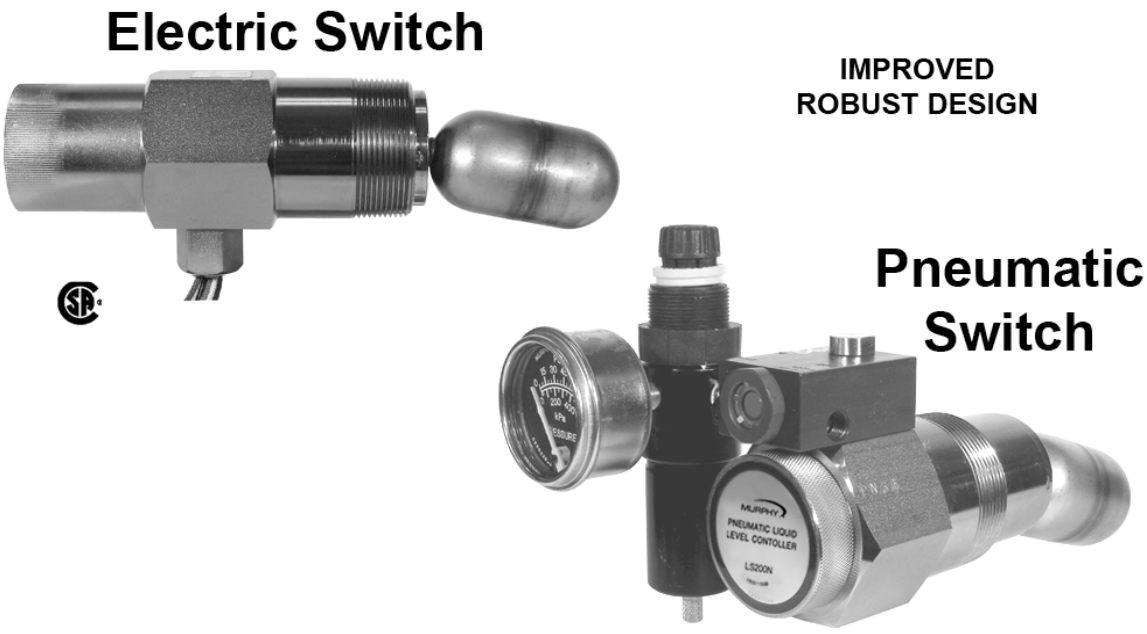
LLS 7

MURPHY
L-1100

1-1/2” LIQUID LEVEL SWITCH 1500 PSI

ANGI PART NUMBER 485-02138

MURPHY®



LS200, LS200N, LS200NDVOR Series and L1100 Liquid Level Switches

Installation and Operations Manual

00-02-0671
09-15-08
Section 15

In order to consistently bring you the highest quality full featured products, we reserve the right to change our specifications and designs at any time. The latest version of this manual can be found at www.fwmurphy.com.

Warranty - A limited warranty on materials and workmanship for one year is given with this FW Murphy product. A copy of the warranty may be viewed or printed by going to www.fwmurphy.com/support/warranty.htm



CAUTION: LS200 Series parts are not interchangeable with other Murphy liquid level products. Damage caused by using incorrect parts is not covered by our Limited Warranty.



Please read the following information before installing. A visual inspection for damage during shipping is recommended before mounting.

BEFORE BEGINNING INSTALLATION OF THIS MURPHY PRODUCT:

- Disconnect all electrical power to the machine.
- Make sure the machine cannot operate during installation.
- Follow all safety warnings of the machine manufacturer.
- Read and follow all installation instructions.
- OBSERVE all pressure and electrical ratings and requirements for the devices and the operating environment.
- BE SURE all pressure HAS BEEN REMOVED from the vessel before opening any pressure connections.
- Please contact FW MURPHY immediately if you have any questions.

Table of Contents

Product Information **1**
Features 1
LS200, L1100 1
LS200NDVOR 2
LS200NDVO 3
LS200N 3
Pressure Vessel Installation: LS200, LS200N and L1100 ..... **4**
Direct Installation into the Wall of the Pressure Vessel 4
Installation with a Weld Collar 5
Installation Using Murphy External Float Chamber 5
Installation and Adjustment for Pneumatic Models 6
Replacing and Installing the DVO Assembly **7**
Models LS200NDVO & LS200NDVOR 7
Electrical **10**
Replacement Parts **10**
Accessories **11**
15050375: Weld Collar 11
55050617: DVU150/DVU175 Adapter Bushing 11
15051098: External Float Chamber 11
15700799: Series 100 External Float Chamber 12
15000478: Float Shaft Extension for the LS200 12
15000892: Float Shaft Extension for the L1100 12
The Murphy Gas Compressor Scrubber Level System (SLS) 13
Specifications **14**
All Models 14
LS200 14
LS200NDVOR 14
LS200NDVO 14
LS200 N 14
L1100 14
Approximate Shipping Weights and Dimensions 14

(THIS PAGE INTENTIONALLY LEFT BLANK)

Product Information

Features

- Designed for harsh gas compressor scrubber applications
- 304 stainless steel float
- LS200 series rated for 2000 psi (13.8 MPa) [138 bar] working pressure
- Electric and pneumatic models available
- Improved design provides better dependability with reduced number of moving parts
- All models screw directly into the vessel or can be mounted via external float chamber
- Nickel plated body to provide enhanced corrosion protection
- Listed for Class I, Div. 1, Grp. C & D locations
- Canadian Registration Number OF1476.2

Minimum Allowable Specific Gravity for LS200

Table 1
LS200 Minimum Allowable Specific Gravity

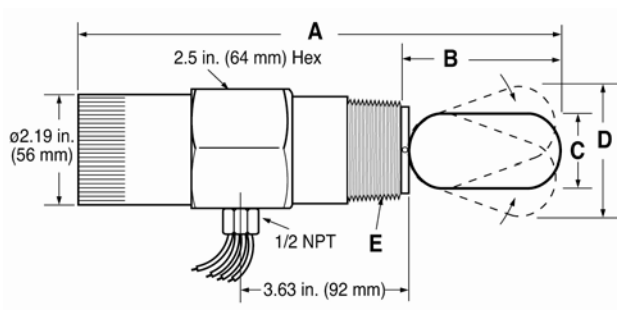
Model	Float Extension length (inch)	Pressure (psi)	Specific Gravity
LS200	0	2000	0.55
	1		0.7
	6		1
LS200NDVO	0	2000	0.63
	1		0.73
	6		1.02

*__Note__: The min. allowable SG will decrease with a decrease in operating pressure

LS200, L1100

LS200 Liquid Level Switches with 2” NPT mounting are float activated to operate an electrical SPDT snap switch (optional DPDT on some models) for alarm or shutdown of an engine or electric motor. The LS200 connects directly into the vessel wall and can be used with a Murphy weld collar (P/N 15050375) or Murphy external float chamber.

L1100 models (1-1/2” NPT) are also available. Refer to the specification table below for product dimensions.



LS200, L1100

Table 2

	LS200	L1100
A	10.16 in. (258 mm)	11 in. (279 mm)
B	3.44 in. (87 mm)	3.50 in. (189 mm)
C	1.75 in. (44 mm)	1.56 in. (40 mm)
D	2.80 in. (71 mm)	3.4 in. (71 mm)
E	2 NPT	1-1/2 NPT

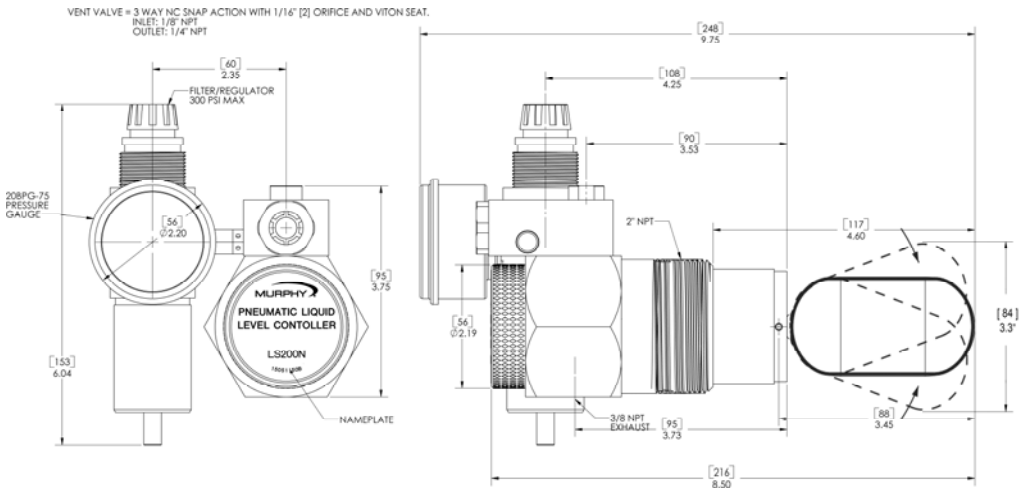
NOTE: Refer to Table 3 and Table 4 for clearances.

LS200NDVOR

LS200NDVOR is a float-activated, pneumatic-vent level device used to operate dump valves or similar devices.

The LS200NDVOR provides a 2” NPT mounting with a pneumatic output for interfacing with pneumatic devices such as our Murphy pneumatic dump valve or with other pneumatic instrumentation.

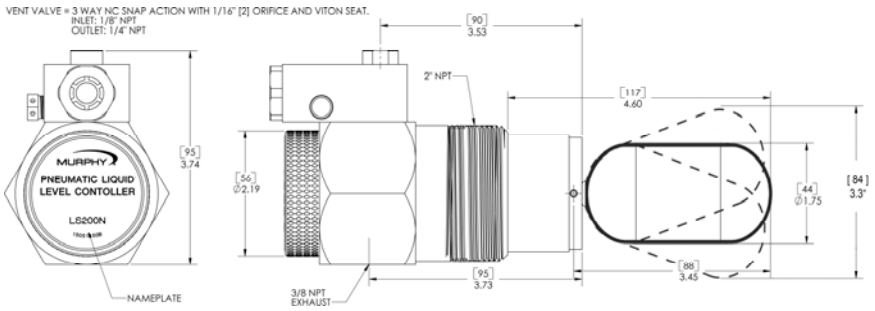
Pneumatic media devices require clean, dry, instrument quality air or gas. This unit is supplied with a pressure regulator, filter and Murphy 20BPG pressure gage for improved system life and trouble-free operation.



LS200NDVOR pneumatic level switch with dump valve operator, pressure regulator and gage

LS200NDVO

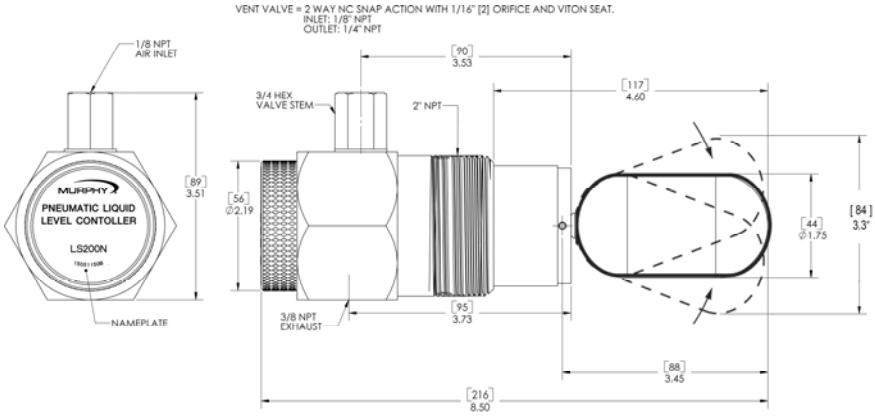
Pneumatic level switch with Dump Valve Operator (DVO) without the pressure regulator for those applications where the system provides a filter regulator for “instrument quality” air or gas as the control medium.



LS200NDVO pneumatic level switch with dump valve operator

LS200N

Pneumatic level switch without the DVO and filter regulator.



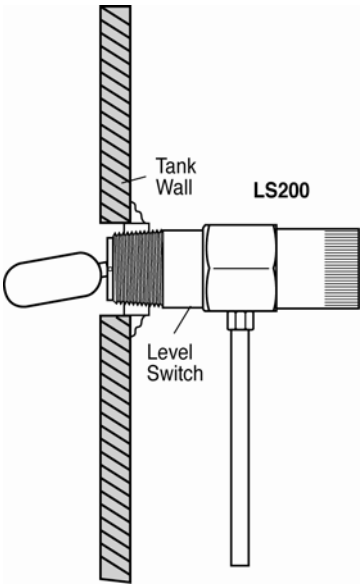
LS200N pneumatic level switch

Pressure Vessel Installation: LS200, LS200N and L1100

Direct Installation into the Wall of the Pressure Vessel

CAUTION: Determine that the float travel is not obstructed by the coupling in the vessel wall, internal baffles, etc.
Refer to tables 1, 2, 3 and 4 for application data.

1. Make certain the float and extension are tight.
2. Before installing the level switch, use of a pipe thread sealant is recommended. Screw the unit directly into the threaded connection in the wall of the pressure vessel.
3. For LS200 and L1100, verify that the electrical connection is positioned at the bottom.
4. For LS200N the 1/8” NPT pneumatic connection should be on top, the 3/8” NPT vent connection should be on the bottom.
5. Make the electrical wiring connections according to appropriate wiring diagrams for the alarm or shutdown system to be used. The electrical connection is 1/2”-14 NPT.
6. Ensure all electrical connections are insulated and the cover is fully installed before reconnecting electrical power.
7. Verify all pressure connections are tight before pressurizing the system.



Clearance Reference Tables

Table 3
Pipe Data

Nom. Size (inches)	O.D. (inches)	Schedule Number	Wall Thickness (inches)	Inside Diameter (inches)
3	3.5	40ST	0.216	3.068
3	3.5	80XS	0.3	2.9
4	4.5	40ST	0.237	4.026
4	4.5	80XS	0.337	3.826

Table 4
Minimum Clearance

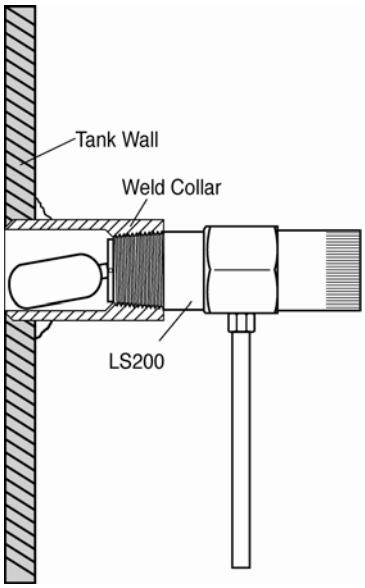
Product Name	Insertion Depth (inches)		Vertical Clearance (inches)	
	Std.	w/ 1” Extension	Std.	w/ 1” Extension
LS 200	4.6	5.6	2.8	3.15
LS 200N	5.43	6.4	3.3	3.9
L 1200	4.65	5.7	3.9	4.55
L 1200N	5.6	6.7	5.3	6.9
L 1100	4.4	5.4	3.4	4.05

Installation with a Weld Collar

1. The weld collar, P/N 15050375, must be welded into the wall of the pressure vessel according to code standards and good welding practices.

2. Follow above instructions for installation directly into the wall of the pressure vessel.

> **NOTE**: Weld collar 15050375 can be used ONLY with model LS200.

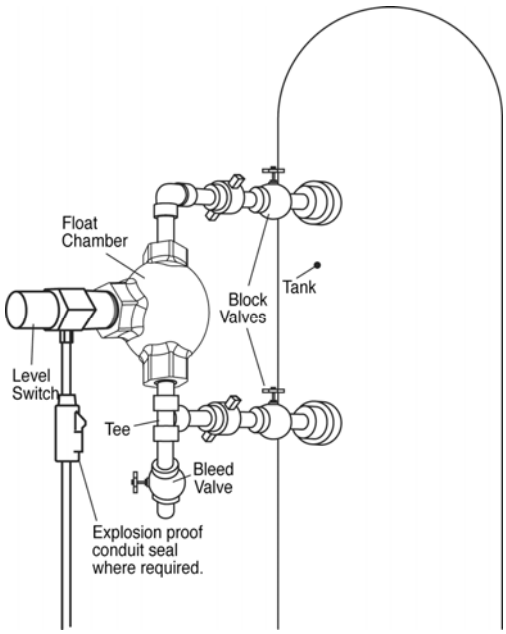


Installation Using Murphy External Float Chamber

1. Install the Murphy float chamber 15051098 or 15700799 on the outside wall of the pressure vessel using 1” NPT piping or use the mounting surface with a bracket. Position the 2” NPT threaded connection at the height where you want the level switch to operate. The 2” NPT threaded connection must be positioned away from the tank wall.

2. A tee and bleed valve are typically installed at the bottom of the lower 1 inch pipe riser to allow draining of the float chamber for servicing or replacement.

> **NOTE**: A typical installation with blocking and bleed valves is shown at right.



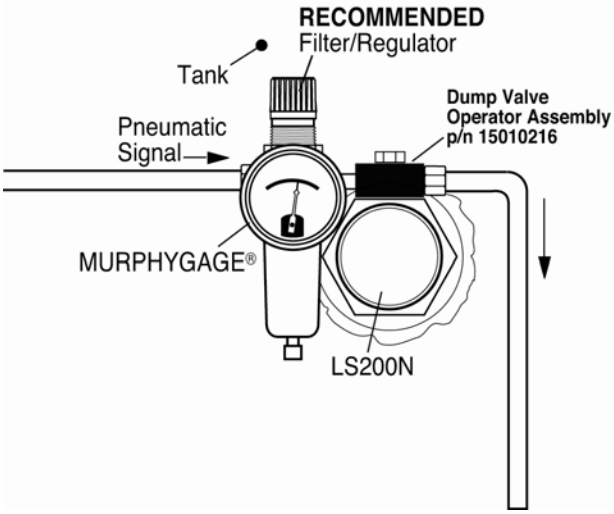
3. Install the LS200 or LS200N/NDVO/NDVOR in the 2” NPT connection of the float chamber. BE SURE float travel is not restricted and that the float is tight onto the float shaft.

4. To complete installation and wiring, follow the instructions for mounting directly into wall of the vessel and for wiring.

CAUTION: Float extensions cannot be used with float chambers.

Installation and Adjustment for Pneumatic Models

1. All pneumatic models operate on the vent principle. **The pneumatic signal source must be clean and dry "Instrument Quality" air or natural gas. The input pneumatic signal must be regulated between 30 and 70 psi (207-483 kPa) [2 -4.83 bar].** If produced gas is used as the signal source, it should be taken after gas passes through the final scrubber. A suitable filter must be positioned before the LS200NDVO to prevent liquids and/or particulates from entering the dump valve operator.



> **NOTE**: Check filter periodically for wear and tear and elements that hamper the flow of the pneumatic signal.

2. All pressure connections must be tight and maintained tight so as not to leak air/gas.

> CAUTION: Avoid excessive Teflon tape which may inhibit proper operation.
>
> Each switch is set to vent on rising level at the factory and should not need field adjustment. For testing the system, Murphy has provided the red "Manual Valve Operator" on the operator pilot valve.

3. **Valve seat adjustment can be made if air/gas begins to leak. Care should be taken when adjusting as only slight movement is necessary to stop the leakage; excessive force will bind the seating mechanism. See the instruction below for adjustment.**



Replacing and Installing the DVO Assembly

> **NOTE**: When replacing/installing the DVO assembly, tubing and fitting modifications may be required. We suggest removing the LS200NDVO/DVOR from the vessel. Relieve pressure from the vessel or use block valves before removing the LS200NDVO/DVOR.

Models LS200NDVO & LS200NDVOR

> **NOTE:** Clean, dry instrument-quality gas should be used. Use and regular maintenance of filters will improve service life and reliability.

Tools Needed

- 2-1/2 inch hex wrench, or pipe wrench with smooth jaws
- 9/16” Hex wrench
- Tubing cutters and benders



CAUTION: LS200 series parts are not interchangeable with the L1200 Series.

Instructions

1. Block off and bleed the instrument gas pressure supply to the LS200NDVO/DVOR.
2. Remove the tubing between the LS200NDVO/DVOR and the scrubber dump valve, and remove the supply gas tubing (regulator [-R-] if used).
3. Remove the LS200NDVO/DVOR from the vessel (optional).
4. If the LS200NDVO/DVOR was removed from the vessel, mount it in a suitable vise on a work bench (if possible).
5. Using the proper tools, disconnect the Inlet, Outlet, and Exhaust fittings from the existing DVO. See ***Figure 1***. You will re-connect these to the new DVO in a later step.

> **NOTE**: The following steps must be done with the DVO in the upright position (on top of the LS200NDVO).

6. Remove the LS200NDVO/DVOR cover. The use of a strap wrench or a pipe wrench may be needed.
7. With a 9/16" hex wrench, loosen the hex head bolt on top of the DVO and remove the existing DVO from the body.
8. Ensure that the adjustable orifice is fully raised up so that the actuator arm is not bent when inserted into the body. See ***Figure 2***.
9. Insert the new DVO onto the body. The DVO manual valve operator must face away from the vessel. See ***Figure 3***.

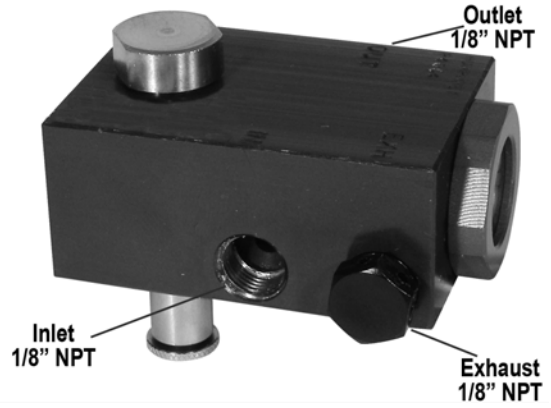


Figure 1 - DVO

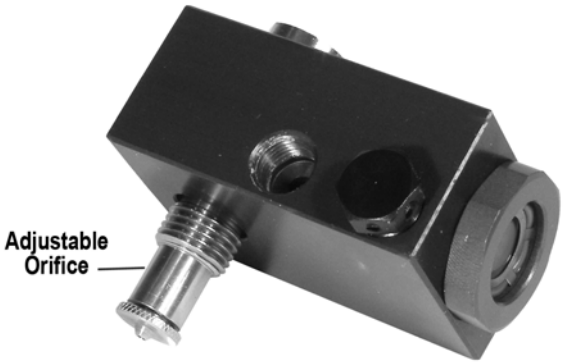


Figure 2 – Adjustable Orifice

CAUTION: Ensure that the actuator arm is not bent during reassembly

10. With the DVO aligned over the hex on the LS200NDVO body, tighten the valve using the 9/16” hex wrench. You may need to hold the DVO while tightening to keep it from rotating.

11. The pneumatic input signal should be regulated between 30 and 70 psi for proper setting of the adjustable orifice. With the float in the down position adjust the adjustable orifice down until it touches the seat. See ***Figure 4***.

    If the DVO is still leaking make slight adjustments (1/32 turn). Excessive adjustments will lock up mechanisms. After adjusting make sure float moves freely up and down.

12. Replace the LS200NDVO/DVOR cover.

13. Using the appropriate tools re-install the inlet, outlet, and exhaust fittings to the new DVO.

> **NOTE:** Thread sealant is recommended although care should be used to not allow excess to enter valve.



Figure 3 – DVO manual valve operator

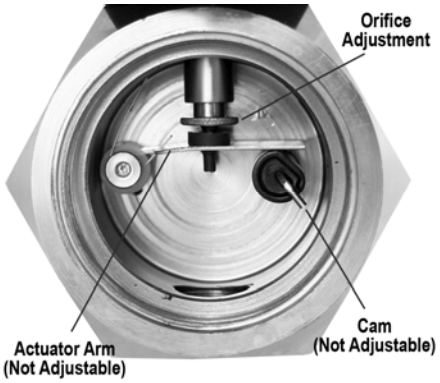
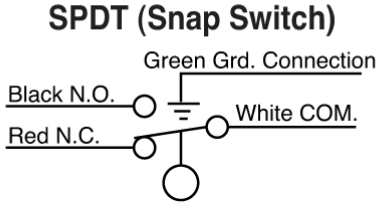


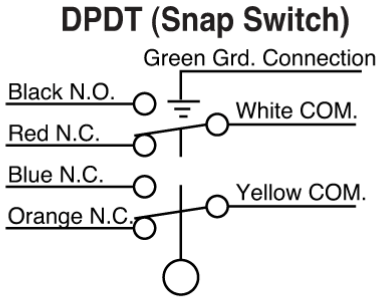
Figure 4 – Orifice Adjustment with float in down position

14. Connect to the inlet, outlet, and exhaust fittings according to installation drawings.

Electrical



Switch Rating: 5 A @ 125-250- 480 VAC
1/2 A @ 125 VDC
1/4 A @ 250 VDC
2A @ 6-30 VDC Resistive
1A @ 6-30 VDC Inductive



Switch Rating: 10 A @ 125-250 VAC
1/2 A @ 125 VDC
1/4 A @ 250 VDC
10 A @ 6-24 VDC
Inductive/Resistive

Replacement Parts

CAUTION: LS200 Series parts are not interchangeable with other Murphy liquid level products. Damage caused by the above mentioned is not covered by our Limited Warranty.

Order by part number designation.

LS200

15000479: Stainless Steel float for LS200 (not interchangeable with L1200)
15000124: SPDT snap switch assembly
15000478: 1” Float shaft extension (not interchangeable with L1200)

LS200N

15000479: Stainless steel float for LS200N (not interchangeable with L1200)
15051133: Valve stem

LS200NDVO and LS200NDVOR

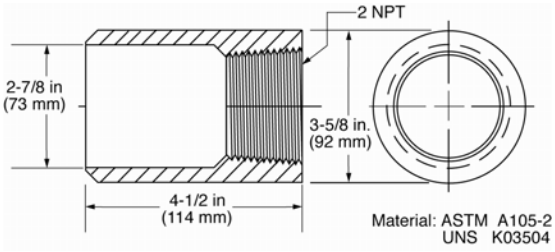
55050621: Regulator only
05706499: 20BPG-D-75 Pressure MURPHYGAGE®
0-75 psi (517 kPa) [5.17 bar]
15010267: Assembly (**LS200N DVO Assembly**)

L1100

15000893: BUOYGLAS™ float
15000937: Stainless steel float
15000124: SPDT snaps switch assembly
15000892: 1” Float shaft extension

Accessories

15050375: Weld Collar

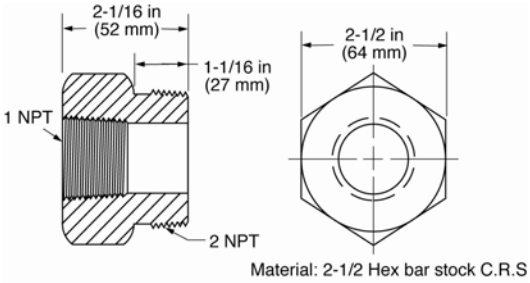


Operating Pressure: 2000 psi (13.8 MPa) [138 bar].

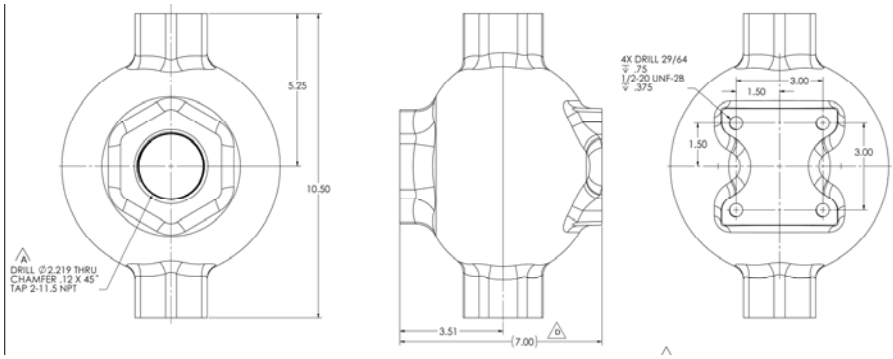
Operating Temperature: 400°F (204°C).

55050617: DVU150/DVU175 Adapter Bushing

Order by part number designation

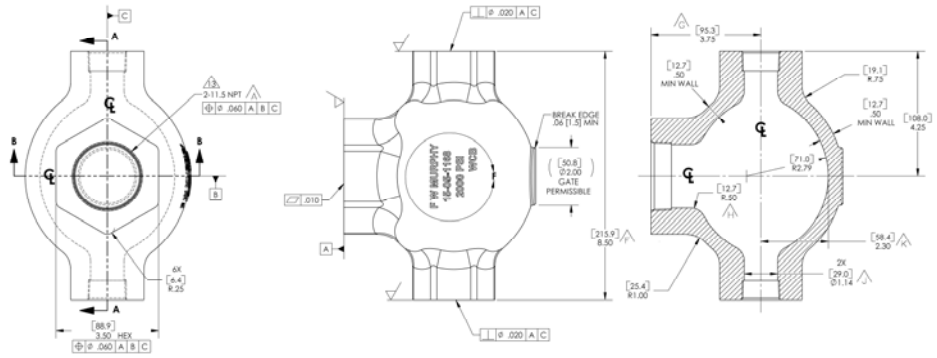


15051098: External Float Chamber



Operating pressure: 2000 psi (13.8 MPa) [138 bar]
Operating temperature: 400°F (204°C).

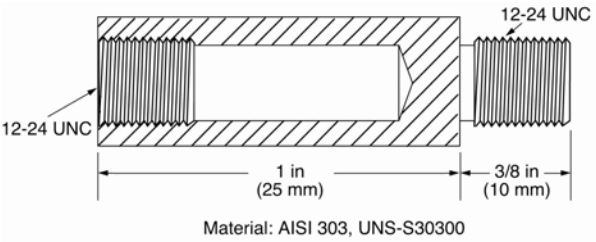
15700799: Series 100 External Float Chamber



Operating pressure: 2000 psi (13.8 MPa) [138 bar]

Operating temperature: 400°F (204°C).

15000478: Float Shaft Extension for the LS200

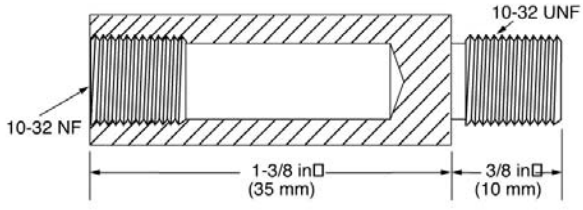


Material: AISI 303, UNS-S30300

CAUTION: Not interchangeable with L1200 parts.

Use of 1" extension requires additional clearance. Refer to Tables 1,2,3, and 4 for application data.

15000892: Float Shaft Extension for the L1100



Material: AISI 304, UNS-S30400

The Murphy Gas Compressor Scrubber Level System (SLS)

The system provides for liquid control in gas scrubber applications, by dumping liquids to drain and protecting compressors with a high liquid level switch. Wetted metal parts are made to survive constant use in corrosive environments. *See Bulletin: SLS-04005B for more details.*

High Level Shutdown Switch

Stainless steel float actuated level switches to alarm and/or shutdown the equipment.

LS200: 2" NPT pipe connection; Rated 2000 psi (13.7MPa) (137bar); Class 1, Division 1, SPDT snap-switch standard. DPDT Optional.



Filter/Regulator & MURPHYGAGE

"Instrument Quality Air/Gas Supply"

Control Panel

Pneumatic Level Control

Float actuated level snap-acting switch controls pneumatic pressure to open and close dump valve.

LS200NDVOR: Dump Valve Operator, pressure regulator, and pressure indicating MURPHYGAGE.

Pneumatic Dump Valves

See DVU-01069B for more details

Two piece union design with manual valve operator allows soft plug and hard seat to be replaced without disassembling outlet piping or scrubber pipe connection. Diaphram actuated valves operate on 30-70 psi (207-483 kPa; 2-5 bar).

Specifications

All Models

- Body: Nickel plated steel; optional 316 stainless steel (meets NACE standard MR-01-75 for direct exposure to H_2S service)
- Float: 304 stainless steel
- Pressure rating: 2000 psig (13.8 MPa) [138 bar] (LS200 models only)
- O-ring: Viton

LS200

- Process connection: 2" NPT
- Temperature rating: -20 to 300°F (-29 to 149°C)
- Electrical: SPDT std. (see "Electrical" section for configuration/rating.
- Wiring: 18 AWG x 36 in. (1.0 mm2 x 916 mm)

LS200NDVOR

- Process connection: 2" NPT
- DVO valve: 3 way N.C. w/manual operator, all connections 1/8" NPT (minimum 30 psig required)
- Filter/pressure regulator set:
- Regulator: 0 to 75 psig (0 to 517 kPa) [0 to 5.17 bar] range
- Maximum input pressure: 300 psig (2.07 MPa) [20.7 bar]

LS200NDVO

- Process connection: 2" NPT
- DVO valve: 3 way N.C. w/manual operator; all connections 1/8" NPT

LS200 N

- Process connection: 2" NPT
- Vent valve: 2 way N.C. w/ 1/16in. (2mm) orifice and Viton seat; Inlet: 1/8" NPT; outlet 3/8" NPT

L1100

- Process connection: 1-1/2" NPT
- Pressure rating: 1500 psig (10.3 MPa) [103.2 bar]
- Float: BUOYGLAS™ operates to 0.5 specific gravity;
  Optional stainless steel to operate in 0.65 specific gravity
- Electrical: SPDT switch

Approximate Shipping Weights and Dimensions

- All models: 6 lb. 10 oz. (3 kg);
- Dimensions: 14 x 5 x 3-1/2 in. (356 x 127 x 89 mm)

MURPHY, the Murphy logo, and Liquid level Switches (LS) are registered and/or common law trademarks of Murphy Industries, Inc. This document, including textual matter and illustrations, is copyright protected by Murphy Industries, Inc., with all rights reserved. (c) 2008 Murphy Industries, Inc. Other third party product or trade names referenced herein are the property of their respective owners and are used for identification purposes only.

FW MURPHY
P.O. Box 470248
Tulsa, Oklahoma 74147 USA
+1 918 317 4100 Fax: +1 918 317 4266
E-mail: sales@fwmurphy.com

INDUSTRIAL PANEL DIVISION
Fax: +1 918 317 4124
E-mail: ipdsales@fwmurphy.com

MURPHY POWER IGNITION
Web site: www.murphy-pi.com

CONTROL SYSTEMS & SERVICES DIVISION
P.O. Box 1819
Rosenberg, Texas 77471 USA
Phone: +1 281 633 4500 Fax: +1 281 633 4588
E-mail: sales@fwmurphy.com

FRANK W. MURPHY, LTD
Church Rd Laverstock
Salisbury SP1 1QZ UK
Phone: +44 172 241 0055 Fax: +44 172 241 0088
E-mail: sales@fwmurphy.co.uk
Web site: www.fwmurphy.co.uk

COMPUTRONIC CONTROLS, LTD
41 - 43 Railway Terrace
Nechells, Birmingham B7 5NG UK
Phone: +44 121 327 8500 Fax: +44 121 327 8501
E-mail: sales@computroniccontrols.com
Web site: www.computroniccontrols.com

www.**fwmurphy**.com

FW MURPHY INSTRUMENTS (HANGZHOU) CO. LTD
77 23rd Street
Hangzhou Economic & Technological Development Area
Hangzhou, Zhejiang 310018 China
Phone: +86 571 8788 6060 Fax: +86 571 8684 8878

FW MURPHY INTERNATIONAL TRADING (SHANGHAI) CO., LTD.
Suite 1704, Tower B, City Center of Shanghai; 100 Zunyi Road
Shanghai, 200051 China
Phone: +86 21 6237 2082 Fax: +86 21 6237 2083
Web site: mhong@fwmurphy.com



ISO 9001
REGISTERED

Printed in U.S.A.

MLV 13

WIKA
9799325

NEEDLE VALVE - ½” FNPT 90°F ANGLE 10,000 PSI
316 STAINLESS STEAL BODY
HARD SEAT
CV FACTOR = .52

ANGI PART NUMBER – 338-07241

NO REBUILD KIT AVAILABLE

Pressure Gauge Accessories
Instrument Grade Needle Valves
Type 910.11

Accessories, Mechanical

Application
Intended to isolate the pressure gauge from the measured fluid or to provide a means of throttling or dampening pressure pulsation.

Pressure Rating
Hard seat models 10,000 psi
Soft seat models 6,000 psi

Operating Temperature
Media: max. 200°F (+93°C)
min. 0°F (-18°C)

Flow Rate
Hard seat models Max. C_v .52
Soft seat models Max. C_v .83





Standard Features

Valve Body
12L14 carbon steel, nickel plated, or 316 stainless steel, electro-polished

Bonnet
12L14 carbon steel or 316 stainless steel

Valve Stem
316 stainless steel (hard chromed on hard seat models)

Handle
12L14 carbon steel or 316 stainless steel

Handle Bolt
12L14 carbon steel or 18-8 stainless steel

Stem Seals
Viton o-ring with PTFE back-up ring

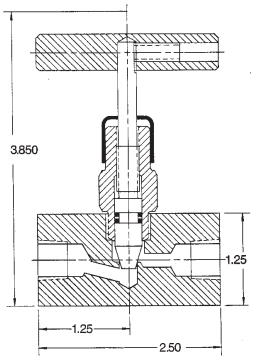
Stem Seal Lock (soft seat model)
12L14 carbon steel or 316 stainless steel

Stem Seat (soft seat model)
Delrin

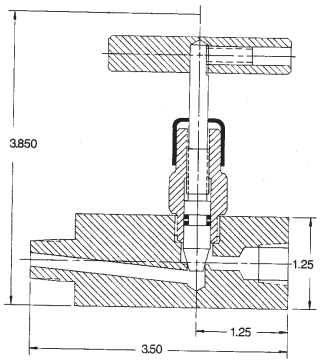
Orifice Size
0.187 inches (4.75 mm)

Order Options
Panel mounting bracket

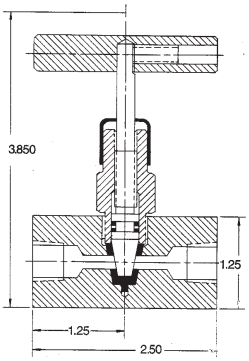
Hard Seat
Female - Female



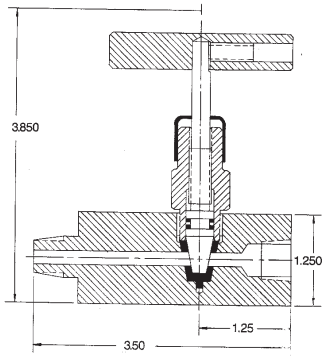
Hard Seat
Male - Female



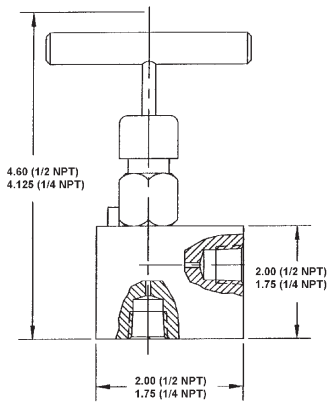
Soft Seat
Female - Female



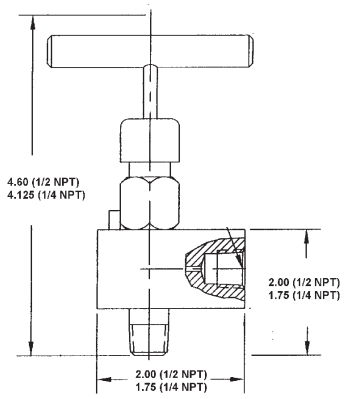
Soft Seat
Male - Female



Hard Seat
Female - Female
Angle Valve



Hard Seat
Male - Female
Angle Valve



THE MEASURE OF

Total Performance™

Ordering Information:
State computer part number (if available) / model number / size / range / connection size and location / options required.

Specifications given in this price list represent the state of engineering at the time of printing. Modifications may take place and the specified materials may change without prior notice

WIKA Instrument Corporation
1000 Wiegand Boulevard
Lawrenceville, Georgia 30043-5868
Tel: 770-513-8200 Fax: 770-338-5118
http://www.wika.com e-mail: info@wika.com

MV 2

HOKE
7115F4Y
1/4” FNPT BALL VALVE, 6000 PSI

ANGI PART NUMBER 339-02423

REBUILD KIT – HOKE 7100 SERIES VALVE – 761-07264

REBUILD KIT – HOKE 7100 SERIES SEAT – 761-01229

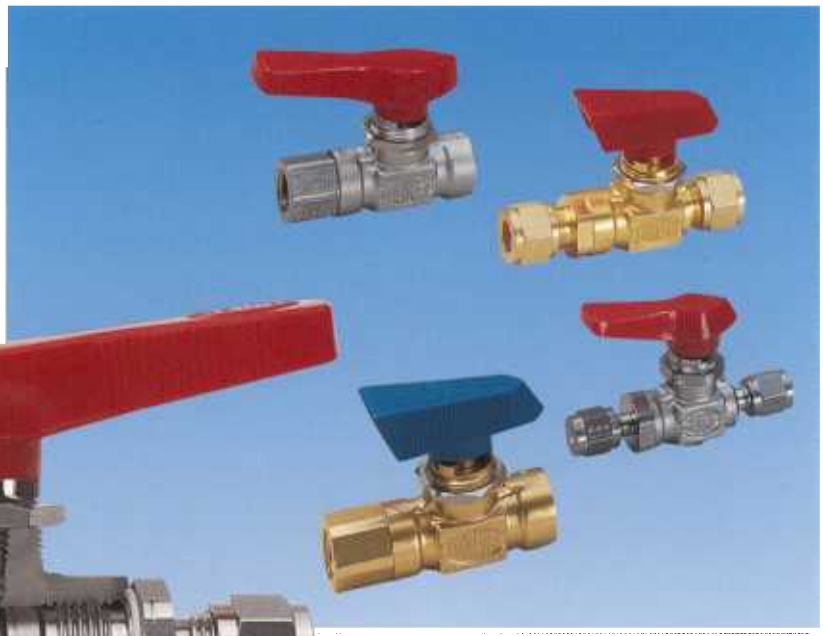
THIS PAGE LEFT INTENTIONALLY BLANK

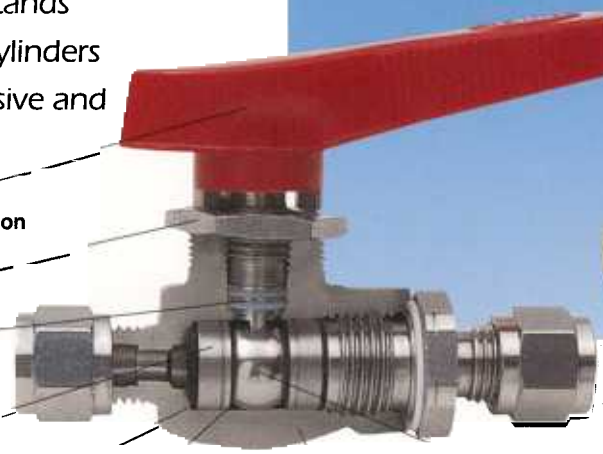
Flomite® 71 Series

2-Way Integral Panel Mount Ball Valves

Typical Applications

- Instrument panels
- High pressure instrument lines
- Gas sampling in pilot plants
- Full flow and shutoff in chromatographs
- Hydraulic test stands
- Gas sampling cylinders
- Handling corrosive and viscous fluids





Used for quick on-off service with a visual indication of flow, Hoke's 2-way ball valves offer an orifice size up to .250 in. Flomite valves feature floating ball design, encapsulated seats and check seals to ensure leak-tight service and extended service life.

HOKE ISO 9002 Certified

Technical Data

Operating Pressure Range:
Moderate vacuum to 6000 PSIG @ 70°F (41.4 MPa @ 21°C)*

Operating Temperature Range:
-20° to 480°F (-29° to 249°C)

Orifice Sizes:
.093 to .250 in. (2.4 to 6.4mm)

Cv Factors:
.23 to 1.40

End Connections:
⅛ to ⅜ in. Gyrolok®
⅛ to ¼ NPT
3 to 10mm Gyrolok

* Moderate vacuum is 10⁻³ to 10⁻⁶ torr

Benefits

Visual flow indication
Quarter-turn handle indicates on-off flow.

Bidirectional leak-tight sealing
Dual encapsulated TFE or Kel-F seats and microfinished ball ensure a leak-tight seal.

Helps eliminate fugitive emissions
Dyna-Pak® packing provides a leak-tight seal with low operating torque in vacuum or high pressure applications.

HOKE Exclusive

Long cycle life
Floating ball provides pressure-assisted sealing and temperature and wear compensation.

Compatibility
A variety of body and seat/washer materials are provided.

Installation variety
Select from Hoke Gyrolok tube fittings or pipe-ended models.

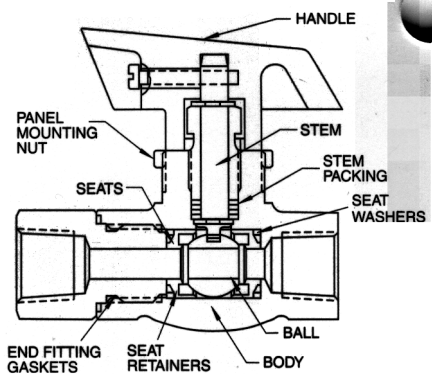
Panel mounting
Panel mounting is standard on all models.

Remote actuation
Electric and pneumatic actuators are available for automated systems.

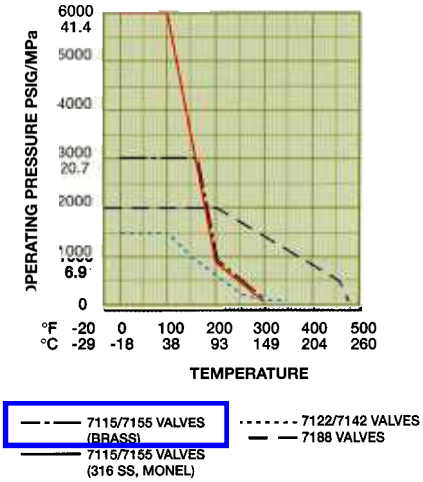
Materials of Construction

Description	Brass Valves	316 SS Valves	Monel® Valves
Body	Brass	316 SS	Monel
Ball	316 SS	316 SS	Monel
Stem	316 SS	316 SS	Monel
Stem Packing			
7188	–	Hostaflon®	–
Other Valves	TFE/316 SS Wafers	TFE/316 SS Wafers	TFE/Monel Wafers
Seats			
7115, 7155	Kel-F®	Kel-F	Kel-F
7122, 7142	TFE	TFE	TFE
7188	–	Filled TFE	–
Seat Retainers	Brass	316 SS	Monel
Seat Washers†			
7115, 7155, 7188	Viton®	Viton	Viton
7122, 7142	TFE	TFE	TFE
End Fitting Gaskets			
7188	–	Hostaflon	–
Other Valves	TFE	TFE	TFE
Handle	Nylon	Nylon	Nylon
Panel Mounting Nut			
7115	Nickel Plated Brass	Nickel Plated Brass	Nickel Plated Brass
Other Valves	Nickel Plated Brass	316 SS	Nickel Plated Brass

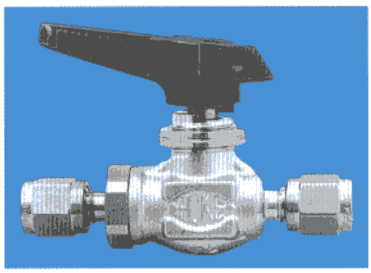
All 6000 PSIG valves come with long red handles for reduced operating force.
All other models have a short blue handle.
† Other elastomers are available upon request; contact your local distributor.



Pressure vs. Temperature Curve



Valve Ordering Charts


7155G2Y

Flomite 7115, 7155

Brass: Pressure to 3000 PSIG; 316 SS/Monel: Pressure to 6000 PSIG

Kel-F Seats—Viton Washers for Service from 0° to 300°F

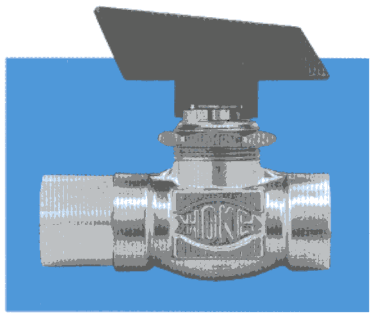
End Connections		Order by Part Number			Orifice	Cv
Inlet	Outlet	Brass	316 SS	Monel		
⅛ Gyrolok	⅛ Gyrolok	7155G2B	7155G2Y	–	.093	.23
⅛ Female NPT	⅛ Female NPT	7155F2B	7155F2Y	–	.125	.40
⅛ Female NPT	⅛ Female NPT	–	7115F2Y	–	.250	1.40
¼ Gyrolok	¼ Gyrolok	7155G4B	7155G4Y	–	.125	.40
¼ Gyrolok	¼ Gyrolok	7115G4B	7115G4Y	7115G4M	.187	.80
¼ Male NPT	¼ Gyrolok	7115H4B	7115H4Y	–	.187	.80
¼ Male NPT	¼ Female NPT	7115L4B	7115L4Y	–	.250	1.40
¼ Female NPT	¼ Female NPT	7115F4B	7115F4Y	7115F4M	.250	1.40
⅜ Gyrolok	⅜ Gyrolok	7115G6B	7115G6Y	–	.250	1.40
3mm Gyrolok	3mm Gyrolok	–	7155G3Y/MM	–	.093	.23
6mm Gyrolok	6mm Gyrolok	–	7155G6Y/MM	–	.125	.40
6mm Gyrolok	6mm Gyrolok	–	7115G6Y/MM	–	.187	.80
8mm Gyrolok	8mm Gyrolok	–	7115G8Y/MM	–	.250	1.40
10mm Gyrolok	10mm Gyrolok	–	7115G10Y/MM	–	.250	1.40

The following are trademarks of their respective companies:
Monel, International Nickel Company; Kel-F, 3M Co.; Viton, DuPont; Hostaflon, Hoechst.

Flomite 71 Series

Flomite 7122, 7142 **Pressure to 1500 PSIG**
TFE Seats—TFE Washers for Service from 0° to 350°F

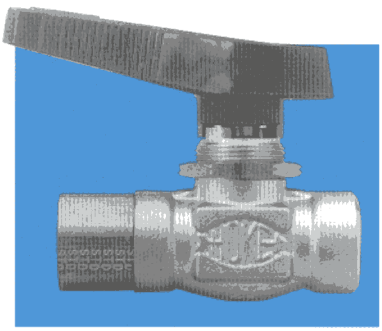
End Connections		Order by Part Number			Orifice	Cv
Inlet	Outlet	Brass	316 SS	Monel		
1/8 Gyrolok	1/8 Gyrolok	7142G2B	7142G2Y	–	.093	.23
1/8 Female NPT	1/8 Female NPT	7142F2B	7142F2Y	–	.125	.40
1/4 Gyrolok	1/4 Gyrolok	7142G4B	7142G4Y	–	.125	.40
1/4 Gyrolok	1/4 Gyrolok	7122G4B	7122G4Y	7122G4M	.187	.80
1/4 Male NPT	1/4 Gyrolok	7122H4B	7122H4Y	–	.187	.80
1/4 Male NPT	3/8 Gyrolok	–	7122H46Y	–	.250	1.40
1/4 Male NPT	1/4 Male NPT	–	7122M4Y	–	.250	1.40
1/4 Male NPT	1/4 Female NPT	7122L4B	7122L4Y	–	.250	1.40
1/4 Female NPT	1/4 Female NPT	7122F4B	7122F4Y	7122F4M	.250	1.40
3/8 Gyrolok	3/8 Gyrolok	7122G6B	7122G6Y	–	.250	1.40
3mm Gyrolok	3mm Gyrolok	–	7142G3Y/MM	–	.093	.23
6mm Gyrolok	6mm Gyrolok	–	7142G6Y/MM	–	.125	.40
6mm Gyrolok	6mm Gyrolok	–	7122G6Y/MM	–	.187	.80
8mm Gyrolok	8mm Gyrolok	–	7122G8Y/MM	–	.250	1.40
10mm Gyrolok	10mm Gyrolok	–	7122G10Y/MM	–	.250	1.40



7122F4B

Flomite 7188 **Pressure to 2000 PSIG**
Filled TFE Seats—Viton Washers for Service from -20° to 480°F

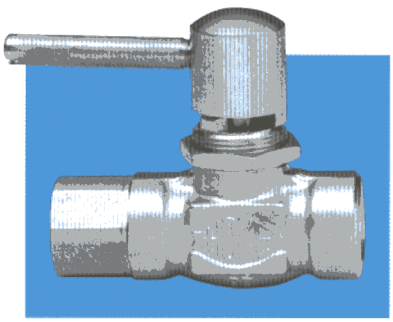
End Connections		Order by Part Number	Orifice	Cv
Inlet	Outlet	316 SS		
1/4 Gyrolok	1/4 Gyrolok	7188G4Y	.187	.80
1/4 Female NPT	1/4 Female NPT	7188F4Y	.250	1.40
3/8 Gyrolok	3/8 Gyrolok	7188G6Y	.187	.80



7188F4Y– Provides Service to 480°F

Ordering Options

Metal Handles
Metal handles can be ordered for Flomite 71 series 2-way valves with an orifice of .187 in. or .250 in. To order, specify kit #7100K13 following the valve number.



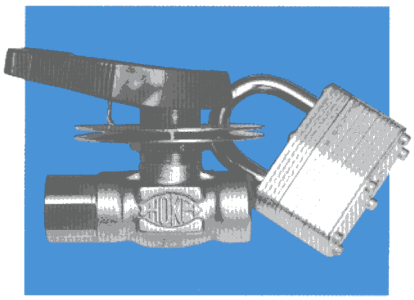
7122F4Y with Metal Handle

Color-Coded Handles
Color-coded handles are available for 7115, 7122 and 7188 valves. Order by the part number listed below. Only black (#95576-032) is available for 7142 and 7155 valves.



#90187-6 #90187-5 #90187-3 #90187-2 #90187-1

Handle Locking Kit
Safety lockout kits are available for applications which must conform to Code of Federal Regulations 29CFR Part 1910, OSHA Safety and Health Act and other worldwide regulations. Valves can be locked in either an opened or closed position with the stainless steel upper and lower locking plates. Lock with readily available padlocks or commercially available multiple lockout devices. Locking kits include the locking plates and assembly instructions. To order a safety lockout kit for 7115, 7122 and 7188 valves, specify kit #7100K18.

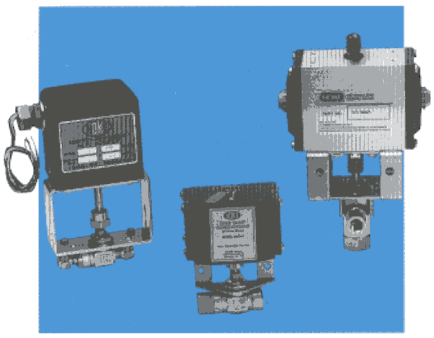


Ball Valve with Handle Lock

Spare Parts
Spare parts and repair kits are available for all ball valves. Please contact your distributor for specific information.

Cleaning and Testing
When ordering, please specify if oxygen cleaning or helium leak testing is required.

Additional Sizes
Additional sizes and options are available on special request. Please consult your local Hoke distributor.



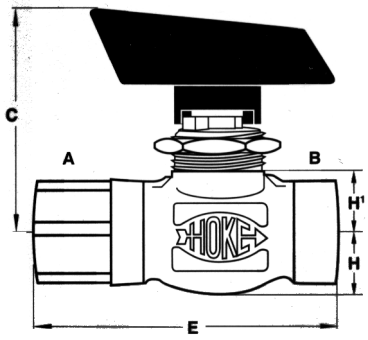
Actuators

Electric and Pneumatic Actuators

For remote control of Flomite 71 series valves, order an electric or pneumatic actuator. Electric actuators are supplied in either 115 VAC or 24 VDC with weather-proof or explosion-proof housings. Pneumatically actuated ball valves using Hoke's Space Saver® actuator can be used for both 90° and 180° double acting and spring return applications. See Hoke's Actuated Valve Catalog or contact your distributor for details.

Dimensions Chart

Flomite 71 Series



Inlet A	Outlet B		C	E	H	H'	Panel Mounting Max. Thickness	Panel Mounting Hole Size
1/8 Gyrolok	1/8 Gyrolok	inch	1 13/32	2 19/32	13/32	11/32	3/16	19/32
		mm	36	66	10	9	5	15
1/8 Female NPT for .125 orifice	1/8 Female NPT for .125 orifice	inch	1 13/32	1 31/32	13/32	11/32	3/16	19/32
		mm	36	50	10	9	5	15
1/8 Female NPT for .250 orifice	1/8 Female NPT for .250 orifice	inch	1 23/32	2 19/64	1/2	7/16	1/4	49/64
		mm	44	58	13	11	6	19
1/4 Gyrolok for .125 orifice	1/4 Gyrolok for .125 orifice	inch	1 13/32	2 11/16	13/32	11/32	3/16	19/32
		mm	36	68	10	9	5	15
1/4 Gyrolok for .187 orifice	1/4 Gyrolok for .187 orifice	inch	1 23/32	3 3/32	1/2	7/16	1/4	49/64
		mm	44	78	13	11	6	19
1/4 Male NPT	1/4 Gyrolok	inch	1 7/8	2 7/8	1/2	7/16	1/4	49/64
		mm	48	73	13	11	6	19
1/4 Male NPT	3/8 Gyrolok	inch	1 7/8	2 7/8	1/2	7/16	1/4	49/64
		mm	48	73	13	11	6	19
1/4 Male NPT	1/4 Male NPT	inch	1 23/32	2 17/32	1/2	7/16	1/4	49/64
		mm	44	64	13	11	6	19
1/4 Male NPT	1/4 Female NPT	inch	1 7/8	2 17/32	1/2	7/16	1/4	49/64
		mm	48	64	13	11	6	19
1/4 Female NPT	1/4 Female NPT	inch	1 7/8	2 7/16	1/2	7/16	1/4	49/64
		mm	48	62	13	11	6	19
3/8 Gyrolok	3/8 Gyrolok	inch	1 7/8	3 1/4	1/2	7/16	1/4	49/64
		mm	48	83	13	11	6	19
3mm Gyrolok	3mm Gyrolok	inch	1 13/32	2 19/32	13/32	11/32	3/16	19/32
		mm	36	66	10	9	5	15
6mm Gyrolok for .125 orifice	6mm Gyrolok for .125 orifice	inch	1 13/32	2 11/16	13/32	11/32	3/16	19/32
		mm	36	68	10	9	5	15
6mm Gyrolok for .187 orifice	6mm Gyrolok for .187 orifice	inch	1 23/32	3 3/32	1/2	7/16	1/4	49/64
		mm	44	78	13	11	6	19
8mm Gyrolok	8mm Gyrolok	inch	1 7/8	3 1/4	1/2	7/16	1/4	49/64
		mm	48	83	13	11	6	19
10mm Gyrolok	10mm Gyrolok	inch	1 7/8	3 1/8	1/2	7/16	1/4	49/64
		mm	48	79	13	11	6	19

Dimensions for reference only, subject to change.

HOKE Cares About Your Safety



WARNING

IMPROPER SELECTION OR USE OF PRODUCTS DESCRIBED HEREIN CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.

Product information described herein is offered for use by the system designer and user.

It is solely the responsibility of the system designer and user to select products suitable for their specific application requirements and to ensure proper installation, operation, and maintenance of these products. Material compatibility, product ratings, and application details should be considered in the selection.

Always contact your local Hoke Distributor with any questions you may have before pressurizing and operating the product.

SAFETY INSTRUCTIONS

1. Do not tighten or loosen any part of a fitting or valve when the system is pressurized. Make sure the system is unpressurized when tightening or loosening a fitting or valve connection.

2. Do not loosen Hoke Gyrolok nut or any product component in order to relieve or bleed down system pressure.

3. Do not exceed pressure-temperature specifications stated in the appropriate catalog.

4. When the application involves use of a toxic or hazardous fluid, exercise extra caution during operation and maintenance.

5. Before assembling new, unused Hoke Gyrolok tube fitting ends, loosen the Hoke Gyrolok nut before inserting the tube to allow full insertion of the tube to the base of the body bore.

6. Always use tubing that is compatible with the fitting or valve material. Tubing appropriate for use with Hoke products is described in the Hoke Gyrolok catalog. For example, use 316 Stainless Steel fittings with 316 Stainless Steel tubing.

7. Always leave a length of straight tube between the tube bend and the fitting. A tube bent too close to the fitting connection may be a source of leakage.

8. During assembly of the Hoke Gyrolok tube end, always hold the fitting or valve body with one wrench while separately wrench tightening the Hoke Gyrolok nut. Follow the same precaution when disassembling.

9. Always use a Hoke tube insert (basic part number "TI") when assembling a Hoke Gyrolok fitting to soft, pliable plastic tubing.

10. Always use proper thread lubricants or sealants on tapered pipe threads. Note that thread sealants may have lower temperature ratings than the basic fitting.

11. NPT threads should be torqued in accordance with an industry standard, such as Underwriter's Laboratory UL842. Note that previously assembled threads may require additional tightening.

12. When installing an NPT ended valve, hold the valve body near the connection with one wrench, while separately wrench tightening the mating pipe. Turn the pipe, not the valve. Follow the same precaution when disconnecting.

13. Do not hold the valve handle when tightening an end connection.

14. Do not use excessive force to open or close a Ball Valve. e.g., Do not use a handle extension.

15. On initial installation, valves may require an adjustment of the packing nut due to storage variations, systems parameters, and cold flow properties of TFE.

THIS PAGE LEFT INTENTIONALLY BLANK

MV 124

HOKE / HOKE
7223F6YD / DBL-NO / 07L90SR31SO-M31 / LBMK7223-M31 / LTMK7223-M31

(2) 3/8” FNPT BALL VALVE, 5000 PSI, SS
W/ 07L ACTUATOR, NORMALLY OPEN

ANGI PART NUMBER 334-07322

REBUILD KIT - HOKE PKG / SEAT 7223D SERIES – 761-07276

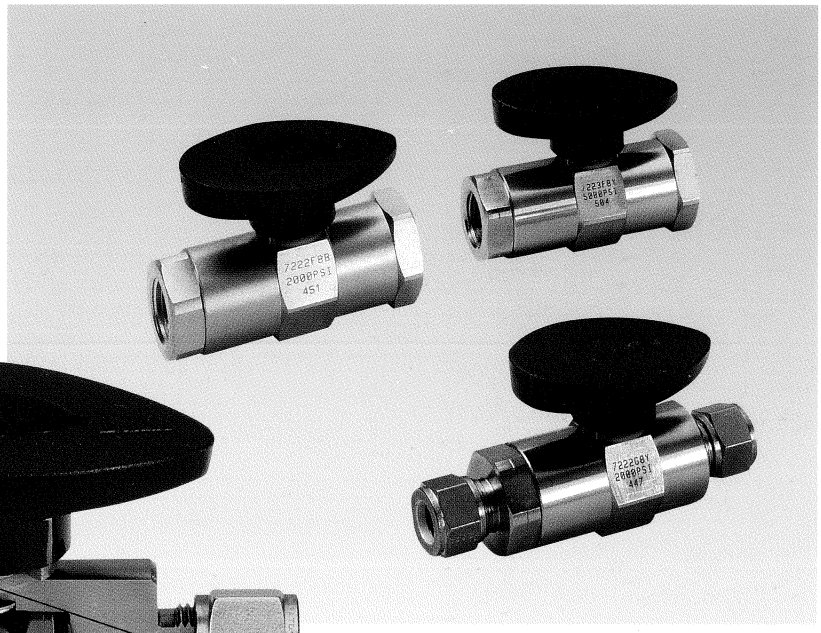
REBUILD KIT - HOKE SEAL KIT 7223D SERIES – 761-07391

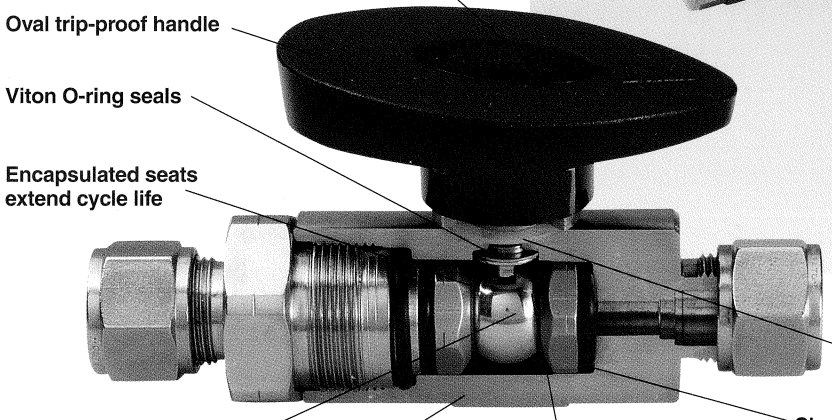
REBUILD KIT – ACTUATOR HOKE 07L – 761-07505

THIS PAGE LEFT INTENTIONALLY BLANK

Rotoball® 72 Series
2-Way Low Profile Ball Valves

Typical Applications
- Hydraulic test stands
- Handling slurries
- Refinery pilot plants
- Pneumatic systems
- Corrosive handling





Hoke's bar stock 2-way ball valves offer a .375 in. orifice. Rotoball valves feature floating ball design, encapsulated seats and trip-proof handle for safe, leak-tight service and long service life.

HOKE ISO 9002 Certified

Technical Data

Operating Pressure Range:
Moderate vacuum to 5000 PSIG @ 70°F (34.5 MPa @ 21°C)*

Operating Temperature Range:
-20° to 350°F (-29° to 177°C)

Orifice Size:
.375 in. (9.5mm)

Cv Factor:
3.4

End Connections:
½ in. Gyrolok®
⅜ to ½ Female NPT
12mm Gyrolok

* Moderate vacuum is 10^{-3} to 10^{-5} torr.

Benefits

Safety
Blowout-proof stem.
Oval trip-proof handle helps prevent accidental actuation.

Visual flow indication
Quarter-turn handle indicates on-off.

Bidirectional leak-tight sealing
Dual encapsulated TFE seats and microfinished ball ensure a leak-tight seal.

Long cycle life
Floating ball provides pressure-assisted sealing and temperature wear compensation.

Compatibility
TFE seats with TFE or Viton washers provide excellent corrosion resistance.

Choice of materials
Select from Brass, 316 SS or Monel.

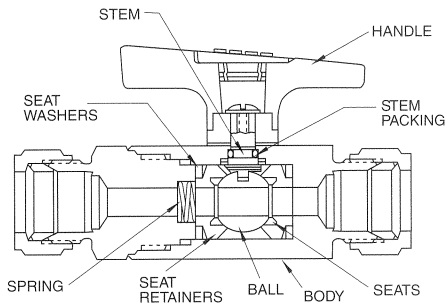
Installation variety
Choose Hoke Gyrolok tube fittings or pipe-ended models.

Remote actuation
Electric and pneumatic actuators are available for automated systems.

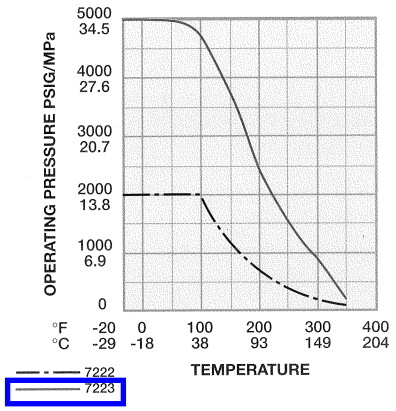
Materials of Construction

Description	Brass Valves	316 SS Valves	Monel® Valves
Body	Brass	316 SS	Monel
Ball	316 SS	316 SS	Monel
Stem	316 SS	316 SS	Monel
Stem Packing†	Viton®	Viton	Viton
Seats	TFE	TFE	TFE
Seat Retainers	316 SS	316 SS	Monel
Seat Washers†			
7222	TFE	TFE	TFE
7223	–	Viton	–
Spring	316 SS	316 SS	Monel
Handle	Nylon	Nylon	Nylon

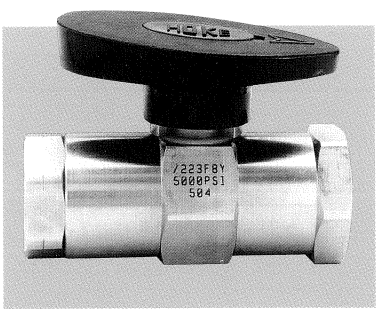
† Other elastomers are available upon request; contact your local distributor.



Pressure vs. Temperature Curve



Valve Ordering Charts



7223F8Y

Rotoball 7222 Pressure to 2000 PSIG TFE Seats—TFE Washer

End Connections	Order by Part Number			Orifice	Cv
Inlet and Outlet	Brass	316 SS	Monel		
3/8 Female NPT	–	7222F6Y	–	.375	3.4
1/2 Female NPT	7222F8B	7222F8Y	7222F8M	.375	3.4
1/2 Gyrolok	7222G8B	7222G8Y	7222G8M	.375	3.4
12mm Gyrolok	–	7222G12Y/MM	–	.375	3.4

Rotoball 7223 Pressure to 5000 PSIG TFE Seats—Viton Washers

End Connections	Order by Part Number	Orifice	Cv
Inlet and Outlet	316 SS		
3/8 Female NPT	7223F6Y	.375	3.4
1/2 Female NPT	7223F8Y	.375	3.4
1/2 Gyrolok	7223G8Y	.375	3.4
12mm Gyrolok	7223G12Y/MM	.375	3.4

HOKE Cares About Your Safety



WARNING

IMPROPER SELECTION OR USE OF PRODUCTS DESCRIBED HEREIN CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.

Product information described herein is offered for use by the system designer and user.

It is solely the responsibility of the system designer and user to select products suitable for their specific application requirements and to ensure proper installation, operation, and maintenance of these products. Material compatibility, product ratings, and application details should be considered in the selection.

Always contact your local Hoke Distributor with any questions you may have before pressurizing and operating the product.

SAFETY INSTRUCTIONS

1. Do not tighten or loosen any part of a fitting or valve when the system is pressurized. Make sure the system is unpressurized when tightening or loosening a fitting or valve connection.

2. Do not loosen Hoke Gyrolok nut or any product component in order to relieve or bleed down system pressure.

3. Do not exceed pressure-temperature specifications stated in the appropriate catalog.

4. When the application involves use of a toxic or hazardous fluid, exercise extra caution during operation and maintenance.

5. Before assembling new, unused Hoke Gyrolok tube fitting ends, loosen the Hoke Gyrolok nut before inserting the tube to allow full insertion of the tube to the base of the body bore.

6. Always use tubing that is compatible with the fitting or valve material. Tubing appropriate for use with Hoke products is described in the Hoke Gyrolok catalog. For example, use 316 Stainless Steel fittings with 316 Stainless Steel tubing.

7. Always leave a length of straight tube between the tube bend and the fitting. A tube bent too close to the fitting connection may be a source of leakage.

8. During assembly of the Hoke Gyrolok tube end, always hold the fitting or valve body with one wrench while separately wrench tightening the Hoke Gyrolok nut. Follow the same precaution when disassembling.

9. Always use a Hoke tube insert (basic part number "TI") when assembling a Hoke Gyrolok fitting to soft, pliable plastic tubing.

10. Always use proper thread lubricants or sealants on tapered pipe threads. Note that thread sealants may have lower temperature ratings than the basic fitting.

11. NPT threads should be torqued in accordance with an industry standard, such as Underwriter's Laboratory UL842. Note that previously assembled threads may require additional tightening.

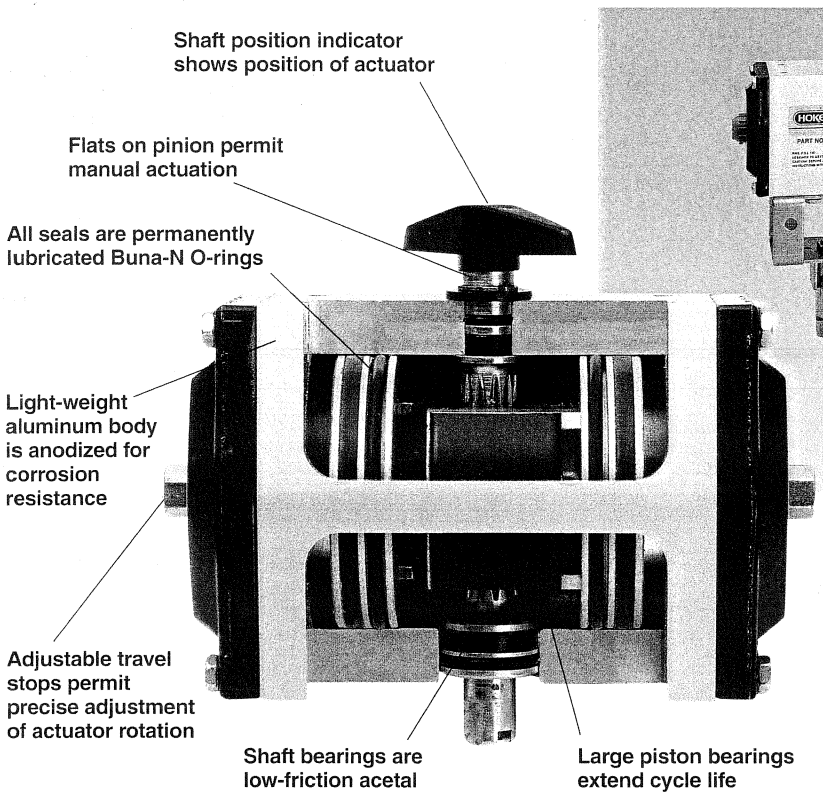
12. When installing an NPT ended valve, hold the valve body near the connection with one wrench, while separately wrench tightening the mating pipe. Turn the pipe, not the valve. Follow the same precaution when disconnecting.

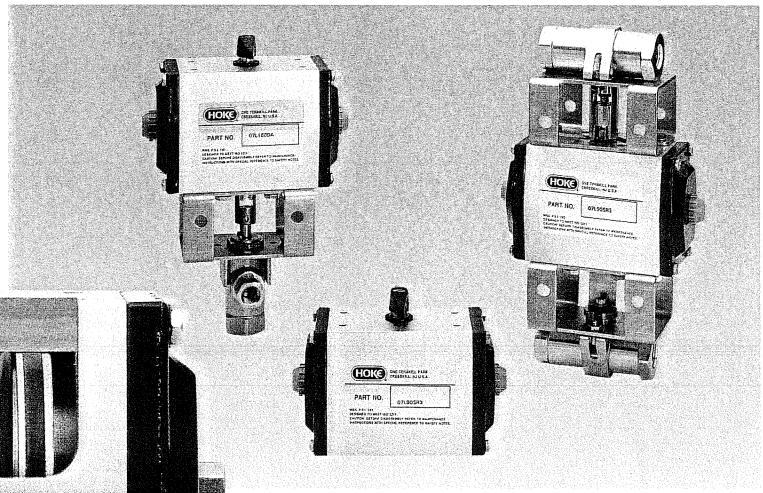
13. Do not hold the valve handle when tightening an end connection.

14. Do not use excessive force to open or close a Ball Valve. e.g., Do not use a handle extension.

15. On initial installation, valves may require an adjustment of the packing nut due to storage variations, systems parameters, and cold flow properties of TFE.

07L Series
Pneumatic Actuators





The 07L series rack and pinion actuator uses a double piston design to generate high torque while maintaining a small envelope. The actuators are available in double acting and spring return versions for both 90° and 180° actuation. A position indicator provides a visual guide to the unit's position and can be removed for manual override. The high cycle life and compact size combine to support the industry trends toward automation and downsizing.

Technical Data

Maximum Operating Pressure:
140 PSIG @ 70°F (960 kPa @ 21°C)

Operating Temperature Range:
-13° to 200°F (-25° to 95°C)

Air Supply Connections:
⅛ Female NPT

Weight:*
3.0 to 3.4 lbs. (1.2 to 1.3 kg)

Cycle Time:†
90°—.25 secs.
180°—.50 secs.

* Weight varies due to number of springs used.
† Based on 80 PSIG air and ¼" supply line.

Benefits

Safety
Shaft position indicator—
- shows position of actuator.
- can be removed to allow manual override.

Fail-safe spring return option.

Compact
Double piston design reduces envelope.
Patented spring return cartridge saves space.
Single unit may be used to actuate one or two valves.

Reliable
Long cycle life.
Acetal piston guides and rings reduce friction.
Internally lubricated seals, bearings and guides require no further lubrication under normal conditions.

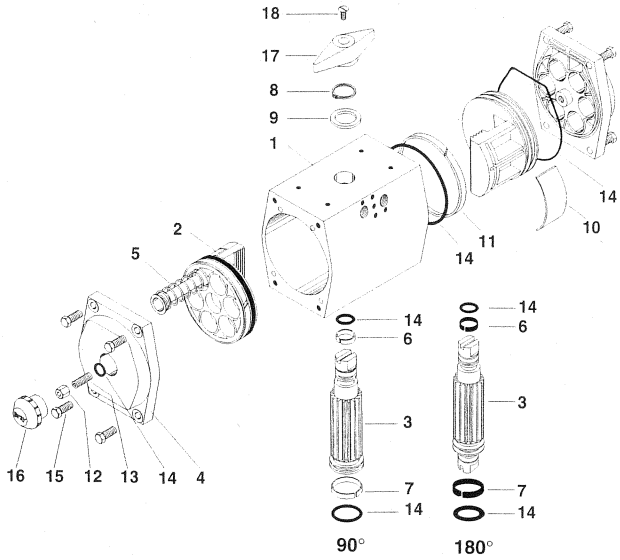
Durable
Anodized body and epoxy-coated end caps provide corrosion protection.
Stainless steel brackets.

Powerful
Actuates larger, high pressure single and multiport valves (7115, 7165, 7200, 7644, 7670, 7900, 7B).

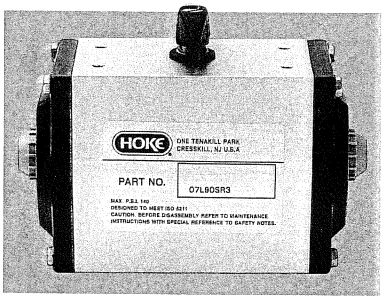
Versatile
90° and 180° operation.
Double acting and spring return.
Uses standard shop air.
Optional position monitor and solenoids—
- allow electronic control,
- are available in weather-proof and explosion-proof enclosures.

Materials of Construction

Item	Qty.	Description	Material
1	1	Body	Anodized Aluminum
2	2	Piston	Aluminum
3	1	Pinion	Zinc Plated Carbon Steel
4	2	End Cap	Coated Aluminum
5	4 max.	Spring Cartridge Assembly	Coated Spring Steel
6	1	Upper Bearing	Acetal
7	1	Lower Bearing	Acetal
8	1	Retaining Ring	Zinc Plated Spring Steel
9	1	Washer	Nylon
10	2	Bearing Pad	Acetal
11	2	Guide Ring	Acetal
12	2	Stop Nut	Zinc Plated Carbon Steel
13	2	Travel Adjusting Screw Stop	Zinc Plated Carbon Steel
14	8	O-ring	Buna-N (Nitrile)
15	8	Hex Head Cap Screw	Zinc Plated Carbon Steel
16	2	Dust Cap	Nylon
17	1	Indicator Pointer	Nylon
18	1	Indicator Pointer Screw	Zinc Plated Carbon Steel



Actuator Ordering Charts



07L90SR3

90° Double Acting Actuators

Actuator Part Number	For Use with One Valve	For Use with Two Valves	Top Mount Kit Number	Bottom Mount Kit Number
07L90DA	7222	7222	LTMK7222	LBMK7222
	7223	7223	LTMK7223	LBMK7223
	7092	7092	LTMK7222	LBMK7222
	7093	7093	LTMK7223	LBMK7223
	7B	–	–	7BK1

90° Spring Return Actuators

Actuator Part Number	For Use with One Valve	For Use with Two Valves	Top Mount Kit Number	Bottom Mount Kit Number
07L90SR3	–‡	7115	LTMK7115	LBMK7115
	–‡	7015	LTMK7115	LBMK7115
	7222	7222	LTMK7222	LBMK7222
	7223	7223	LTMK7223	LBMK7223
	7092	7092	LTMK7222	LBMK7222
	7093	7093	LTMK7223	LBMK7223
	7B	–	–	7BK1
07L90SR4	7911	–	–	LBMK7900
	7921	–	–	LBMK7900

‡ See 0700 Series Actuator catalog.

180° Double Acting Actuators

Actuator Part Number	For Use with One Valve	For Use with Two Valves	Top Mount Kit Number	Bottom Mount Kit Number
07L180DA	7644	7644	LTMK7644	LBMK7644

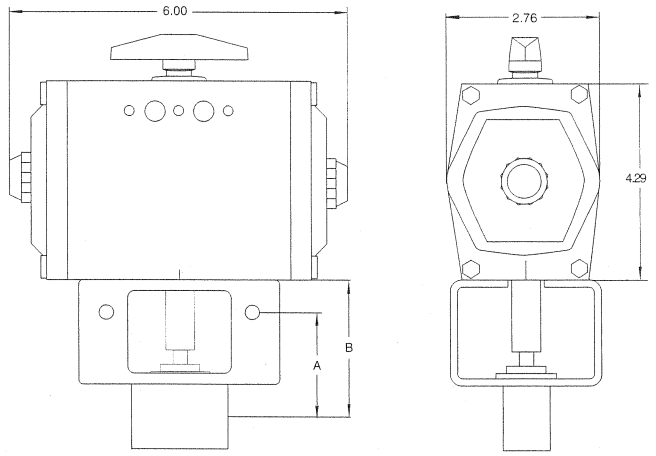
180° Spring Return Actuators

Actuator Part Number	For Use with One Valve	For Use with Two Valves	Top Mount Kit Number	Bottom Mount Kit Number
07L180SR3	7165	7165	LTMK7165	LBMK7165
	7065	7065	LTMK7065	LBMK7065
	7671	7671	LTMK7165	LBMK7165
	7673	7673	LTMK7165	LBMK7165
07L180SR4	7644	–	–	LBMK7644

07L Series

Dimensions Chart

Series		Dim. A	Dim. B
7065	inch	1 21/32	2 13/32
	mm	42	61
7090	inch	1 15/16	2 43/64
	mm	49	68
7015/ 7022/ 7115	inch	1 11/16	2 7/16
	mm	43	62
7165	inch	1 21/32	2 13/32
	mm	42	61
7200	inch	1 15/16	2 43/64
	mm	49	68
7644	inch	2 1/8	2 29/32
	mm	54	74
7670	inch	1 21/32	2 13/32
	mm	42	61
7911/ 7921	inch	2 1/2	3 17/64
	mm	64	83
7B	inch	2 11/32	3 1/16
	mm	59	78

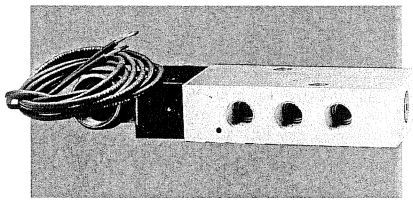


Options

For actuators operated by other media, such as water or hydraulic fluid, contact your local distributor.

Solenoids

Hoke solenoids provide electric on-off control of the Hoke pneumatic actuators. Direct-mount capability through NAMUR interface provides a compact package with no external tubing or fittings. Equipped with a mechanical manual override, these units can be used with either spring return or double acting actuators. They are available in a weather-proof (NEMA 4) or explosion-proof (NEMA 4, 7, 9) housing.



HL-SOL-WP

Solenoid Ordering Chart

Order by Part Number	Description
HL-SOL-EX	solenoid—weather-proof and explosion-proof
HL-SOL-WP	solenoid—weather-proof
HL-SOL-MKIT	solenoid mounting kit

Specifications

Operating Conditions

Temperature Range:
0° to 180°F
(-18° to 82°C)

Maximum Operating Pressure Differentials:
150 PSIG @ 70°F
(1033 kPa @ 21°C)

Leakage Rate:
Bubble tight

Electrical Characteristics

Coil Voltage:
Standard voltage is 120 volts AC

Nominal Power:
AC—5.6 watts

Coil Construction:
Standard, molded and potted with 24" leads

Manual Override:
Manual override lever positioned on the inside of the solenoid block

Operating Speed:
10 cycles per minute

Duty Cycle:
Continuous

Mechanical Characteristics

Materials:
Coil housing—steel and zinc chromated; valve body—anodized aluminum; internal parts—stainless steel with Buna-N seals

Porting:
¼" NPT

Coil Housing:
Weather-proof and explosion-proof: (NEMA 4, 7, 9) ½" conduit connection and a third wire ground
Weather-proof only: (NEMA 4)

Listings:
Weather-proof and explosion-proof: UL listed and CSA certified for hazardous locations: Class I-Groups C & D; Class II-Groups E, F & G
Weather-proof only: listing not applied for

Dimensions for reference only, subject to change.

MV 167

MILWAUKEE VALVE
1/2 BA-100

1/2” FNPT BALL VALVE, 600 PSI, BRONZE,
W/ LOK KIT

ANGI PART NUMBER 334-07284

NO REBUILD KIT AVAILABLE

THIS PAGE LEFT INTENTIONALLY BLANK

BA-100/100S

1/4" - 3"

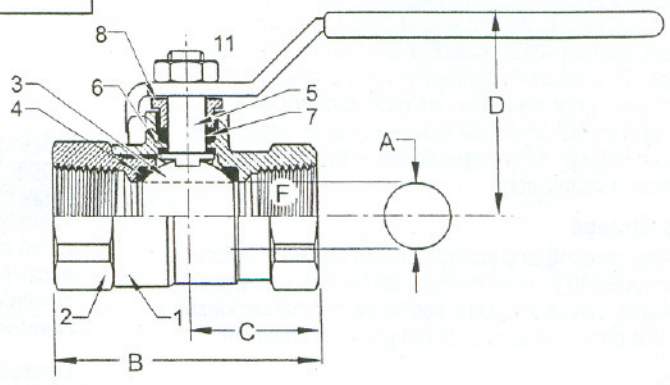
MSS SP-110

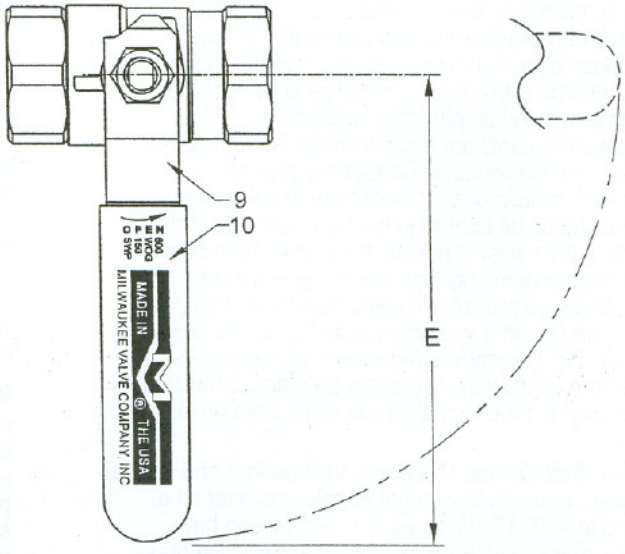
BRONZE BALL VALVE
TWO-PIECE, STANDARD-PORT
600 PSIG WOG / 150 PSIG SWP *
THREADED ENDS

MATERIALS LIST

ITEM	PART	MODEL	MATERIALS	ASTM SPEC.
1	Body	100 & 100S	Cast Bronze	B584
2	Tailpiece	100 & 100S	Brass	B16
			Cast Bronze (1" & up)	B584
3	Ball	100	Brass w/ Hard Chrome Plating	B16
		100S	316 Stainless Steel	A276
4	Seat	100 & 100S	RPTFE, 15% Glass Filled	
5	Stem	100	Brass	B16
		100S	316 Stainless Steel	A276
6	Thrust Washer	100 & 100S	RPTFE, 25% Glass Filled	
7	Packing	100 & 100S	PTFE	
8	Packing Nut	100 & 100S	Brass	B16
9	Handle	100 & 100S	Steel w/ Zinc Plating	B633
10	Hand Grip	100 & 100S	Vinyl	
11	Handle Nut	100 & 100S	Steel w/ Zinc Plating	B633

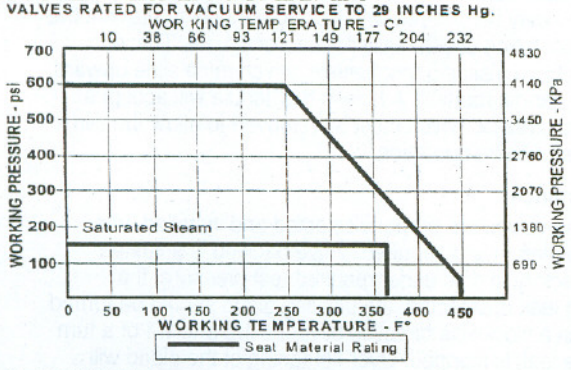
* Milwaukee Valve Company recommends the use of Stainless steel ball and stem for steam applications. Please consult factory for more information.





PRESSURE - TEMPERATURE DATA

VALVES RATED FOR VACUUM SERVICE TO 29 INCHES Hg.



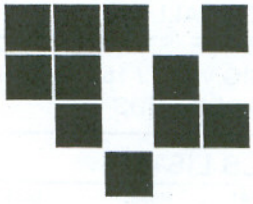
DIMENSIONS

	UNITS	1/4" DN6	3/8" DN10	1/2" DN15	3/4" DN20	1" DN25	1-1/4" DN32	1-1/2" DN40	2" DN20	2-1/2" DN65	3" DN80
A (DIA)	INCHES	0.38	0.38	0.51	0.70	0.88	1.07	1.32	1.57	2.00	2.31
	mm	9.3	9.3	12.5	17.2	21.6	26.2	32.3	38.5	49.0	56.6
B	INCHES	1.86	1.86	2.19	2.64	3.17	3.50	3.96	4.30	5.56	6.20
	mm	45.6	45.6	53.7	64.7	77.7	85.8	97.0	105.4	136.2	151.9
C	INCHES	1.00	1.00	1.10	1.30	1.58	1.74	1.97	2.15	2.79	3.10
	mm	24.5	24.5	27.0	31.9	38.7	42.6	48.3	52.7	68.4	76.0
D	INCHES	1.78	1.81	1.91	2.08	2.25	2.66	2.84	3.00	3.47	3.90
	mm	43.6	44.3	46.8	51.0	55.1	65.2	69.6	73.5	85.0	95.6
E	INCHES	3.81	3.81	3.81	4.56	4.56	6.31	6.31	7.19	7.19	7.19
	mm	93.3	93.3	93.3	111.7	111.7	154.6	154.6	176.2	176.2	176.2
F	THREAD SIZE	1/4" NPT	3/8" NPT	1/2" NPT	3/4" NPT	1" NPT	1-1/4" NPT	1-1/2" NPT	2" NPT	2-1/2" NPT	3" NPT
Cv		7	7	13	25	38	61	87	121	228	305

Note: DN (Diameter Nominal) = Metric equivalent size.

The information presented on this sheet is correct at the time of publication. Milwaukee Valve reserves the right to change design, and/or material specifications without notice.

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS



CAUTION!

It is the installer's and/or system designer's responsibility to insure that valves are chosen and/or installed within applicable and current ANSI, ASME, ASTM and/or API piping specifications. The following instructions are suggestions and recommendations only, based on the manufacturer's experience, and do not constitute requirements as established by appropriate industry piping specifications or standards for valve selection or installation.

Handling & Storage

Proper care in handling and storage should be taken before valves are installed to prevent damage and to keep pipe ends clean. If possible, valves should be kept in the original packaging, and stored in a protected area until just prior to installation.

Installation

Threaded-End Ball Valves: Inspect both the valves and pipe ends to make sure they are free of dirt, dust, oil or anything that may prevent a proper connection. Before installing, clean pipe and valve ends with compressed air or water, and wipe with a clean cloth. Pipe ends must be properly threaded and prepared for installation.

PTFE-based sealants are recommended for threaded-end valves when making up joints. Consult the sealant-manufacturer's instructions for proper use of the sealant. The sealant should be applied to the pipe, rather than the female end of the valve, to prevent the sealant from being forced into the valve interior and interfering with valve operation. Because bronze is a softer metal than steel, always put the pipe in a vise and turn the valve onto the pipe end. Always use a smooth-jawed wrench on the valve ends, rather than the valve body, to prevent distortion of the internal parts of the valve. Pipe wrenches should be used on pipe and fittings only.

Solder-End Ball Valves: Milwaukee Valve solder-end valves are designed for use with wrought seamless copper tube, conforming to ASTM B-88, types K, L, and M, and have dimensions meeting ANSE B 16.18 for standard cast-brass solder-joint fittings. The copper tube being installed must meet these specifications. The selection of the solder type being used may be influenced by the application or by local government regulations. Make sure that the solder being used is within these specifications or regulations.

Important: When installing two-piece solder-end ball valves, make sure that the valve is in the partially-open position to allow heat to escape, preventing distortion or damage to the PTFE-seats and seals. When three-piece bolted-body, solder-end ball valves are being installed, the valve's center section, with seats and seals, must be completely removed prior to soldering. Re-assemble the valve after the end-pieces have been installed onto the tubing. Refer to instruction sheet #IS-BA3-01 for recommended reassembly procedures.

The copper tube should be cut square and any burrs should be removed. The tubing and valve-ends should be cleaned to a bright finish with steel wool or emery cloth. Wipe both ends with a clean cloth, and apply a sufficient amount of flux to both the outside of the tube-end and the inside of the valve cup to insure adhesion. Insert the tube end into the valve cup and apply heat uniformly to the valve end and the tubing. Do Not Overheat The Joint. Keep The Flame From Making Direct Contact With The Valve Body, As Damage To The Soft Internal Parts Of The Valve May Occur, Preventing Proper Valve Operation. The Flame Should Be Directed Away From The Stem Centerline Toward The Valve Ends.

Apply solder to the juncture of the valve and the tubing. When sufficiently heated, the solder will flow into the joint due to capillary attraction. When a solder ring forms around the circumference of the juncture, the joint has been completed. Remove all excess solder with a brush or cloth.

Operation

Generally, ball valves are designed to be opened by rotating the handle in a counter-clockwise direction, and closed by rotating the handle in a clockwise direction. The handle direction normally indicates the ball-port position, and whether the valve is opened or closed. However, for some applications, valves may be ordered with a reverse-operating handle where the handle position is perpendicular to the ball-port position. In these cases, the valve will include a warning tag. The warning identification must never be removed from the valve.

Valves may be ordered with locking handles to prevent the valve from being accidentally opened or closed. These handles have a sliding mechanism, which must slide upward to allow handle rotation. A hole in the handle will accept a standard padlock, which must be removed to allow the slider to move for valve operation.

Maintenance

Once the valves are properly selected and installed, very little maintenance is required. Valve packing is adjusted at the factory to seal under required test pressure. If a packing leak is detected, the packing gland should be turned slowly in a clockwise direction between 1/8 and 1/4 of a turn until the leak is stopped. Over-tightening of the gland will reduce packing service-life, and is not recommended.

With two-piece valves, repair or replacement of internal parts is not recommended, as damage may occur to the body and tailpiece during disassembly, making the valve inoperable. Never attempt to disassemble a valve while it is installed or in service. If a valve seems to wear prematurely, check the system requirements and service conditions to make sure the valve has been properly selected and installed for the application. Corrosion, pressure or temperature fluctuations, high velocities, and dirt or grit in the system can contribute to wear, and should be checked and prevented, if possible.

Three-piece valves are designed for applications where frequent disassembly and reassembly for maintenance are required. With these valves, the center section can be removed for replacement of the PTFE ball seats and body seals, while the end caps remain connected to the pipe. Never Attempt To Loosen The Body Bolts Or Packing Gland While The Valve Is In Service. Always Be Sure That The Valve Is Completely Isolated From System Pressure, Temperature Or Line Media Prior To Loosening The Body Bolts Or Packing Gland. Once the valve is isolated, open and close the valve several times to relieve residual pressure from the body cavity.

MV 74

MILWAUKEE VALVE
1 BA – 100

1” FNPT BALL VALVE, 600 PSI BRONZE

ANGI PART NUMBER 334-07264

NO REBUILD KIT AVAILABLE

THIS PAGE LEFT INTENTIONALLY BLANK

BA-100/100S

1/4" - 3"

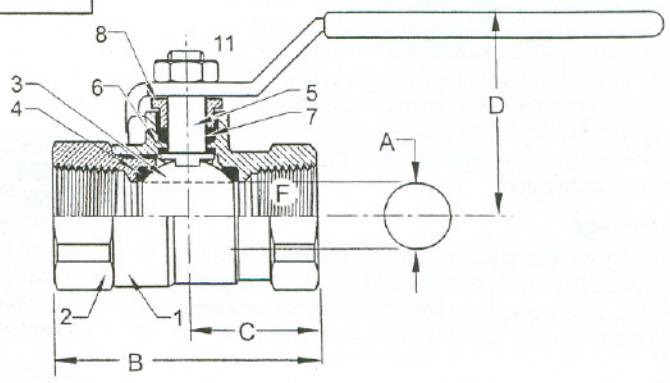
MSS SP-110

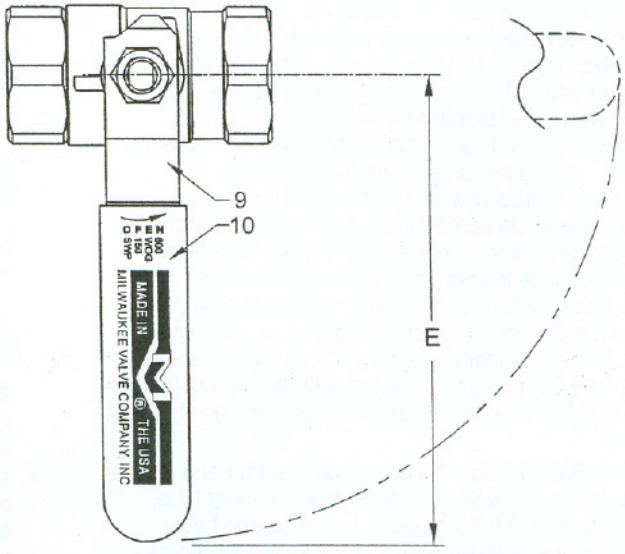
BRONZE BALL VALVE
TWO-PIECE, STANDARD-PORT
600 PSIG WOG / 150 PSIG SWP *
THREADED ENDS

MATERIALS LIST

ITEM	PART	MODEL	MATERIALS	ASTM SPEC.
1	Body	100 & 100S	Cast Bronze	B584
2	Tailpiece	100 & 100S	Brass	B16
			Cast Bronze (1" & up)	B584
3	Ball	100	Brass w/ Hard Chrome Plating	B16
		100S	316 Stainless Steel	A276
4	Seat	100 & 100S	RPTFE, 15% Glass Filled	
5	Stem	100	Brass	B16
		100S	316 Stainless Steel	A276
6	Thrust Washer	100 & 100S	RPTFE, 25% Glass Filled	
7	Packing	100 & 100S	PTFE	
8	Packing Nut	100 & 100S	Brass	B16
9	Handle	100 & 100S	Steel w/ Zinc Plating	B633
10	Hand Grip	100 & 100S	Vinyl	
11	Handle Nut	100 & 100S	Steel w/ Zinc Plating	B633

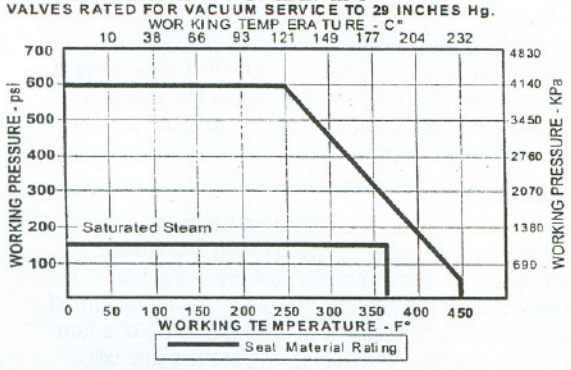
* Milwaukee Valve Company recommends the use of Stainless steel ball and stem for steam applications. Please consult factory for more information.





PRESSURE - TEMPERATURE DATA

VALVES RATED FOR VACUUM SERVICE TO 29 INCHES Hg.



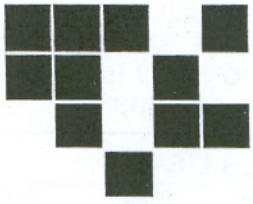
DIMENSIONS

	UNITS	1/4" DN6	3/8" DN10	1/2" DN15	3/4" DN20	1" DN25	1-1/4" DN32	1-1/2" DN40	2" DN20	2-1/2" DN65	3" DN80
A (DIA)	INCHES	0.38	0.38	0.51	0.70	0.88	1.07	1.32	1.57	2.00	2.31
	mm	9.3	9.3	12.5	17.2	21.6	26.2	32.3	38.5	49.0	56.6
B	INCHES	1.86	1.86	2.19	2.64	3.17	3.50	3.96	4.30	5.56	6.20
	mm	45.6	45.6	53.7	64.7	77.7	85.8	97.0	105.4	136.2	151.9
C	INCHES	1.00	1.00	1.10	1.30	1.58	1.74	1.97	2.15	2.79	3.10
	mm	24.5	24.5	27.0	31.9	38.7	42.6	48.3	52.7	68.4	76.0
D	INCHES	1.78	1.81	1.91	2.08	2.25	2.66	2.84	3.00	3.47	3.90
	mm	43.6	44.3	46.8	51.0	55.1	65.2	69.6	73.5	85.0	95.6
E	INCHES	3.81	3.81	3.81	4.56	4.56	6.31	6.31	7.19	7.19	7.19
	mm	93.3	93.3	93.3	111.7	111.7	154.6	154.6	176.2	176.2	176.2
F	THREAD SIZE	1/4" NPT	3/8" NPT	1/2" NPT	3/4" NPT	1" NPT	1-1/4" NPT	1-1/2" NPT	2" NPT	2-1/2" NPT	3" NPT
Cv		7	7	13	25	38	61	87	121	228	305

Note: DN (Diameter Nominal) = Metric equivalent size.

The information presented on this sheet is correct at the time of publication. Milwaukee Valve reserves the right to change design, and/or material specifications without notice.

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS



CAUTION!

It is the installer's and/or system designer's responsibility to insure that valves are chosen and/or installed within applicable and current ANSI, ASME, ASTM and/or API piping specifications. The following instructions are suggestions and recommendations only, based on the manufacturer's experience, and do not constitute requirements as established by appropriate industry piping specifications or standards for valve selection or installation.

Handling & Storage

Proper care in handling and storage should be taken before valves are installed to prevent damage and to keep pipe ends clean. If possible, valves should be kept in the original packaging, and stored in a protected area until just prior to installation.

Installation

Threaded-End Ball Valves: Inspect both the valves and pipe ends to make sure they are free of dirt, dust, oil or anything that may prevent a proper connection. Before installing, clean pipe and valve ends with compressed air or water, and wipe with a clean cloth. Pipe ends must be properly threaded and prepared for installation.

PTFE-based sealants are recommended for threaded-end valves when making up joints. Consult the sealant-manufacturer's instructions for proper use of the sealant. The sealant should be applied to the pipe, rather than the female end of the valve, to prevent the sealant from being forced into the valve interior and interfering with valve operation. Because bronze is a softer metal than steel, always put the pipe in a vise and turn the valve onto the pipe end. Always use a smooth-jawed wrench on the valve ends, rather than the valve body, to prevent distortion of the internal parts of the valve. Pipe wrenches should be used on pipe and fittings only.

Solder-End Ball Valves: Milwaukee Valve solder-end valves are designed for use with wrought seamless copper tube, conforming to ASTM B-88, types K, L, and M, and have dimensions meeting ANSE B 16.18 for standard cast-brass solder-joint fittings. The copper tube being installed must meet these specifications. The selection of the solder type being used may be influenced by the application or by local government regulations. Make sure that the solder being used is within these specifications or regulations.

Important: When installing two-piece solder-end ball valves, make sure that the valve is in the partially-open position to allow heat to escape, preventing distortion or damage to the PTFE-seats and seals. When three-piece bolted-body, solder-end ball valves are being installed, the valve's center section, with seats and seals, must be completely removed prior to soldering. Re-assemble the valve after the end-pieces have been installed onto the tubing. Refer to instruction sheet #IS-BA3-01 for recommended reassembly procedures.

The copper tube should be cut square and any burrs should be removed. The tubing and valve-ends should be cleaned to a bright finish with steel wool or emery cloth. Wipe both ends with a clean cloth, and apply a sufficient amount of flux to both the outside of the tube-end and the inside of the valve cup to insure adhesion. Insert the tube end into the valve cup and apply heat uniformly to the valve end and the tubing. Do Not Overheat The Joint. Keep The Flame From Making Direct Contact With The Valve Body, As Damage To The Soft Internal Parts Of The Valve May Occur, Preventing Proper Valve Operation. The Flame Should Be Directed Away From The Stem Centerline Toward The Valve Ends.

Apply solder to the juncture of the valve and the tubing. When sufficiently heated, the solder will flow into the joint due to capillary attraction. When a solder ring forms around the circumference of the juncture, the joint has been completed. Remove all excess solder with a brush or cloth.

Operation

Generally, ball valves are designed to be opened by rotating the handle in a counter-clockwise direction, and closed by rotating the handle in a clockwise direction. The handle direction normally indicates the ball-port position, and whether the valve is opened or closed. However, for some applications, valves may be ordered with a reverse-operating handle where the handle position is perpendicular to the ball-port position. In these cases, the valve will include a warning tag. The warning identification must never be removed from the valve.

Valves may be ordered with locking handles to prevent the valve from being accidentally opened or closed. These handles have a sliding mechanism, which must slide upward to allow handle rotation. A hole in the handle will accept a standard padlock, which must be removed to allow the slider to move for valve operation.

Maintenance

Once the valves are properly selected and installed, very little maintenance is required. Valve packing is adjusted at the factory to seal under required test pressure. If a packing leak is detected, the packing gland should be turned slowly in a clockwise direction between 1/8 and 1/4 of a turn until the leak is stopped. Over-tightening of the gland will reduce packing service-life, and is not recommended.

With two-piece valves, repair or replacement of internal parts is not recommended, as damage may occur to the body and tailpiece during disassembly, making the valve inoperable. Never attempt to disassemble a valve while it is installed or in service. If a valve seems to wear prematurely, check the system requirements and service conditions to make sure the valve has been properly selected and installed for the application. Corrosion, pressure or temperature fluctuations, high velocities, and dirt or grit in the system can contribute to wear, and should be checked and prevented, if possible.

Three-piece valves are designed for applications where frequent disassembly and reassembly for maintenance are required. With these valves, the center section can be removed for replacement of the PTFE ball seats and body seals, while the end caps remain connected to the pipe. Never Attempt To Loosen The Body Bolts Or Packing Gland While The Valve Is In Service. Always Be Sure That The Valve Is Completely Isolated From System Pressure, Temperature Or Line Media Prior To Loosening The Body Bolts Or Packing Gland. Once the valve is isolated, open and close the valve several times to relieve residual pressure from the body cavity.

MV 206

SVF/SVF
B41446AG-150/A2S-255-11-V

3” CL150 BALL VALVE F.P. FIRE RATED API 607
W/ A2S-255-11-V ACTUATOR

ANGI PART NUMBER 334-07414

REBUILD KIT-3 CL150 B414466AG – 761-07450

REBUILD KIT-ACTUATOR A2S-255-11-V – 761-07451

THIS PAGE LEFT INTENTIONALLY BLANK

SVF Flow Controls
INCORPORATED

SERIES 41, B41 & B42

FLANGED BALL VALVES
API 607 4TH EDITION

Size Range:
1/2" - 8"

Pressure Rating:
ANSI 150# & 300#
Flanged

Body Material:
Carbon Steel
316 Stainless Steel
Alloy 20
Hastelloy C

Features:
Fire Safe
Anti-Static
Tested API 598
NACE





SVF Flow Controls
INCORPORATED

INSTALLATION, OPERATION AND MAINTENANCE
2-PC FULL PORT FLANGED BALL VALVE (1/2"–10") B41/42 SERIES

GENERAL

SVF Ball valves have been designed and engineered to provide long lasting and trouble free service when used in accordance with the instruction and specifications herein.

The following instructions refer only to SVF STANDARD VALVES as described in the SVF current catalog sheets B41/42 SERIES.

Keep protective cover in place until moment of installation. Valve performance depends upon prevention of damage to ball surface. Upon removal of cover make sure that the valve is completely open and free of obstruction.

When shipped from the factory, the valve contains a silicon based lubricant which aids in the assembly of the valve. This may be removed with a solvent if found objectionable; alternatively valves can be ordered free of lubricants.

Certain ferrous valves are phosphated and oil dipped during the course of manufacture, but the processes used are completely non-toxic and the valves are quite safe to use for edible or potable products.

INSTALLATION

The valve may be installed for flow or vacuum in either direction. Use care to exclude pipe sealants from the valve cavity. When installing, use standard gaskets suitable for the specific service. Tighten flange bolts or studs evenly.

OPERATION

SVF valves provide tight shut off when used under normal conditions and in accordance with SVF's published pressure/temperature chart. If these valves are used in a partially open (throttled) position seat life may be reduced.

SVF valves have ¼ turn operation closing in a counter-clockwise direction. It is possible to see when the valve is open or closed by the position of the wrench handle. When the wrench is across the pipeline, the valve is closed.

Any media which might solidify, crystallize or polymerize should not be allowed to stand in the ball valve cavities unless regular maintenance is provided. If minimal maintenance is performed, SVF offers steam jacketed ball valves.

TORQUE REQUIREMENTS

Torque ratings are subject to variations depending on the length of time between cycles and the media in the system. All values as shown in Catalog Sheet B41/42 SERIES are based on clean tap water after 24 hours.

Breakaway torque is that force which must be exerted to cause the ball to begin to open.

Note: media which contain fine powders (25 microns or less) will significantly raise ball valve torque requirements.

MAINTENANCE

GENERAL

With self-wiping ball/seats, SVF valves have a long, trouble free life, and maintenance is seldom required. But, when necessary, valves may be refurbished, using a small number of components, none of which require machining. SVF valves are designed for easy service and assembly in the field. The following checks will help to extend valve life, or reduce plant problems.

SVF Flow Controls
INCORPORATED

INSTALLATION, OPERATION AND MAINTENANCE
2-PC FULL PORT FLANGED BALL VALVE (1/2"–10") B41/42 SERIES

STEM LEAKAGE

If gland is in good condition tighten gland bolts (part #12 in catalog).

Note: If Stem leakage is not cured by the simple means described above, it will be necessary to dismantle valve and replace the stem packing *(if there is no stem leakage the stem assembly should not be touched).*

IN-LINE LEAKAGE

Check that valve is fully closed. If it is, leakage will be due to damaged seat or ball sealing surfaces and it will be necessary to dismantle the valve.

REBUILDING

Before rebuilding, check that all the correct components are available and that they are fit for reassembling. When rebuilding, cleanliness is essential to allow long valve life and provide cost effective maintenance. CAUTION: NO BODY OR STEM SEALS ARE REUSABLE. Care must be taken to avoid scratching the seats and seal during installation.

Note: Caution must be taken with valves that have been in hazardous media. They must be decontaminated before disassembly by relieving the line pressure and flushing the line with the valve in the partially open position. Protective clothing and face shields, gloves, etc. MUST BE USED for this operation.

A **Disassembly of Valve:** (After removing from line)

1.) With valve in Open position, undo body bolts (#17) to separate valve body components (#1 & #2).

2.) Remove body seal (#9), ball (#4) and seats (#8) and discard body seal and seats if they shown signs of damage or leakage paths.

B **Removing Stem Assembly**

1.) Remove handle by removing Snap ring (#11).

2.) Undo and remove gland nuts and bolts (See parts #16, 20, 14, 7, 12 & 6).

3.) Push stem (#3) into valve body to remove stem from valve.

4.) Remove stem seals and thrust washers and discard.

C **Inspection**

1.) The ball and the surfaces against which the seats wipe and make contact should be free of pit marks and scratches. Light marring from the action of the ball against the seats is normal and will not affect the operation of the valve.

2.) The stem and body surfaces that the thrust bearing and stem seal contact, should be free of pit marks and scratches.

D **Reassembly**

1.) Lightly lubricate the ball, seats, body seal, stem seal and thrust bearing with lubricant compatible with media being handled. White petroleum jelly is a good general-purpose lubricant.

2.) To reassemble stem, disassembly procedure should be followed in reverse order.

3.) When stem assembly is complete, tighten gland nuts and bolts.

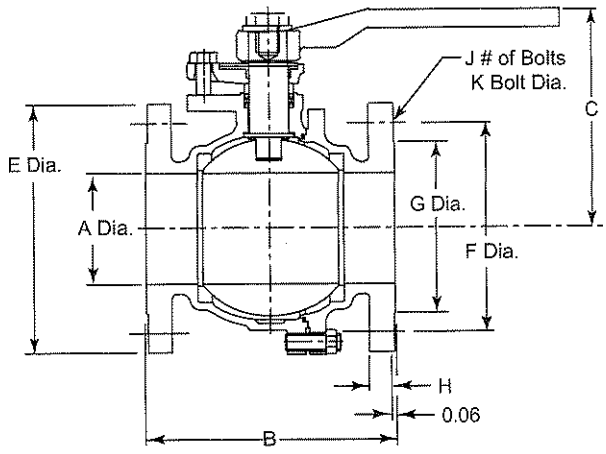
4.) Insert seats in body. Make sure seats rest firmly on back surface of each recess.

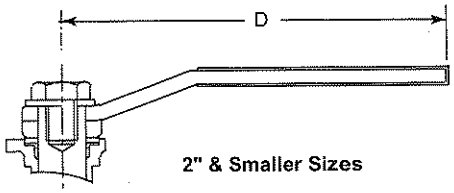
5.) With stem in the CLOSED position, insert ball into body so that stem slot engages with the tang at the base of the stem.

6.) Make sure body seal rests squarely on center seal surface of body. Insert and tighten body bolts diagonally.

Series B41 Class 150, Full Bore, Sizes 1/2" - 4"

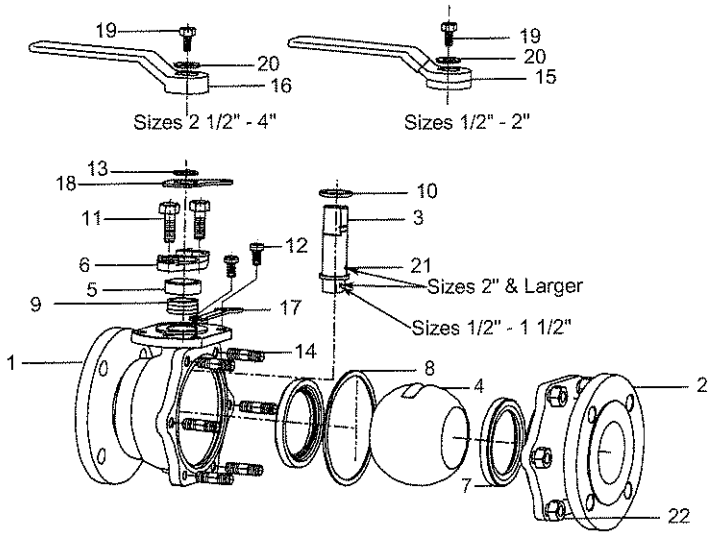
Dimensions & Weights





Size	A	B	C	D	E	F	G	H	J	K	CS Wt.	SS Wt.
1/2	0.51	4.25	3.30	5.10	3.50	2.38	1.38	0.44	4	0.62	4	4
3/4	0.75	4.61	3.46	5.10	3.88	2.75	1.69	0.44	4	0.62	5	5
1	1.00	5.00	4.01	5.10	4.25	3.12	2.00	0.44	4	0.62	7	7
1 1/2	1.50	6.50	5.00	9.10	5.00	3.88	2.88	0.56	4	0.62	15	15
2	2.00	7.00	5.59	9.10	6.00	4.75	3.62	0.62	4	0.75	22	22
2 1/2	2.50	7.50	5.98	13.80	7.00	5.50	4.12	0.69	4	0.75	34	35
3	3.00	8.00	6.69	13.80	7.50	6.00	5.00	0.75	4	0.75	44	45
4	4.00	9.00	8.11	17.70	8.50	7.50	6.19	0.94	8	0.75	75	77

Materials of Construction



▶ Remove for actuator mounting.

		Material	
No.	Description	Carbon Steel	Stainless
1	Body	A216-WCB	A351-CF8M
2	Cap	A216-WCB	A351-CF8M
3	Stem	A276-316	A276-316
4	Ball	A351-CF8M	A351-CF8M
5	Gland	A276-316	A276-316
6	Gland Flange	A351-CF8	A351-CF8
7	Seat	*RTFE	*RTFE
8	Seal	SPW304+Graphite	SPW304+Graphite
9	Gland Packing	**	**
10	Thrust Washer	RTFE 25% C.	RTFE 25% C.
11	Gland Bolt	A193-B8	A193-B8
▶ 12	Locking Bolt	A193-B8	A193-B8
▶ 13	Snap Ring	A686-W1***	A686-W1***
14	Body Bolt	A193-B7	A193-B8
▶ 15	Handle, Vinyl Coat	A108-1020****	A108-1020****
▶ 16	Handle	A536*****	A536*****
▶ 17	Locking Plate	A167-304	A167-304
▶ 18	Stop/Lock	A167-304	A167-304
▶ 19	Handle Bolt	A276-304	A276-304
▶ 20	Washer	A167-304	A167-304
21	Anti-Static Device	316 SS	316 SS
22	Body Nut	A194-2H	A194-8

* 15% Glass Standard, 25% Carbon Optional
** Expanded Graphite + Corrosion Inhibitor
*** Cr Plated
**** 2" & Smaller
***** 2 1/2"-4"

Technical Information

Determining Valve Torque

Valve operating torque is a function of the differential pressure across the valve when it is in the closed position. The torque tables on the opposite page shows operating values for valves in clean, clear, particle-free liquid. For other services it is necessary to apply a Torque Safety Factor as outlined below:

Torque Safety Factors

Media	Factor
Oils, lubricating media	X 0.8
Liquid, clean (particle-free)	X 1.0
Liquid, dirty (slurry), raw water	X 1.8
Gas, clean & wet (saturated steam)	X 1.2
Gas, dry (superheated steam)	X 1.3
Gas, dirty (natural gas)	X 1.5
Oxygen, Chlorine	X 1.5
For other conditions contact SVF.	

C_V Values

41 Series

1 1/2"	2"	2 1/2"	3"	4"	6"
106	153	276	317	449	899

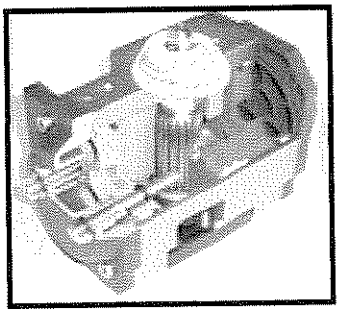
B41 & B42 Series

1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"
26	61	113	270	500	800	1,200	2,200	5,300	9,700

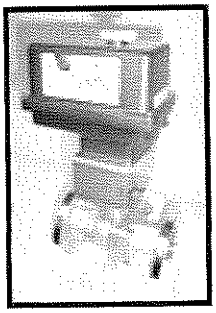
Control Accessories

SVF flanged ball valves are available with a complete selection of control accessories for automation and communication.

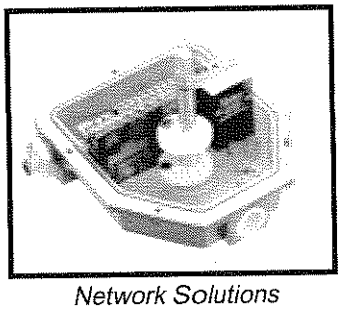
Device	Model	Brochure
Actuators	Aero Rack & Pinion Pneumatic	Aero Actuator
	Electric Actuators	"E" Series
	Compact4 Pneumatic	"Compact4"
Communication	LTD4Limit Switches	"LTD4", Limit Switches
	Pilot/Solenoid valve	"SV"
	Bus-type Network cards	"ASi" & "DeviceNet"



Aero Actuator



Electric Actuator



Network Solutions

Torque Values for Gland Packing and Body Bolts

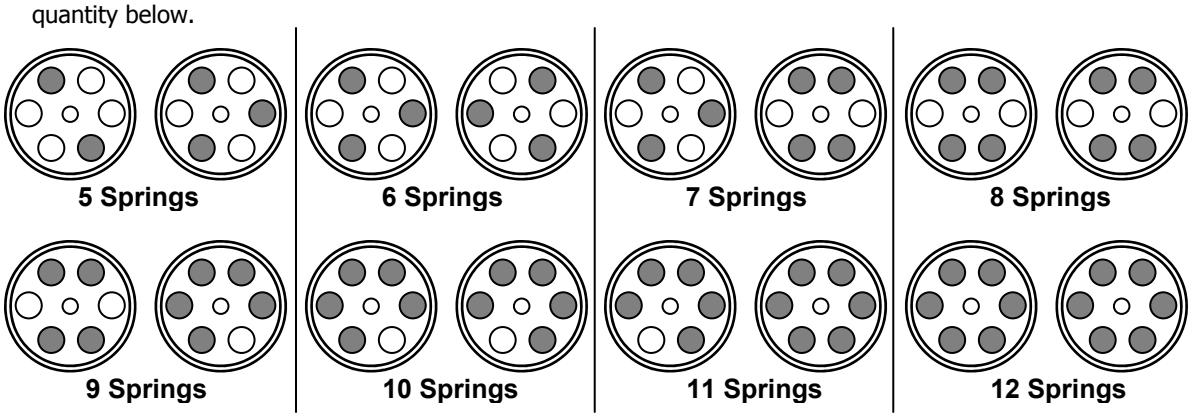
Valve Size	Gland Bolt		Body Flange Bolt	
	41/B41 Class 150	B42 Class 300	B41 Class 150	B42 Class 300
1/2"	52		87	87
3/4"	52		87	87
1"	78		191	191
1 1/2"	104		191	339
2"	104		339	868
2 1/2"	174		339	868
3"	174		339	868
4"	174		547	868
6"	347		1701	2300
8"	347		2300	2864

CAUTION: ALWAYS USE CARE AND COMMON SENSE WHEN WORKING WITH PNEUMATIC ACTUATORS. DE-ENERGIZE THE AIR SUPPLY (AND DE-PREESSURIZE IT) AND SHUTOFF ALL ELECTRICAL POWER TO ANY OF THE ACCESSORIES BEFORE PERFORMING ANY MAINTENANCE OR REPAIR. DISCONNECT THE INLET PRESSURE PIPE OR TUBING TO ENSURE THAT THE ACTUATOR HAS FULLY DE-PRESSURIZED AND, FOR SPRING RETURN ACTUATORS, THAT THE ACTUATOR HAS CYCLED UNDER SPRING LOAD.

SVF- Aero² actuators are designed to operate with dry or lubricated air media, but will function equally well with non-corrosive and inert gas or light hydraulic oil. The actuators are offered in two different configurations: double acting and spring return. Each actuator can be easily converted from double acting to spring return (or vice versa) by insertion (or removal) of spring cartridges.

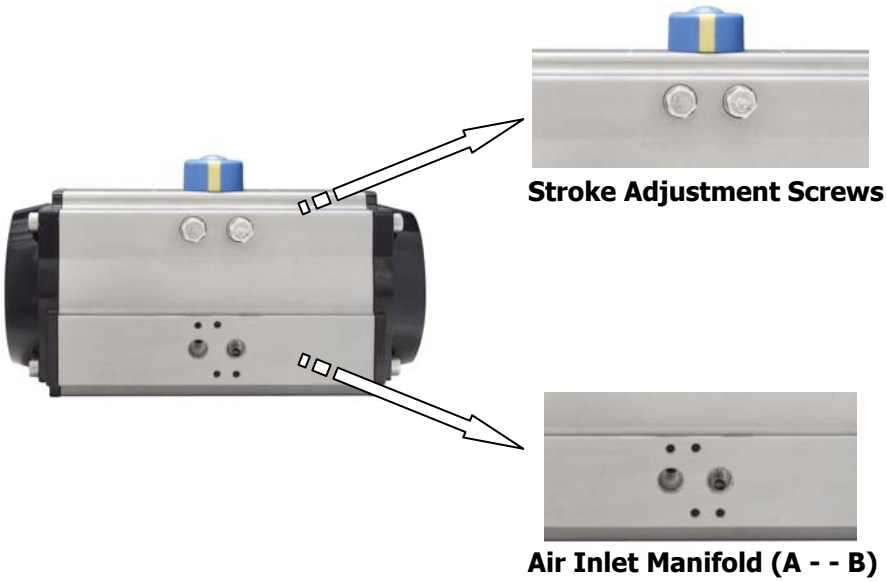
Spring Locations

Each actuator has two pistons. Spring return actuators may be sized/used with an un-even number of springs. The difference between the springs from each piston shall be only one. See locations for each quantity below.



Commissioning the Actuator

For the following sections please note the location (in the graphic below) of the Stroke Adjustment Screws and Air Inlet Manifold.



Operation 1- Inlet Air Pressure

NOTE: The maximum air pressure to all ***aero2*** actuators is 120 psig-regulated/relieved

The standard configuration of the ***aero2*** actuator operates as follows:

Note: throughout this document we will assume that the automated valve is setup such that Counter-Clockwise rotation OPENS the valve and Clockwise rotation CLOSES the valve

Double Acting

Air Inlet Manifold Port

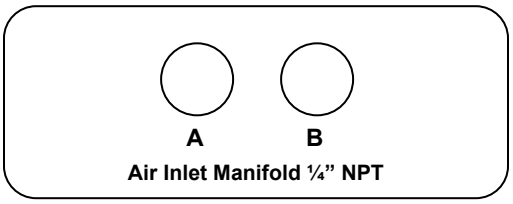
"A" CCW Rotation (When viewed from the top of the actuator) <OPENS the valve>

"B" Clockwise <CLOSES the valve>

Spring Return

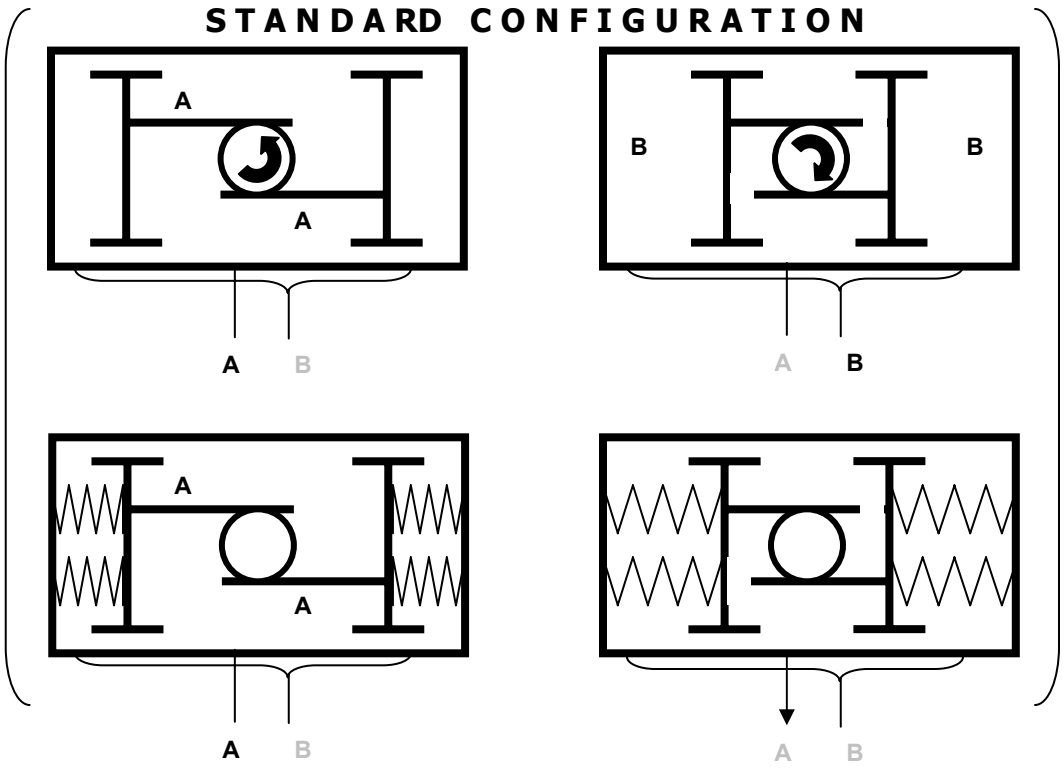
Air Inlet Manifold Port

"A" CCW Rotation (When viewed from the top of the actuator) <OPENS the valve>

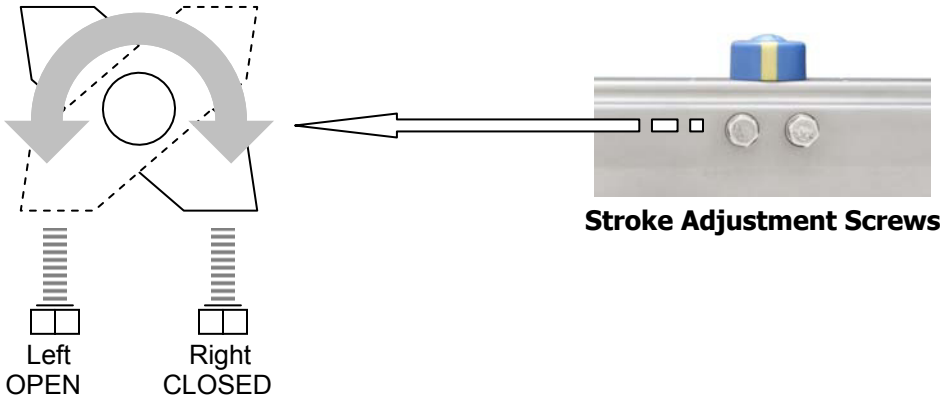


"B" CW (It is not necessary to pressurize this port when using a spring return actuator) Port "B" must remain open and free of any plugs or other obstructions.

For information about changing the orientation of the actuator's stroke direction, please contact the manufacturer.



Operation 2- Stroke Adjustment for aero2 (Standard Rotation)



The ***aero²*** actuator features bi-directional stroke adjustment for the Open and Closed positions. To make adjustments please see the instructions below.

NOTICE: Do Not use the stroke adjustment bolts to over power the actuator against the spring or air pressure or to reverse the action of the valve.

Always thread to the bolt CCW (outward) to allow the actuator to continue motion when setting the final valve position.

If the actuator/valve has over traveled do the following:

Before making adjustments note that each stroke adjustment bolt has a lock nut and o-ring.

- Loosen the lock nut a few turns
- Avoid over tightening; to protect the o-ring

If valve has <u>over-traveled</u> in the OPEN position,

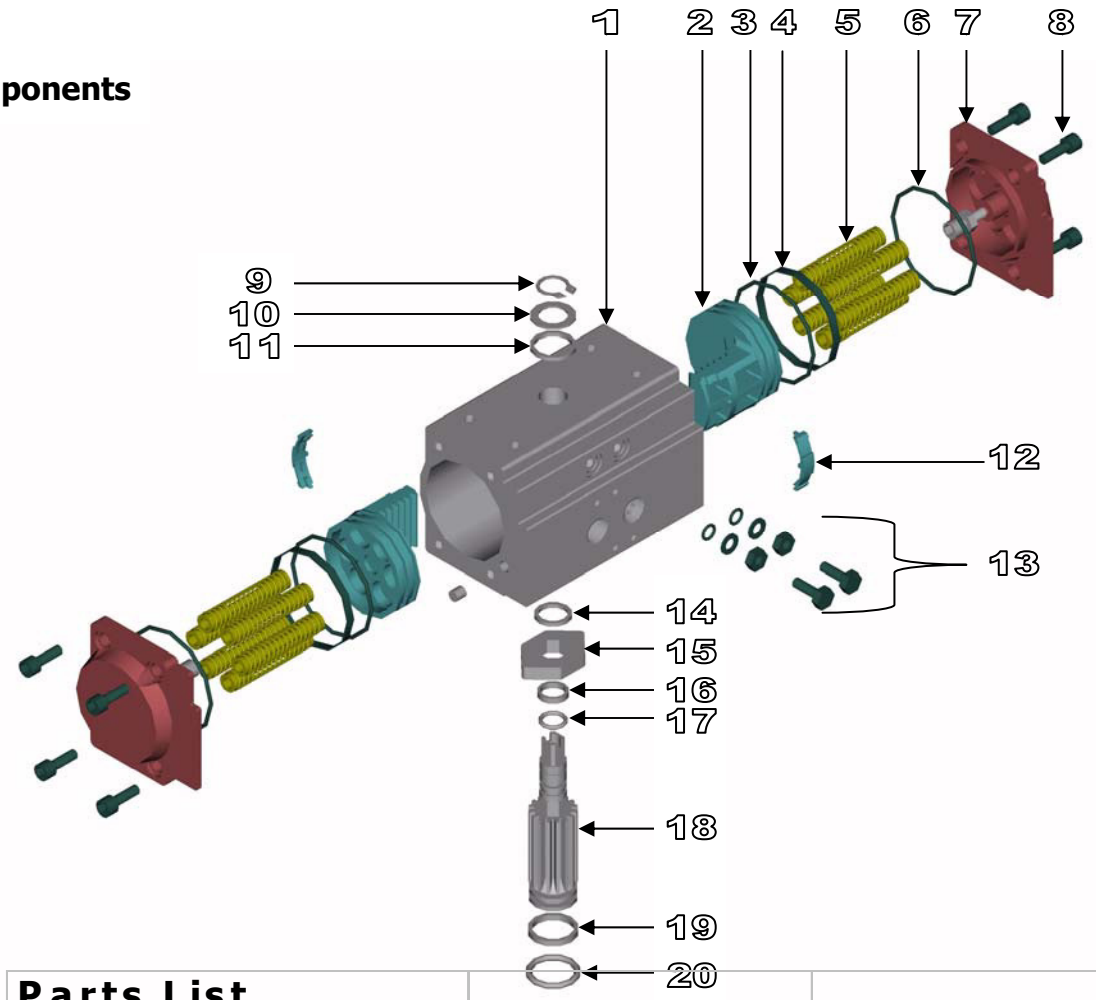
a- Cycle the actuator to the CLOSED position
b- Thread the LEFT stroke adjustment bolt IN-ward a few turns.
c- Cycle the actuator in the OPENING direction then thread the bolt outward to the exact position desired.

If valve has <u>over-traveled</u> in the CLOSED position,

a- Cycle the actuator to the OPEN position
b- Thread the RIGHT stroke adjustment bolt IN-ward a few turns.
c- Cycle the actuator in the CLOSING direction then thread the bolt outward to the exact position desired.

Once you have set the desired position tighten the lock nut. Take care not to damage the o-ring seal under the washer.

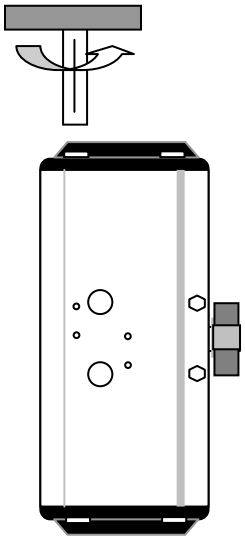
Components

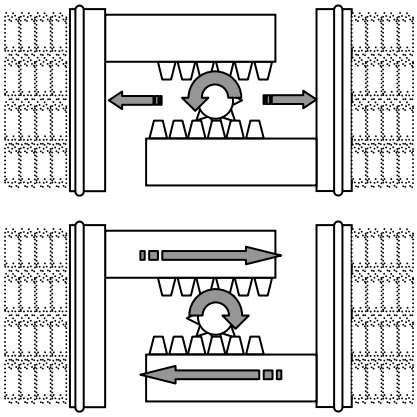


Parts List

No.	Description	Material	Quantity
1	Actuator Housing	Hard Anodized Aluminum	1
2	Pistons	Aluminum	2
3	Piston Seals	Buna	2
4	Piston Bearings	Acetal	2
5	Springs	Spring Steel Corr. Resistant	According to Model
6	End Cap O-ring	Buna	2
7	End Caps	Aluminum Baked Epoxy	2
8	End Cap Bolts	300 Series SS	8
9	C-Clip	300 Series SS	1
10	Thrust Follower	300 Series SS	1
11	Thrust Ring	Acetal	1
12	Wear Bands	Acetal	2
13	Stroke Adj. Set	300 Series SS	1 set
14	Spacer	Acetal	1
15	Stroke Adj. Stop	300 Series SS	1
16	Thrust Ring	Acetal	1
17	Thrust Follower	300 Series SS	1
18	Drive Shaft	304 Series SS	1
19	Shaft Bearing	Acetal	1
20	Shaft Seal	Buna	1

1





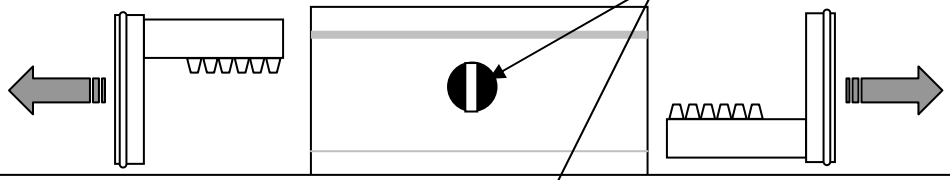
Standard Configuration

1- Air Stroke pushes pistons outward which are engaged with the pinion gear (output shaft) to rotate CCW – OPEN
2- Spring Stroke pushes pistons inward which are engaged with the pinion gear (output shaft) to rotate CW – CLOSED

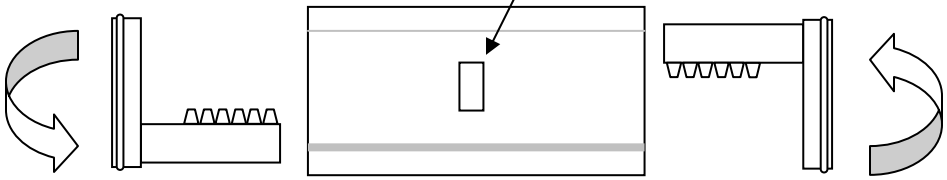
Remove End Caps

2

Remove Indicator Cap and use the wrench flats to assist with removal and replacement of pistons

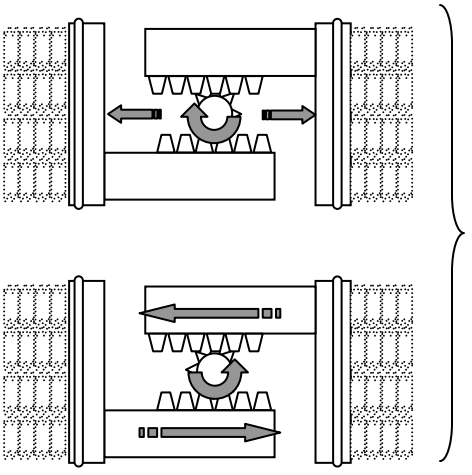


Remove Pistons: A low (3 psi) pressure applied to port "A" will help expose the pistons for removal.



3

Rotate pistons and re-insert. Note: Before engaging the piston (gear rack) with the pinion, "Back Rotate" the pinion gear by one tooth for proper orientation.



Reverse Configuration

1- Air Stroke pushes pistons outward which are engaged with the pinion gear (output shaft) to rotate CW – CLOSED
2- Spring Stroke pushes pistons inward which are engaged with the pinion gear (output shaft) to rotate CCW – OPEN

MV 265

SVF/SVF
EZ966A1712NN10/A2S-035-12-V

1” BALL VALVE, 1000 PSI, FULL PORT, NORMALLY CLOSED, 3-PIECE, SS BODY, SS INTERNALS
W/ A2S-035-12-V ACTUATOR

ANGI PART NUMBER 334-07470

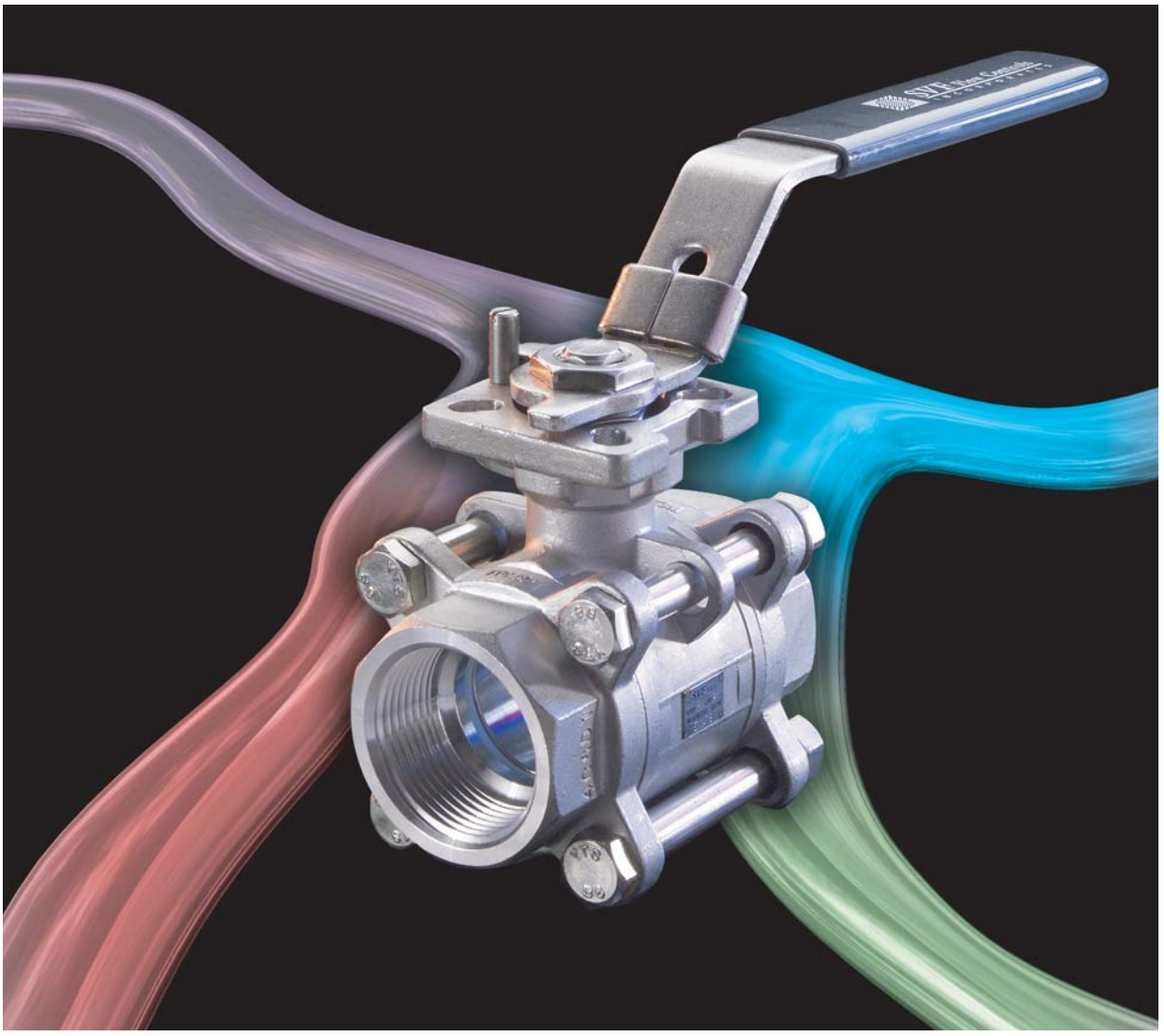
VALVE REBUILD KIT-SVF 1” – RKEZ910AT

ACTUATOR REBUILD KIT-SVF A2S-035-V – 761-07460

THIS PAGE LEFT INTENTIONALLY BLANK

EZ Valve

High Performance Ball Valves



SVF Flow Controls
INCORPORATED

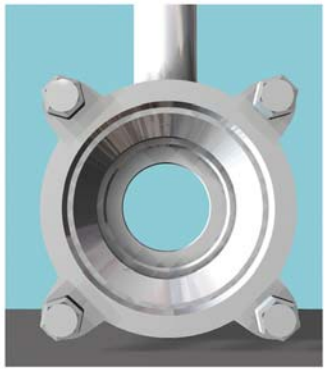
SVF Flow Controls, Inc.

THIS PAGE LEFT INTENTIONALLY BLANK

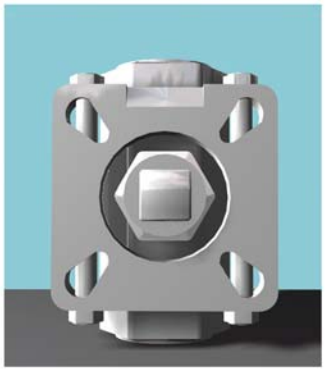
- Dual Pattern ISO-5211 "Direct-Mount" Actuator Attachment
- Live-Loaded Stem Seals
- One-Piece Seat/Seal (TFM)
- Integral Locking Device
- Three-Piece Construction
- End Connections: NPT, SW, BW
- Engineered Stem Seal Design
- Full Port Opening
- 316 Stainless Steel construction. Carbon Steel valves feature a 316 SS Center Section
- Blow Out Proof Stem



Size Range 1/4" to 2" Full Port



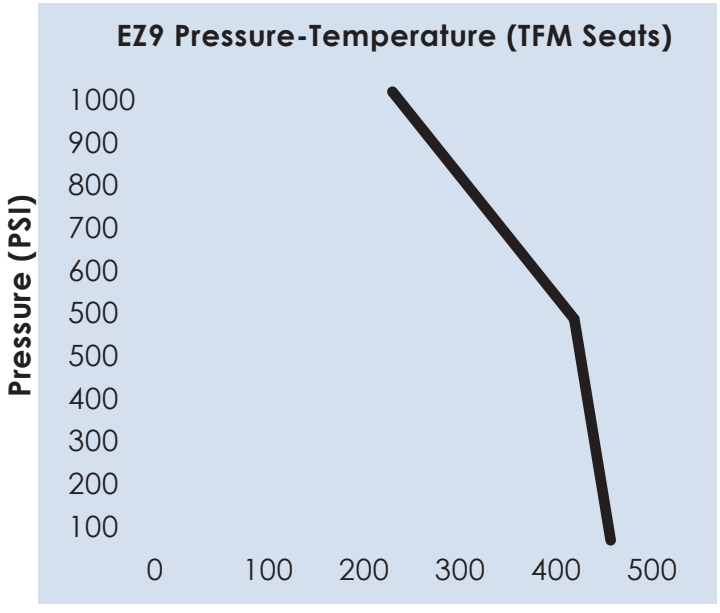
Full Port Opening (NPT, SW, BW)



ISO-5211 for Direct Mount Actuation



Integral Locking Device



PERFORMANCE DATA (Cv)

Valve Size	Approximate Flow (Cv)
1/4-1/2"	12
3/4"	32
1"	57
1.25"	80
1.5"	104
2"	240

All Valves Are Full Ported.

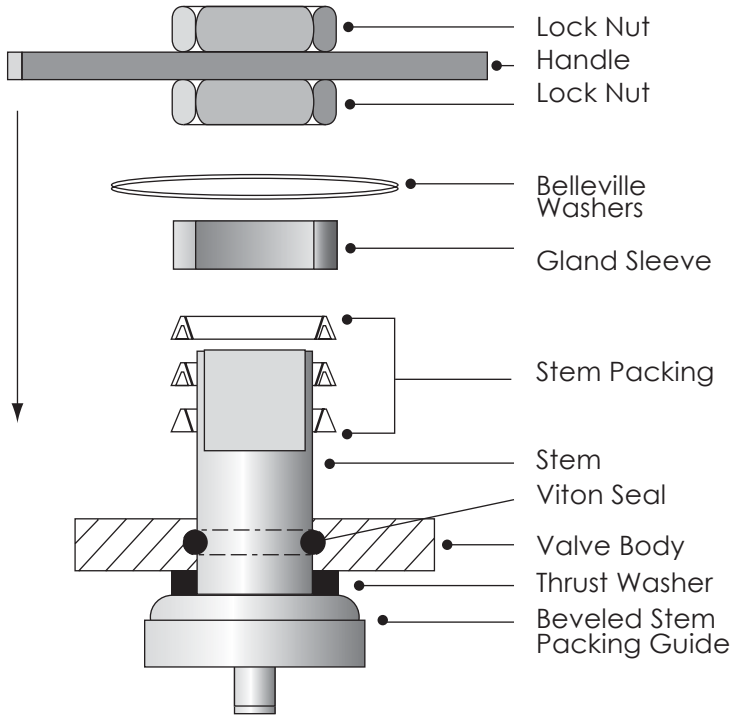
EZ Valve

Quick Reference Data

Valve Size	Approximate Flow (Cv)	Operating Torque (Lbf.in.)	Weight (lbs)	ISO Flange FO4	FO5	FO7
1/4 - 1/2"	12	35	1.5	x	x	
3/4"	32	50	1.8	x	x	
1"	57	80	2.4	x	x	
1.25"	80	120	3.6	x	x	
1.5"	104	250	5.6		x	x
2"	240	300	8.2		x	x

High Performance Stem Seal Design

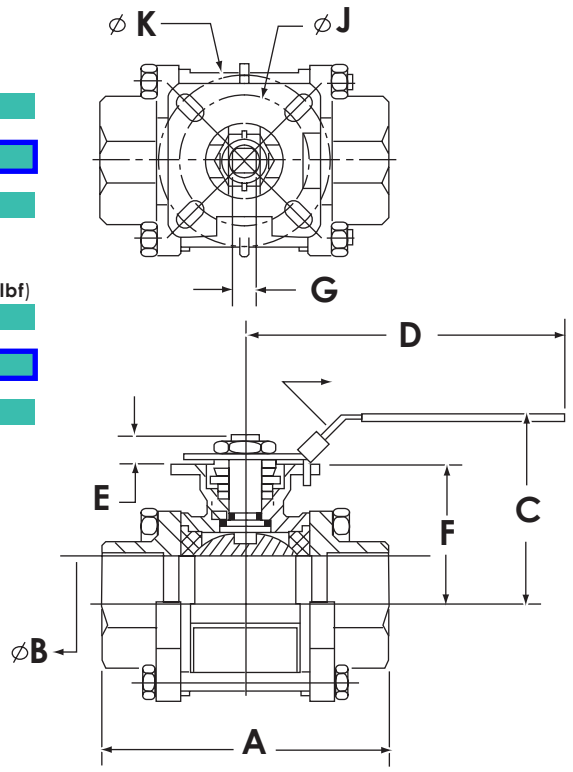
- An adjustable V-Ring design creates a multiple seal between the stem and body.
- Each stem assembly is composed of three V-Rings providing a very high cycle life by resisting creep and cold flow.
- The Thrust Washer adds a secondary seal, reduces torque and prevents galling.
- The beveled stem packing/thrust guide provides an additional level of performance and sealing and completes the High Performance design.



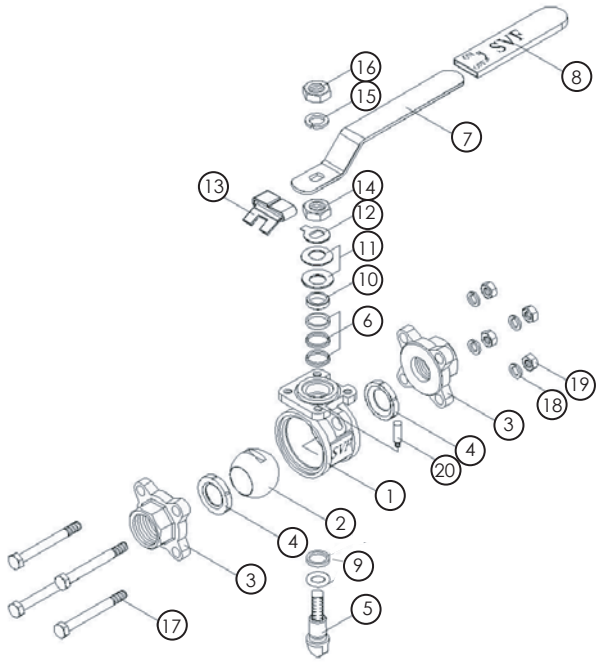
EZ Valve Dimensions

Size	A	B	C	D	E
1/4-1/2"	2.5	0.59	2.88	4.41	0.335
3/4"	2.85	0.79	3.18	4.41	0.335
1"	3.19	1	3.56	5.35	0.449
1-1/4"	3.72	1.25	3.89	7.28	0.449
1-1/2"	4.25	1.5	4.54	7.79	0.551
2"	4.78	2	4.88	7.79	0.54

Size	F	G	ΦJ/ISO 5211	ΦK/ISO 5211	Torque (in-lbf)
1/4-1/2"	1.46	0.354	1.654/F04	1.969/F05	35
3/4"	1.77	0.354	1.654/F04	1.969/F05	50
1"	2.11	0.433	1.654/F04	1.969/F05	80
1-1/4"	2.32	0.433	1.654/F04	1.969/F05	120
1-1/2"	2.95	0.551	1.969/F05	2.756/F07	250
2"	3.29	0.551	1.969/F05	2.756/F07	300



Materials List



No.	Part Name	Material: Stainless Steel / Carbon Steel	Qty.
1	Body	A351 Gr. CF8M	1
2	Ball	SS316	1
3	End Cap	A351 Gr.CF3m or A216 Gr. WCB	2
4	Seat/Seal	TFM	2
5	Stem	SS316	1
6	Stem Packing	RTFE.	1Set
7	Handle	SS304	1
8	Handle Cover	Plastic	1
9	Thrust Washer	RTFE.	1
10	Gland	SS304	1
11	Belleville Washer	SS401	2
12	Tab Washer	SS304	1
13	Locking Device	SS304	1
14	Gland Nut	SS304	1
15	Handle Washer	SS304	1
16	Handle Nut	SS304	1
17	Bolt	SS304	4~6
18	Bolt Washer	SS304	4~6
19	Bolt Nut	SS304	4~6
20	Stop Pin	SS304	1

Important note: For carbon Steel Piping Systems, Stainless steel valves are supplied with carbon steel ends (SW, BW)

Product Specification for Full Ported, 3-Piece Ball Valves (EZ9)

This specification covers the design of full port, three-piece ball valves used in plant-wide applications.



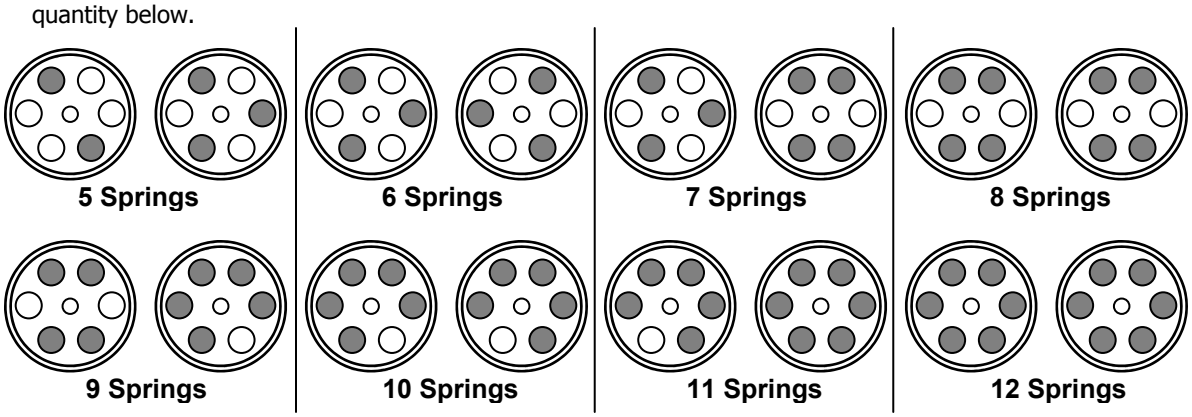
- Valve shall be a three-piece design (1/4" to 2") in full port design and in a selection of body materials (stainless steel, carbon steel), and TFM seats to meet a broad range of fluid types, pressures and temperatures.
- End connection shall be NPT, Socket Weld, Butt Weld or flanged.
- Weld-ends shall be "L" grade 316 stainless steel or carbon steel as required by the application.
- Stem seal shall be live-loaded V-Ring design using high-performance stainless steel disc springs (Belleville Washers). The design shall meet the stem seal testing criteria according to ISA-SP-93.
- Actuator attachment shall be by integral mounting surface as part of the valve center section to eliminate the use of pressure-containing body bolts for actuator mounting. Dimension and design as per ISO-5211.
- Manual lever-handle shall be stainless steel with vinyl grip and locking capabilities.
- Product tagging shall be permanently affixed using spot welding, etching or riveting.
- Ball and stem shall be 316 stainless steel.
- Valves -with weld ends- for carbon steel piping systems shall be supplied with stainless steel center sections.
- Valve shall provide equal-percentage flow characteristics when used in throttling control.
- Valve shall be designed, manufactured and tested to meet applicable industry standards; such as: ANSI, ASME, API, BPE, DIN, ISO (as required)
- Process-quality ball valves shall be SVF Series "EZ9" (full port) or equal.

CAUTION: ALWAYS USE CARE AND COMMON SENSE WHEN WORKING WITH PNEUMATIC ACTUATORS. DE-ENERGIZE THE AIR SUPPLY (AND DE-PREESSURIZE IT) AND SHUTOFF ALL ELECTRICAL POWER TO ANY OF THE ACCESSORIES BEFORE PERFORMING ANY MAINTENANCE OR REPAIR. DISCONNECT THE INLET PRESSURE PIPE OR TUBING TO ENSURE THAT THE ACTUATOR HAS FULLY DE-PRESSURIZED AND, FOR SPRING RETURN ACTUATORS, THAT THE ACTUATOR HAS CYCLED UNDER SPRING LOAD.

SVF- Aero² actuators are designed to operate with dry or lubricated air media, but will function equally well with non-corrosive and inert gas or light hydraulic oil. The actuators are offered in two different configurations: double acting and spring return. Each actuator can be easily converted from double acting to spring return (or vice versa) by insertion (or removal) of spring cartridges.

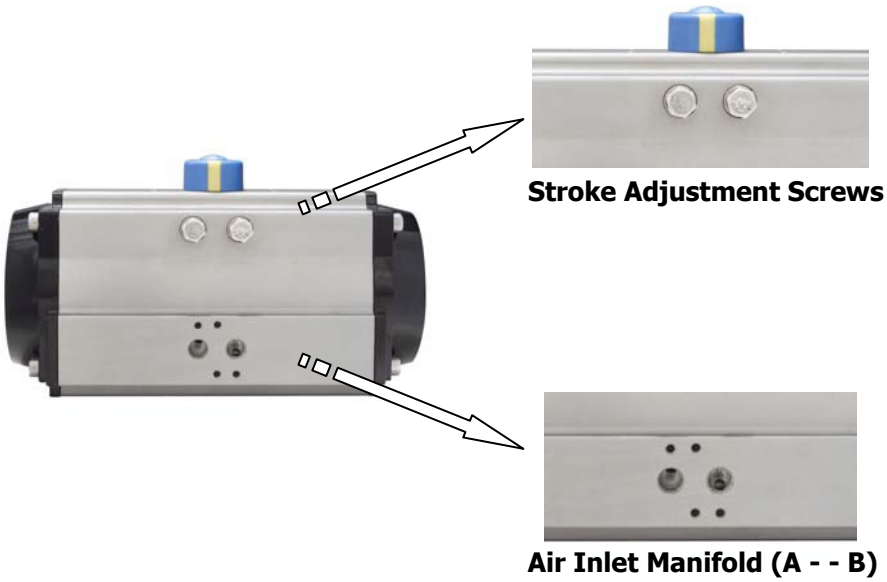
Spring Locations

Each actuator has two pistons. Spring return actuators may be sized/used with an un-even number of springs. The difference between the springs from each piston shall be only one. See locations for each quantity below.



Commissioning the Actuator

For the following sections please note the location (in the graphic below) of the Stroke Adjustment Screws and Air Inlet Manifold.



Operation 1- Inlet Air Pressure

NOTE: The maximum air pressure to all ***aero2*** actuators is 120 psig-regulated/relieved

The standard configuration of the ***aero2*** actuator operates as follows:

Note: throughout this document we will assume that the automated valve is setup such that Counter-Clockwise rotation OPENS the valve and Clockwise rotation CLOSES the valve

Double Acting

Air Inlet Manifold Port

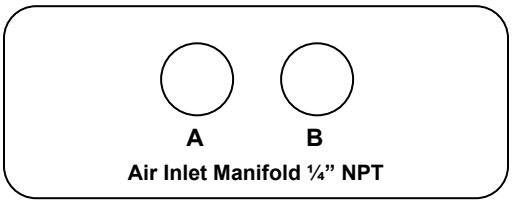
"A" CCW Rotation (When viewed from the top of the actuator) <OPENS the valve>

"B" Clockwise <CLOSES the valve>

Spring Return

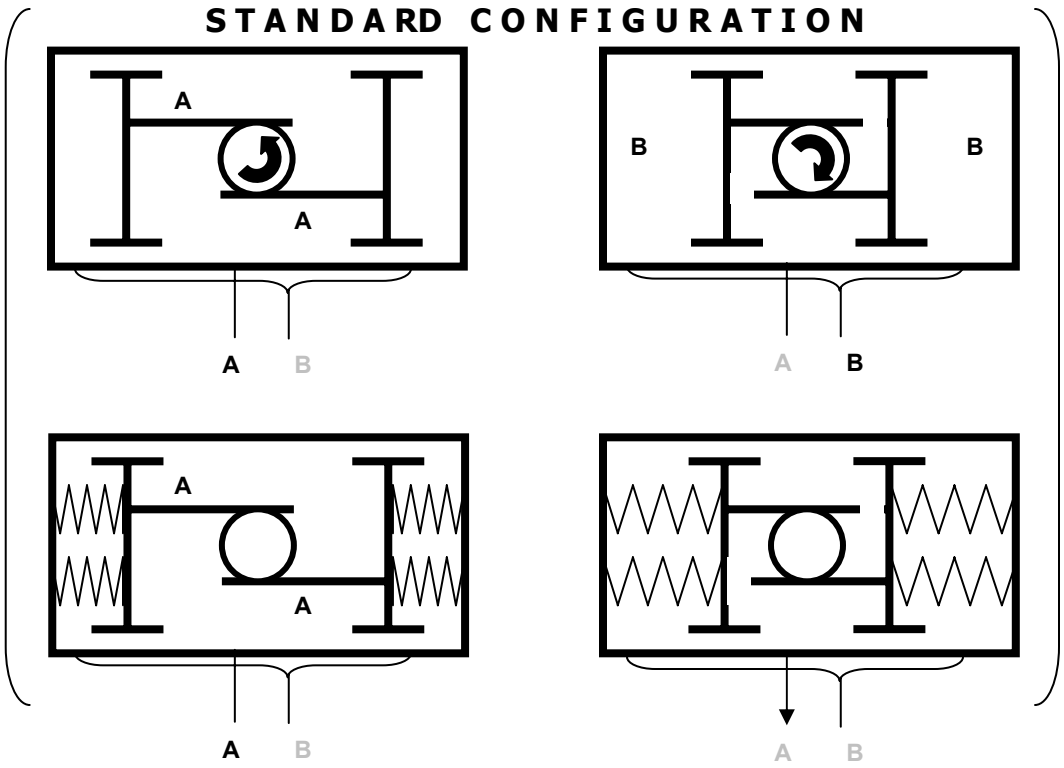
Air Inlet Manifold Port

"A" CCW Rotation (When viewed from the top of the actuator) <OPENS the valve>

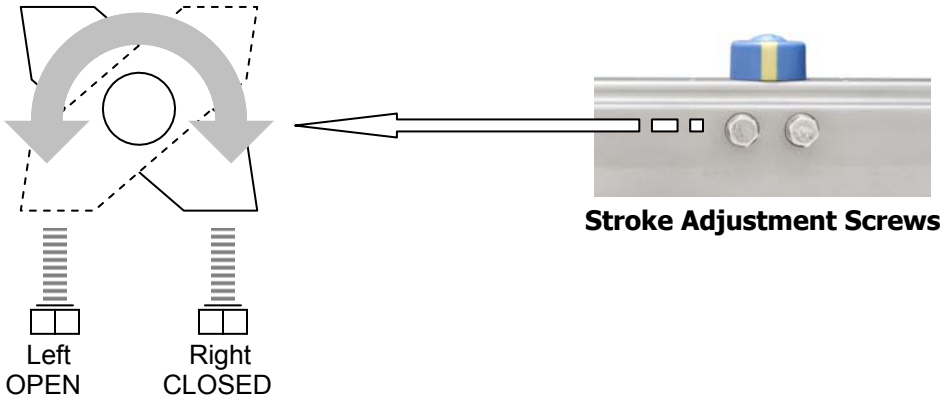


"B" CW (It is not necessary to pressurize this port when using a spring return actuator) Port "B" must remain open and free of any plugs or other obstructions.

For information about changing the orientation of the actuator's stroke direction, please contact the manufacturer.



Operation 2- Stroke Adjustment for aero2 (Standard Rotation)



The ***aero²*** actuator features bi-directional stroke adjustment for the Open and Closed positions. To make adjustments please see the instructions below.

NOTICE: Do Not use the stroke adjustment bolts to over power the actuator against the spring or air pressure or to reverse the action of the valve.

Always thread to the bolt CCW (outward) to allow the actuator to continue motion when setting the final valve position.

If the actuator/valve has over traveled do the following:

Before making adjustments note that each stroke adjustment bolt has a lock nut and o-ring.

- Loosen the lock nut a few turns
- Avoid over tightening; to protect the o-ring

If valve has <u>over-traveled</u> in the OPEN position,

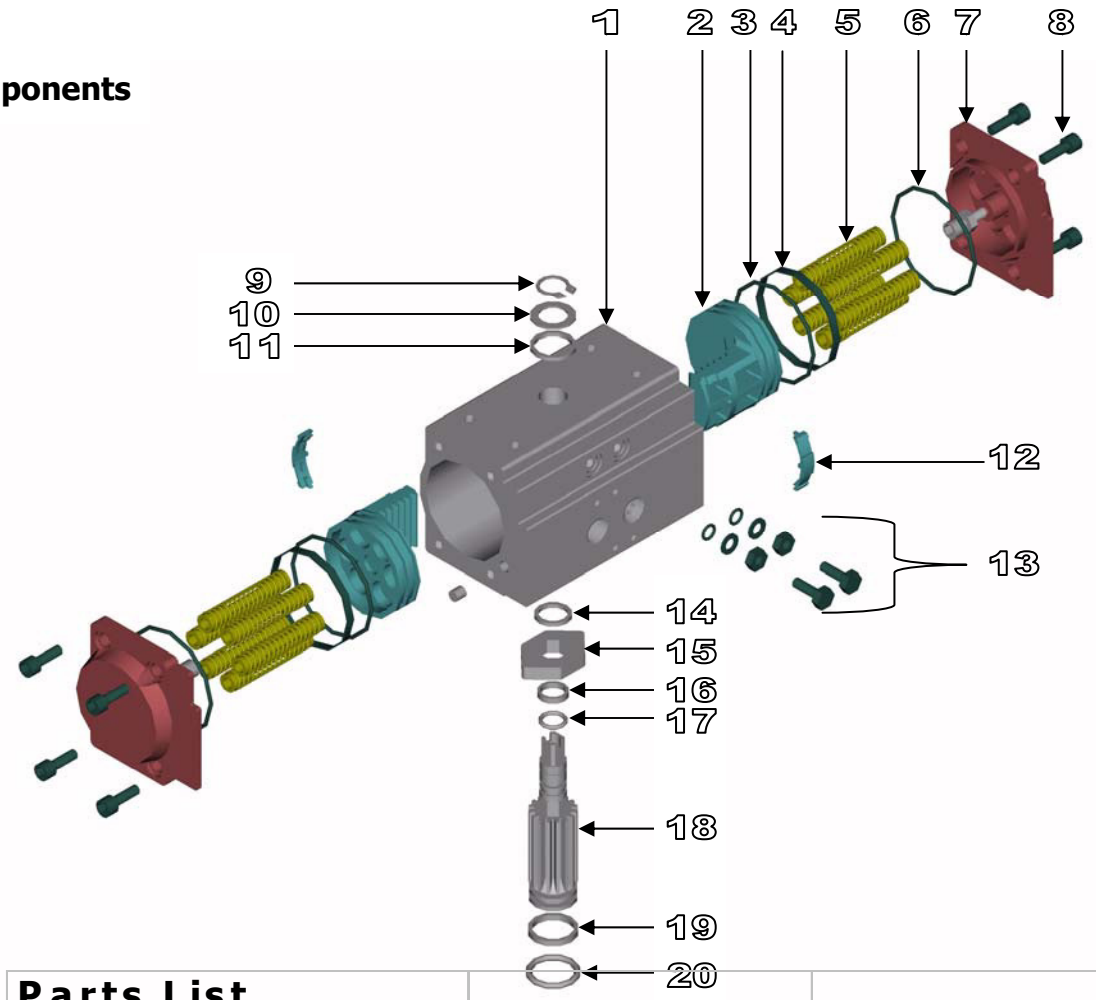
a- Cycle the actuator to the CLOSED position
b- Thread the LEFT stroke adjustment bolt IN-ward a few turns.
c- Cycle the actuator in the OPENING direction then thread the bolt outward to the exact position desired.

If valve has <u>over-traveled</u> in the CLOSED position,

a- Cycle the actuator to the OPEN position
b- Thread the RIGHT stroke adjustment bolt IN-ward a few turns.
c- Cycle the actuator in the CLOSING direction then thread the bolt outward to the exact position desired.

Once you have set the desired position tighten the lock nut. Take care not to damage the o-ring seal under the washer.

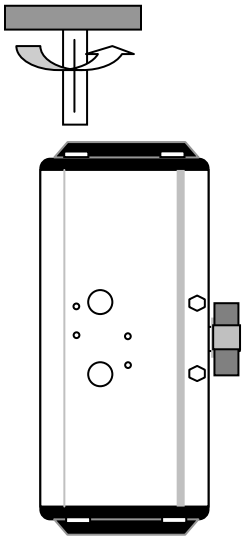
Components

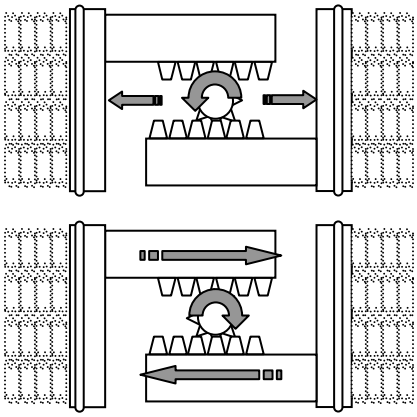


Parts List

No.	Description	Material	Quantity
1	Actuator Housing	Hard Anodized Aluminum	1
2	Pistons	Aluminum	2
3	Piston Seals	Buna	2
4	Piston Bearings	Acetal	2
5	Springs	Spring Steel Corr. Resistant	According to Model
6	End Cap O-ring	Buna	2
7	End Caps	Aluminum Baked Epoxy	2
8	End Cap Bolts	300 Series SS	8
9	C-Clip	300 Series SS	1
10	Thrust Follower	300 Series SS	1
11	Thrust Ring	Acetal	1
12	Wear Bands	Acetal	2
13	Stroke Adj. Set	300 Series SS	1 set
14	Spacer	Acetal	1
15	Stroke Adj. Stop	300 Series SS	1
16	Thrust Ring	Acetal	1
17	Thrust Follower	300 Series SS	1
18	Drive Shaft	304 Series SS	1
19	Shaft Bearing	Acetal	1
20	Shaft Seal	Buna	1

1





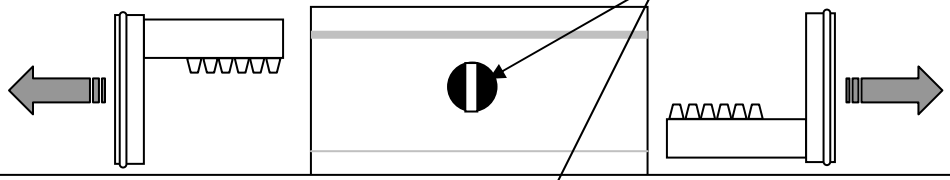
Standard Configuration

1- Air Stroke pushes pistons outward which are engaged with the pinion gear (output shaft) to rotate CCW – OPEN
2- Spring Stroke pushes pistons inward which are engaged with the pinion gear (output shaft) to rotate CW – CLOSED

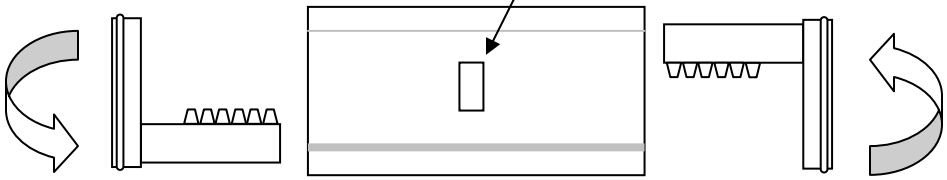
Remove End Caps

2

Remove Indicator Cap and use the wrench flats to assist with removal and replacement of pistons

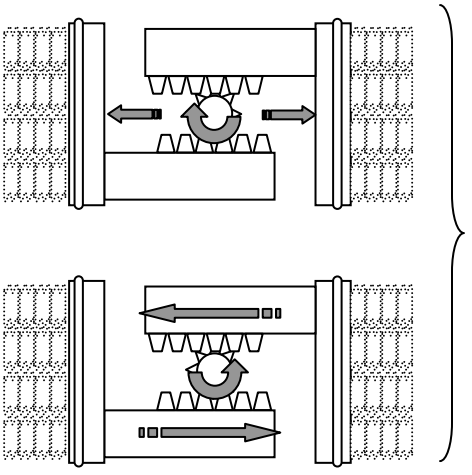


Remove Pistons: A low (3 psi) pressure applied to port "A" will help expose the pistons for removal.



3

Rotate pistons and re-insert. Note: Before engaging the piston (gear rack) with the pinion, "Back Rotate" the pinion gear by one tooth for proper orientation.



Reverse Configuration

1- Air Stroke pushes pistons outward which are engaged with the pinion gear (output shaft) to rotate CW – CLOSED
2- Spring Stroke pushes pistons inward which are engaged with the pinion gear (output shaft) to rotate CCW – OPEN

THIS PAGE LEFT INTENTIONALLY BLANK

MV 266

SVF
HBEV766DTSE07
3/4” FNPT BALL VALVE, 6000 PSI, SS,
FULL PORT

ANGI PART NUMBER 334-07471

NO VALVE REBUILD KIT AVAILABLE

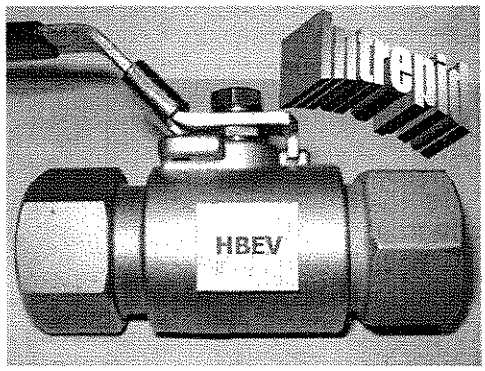
THIS PAGE LEFT INTENTIONALLY BLANK

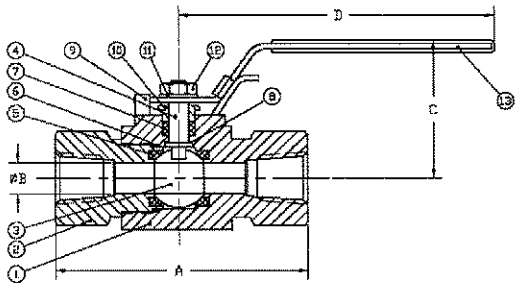
Series *"HBEV" High Pressure Ball Valve*

Certified to API-607-05 Fire Safe

SVF Series HBEV ball valves are designed for extreme pressures in a wide range of industries and applications.

- SEAL WELDED CONSTRUCTION
- Full port design
- Stainless steel construction
- 6000 WOG Rating
- Fully Compliant with ASME B16.34 Class 2500
- Delrin Seats: Standard with threaded end valves
- PEEK Seats: Standard with Socket Weld valves
- NACE MR-01-75 Compliant
- Standard ISO-5211 mounting pad on all sizes
- Fire Safe design to API-607-05
- Standard locking handle on all sizes
- Size Range: ¼" to 2" Full Port



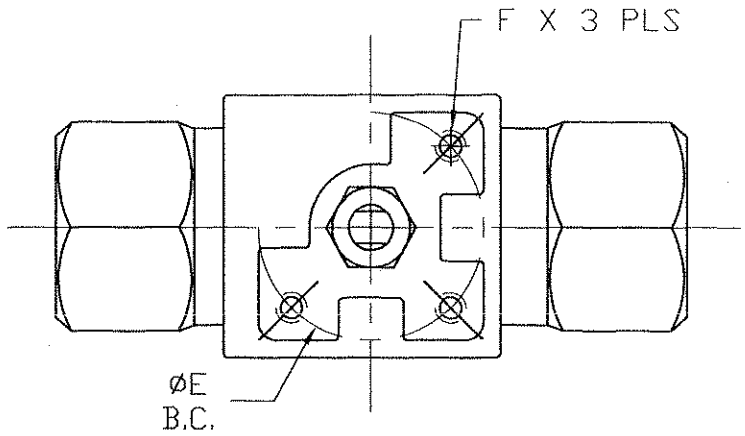


MATERIALS OF CONSTRUCTION

ITEM	COMPONENTS	MATERIAL	STANDARD
1	BODY	STAINLESS STEEL	ASTM-A351-CF8M
2	END CONNECTOR	STAINLESS STEEL	ASTM-A351-CF8M
3	BALL	STAINLESS STEEL	ASTM-A351-CF8M
4	STEM	STAINLESS STEEL	17-4 PH
5	SEAT	DELRIN/PEEK	
6	SEAL	PTFE	
7	STEM PACKING	GRAPHITE	
8	THRUST WASHER	PEEK	
9	STOP PIN	STAINLESS STEEL	
10	GLAND NUT	STAINLESS STEEL	
11	STEM WASHER	STAINLESS STEEL	
12	STEM NUT	STAINLESS STEEL	
13	HANDLE	STAINLESS STEEL	



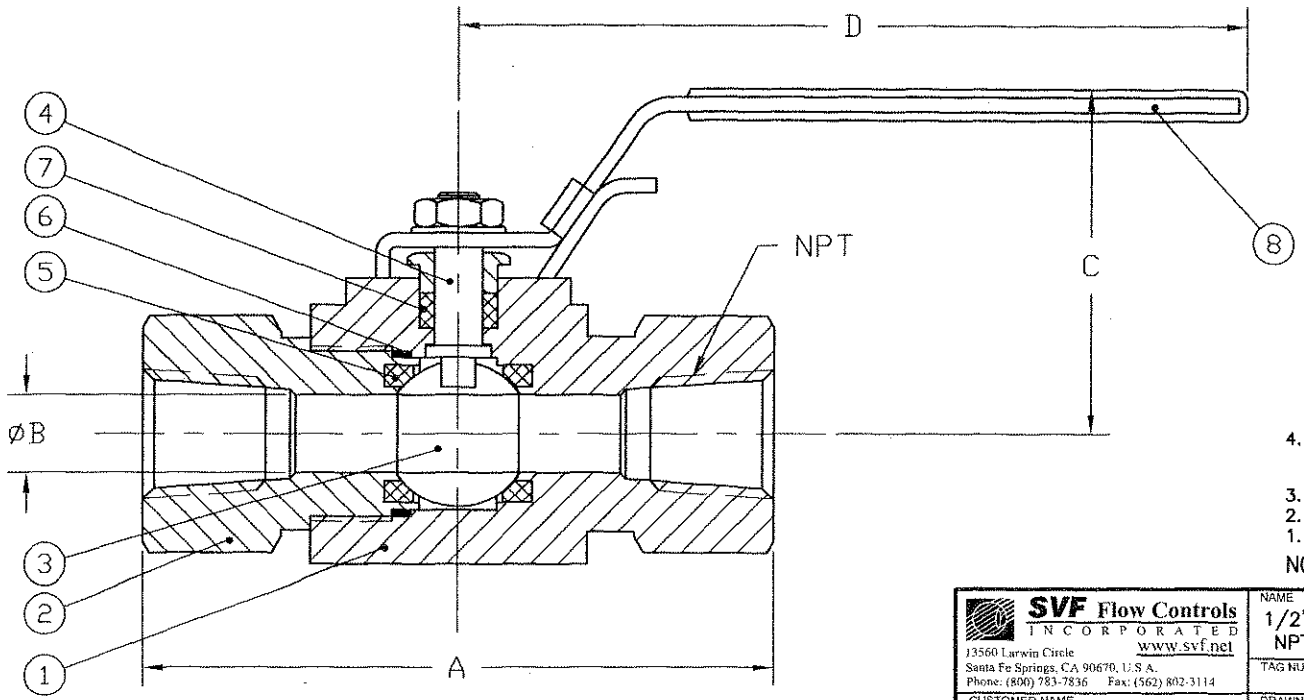
Series HBEV High Pressure Valve



SIZE	A	ØB	C	D	ØE	F
1/4"	3.00	0.25	2.20	5.00	1.417	M5 X 0.8P
3/8"	3.00	0.38	2.20	5.00	1.417	M5 X 0.8P
1/2"	3.99	0.50	2.20	5.00	1.417	M5 X 0.8P
3/4"	4.25	0.75	2.70	6.30	1.654	M5 X 0.8P
1"	4.50	1.00	3.50	8.25	1.969	M6 X 1.0P
1-1/2"	5.25	1.50	4.45	10.20	2.756	M8 X 1.25P

MATERIALS OF CONSTRUCTION

ITEM	NAME	MATERIAL	STANDARD
1	BODY	STAINLESS STEEL	ASTM A351-CF8M
2	END CONNECTORS	STAINLESS STEEL	ASTM A351-CF8M
3	BALL	STAINLESS STEEL	ASTM A351-CF8M
4	STEM	STAINLESS STEEL	ASTM A276-316
5	SEAT	PEEK	
6	SEAL	PTFE	
7	STEM PACKING	GRAPHITE	
8	HANDLE	STAINLESS STEEL	



NOTE:
1. ALL DIMENSIONS ARE MAXIMUM, EXCEPT FACE TO FACE.
2. VALVES CONFORM TO N/A
3. PRESSURE RATING CLASS 6000PSI CWP.
4. MOUNTING HARDWARES, HANDLE, GEAR OPERATOR, HANDWHEEL, ACTUATOR AND ACCESSORIES ARE MANUFACTURER'S STANDARDS WHERE APPLICABLE.

SVF Flow Controls INCORPORATED
13560 Larwin Circle
Santa Fe Springs, CA 90670, U.S.A.
Phone: (800) 783-7836 Fax: (562) 802-3114
www.svf.net

NAME: 1/2" TO 1-1/2" SERIES HBEV NPT END BALL VALVES		VALVE MODEL NUMBER: HBEV766DTSE	
		REMARK	
TAG NUMBER: N/A	SALES ORDER NUMBER: N/A	CERTIFIED BY	DATE
CUSTOMER NAME: N/A	DRAWN BY: Charles Shen	DATE: 06/08/04	SCALE: N.T.S. / SHEET 1 OF 1
P.O. NUMBER: N/A	CHECKED BY	DATE	DRAWING NUMBER: HBEV766DTSE0515 / REV. A

OC 2

THERMAL
M10

1” FML NPT 8000 BTU/HR OIL COLLER

ANGI PART NUMER 150-07232

THIS PAGE LEFT INTENTIONALLY BLANK

INSTALLATION AND SERVICE RECOMMENDATIONS "M" SERIES AND "MR" SERIES

General Information

1. Air Cooled Mobile Series coolers are built for operation with maximum oil pressures to 300 psi and temperatures to 400°F.
2. Care must be taken to reduce or eliminate dirt and debris from blocking the cooling surface as overheating could result.

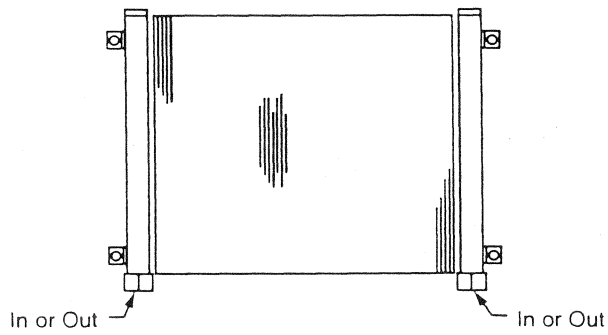
Installation

1. Mobile Series coolers are designed for mounting by "L" shaped brackets attached to the sides of the manifolds.
2. It is recommended that these units be installed with the oil ports positioned, based on oil flow rates.

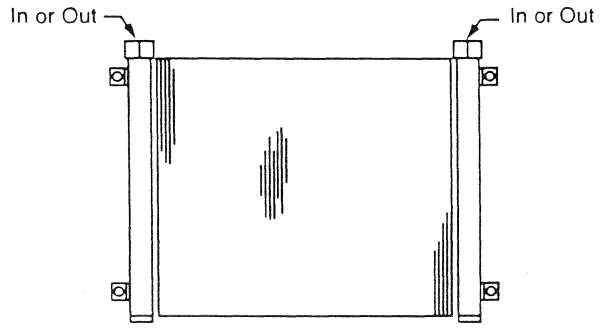
HEAT EXCHANGER PIPING HOOK-UP

"M" Series

Oil Connections Down—High Flow Rates Only.

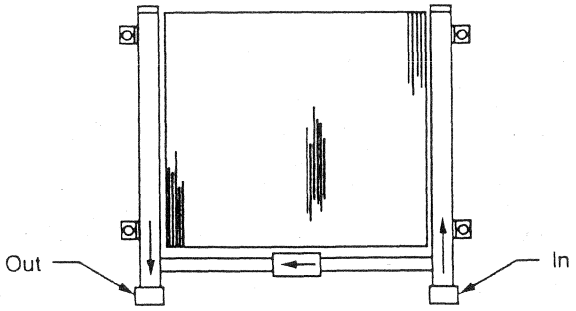


Oil Connections Up—High, Low and Medium Flow Rates

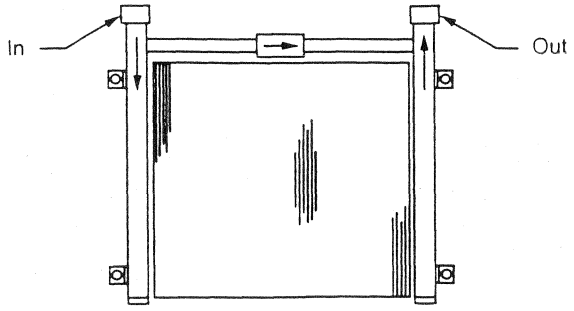


"MR" Series

Oil Connections Down—High Flow Rates Only.



Oil Connections Up—Low to Medium Flow Rates



3. Units should not be located in corrosive atmospheres as rapid deterioration of the cooling coil, and/or manifolds may take place resulting in reduced service life (corrosion resistant coatings available—consult factory).

4. Piping should be sized based on oil flow and pressure drop requirements, not on the oil coolers port sizes. It should also be properly supported to prevent excessive strain to connections, manifolds, etc.

   NOTE: Oil port position is at customer option, however, the cooler must be flooded with oil to take full advantage of cooling potential.

Maintenance

1. The unit should be inspected regularly for corrosion and dirty or clogged heat transfer surface. Dirt and dust can be removed by washing, brushing or blowing out with compressed air. Should the surface be greasy, the fins and tubes can be brushed or sprayed with a non-flammable degreasing fluid which is safe on copper, steel and aluminum. Follow with a hot water rinse and dry thoroughly. A steam cleaner can also be used effectively.

2. Once a year, or as required by the application, piping should be disconnected and a degreasing agent circulated through the unit to remove sludge from turbulators and internal tube surfaces to return the unit to full capacity. A thorough cleaning of the entire system in the same manner is preferable to avoid carry-over from uncleaned piping, pump and accessories. The strainer or any filtering devices should also be serviced following this operation.

3. When ordering replacement parts or inquiring on service, mention the model number, serial number and the original purchase order number.

4. Check valve cartridge (MR Series) is not serviceable. Install oil filter ahead of unit to keep foreign particles from rendering the cartridge ineffective.

PR 13

MECO
5648-9717

125 PSI PRESSURE REGULATOR

ANGI PART NUMBER 500-01674

REBUILD KIT ASSY - MECO PRIMARY REGULATOR – 840-04319

THIS PAGE LEFT INTENTIONALLY BLANK

NGV REGULATORS & ENVIRO-CAP®

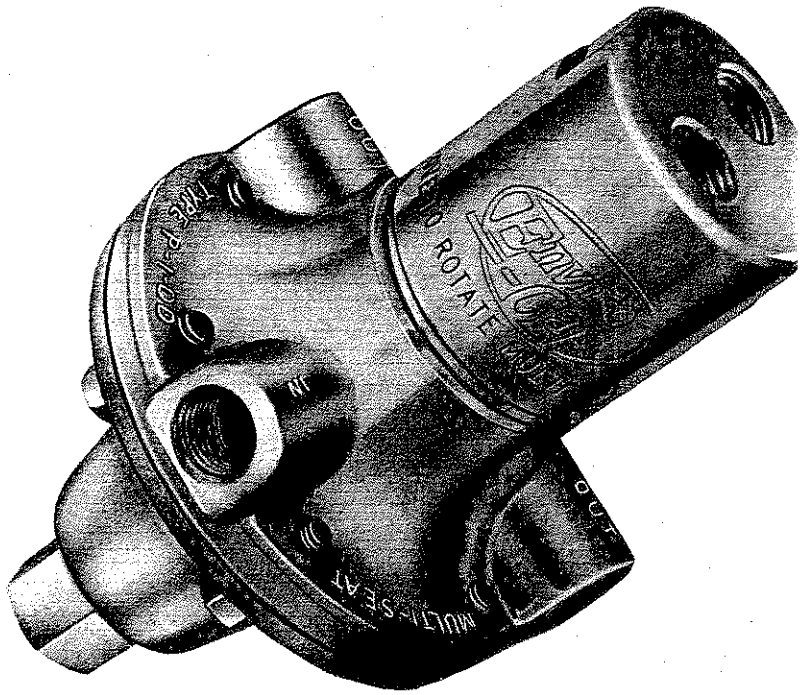
TYPE "P-NGV"

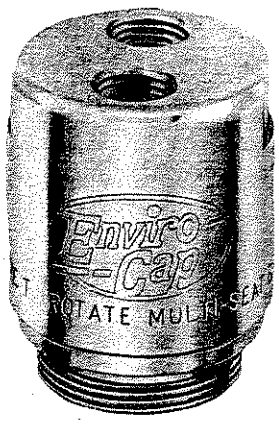
THE DEPENDABILITY OF THE "YOKE" TYPE REGULATOR IS IDEALLY SUITED AS THE HIGH PRESSURE REGULATOR IN POSITIVE PRESSURE NGV SYSTEMS. RATED FOR INLET PRESSURES TO 5,500 PSI, DELIVERY PRESSURES BETWEEN 2 AND 500 PSI ARE RELIABLY ACHIEVED.

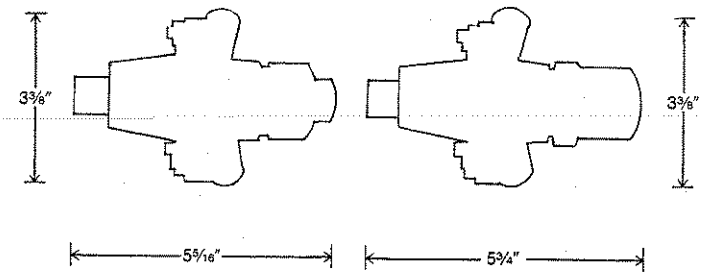
A SPECIAL FEATURE IS THE DIA-BLOK CONSTRUCTION. THE DIAPHRAGM IS CONNECTED TO THE SEAT BLOCK BY MEANS OF A YOKE. THIS ONE PIECE ACTION PROVIDES INSTANT RESPONSE TO VARIATIONS IN DEMAND AND INSURES INSTANTANEOUS AND POSITIVE SHUTOFF.

THE ENVIRO-CAP CAN BE USED TO RETROFIT ANY MECO TYPE "P" REGULATOR WHERE FREEZING AND RESULTING ERRATIC GAS FLOW IS A PROBLEM.

ENGINE COOLANT IS CIRCULATED THROUGH THE BACK CAP TO PREVENT "FREEZE-UP" AND MAINTAIN A UNIFORM GAS FLOW. CONNECTIONS TO THE ENGINE COOLING SYSTEM ARE THROUGH ¼" NPT PORTS.







Standard Type P NGV Regulator

Type P NGV Regulator with ENVIRO-CAP

SPECIFICATIONS:

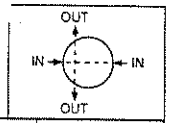
Maximum Inlet Pressure: 5,500 psi
Delivery Pressure Ranges:

Standard	Optional
0–125 psi	0–30 psi
0–150 psi	0–50 psi
0–225 psi	0–500 psi

Ports:
¼" NPT Female
Effective Diaphragm Size:
2³⁄₁₆" diameter
Materials of Construction:
Body.....Forged Brass
Bonnet.....Forged Brass
Diaphragm..Stainless Steel
Seat.....Nylon
Seals.....Teflon & SBR
Nozzle.....Stainless Steel
Inlet Filter...Sintered Bronze
Options: (at extra cost)
Mounting bolts and nuts

Ordering Information

PORTING STYLE P-1-DD



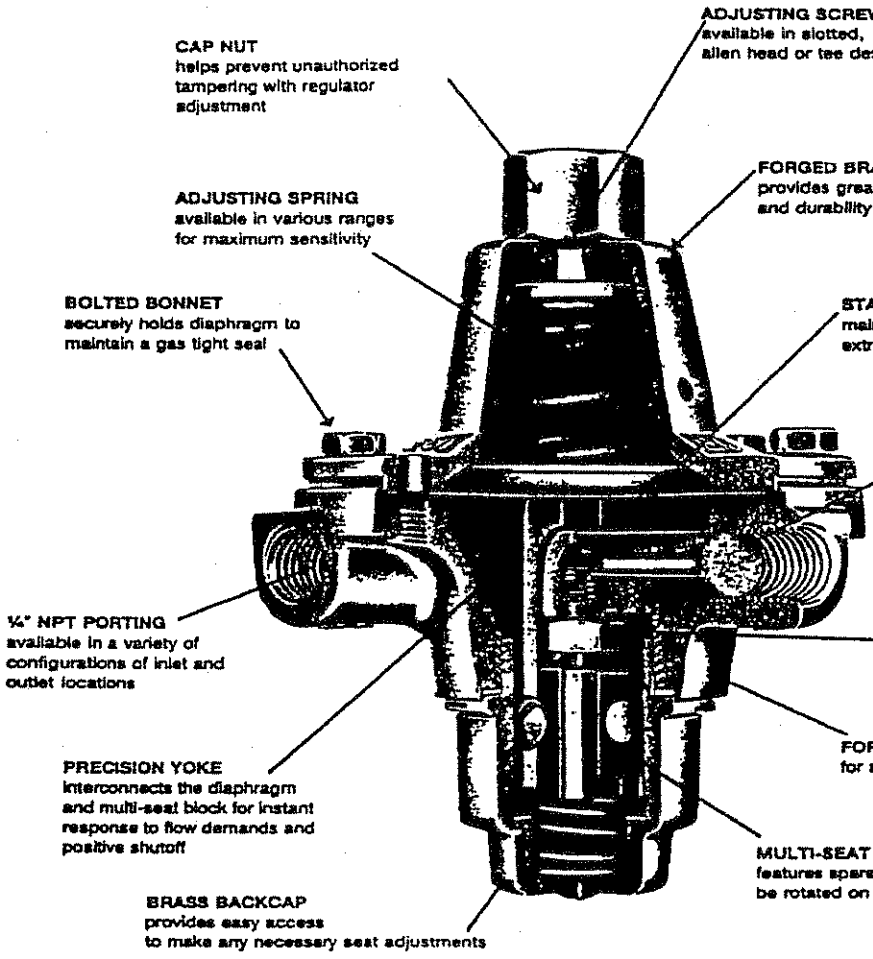
Stock No.	Max. Outlet Pressure	Connections		Enviro-Cap	Wt.
		Inlet	Outlet		
8429 8431 8433	125 psi 150 psi 225 psi	(2)¼"NPTF	(2)¼"NPTF	YES	3½ #
8440 8441 8442	125 psi 150 psi 225 psi	(2)¼"NPTF	(2)¼"NPTF	NO	3¼ #
4534	ENVIRO-CAP, WATER HEATED BACK CAP ONLY				

These are MECO's standard models. Additional models with other outlet pressure ranges, other porting and accessories are also available. Please consult with us on your custom regulator application.

MECO Regulators are included in kits certified by A.G.A. and C.A.R.B. MECO Regulators are approved by the Railroad Commission of Texas and are also available with Underwriters Laboratories (UL) Listing. Additional certifications may be applicable; please consult MECO for current listings.

Control Gas Regulator

YOKE TYPE REGULATORS



THE TYPE P HIGH PRESSURE REGULATORS . . . fill numerous needs throughout industry. Time proven for reliability and service, these regulators are designed around the special DIA-BLOCK feature. The diaphragm and seat block are directly connected by a precision machined YOKE. Any action on the diaphragm is instantly transmitted to the seat. The results being a high degree of sensitivity and accuracy.

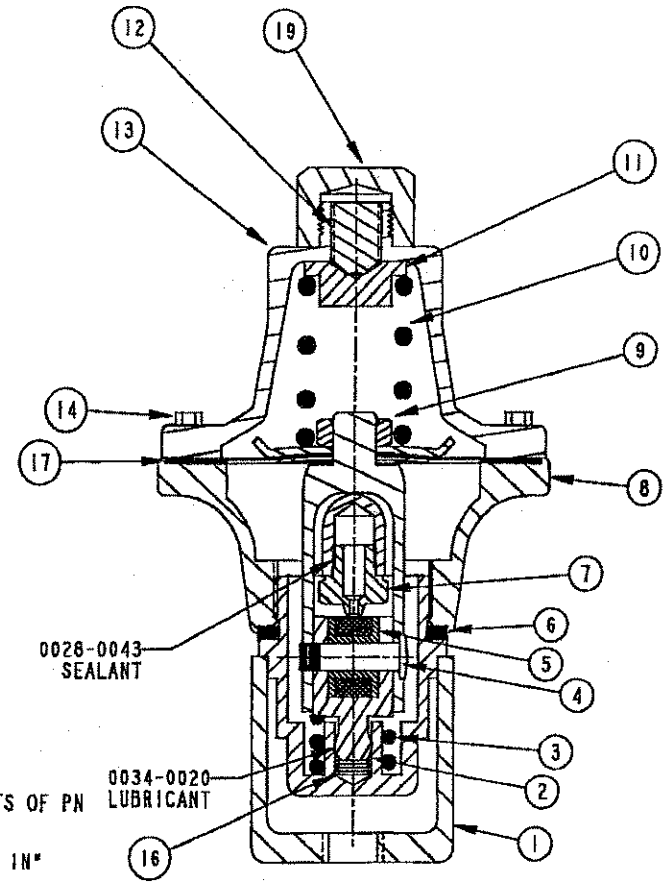
MULTI-SEAT BLOCK . . . contains four seating surfaces which can be easily revolved as needed. No special tools are required to make this change. Various seating materials are available

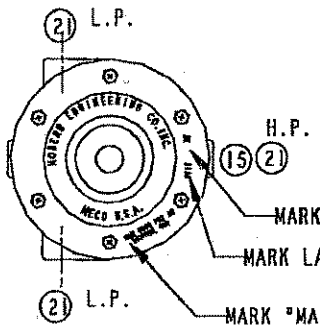
DWG.NO. 5648-8717 SH 1

NOTES
1. TEST REGULATOR PER 0090-0040, SHEET 2 PROCEDURE 11.2.
2. MARK REGULATOR PER DETAIL "A" BELOW.
3. SEE DWG 0093-0416 FOR TORQUE REQUIREMENTS.
4. USE 0034-0020 LUBRICANT AND 0028-0043 SEALANT WHERE SHOWN.

REVISIONS

SYM	REF.	DATE	SYM	REF.	DATE	SYM	REF.	DATE
DWG RELEASE			B	E960	10-00			
EO	E542	11-99	C	F3058	12-01			
A	E675	8-00						





DETAIL A

ITEM NO.	DESCRIPTION	PART NO.	NO. REQ'D
28	LUBRICANT	0034-0020	A/R
27	SEALANT	0028-0043	A/R
26			
C 25	INSTRUCTION MANUAL A	0056-1625	1
24			
23			
22			
21	CAPLUG	1417-0005	3
20			
19	BONNET NUT	5213-5274	1
18			
17	DIAPHRAGM GASKET	5213-5269	1
16	O-RING	5199-2135	4
15	FILTER	5213-5215	1
14	BONNET SCREW	5213-5145	6
13	BONNET	5203-5419	1
B 12	ADJUSTING SCREW	5204-5279	1
11	SPRING BUTTON	5213-5259	1
10	BONNET SPRING (GREY)	5205-5400	1
9	DIAPH-YOKE ASSY	5232-4564	1
8	BODY	5202-5411	1
7	NOZZLE	5213-5161	1
6	BACK CAP GASKET	5213-5429	1
5	SEAT BLOCK ASSEMBLY	5233-4521	1
4	YOKE CLAMPING SCREW	5213-5181	1
3	BACK CAP SPRING	5205-5177	1
2	YOKE GUIDE	5213-5182	1
1	BACK CAP ASSEMBLY	5235-4534	1

BILL OF MATERIALS

PROPRIETARY NOTICE
This drawing contains designs and other information which are the property of VICTOR EQUIPMENT COMPANY. Except for rights granted expressly by contract, this drawing may not be duplicated or disclosed in whole or in part or used for manufacture of designs disclosed herein without the prior written permission of VICTOR EQUIPMENT COMPANY.

VICTOR®
VICTOR EQUIPMENT COMPANY
DENTON TEXAS

REF. DATA 70420	MATERIAL	UNLESS SPECIFIED BREAK ALL EDGES .005-.015 MACHINED SURFACES 125 ALL FEATURES WITH A COMMON AXIS MUST BE COAXIAL WITHIN .003 F.I.M. TOLERANCES .X ±.020 .XX ±.010 .XXX ±.005 ANGLES ±1°	DRAWN B. BRADFORD 11-5-99
	FINISH		CHECKED L.TURNEY 11-99
			APVD L.TURNEY 11-99
		DIMENSIONS ARE IN INCHES UNLESS NOTED	PROJECTION

TITLE: SPECIAL P REGULATOR NVG
PRESET 125 PSI

SIZE B | DWG.NO. 5648-8717 | SCALE NTS | SHEET 1 OF 1

Printed 01/03/02

DWG. NO. 0080-0040 SH 2

NOTES

REVISIONS								
STN	REF.	DATE	STN	REF.	DATE	STN	REF.	DATE
A	E514	9-99	C	E572	12/99			
REV & REDWN			D	E605	01-00			
B	E516	10-99						

A TEST PRESSURE PSIG	H PRESSURE SETTING FOR TESTS	J PRESS. GAUGE FOR TEST	K LEAK TEST	L DROP TEST	M CREEP TEST	N FINAL PRESET	PROC. NUMBER
3600±200	225 PSIG	400 PSIG	10 SCC	15 PSIG	3 PSIG	225±5 PSIG	11.1
3600±200	125 PSIG	200 PSIG	10 SCC	10 PSIG	3 PSIG	125±5 PSIG	11.2
3600±200	50 PSIG	100 PSIG	10 SCC	5 PSIG	3 PSIG	50±3 PSIG	11.3
3600±200	150 PSIG	200 PSIG	10 SCC	10 PSIG	3 PSIG	150±5 PSIG	11.4
3600±200	40 PSIG	100 PSIG	10 SCC	5 PSIG	3 PSIG	40 ±5 PSIG	11.5
3600±200	35 PSIG	100 PSIG	10 SCC	5 PSIG	3 PSIG	35 ±5 PSIG	11.6
3600±200	60 PSIG	100 PSIG	10 SCC	5 PSIG	3 PSIG	60 ±3 PSIG	11.7

TEST PROCEDURE
MECO PRESET REGULATORS

1. INSTALL A TEST GUN WITH A #52 (.0635) ORIFICE TO REGULATOR OUTLET. USE A J PSIG OUTLET GAUGE FOR TESTS.
2. PRESSURIZE THE REGULATOR WITH A PSIG OF OIL FREE AIR OR DRY NITROGEN.
3. LEAK TEST: ADJUST THE REGULATOR TO DELIVER H PSIG. CLOSE THE INLET VALVE AND TURN THE ADJUSTING SCREW ONE TURN COUNTER CLOCKWISE. OBSERVE BOTH GAUGES FOR 5 MINUTES. NO CHANGE IN EITHER GAUGE READING IS PERMITTED. A LEAK TEST MAY BE PERFORMED BY OTHER MEANS PROVIDED THE LEAK RATE USING AIR DOES NOT EXCEED K PER MINUTE.
4. DROP TEST: ADJUST THE REGULATOR TO DELIVER H PSIG STATIC. OPEN THE TEST GUN. THE DROP ON THE OUTLET TEST GAUGE MUST NOT EXCEED L PSIG.
5. SLOW SHUT-OFF/CREEP TEST: ADJUST THE REGULATOR TO DELIVER H PSIG FLOWING. CLOSE THE TEST GUN AND OBSERVE THE DELIVERY PRESSURE READING FOR 5 MINUTES. AN INITIAL SLOW SHUT-OFF INCREASE OF M PSIG DURING THE FIRST MINUTE IS PERMISSIBLE. NO FURTHER CREEP IS PERMISSIBLE DURING THE NEXT 4 MINUTES.
6. PRESET THE REGULATOR TO N PSIG STATIC.

PROPRIETARY NOTICE
This drawing contains designs and other information which are the property of VICTOR EQUIPMENT COMPANY. Except for rights granted expressly by contract, this drawing may not be duplicated or disclosed in whole or in part or used for manufacture of designs disclosed herein without the prior written permission of VICTOR EQUIPMENT COMPANY.

VICTOR®
VICTOR EQUIPMENT COMPANY
DENTON TEXAS

REF. DATA
70420

MATERIAL

FINISH

UNLESS SPECIFIED
BREAK ALL EDGES .005-.010
MACHINED SURFACES √125
ALL FEATURES WITH A COMMON AXIS MUST BE COAXIAL WITHIN .005 F.I.M.
TOLERANCES .X ±.020
.XX ±.010
.XXX ±.005
ANGLES ±1°

	BY	DATE
DRAWN	E. BRADFORD	10-22-99
CHECKED	L.TURNEY	11-99
APVD	L.TURNEY	11-99

DIMENSIONS ARE IN INCHES UNLESS NOTED

TITLE: TEST PROCEDURE MECO PRESET REGULATORS

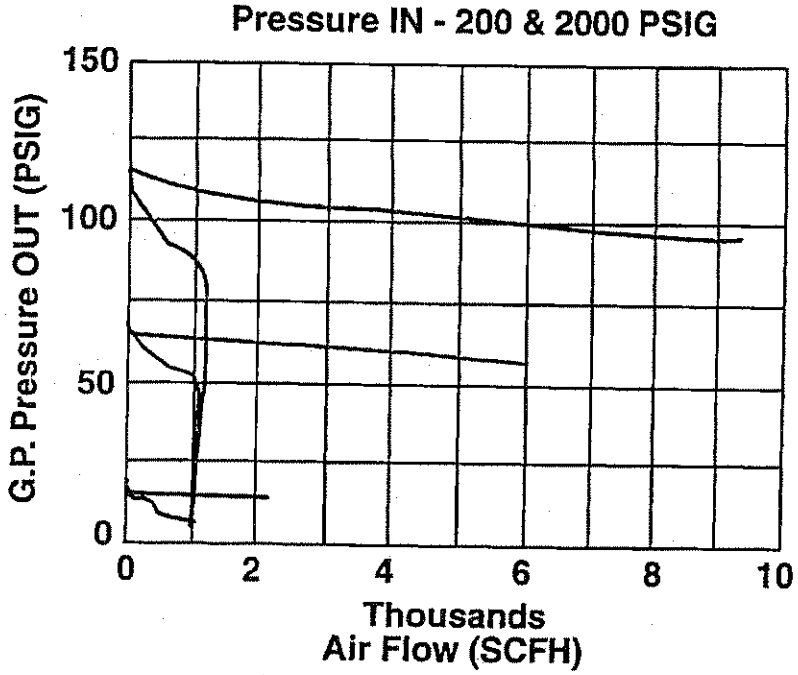
SIZE B | DWG.NO. 0080-0040

PROJECTION | SCALE NTS | SHEET 2 OF 2

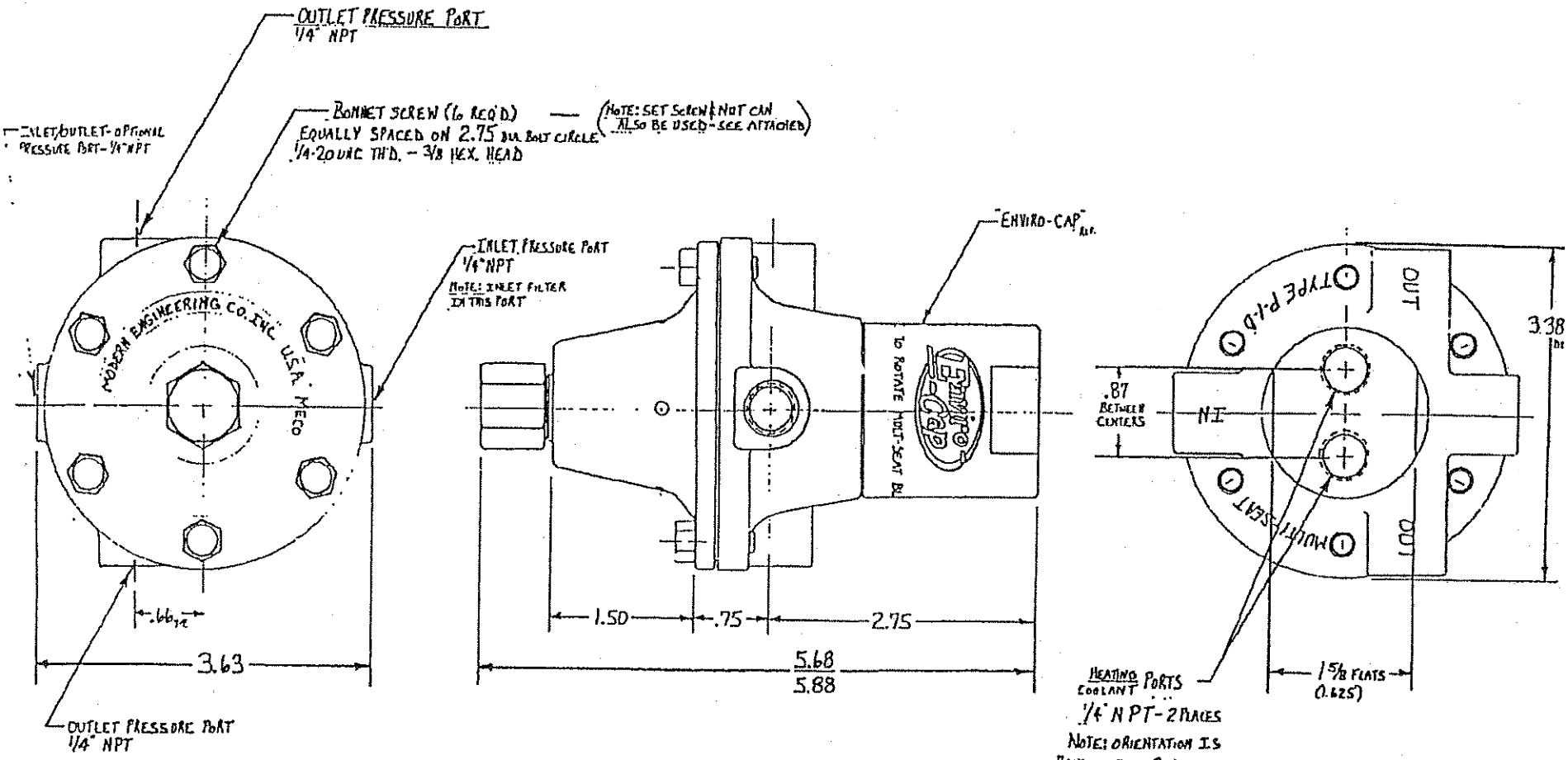
Printed 04/16/01

Flow Data (SCFH)

Meco "P" Series Cylinder Regulator
Single Stage / Heavy Duty



Reference: "P" Regulator Section A, Page 37



WEIGHT - 3.5 LB. APPROX.

NAME: INSTALLATION DWG. ("P" NGV)
MATERIAL:
DWG. NO. | STOCK NO.

ALL DIMENSIONS IN INCHES
TOLERANCE
2 PLACE DECIMAL AND FRACTIONAL DIMENSIONS ± OR -.03 UNLESS OTHERWISE SPECIFIED
3 PLACE DECIMAL DIMENSIONS ± OR -. UNLESS OTHERWISE SPECIFIED

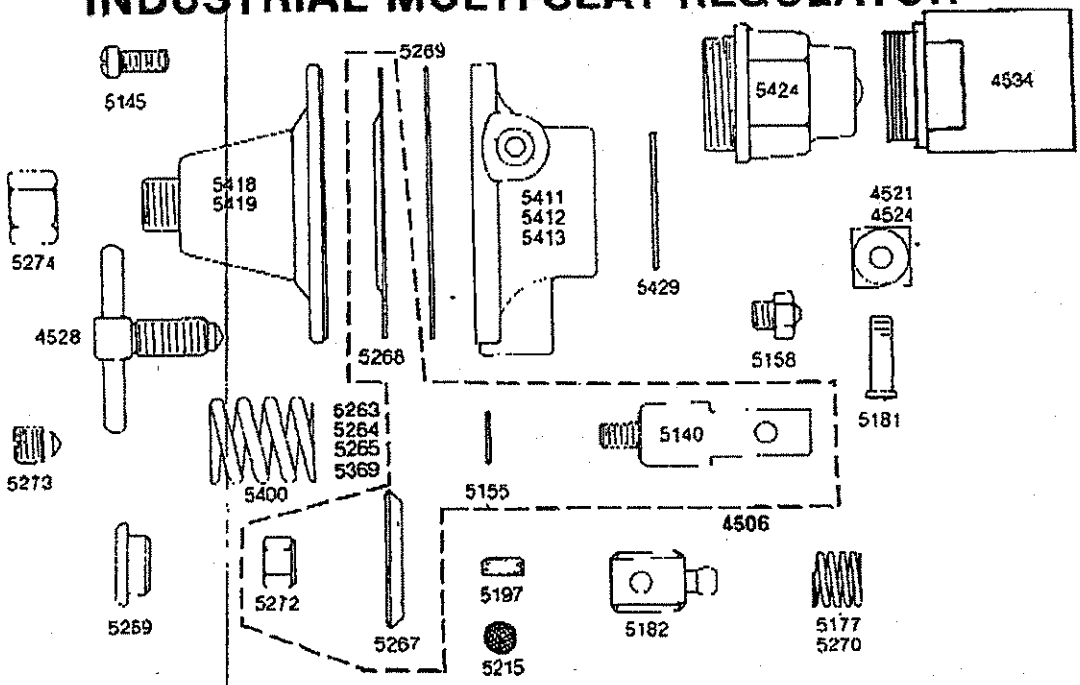
REVISED

MODERN ENGINEERING COMPANY
GALLMAN, MS • ST. LOUIS, MO U.S.A.

SUBJECT: TYPE "P" NGV REGULATOR
DRAWN: WFF | DATE: 6-25-91
CHK'D BY: | SCALE: FULL (APPROX)

THIS DRAWING OR PRINT IS THE PROPERTY OF MODERN ENGINEERING CO. AND IS RETURNABLE ON DEMAND.

TYPE P-30, P-50, P-125, P-150, & P-225
INDUSTRIAL MULTI-SEAT REGULATOR



Stock No.	Description
4506	Diaphram-Yoke Assembly
4521	Seat Block with White Nylon Seats
4524	Seat Block with Kel-F Seats for CO_2
4528	Adjusting Screw Assembly
4534	ENVIRO-CAP, Water Heated Back Cap Assembly
5140	Yoke (Part of 4506)
5145	Bonnet Screw 6 required, Pkg. 12
5155	Yoke Gasket, Teflon, Pkg. 12 (Part of 4506)
5158	Nozzle with 5/64" Orifice, Pkg. 6
5177	Rear Spring, for over 500 PSI Inlet Pressure, Standard
5181	Yoke Clamping Screw, Pkg. 6
5182	Yoke Guide
5197	Filter Screen, pkg. 6
5215	Sintered Filter, pkg. 12, Standard
5259	Spring Button
5263	Compression Spring for 30 PSI Pressure (Red)
5264	Compression Spring for 125 PSI Pressure (Green)
5265	Compression Spring for 150 PSI pressure (Purple)
5267	Diaphragm Plate (Part of 4506)
5268	Stainless Steel Diaphragm (Part of 4506)
5269	Diaphragm Gasket, Pkg. 6
5272	Diaphragm Plate Nut (Part of 4506)
5273	Slot Type Adjusting Screw
5274	Protection Cap for Slot Adjusting Screw
5369	Compression Spring for 50 PSI pressure (Black)
5400	Compression Spring for 225 PSI pressure (Grey)
5411	Body, 1 inlet, 2 outlets P-1-DA
5412	Body, 1 inlet, 3 outlets P-1-DC
5413	Body, 2 inlets, 2 outlets P-1-DD
5418	Bonnet, for "T" Type Adjusting Screw
5419	Bonnet, for Slotted Type Adjusting Screw
5423	Allen Head Adj. Screw
5424	Back Cap
5429	Back Cap Gasket, Teflon, Pkg. 12

THIS PAGE LEFT INTENTIONALLY BLANK

PT 44

AMERICAN SENSOR TECHNOLOGIES (AST)
AST4400A00100P4E0437

0-100 PSI PRESSURE TRANSDUCER, IS/UL
CL1 DIV2 , GROUP C&D, 4-20mA ,1/4MNPT SS

ANGI PART NUMBER 410-07276

THIS PAGE LEFT INTENTIONALLY BLANK

AST4400 *Stainless Steel Media Isolated Pressure Sensor*

CSA Approved For Hazardous Locations with Approved Barrier

RoHS COMPLIANT LEAD FREE

Overview

The AST4400 is a media isolated stainless steel pressure sensor with a wide variety of options. In addition to its rugged construction and best price-to-performance ratio in the industry, the AST4400 is the solution for pressure measurement in Intrinsically Safe areas.

NOW APPROVED SINGLE SEAL ANSI / ISA 12.27.01-2003



Benefits

- **ANSI/ISA - 12.27.01.2003 Certified "Single Seal"** (No need for expensive secondary seal)
- **CSA 157** Class 1 Groups C, D IS with approved Barrier (page 2)
- **CAN/CSA-C22.2 No. 157.92** - Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations
- High Strength Stainless Steel Construction
- No Oil, Welds or Internal O-rings
- Wide Operating Temperature Range
- Ranges up to 10,000 PSI
- Low Static and Thermal Errors
- Unparalleled Price and Performance
- Compatible with Wide Range of Liquids and Gases
- EMI/RFI Protection
- 500VAC Isolation

Applications

- Industrial OEM Equipment
- Water Management
- Pneumatics
- Hydrogen Storage (316L SS)
- HVAC/R Equipment
- Control Panels
- Hydraulic Systems
- Data Loggers

Performance @25°C (77°F)

Accuracy*	< ±0.25% BFSL
Stability (1 year)	±0.25%FS, typical
Over range Protection	2X Rated Pressure
Burst Pressure	5X or 20,000 PSI (whichever is less)
Pressure Cycles	> 100 Million

* Accuracy includes non-linearity, hysteresis & non-repeatability

Environmental Data

Temperature	
Operating	-40 to 85°C (-40 to 185°F)
Storage	-40 to 100°C (-40 to 212°F)
Thermal Limits	
Compensated Range	0 to 55°C (30 to 130°F)
TC Zero	<±1.5% of FS
TC Span	<±1.5% of FS
Other	
Shock	100G, 11 msec, 1/2 sine
Vibration	10G peak, 20 to 2000 Hz.
EMI/RFI Protection	Yes
Rating	IP-66

Electrical Data

Output	**4-20mA**	**1-5VDC, 1-6VDC**	**0-50mV (10mV/V)**	**0.5-4.5V Ratiometric**
Excitation	10-28VDC	10-28VDC	5VDC, typical	5VDC, regulated
Output Impedance	>10k Ohms	<100 Ohms, Nominal	1100 Ohms, Nominal	<100 Ohms, Nominal
Current Consumption	20mA, typical	<10mA	<5mA	<10mA
Bandwidth	(-3dB): DC to 250 Hz	(-3dB): DC to 1kHz	(-3dB): DC to 5kHz, min	(-3dB): DC to 1kHz
Output Noise	-	<2mV RMS	-	<2mV RMS
Zero Offset:	<±1% of FS	<±1% of FS	< ±2% of FS	<±1% of FS
Span Tolerance	<±2% of FS	<±1.5% of FS	< ±2% of FS	<±1.5% of FS
Output Load	0-800 Ohms@10-28VDC	10k Ohms, Min.	>1M Ohms	10K Ohms, Min.
Reverse Polarity Protection	Yes	Yes	-	No

Ordering Information

AST4400 | **A** | **00500** | **P** | **4** | **E** | **0** | **000** | **-SS**

Series Type

Process Connection
A=1/4" NPT Male
B=1/8" NPT Male
C=1/4" BSPP Male
F=7/16" - 20 UNF Male
I= 1/4" NPT Female

Pressure Range
Insert pressure range from chart

Pressure Unit
B= Bar
K= kg/cm2
P= PSI

Outputs
1= 0.5-4.5V ratiometric
3= 1-5V
4= 4-20mA (2 wire loop powered)
6= 1-6V
A= 0-50mV (10mV/V)

Electrical
A= 2 ft. (0.6 m)
B= 4 ft. (1.2 m)
C= 6 ft. (1.8 m)
D= 10 ft. (3.0 m)
E= Mini DIN 43650
F= Packard Metripack 150 3-Pin Conn.
I= DIN 43650A
L= Conduit fitting, Cable 2 ft.
M= Conduit fitting, Cable 4 ft.
N= Conduit fitting, Cable 6 ft.
P= Conduit fitting, Cable 10 ft.

Now With DIN43650A!

Wetted Material
0=17-4PH
1=316 L

Options
000 -No special options

Single Seal

Pressure Ranges*

PSIG Measurement Range	Pressure Range Code	BARG Measurement Range	Pressure Range Code
-14.7 to 25**	V0025**	-1 to 2**	V0002**
0-25	00025	0-2	00002
0-50	00050	0-5	00005
0-100	00100	0-10	00010
0-200	00200	0-20	00020
0-500	00500	0-50	00050
0-1,000	01000	0-100	00100
0-2,500	02500	0-250	00250
0-5,000	05000	0-350	00350
0-7,500	07500	0-500	00500
0-10,000	10000	0-700	00700

*Typical ranges. All ranges between 0-25 PSI and 0-10,000 PSI available.
**Compound ranges up to -14.7 to 2500 PSI available. Please consult factory.

Barrier Installation

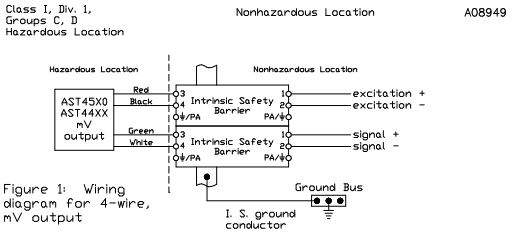


Figure 1: Wiring diagram for 4-wire, mV output

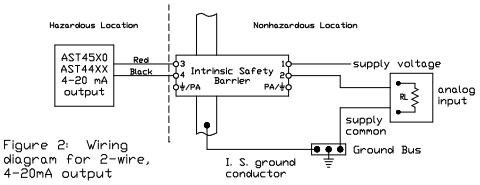


Figure 2: Wiring diagram for 2-wire, 4-20mA output

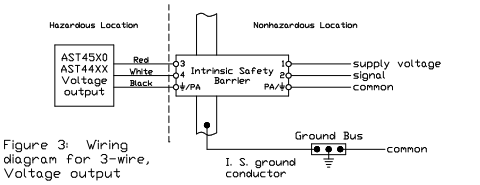


Figure 3: Wiring diagram for 3-wire, Voltage output

Entity Parameters

Models AST4400, AST4410 and AST44LP	Models AST4400, AST4410 and AST44P with integral cable	Models AST4500, AST4510 and AST4520
Vmax = 28 Vdc Imax = 175 mA Ci = 0.45 uF Li = 0	Vmax = 28 Vdc Imax = 175 mA Ci = 0.45 uF Li = 1.32 uH	Vmax = 28 Vdc Imax = 175 mA Ci = 0.46 uF Li = 16.5 uH

1. For installation in accordance with Fig 2, barrier must be a CSA Certified, Single Channel grounded Shunt-Diode Zener Barrier or a Single Channel Isolating Barrier.

Barrier parameters must meet the following requirements:

Voc or Uo <= Vmax
Isc or Io <= Imax
Po <= Pi (if applicable)
Ca or Co >= Ci + Ccable
La or Lo >= Li + Lcable

2. For installations in accordance with Figs. 1 and 3, one dual-channel or two single-channel barriers may be used, where in either case, both channels have been Certified for use together with combined entity parameters.

The following conditions must be satisfied:

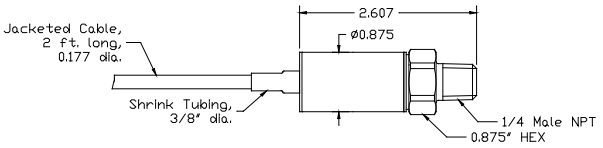
Voc or Uo <= Vmax
Isc or Io <= I max
Po <= Pi (if applicable)
Ca or Co >= Ci + Ccable
La or Lo >= Li + Lcable

3. Maximum non-hazardous area voltage must not exceed 250 V.

4. Installation should be in accordance with Canadian Electrical Code, Part I.

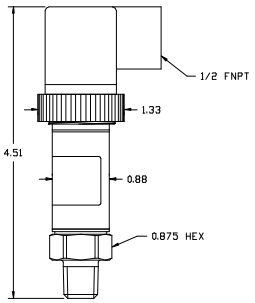
5. A grounding method is not provided by the manufacturer as part of the integral design of the Transducer. For units which are connected through a grounded shunt diode safety barrier, ensure that the transducer is mounted to a surface which is at the same potential as the barrier ground.

Dimensional Data



DIN43650A

Output	Pin 1	Pin 2	Pin 3	Wide Pin
4-20mA	+V Supply	Ground	Case GND	N/C
3W Voltage	+V Supply	Ground	+ Signal	Case GND



CABLE

Output	Red	Black	White	Green
4-20mA	+V Supply	Ground	N/C	Case GND
3W Voltage	+V Supply	Ground	+ Signal	Case GND

Warranty

Workmanship - AST, Inc. pressure transmitters have a limited one-year warranty to the original purchaser. AST, Inc. will replace or repair, free of charge, any defective transmitter. This warranty does not apply to any units that have been modified; misused, neglected or installed where the application exceeds published ratings. AST's sensors are made with pride in New Jersey, USA. If in the area please feel free to stop by for a visit!

Installation/Applications - The purchaser is responsible for media compatibility, functional adequacy, and correct installation of the transmitter.

© 2009 American Sensor Technologies Inc. Form data4400-ss 09/23/09.
All specifications subject to change without notice.

PT 46

AMERICAN SENSOR TECHNOLOGIES
AST4400A00600P4E0444

TRANSD-AST 0-600PSI IS / UL CL1 DIV2
GRPC&D 4-20mA ¼ MNPT SS

ANGI PART NUMBER 410-07278

THIS PAGE LEFT INTENTIONALLY BLANK

AST4400 *Stainless Steel Media Isolated Pressure Sensor*

CSA Approved For Hazardous Locations with Approved Barrier

RoHS COMPLIANT LEAD FREE

Overview

The AST4400 is a media isolated stainless steel pressure sensor with a wide variety of options. In addition to its rugged construction and best price-to-performance ratio in the industry, the AST4400 is the solution for pressure measurement in Intrinsically Safe areas.

NOW APPROVED SINGLE SEAL ANSI / ISA 12.27.01-2003



Benefits

- **ANSI/ISA - 12.27.01.2003 Certified "Single Seal"** (No need for expensive secondary seal)
- **CSA 157** Class 1 Groups C, D IS with approved Barrier (page 2)
- **CAN/CSA-C22.2 No. 157.92** - Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations
- High Strength Stainless Steel Construction
- No Oil, Welds or Internal O-rings
- Wide Operating Temperature Range
- Ranges up to 10,000 PSI
- Low Static and Thermal Errors
- Unparalleled Price and Performance
- Compatible with Wide Range of Liquids and Gases
- EMI/RFI Protection
- 500VAC Isolation

Applications

- Industrial OEM Equipment
- Water Management
- Pneumatics
- Hydrogen Storage (316L SS)
- HVAC/R Equipment
- Control Panels
- Hydraulic Systems
- Data Loggers

Performance @25°C (77°F)

Accuracy*	< ±0.25% BFSL
Stability (1 year)	±0.25%FS, typical
Over range Protection	2X Rated Pressure
Burst Pressure	5X or 20,000 PSI (whichever is less)
Pressure Cycles	> 100 Million

* Accuracy includes non-linearity, hysteresis & non-repeatability

Environmental Data

Temperature	
Operating	-40 to 85°C (-40 to 185°F)
Storage	-40 to 100°C (-40 to 212°F)
Thermal Limits	
Compensated Range	0 to 55°C (30 to 130°F)
TC Zero	<±1.5% of FS
TC Span	<±1.5% of FS
Other	
Shock	100G, 11 msec, 1/2 sine
Vibration	10G peak, 20 to 2000 Hz.
EMI/RFI Protection	Yes
Rating	IP-66

Electrical Data

Output	**4-20mA**	**1-5VDC, 1-6VDC**	**0-50mV (10mV/V)**	**0.5-4.5V Ratiometric**
Excitation	10-28VDC	10-28VDC	5VDC, typical	5VDC, regulated
Output Impedance	>10k Ohms	<100 Ohms, Nominal	1100 Ohms, Nominal	<100 Ohms, Nominal
Current Consumption	20mA, typical	<10mA	<5mA	<10mA
Bandwidth	(-3dB): DC to 250 Hz	(-3dB): DC to 1kHz	(-3dB): DC to 5kHz, min	(-3dB): DC to 1kHz
Output Noise	-	<2mV RMS	-	<2mV RMS
Zero Offset:	<±1% of FS	<±1% of FS	< ±2% of FS	<±1% of FS
Span Tolerance	<±2% of FS	<±1.5% of FS	< ±2% of FS	<±1.5% of FS
Output Load	0-800 Ohms@10-28VDC	10k Ohms, Min.	>1M Ohms	10K Ohms, Min.
Reverse Polarity Protection	Yes	Yes	-	No

Ordering Information

AST4400 **A** **00500** **P** **4** **E** **0** **000** **-SS**

Series Type

Process Connection
A=1/4" NPT Male
B=1/8" NPT Male
C=1/4" BSPP Male
F=7/16" - 20 UNF Male
I= 1/4" NPT Female

Pressure Range
Insert pressure range from chart

Pressure Unit
B= Bar
K= kg/cm2
P= PSI

Outputs
1= 0.5-4.5V ratiometric
3= 1-5V
4= 4-20mA (2 wire loop powered)
6= 1-6V
A= 0-50mV (10mV/V)

Electrical
A= 2 ft. (0.6 m)
B= 4 ft. (1.2 m)
C= 6 ft. (1.8 m)
D= 10 ft. (3.0 m)
E= Mini DIN 43650
F= Packard Metripack 150 3-Pin Conn.
I= DIN 43650A
L= Conduit fitting, Cable 2 ft.
M= Conduit fitting, Cable 4 ft.
N= Conduit fitting, Cable 6 ft.
P= Conduit fitting, Cable 10 ft.

Now With DIN43650A!

Wetted Material
0=17-4PH
1=316 L

Options
000 -No special options

Single Seal

Pressure Ranges*

PSIG Measurement Range	Pressure Range Code	BARG Measurement Range	Pressure Range Code
-14.7 to 25**	V0025**	-1 to 2**	V0002**
0-25	00025	0-2	00002
0-50	00050	0-5	00005
0-100	00100	0-10	00010
0-200	00200	0-20	00020
0-500	00500	0-50	00050
0-1,000	01000	0-100	00100
0-2,500	02500	0-250	00250
0-5,000	05000	0-350	00350
0-7,500	07500	0-500	00500
0-10,000	10000	0-700	00700

*Typical ranges. All ranges between 0-25 PSI and 0-10,000 PSI available.
**Compound ranges up to -14.7 to 2500 PSI available. Please consult factory.

Barrier Installation

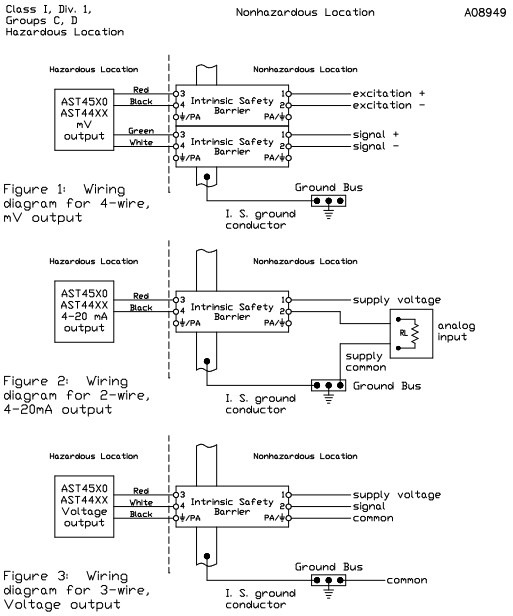


Figure 1: Wiring diagram for 4-wire, mV output

Figure 2: Wiring diagram for 2-wire, 4-20mA output

Figure 3: Wiring diagram for 3-wire, Voltage output

Entity Parameters

Models AST4400, AST4410 and AST44LP	Models AST4400, AST4410 and AST44P with integral cable	Models AST4500, AST4510 and AST4520
Vmax = 28 Vdc Imax = 175 mA Ci = 0.45 uF Li = 0	Vmax = 28 Vdc Imax = 175 mA Ci = 0.45 uF Li = 1.32 uH	Vmax = 28 Vdc Imax = 175 mA Ci = 0.46 uF Li = 16.5 uH

1. For installation in accordance with Fig 2, barrier must be a CSA Certified, Single Channel grounded Shunt-Diode Zener Barrier or a Single Channel Isolating Barrier.

Barrier parameters must meet the following requirements:

Voc or Uo <= Vmax
Isc or Io <= Imax
Po <= Pi (if applicable)
Ca or Co >= Ci + Ccable
La or Lo >= Li + Lcable

2. For installations in accordance with Figs. 1 and 3, one dual-channel or two single-channel barriers may be used, where in either case, both channels have been Certified for use together with combined entity parameters.

The following conditions must be satisfied:

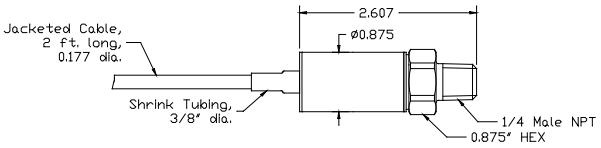
Voc or Uo <= Vmax
Isc or Io <= I max
Po <= Pi (if applicable)
Ca or Co >= Ci + Ccable
La or Lo >= Li + Lcable

3. Maximum non-hazardous area voltage must not exceed 250 V.

4. Installation should be in accordance with Canadian Electrical Code, Part I.

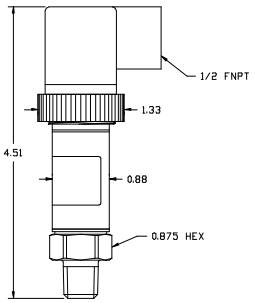
5. A grounding method is not provided by the manufacturer as part of the integral design of the Transducer. For units which are connected through a grounded shunt diode safety barrier, ensure that the transducer is mounted to a surface which is at the same potential as the barrier ground.

Dimensional Data



DIN43650A

Output	Pin 1	Pin 2	Pin 3	Wide Pin
4-20mA	+V Supply	Ground	Case GND	N/C
3W Voltage	+V Supply	Ground	+ Signal	Case GND



CABLE

Output	Red	Black	White	Green
4-20mA	+V Supply	Ground	N/C	Case GND
3W Voltage	+V Supply	Ground	+ Signal	Case GND

Warranty

Workmanship - AST, Inc. pressure transmitters have a limited one-year warranty to the original purchaser. AST, Inc. will replace or repair, free of charge, any defective transmitter. This warranty does not apply to any units that have been modified; misused, neglected or installed where the application exceeds published ratings. AST's sensors are made with pride in New Jersey, USA. If in the area please feel free to stop by for a visit!

Installation/Applications - The purchaser is responsible for media compatibility, functional adequacy, and correct installation of the transmitter.

© 2009 American Sensor Technologies Inc. Form data4400-ss 09/23/09.
All specifications subject to change without notice.

PT 47

AMERICAN SENSOR TECHNOLOGIES
AST4400A0100P4E044

TRANSD-AST 0 – 100 # IS /UL
CL 1 DIV2 GRPC & D 4-20MA ¼ MNPT SS

ANGI PART NUMBER 991-07663

THIS PAGE LEFT INTENTIONALLY BLANK

AST4400 *Stainless Steel Media Isolated Pressure Sensor*

CSA Approved For Hazardous Locations with Approved Barrier

RoHS COMPLIANT LEAD FREE

Overview

The AST4400 is a media isolated stainless steel pressure sensor with a wide variety of options. In addition to its rugged construction and best price-to-performance ratio in the industry, the AST4400 is the solution for pressure measurement in Intrinsically Safe areas.

NOW APPROVED SINGLE SEAL ANSI / ISA 12.27.01-2003



Benefits

- **ANSI/ISA - 12.27.01.2003 Certified "Single Seal"** (No need for expensive secondary seal)
- **CSA 157** Class 1 Groups C, D IS with approved Barrier (page 2)
- **CAN/CSA-C22.2 No. 157.92** - Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations
- High Strength Stainless Steel Construction
- No Oil, Welds or Internal O-rings
- Wide Operating Temperature Range
- Ranges up to 10,000 PSI
- Low Static and Thermal Errors
- Unparalleled Price and Performance
- Compatible with Wide Range of Liquids and Gases
- EMI/RFI Protection
- 500VAC Isolation

Applications

- Industrial OEM Equipment
- Water Management
- Pneumatics
- Hydrogen Storage (316L SS)
- HVAC/R Equipment
- Control Panels
- Hydraulic Systems
- Data Loggers

Performance @25°C (77°F)

Accuracy*	< ±0.25% BFSL
Stability (1 year)	±0.25%FS, typical
Over range Protection	2X Rated Pressure
Burst Pressure	5X or 20,000 PSI (whichever is less)
Pressure Cycles	> 100 Million

* Accuracy includes non-linearity, hysteresis & non-repeatability

Environmental Data

Temperature	
Operating	-40 to 85°C (-40 to 185°F)
Storage	-40 to 100°C (-40 to 212°F)
Thermal Limits	
Compensated Range	0 to 55°C (30 to 130°F)
TC Zero	<±1.5% of FS
TC Span	<±1.5% of FS
Other	
Shock	100G, 11 msec, 1/2 sine
Vibration	10G peak, 20 to 2000 Hz.
EMI/RFI Protection	Yes
Rating	IP-66

Electrical Data

Output	**4-20mA**	**1-5VDC, 1-6VDC**	**0-50mV (10mV/V)**	**0.5-4.5V Ratiometric**
Excitation	10-28VDC	10-28VDC	5VDC, typical	5VDC, regulated
Output Impedance	>10k Ohms	<100 Ohms, Nominal	1100 Ohms, Nominal	<100 Ohms, Nominal
Current Consumption	20mA, typical	<10mA	<5mA	<10mA
Bandwidth	(-3dB): DC to 250 Hz	(-3dB): DC to 1kHz	(-3dB): DC to 5kHz, min	(-3dB): DC to 1kHz
Output Noise	-	<2mV RMS	-	<2mV RMS
Zero Offset:	<±1% of FS	<±1% of FS	< ±2% of FS	<±1% of FS
Span Tolerance	<±2% of FS	<±1.5% of FS	< ±2% of FS	<±1.5% of FS
Output Load	0-800 Ohms@10-28VDC	10k Ohms, Min.	>1M Ohms	10K Ohms, Min.
Reverse Polarity Protection	Yes	Yes	-	No

Ordering Information

AST4400 **A** **00500** **P** **4** **E** **0** **000** **-SS**

Series Type

Process Connection
A=1/4" NPT Male
B=1/8" NPT Male
C=1/4" BSPP Male
F=7/16" - 20 UNF Male
I= 1/4" NPT Female

Pressure Range
Insert pressure range from chart

Pressure Unit
B= Bar
K= kg/cm2
P= PSI

Outputs
1= 0.5-4.5V ratiometric
3= 1-5V
4= 4-20mA (2 wire loop powered)
6= 1-6V
A= 0-50mV (10mV/V)

Electrical
A= 2 ft. (0.6 m)
B= 4 ft. (1.2 m)
C= 6 ft. (1.8 m)
D= 10 ft. (3.0 m)
E= Mini DIN 43650
F= Packard Metripack 150 3-Pin Conn.
I= DIN 43650A
L= Conduit fitting, Cable 2 ft.
M= Conduit fitting, Cable 4 ft.
N= Conduit fitting, Cable 6 ft.
P= Conduit fitting, Cable 10 ft.

Now With DIN43650A!

Wetted Material
0=17-4PH
1=316 L

Options
000 -No special options

Single Seal

Pressure Ranges*

PSIG Measurement Range	Pressure Range Code	BARG Measurement Range	Pressure Range Code
-14.7 to 25**	V0025**	-1 to 2**	V0002**
0-25	00025	0-2	00002
0-50	00050	0-5	00005
0-100	00100	0-10	00010
0-200	00200	0-20	00020
0-500	00500	0-50	00050
0-1,000	01000	0-100	00100
0-2,500	02500	0-250	00250
0-5,000	05000	0-350	00350
0-7,500	07500	0-500	00500
0-10,000	10000	0-700	00700

*Typical ranges. All ranges between 0-25 PSI and 0-10,000 PSI available.
**Compound ranges up to -14.7 to 2500 PSI available. Please consult factory.

Barrier Installation

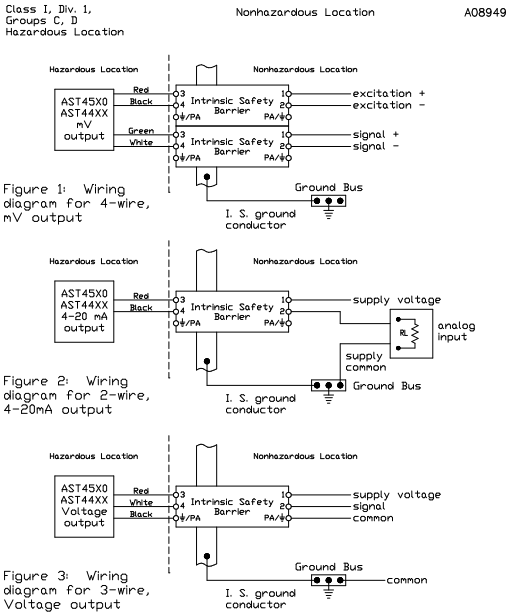


Figure 1: Wiring diagram for 4-wire, mV output

Figure 2: Wiring diagram for 2-wire, 4-20mA output

Figure 3: Wiring diagram for 3-wire, Voltage output

Entity Parameters

Models AST4400, AST4410 and AST44LP	Models AST4400, AST4410 and AST44P with integral cable	Models AST4500, AST4510 and AST4520
Vmax = 28 Vdc Imax = 175 mA Ci = 0.45 uF Li = 0	Vmax = 28 Vdc Imax = 175 mA Ci = 0.45 uF Li = 1.32 uH	Vmax = 28 Vdc Imax = 175 mA Ci = 0.46 uF Li = 16.5 uH

1. For installation in accordance with Fig 2, barrier must be a CSA Certified, Single Channel grounded Shunt-Diode Zener Barrier or a Single Channel Isolating Barrier.

Barrier parameters must meet the following requirements:

Voc or Uo <= Vmax
Isc or Io <= Imax
Po <= Pi (if applicable)
Ca or Co >= Ci + Ccable
La or Lo >= Li + Lcable

2. For installations in accordance with Figs. 1 and 3, one dual-channel or two single-channel barriers may be used, where in either case, both channels have been Certified for use together with combined entity parameters.

The following conditions must be satisfied:

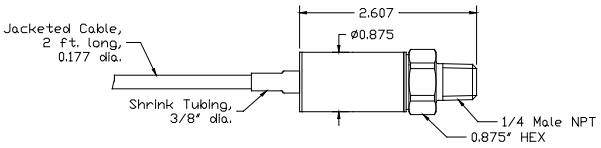
Voc or Uo <= Vmax
Isc or Io <= I max
Po <= Pi (if applicable)
Ca or Co >= Ci + Ccable
La or Lo >= Li + Lcable

3. Maximum non-hazardous area voltage must not exceed 250 V.

4. Installation should be in accordance with Canadian Electrical Code, Part I.

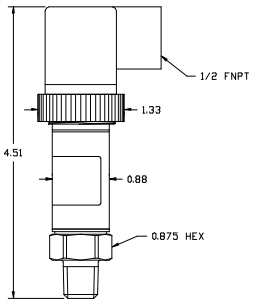
5. A grounding method is not provided by the manufacturer as part of the integral design of the Transducer. For units which are connected through a grounded shunt diode safety barrier, ensure that the transducer is mounted to a surface which is at the same potential as the barrier ground.

Dimensional Data



DIN43650A

Output	Pin 1	Pin 2	Pin 3	Wide Pin
4-20mA	+V Supply	Ground	Case GND	N/C
3W Voltage	+V Supply	Ground	+ Signal	Case GND



CABLE

Output	Red	Black	White	Green
4-20mA	+V Supply	Ground	N/C	Case GND
3W Voltage	+V Supply	Ground	+ Signal	Case GND

Warranty

Workmanship - AST, Inc. pressure transmitters have a limited one-year warranty to the original purchaser. AST, Inc. will replace or repair, free of charge, any defective transmitter. This warranty does not apply to any units that have been modified; misused, neglected or installed where the application exceeds published ratings. AST's sensors are made with pride in New Jersey, USA. If in the area please feel free to stop by for a visit!

Installation/Applications - The purchaser is responsible for media compatibility, functional adequacy, and correct installation of the transmitter.

© 2009 American Sensor Technologies Inc. Form data4400-ss 09/23/09.
All specifications subject to change without notice.

PT 49

AMERICAN SENSOR TECHNOLOGIES
AST4400A03000P4E0444

TRANSD-AST 0-3000 PSI IS / UL CL1 DIV2
GRPC&D 4-20mA ¼ MNPT SS

ANGI PART NUMBER 410-07281

THIS PAGE LEFT INTENTIONALLY BLANK

AST4400 *Stainless Steel Media Isolated Pressure Sensor*

CSA Approved For Hazardous Locations with Approved Barrier

RoHS COMPLIANT LEAD FREE

Overview

The AST4400 is a media isolated stainless steel pressure sensor with a wide variety of options. In addition to its rugged construction and best price-to-performance ratio in the industry, the AST4400 is the solution for pressure measurement in Intrinsically Safe areas.

NOW APPROVED SINGLE SEAL ANSI / ISA 12.27.01-2003



Benefits

- **ANSI/ISA - 12.27.01.2003 Certified "Single Seal"** (No need for expensive secondary seal)
- **CSA 157** Class 1 Groups C, D IS with approved Barrier (page 2)
- **CAN/CSA-C22.2 No. 157.92** - Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations
- High Strength Stainless Steel Construction
- No Oil, Welds or Internal O-rings
- Wide Operating Temperature Range
- Ranges up to 10,000 PSI
- Low Static and Thermal Errors
- Unparalleled Price and Performance
- Compatible with Wide Range of Liquids and Gases
- EMI/RFI Protection
- 500VAC Isolation

Applications

- Industrial OEM Equipment
- Water Management
- Pneumatics
- Hydrogen Storage (316L SS)
- HVAC/R Equipment
- Control Panels
- Hydraulic Systems
- Data Loggers

Performance @25°C (77°F)

Accuracy*	< ±0.25% BFSL
Stability (1 year)	±0.25%FS, typical
Over range Protection	2X Rated Pressure
Burst Pressure	5X or 20,000 PSI (whichever is less)
Pressure Cycles	> 100 Million

* Accuracy includes non-linearity, hysteresis & non-repeatability

Environmental Data

Temperature	
Operating	-40 to 85°C (-40 to 185°F)
Storage	-40 to 100°C (-40 to 212°F)
Thermal Limits	
Compensated Range	0 to 55°C (30 to 130°F)
TC Zero	<±1.5% of FS
TC Span	<±1.5% of FS
Other	
Shock	100G, 11 msec, 1/2 sine
Vibration	10G peak, 20 to 2000 Hz.
EMI/RFI Protection	Yes
Rating	IP-66

Electrical Data

Output	**4-20mA**	**1-5VDC, 1-6VDC**	**0-50mV (10mV/V)**	**0.5-4.5V Ratiometric**
Excitation	10-28VDC	10-28VDC	5VDC, typical	5VDC, regulated
Output Impedance	>10k Ohms	<100 Ohms, Nominal	1100 Ohms, Nominal	<100 Ohms, Nominal
Current Consumption	20mA, typical	<10mA	<5mA	<10mA
Bandwidth	(-3dB): DC to 250 Hz	(-3dB): DC to 1kHz	(-3dB): DC to 5kHz, min	(-3dB): DC to 1kHz
Output Noise	-	<2mV RMS	-	<2mV RMS
Zero Offset:	<±1% of FS	<±1% of FS	< ±2% of FS	<±1% of FS
Span Tolerance	<±2% of FS	<±1.5% of FS	< ±2% of FS	<±1.5% of FS
Output Load	0-800 Ohms@10-28VDC	10k Ohms, Min.	>1M Ohms	10K Ohms, Min.
Reverse Polarity Protection	Yes	Yes	-	No

Ordering Information

AST4400 **A** **00500** **P** **4** **E** **0** **000** **-SS**

Series Type

Process Connection
A=1/4" NPT Male
B=1/8" NPT Male
C=1/4" BSPP Male
F=7/16" - 20 UNF Male
I= 1/4" NPT Female

Pressure Range
Insert pressure range from chart

Pressure Unit
B= Bar
K= kg/cm2
P= PSI

Outputs
1= 0.5-4.5V ratiometric
3= 1-5V
4= 4-20mA (2 wire loop powered)
6= 1-6V
A= 0-50mV (10mV/V)

Electrical
A= 2 ft. (0.6 m)
B= 4 ft. (1.2 m)
C= 6 ft. (1.8 m)
D= 10 ft. (3.0 m)
E= Mini DIN 43650
F= Packard Metripack 150 3-Pin Conn.
I= DIN 43650A
L= Conduit fitting, Cable 2 ft.
M= Conduit fitting, Cable 4 ft.
N= Conduit fitting, Cable 6 ft.
P= Conduit fitting, Cable 10 ft.

Now With DIN43650A!

Wetted Material
0=17-4PH
1=316 L

Options
000 -No special options

Single Seal

Pressure Ranges*

PSIG Measurement Range	Pressure Range Code	BARG Measurement Range	Pressure Range Code
-14.7 to 25**	V0025**	-1 to 2**	V0002**
0-25	00025	0-2	00002
0-50	00050	0-5	00005
0-100	00100	0-10	00010
0-200	00200	0-20	00020
0-500	00500	0-50	00050
0-1,000	01000	0-100	00100
0-2,500	02500	0-250	00250
0-5,000	05000	0-350	00350
0-7,500	07500	0-500	00500
0-10,000	10000	0-700	00700

*Typical ranges. All ranges between 0-25 PSI and 0-10,000 PSI available.
**Compound ranges up to -14.7 to 2500 PSI available. Please consult factory.

Barrier Installation

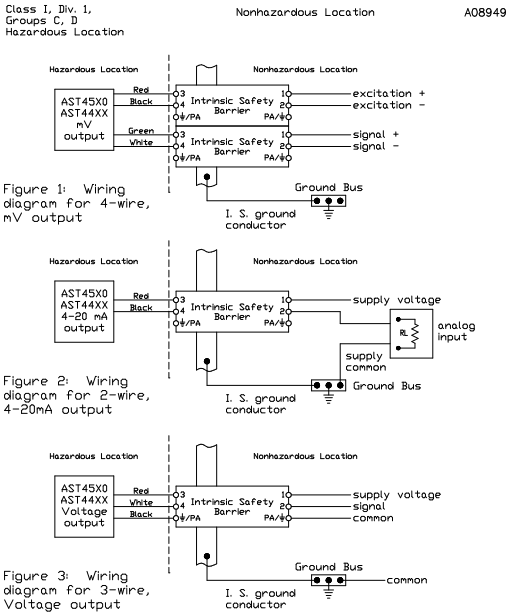


Figure 1: Wiring diagram for 4-wire, mV output

Figure 2: Wiring diagram for 2-wire, 4-20mA output

Figure 3: Wiring diagram for 3-wire, Voltage output

Entity Parameters

Models AST4400, AST4410 and AST44LP	Models AST4400, AST4410 and AST44P with integral cable	Models AST4500, AST4510 and AST4520
Vmax = 28 Vdc Imax = 175 mA Ci = 0.45 uF Li = 0	Vmax = 28 Vdc Imax = 175 mA Ci = 0.45 uF Li = 1.32 uH	Vmax = 28 Vdc Imax = 175 mA Ci = 0.46 uF Li = 16.5 uH

1. For installation in accordance with Fig 2, barrier must be a CSA Certified, Single Channel grounded Shunt-Diode Zener Barrier or a Single Channel Isolating Barrier.

Barrier parameters must meet the following requirements:

Voc or Uo <= Vmax
Isc or Io <= Imax
Po <= Pi (if applicable)
Ca or Co >= Ci + Ccable
La or Lo >= Li + Lcable

2. For installations in accordance with Figs. 1 and 3, one dual-channel or two single-channel barriers may be used, where in either case, both channels have been Certified for use together with combined entity parameters.

The following conditions must be satisfied:

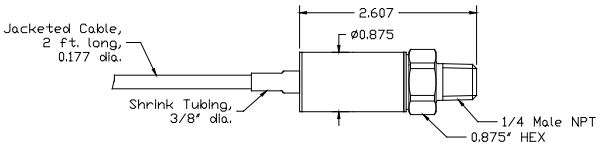
Voc or Uo <= Vmax
Isc or Io <= I max
Po <= Pi (if applicable)
Ca or Co >= Ci + Ccable
La or Lo >= Li + Lcable

3. Maximum non-hazardous area voltage must not exceed 250 V.

4. Installation should be in accordance with Canadian Electrical Code, Part I.

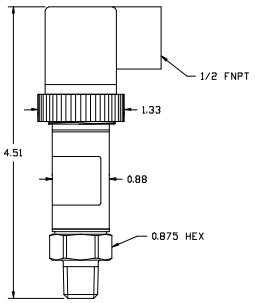
5. A grounding method is not provided by the manufacturer as part of the integral design of the Transducer. For units which are connected through a grounded shunt diode safety barrier, ensure that the transducer is mounted to a surface which is at the same potential as the barrier ground.

Dimensional Data



DIN43650A

Output	Pin 1	Pin 2	Pin 3	Wide Pin
4-20mA	+V Supply	Ground	Case GND	N/C
3W Voltage	+V Supply	Ground	+ Signal	Case GND



CABLE

Output	Red	Black	White	Green
4-20mA	+V Supply	Ground	N/C	Case GND
3W Voltage	+V Supply	Ground	+ Signal	Case GND

Warranty

Workmanship - AST, Inc. pressure transmitters have a limited one-year warranty to the original purchaser. AST, Inc. will replace or repair, free of charge, any defective transmitter. This warranty does not apply to any units that have been modified; misused, neglected or installed where the application exceeds published ratings. AST's sensors are made with pride in New Jersey, USA. If in the area please feel free to stop by for a visit!

Installation/Applications - The purchaser is responsible for media compatibility, functional adequacy, and correct installation of the transmitter.

© 2009 American Sensor Technologies Inc. Form data4400-ss 09/23/09.
All specifications subject to change without notice.

PT 50

AMERICAN SENSOR TECHNOLOGIES (AST)
AST4400A06000P4E0437
0-6000 PSI PRESSURE TRANSDUCER, IS/UL
CL1 DIV2, GROUPC&D, 4-20Ma, 1/4MNPT, SS

ANGI PART NUMBER 410-07282

THIS PAGE LEFT INTENTIONALLY BLANK

AST4400 *Stainless Steel Media Isolated Pressure Sensor*

CSA Approved For Hazardous Locations with Approved Barrier

RoHS COMPLIANT LEAD FREE

Overview

The AST4400 is a media isolated stainless steel pressure sensor with a wide variety of options. In addition to its rugged construction and best price-to-performance ratio in the industry, the AST4400 is the solution for pressure measurement in Intrinsically Safe areas.

NOW APPROVED SINGLE SEAL ANSI / ISA 12.27.01-2003



Benefits

- **ANSI/ISA - 12.27.01.2003 Certified "Single Seal"** (No need for expensive secondary seal)
- **CSA 157** Class 1 Groups C, D IS with approved Barrier (page 2)
- **CAN/CSA-C22.2 No. 157.92** - Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations
- High Strength Stainless Steel Construction
- No Oil, Welds or Internal O-rings
- Wide Operating Temperature Range
- Ranges up to 10,000 PSI
- Low Static and Thermal Errors
- Unparalleled Price and Performance
- Compatible with Wide Range of Liquids and Gases
- EMI/RFI Protection
- 500VAC Isolation

Applications

- Industrial OEM Equipment
- Water Management
- Pneumatics
- Hydrogen Storage (316L SS)
- HVAC/R Equipment
- Control Panels
- Hydraulic Systems
- Data Loggers

Performance @25°C (77°F)

Accuracy*	< ±0.25% BFSL
Stability (1 year)	±0.25%FS, typical
Over range Protection	2X Rated Pressure
Burst Pressure	5X or 20,000 PSI (whichever is less)
Pressure Cycles	> 100 Million

* Accuracy includes non-linearity, hysteresis & non-repeatability

Environmental Data

Temperature	
Operating	-40 to 85°C (-40 to 185°F)
Storage	-40 to 100°C (-40 to 212°F)
Thermal Limits	
Compensated Range	0 to 55°C (30 to 130°F)
TC Zero	<±1.5% of FS
TC Span	<±1.5% of FS
Other	
Shock	100G, 11 msec, 1/2 sine
Vibration	10G peak, 20 to 2000 Hz.
EMI/RFI Protection	Yes
Rating	IP-66

Electrical Data

Output	**4-20mA**	**1-5VDC, 1-6VDC**	**0-50mV (10mV/V)**	**0.5-4.5V Ratiometric**
Excitation	10-28VDC	10-28VDC	5VDC, typical	5VDC, regulated
Output Impedance	>10k Ohms	<100 Ohms, Nominal	1100 Ohms, Nominal	<100 Ohms, Nominal
Current Consumption	20mA, typical	<10mA	<5mA	<10mA
Bandwidth	(-3dB): DC to 250 Hz	(-3dB): DC to 1kHz	(-3dB): DC to 5kHz, min	(-3dB): DC to 1kHz
Output Noise	-	<2mV RMS	-	<2mV RMS
Zero Offset:	<±1% of FS	<±1% of FS	< ±2% of FS	<±1% of FS
Span Tolerance	<±2% of FS	<±1.5% of FS	< ±2% of FS	<±1.5% of FS
Output Load	0-800 Ohms@10-28VDC	10k Ohms, Min.	>1M Ohms	10K Ohms, Min.
Reverse Polarity Protection	Yes	Yes	-	No

Ordering Information

AST4400 **A** **00500** **P** **4** **E** **0** **000** **-SS**

Series Type

Process Connection
A=1/4" NPT Male
B=1/8" NPT Male
C=1/4" BSPP Male
F=7/16" - 20 UNF Male
I= 1/4" NPT Female

Pressure Range
Insert pressure range from chart

Pressure Unit
B= Bar
K= kg/cm2
P= PSI

Outputs
1= 0.5-4.5V ratiometric
3= 1-5V
4= 4-20mA (2 wire loop powered)
6= 1-6V
A= 0-50mV (10mV/V)

Electrical
A= 2 ft. (0.6 m)
B= 4 ft. (1.2 m)
C= 6 ft. (1.8 m)
D= 10 ft. (3.0 m)
E= Mini DIN 43650
F= Packard Metripack 150 3-Pin Conn.
I= DIN 43650A
L= Conduit fitting, Cable 2 ft.
M= Conduit fitting, Cable 4 ft.
N= Conduit fitting, Cable 6 ft.
P= Conduit fitting, Cable 10 ft.

Now With DIN43650A!

Wetted Material
0=17-4PH
1=316 L

Options
000 -No special options

Single Seal

Pressure Ranges*

PSIG Measurement Range	Pressure Range Code	BARG Measurement Range	Pressure Range Code
-14.7 to 25**	V0025**	-1 to 2**	V0002**
0-25	00025	0-2	00002
0-50	00050	0-5	00005
0-100	00100	0-10	00010
0-200	00200	0-20	00020
0-500	00500	0-50	00050
0-1,000	01000	0-100	00100
0-2,500	02500	0-250	00250
0-5,000	05000	0-350	00350
0-7,500	07500	0-500	00500
0-10,000	10000	0-700	00700

*Typical ranges. All ranges between 0-25 PSI and 0-10,000 PSI available.
**Compound ranges up to -14.7 to 2500 PSI available. Please consult factory.

Barrier Installation

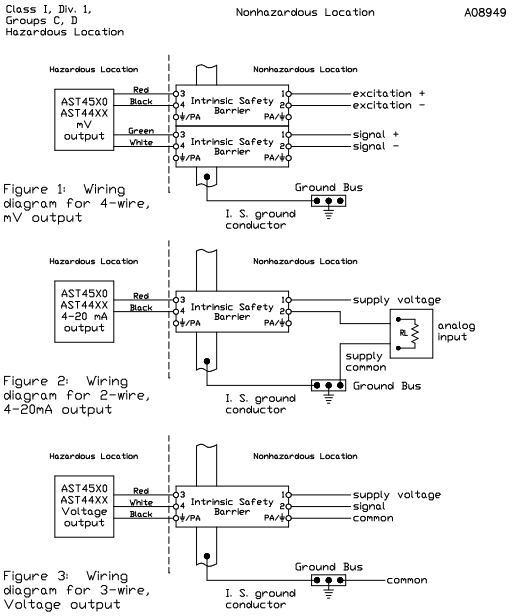


Figure 1: Wiring diagram for 4-wire, mV output

Figure 2: Wiring diagram for 2-wire, 4-20mA output

Figure 3: Wiring diagram for 3-wire, Voltage output

Entity Parameters

Models AST4400, AST4410 and AST44LP	Models AST4400, AST4410 and AST44P with integral cable	Models AST4500, AST4510 and AST4520
Vmax = 28 Vdc Imax = 175 mA Ci = 0.45 uF Li = 0	Vmax = 28 Vdc Imax = 175 mA Ci = 0.45 uF Li = 1.32 uH	Vmax = 28 Vdc Imax = 175 mA Ci = 0.46 uF Li = 16.5 uH

1. For installation in accordance with Fig 2, barrier must be a CSA Certified, Single Channel grounded Shunt-Diode Zener Barrier or a Single Channel Isolating Barrier.

Barrier parameters must meet the following requirements:

Voc or Uo <= Vmax
Isc or Io <= Imax
Po <= Pi (if applicable)
Ca or Co >= Ci + Ccable
La or Lo >= Li + Lcable

2. For installations in accordance with Figs. 1 and 3, one dual-channel or two single-channel barriers may be used, where in either case, both channels have been Certified for use together with combined entity parameters.

The following conditions must be satisfied:

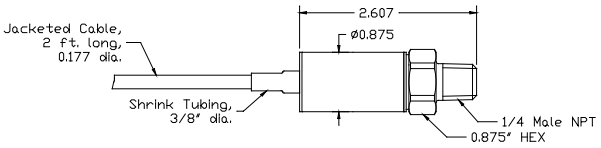
Voc or Uo <= Vmax
Isc or Io <= I max
Po <= Pi (if applicable)
Ca or Co >= Ci + Ccable
La or Lo >= Li + Lcable

3. Maximum non-hazardous area voltage must not exceed 250 V.

4. Installation should be in accordance with Canadian Electrical Code, Part I.

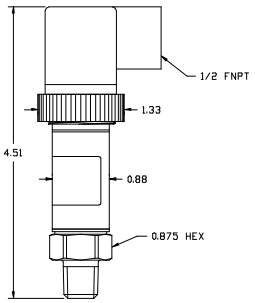
5. A grounding method is not provided by the manufacturer as part of the integral design of the Transducer. For units which are connected through a grounded shunt diode safety barrier, ensure that the transducer is mounted to a surface which is at the same potential as the barrier ground.

Dimensional Data



DIN43650A

Output	Pin 1	Pin 2	Pin 3	Wide Pin
4-20mA	+V Supply	Ground	Case GND	N/C
3W Voltage	+V Supply	Ground	+ Signal	Case GND



CABLE

Output	Red	Black	White	Green
4-20mA	+V Supply	Ground	N/C	Case GND
3W Voltage	+V Supply	Ground	+ Signal	Case GND

Warranty

Workmanship - AST, Inc. pressure transmitters have a limited one-year warranty to the original purchaser. AST, Inc. will replace or repair, free of charge, any defective transmitter. This warranty does not apply to any units that have been modified; misused, neglected or installed where the application exceeds published ratings. AST's sensors are made with pride in New Jersey, USA. If in the area please feel free to stop by for a visit!

Installation/Applications - The purchaser is responsible for media compatibility, functional adequacy, and correct installation of the transmitter.

© 2009 American Sensor Technologies Inc. Form data4400-ss 09/23/09.
All specifications subject to change without notice.

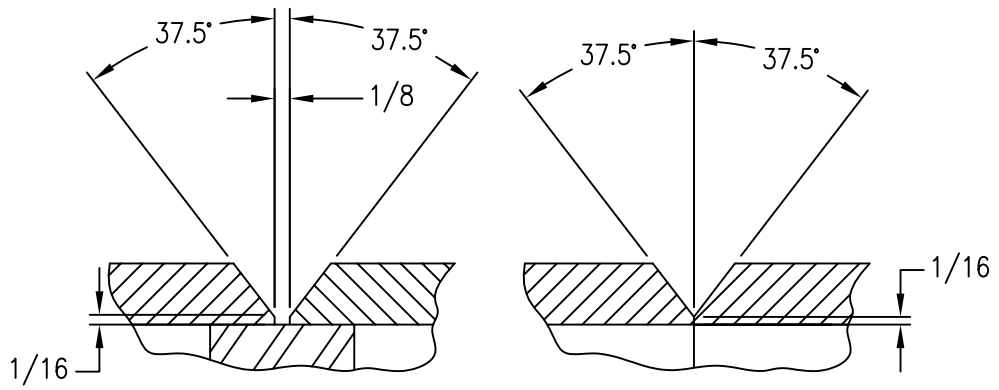
PV 80

SILVAN
135-022 (27-24-120-600)

TANK-VERT 100GAL 600# 24’’OD
64 ½’’ OAL ASME VESSEL RING BASE

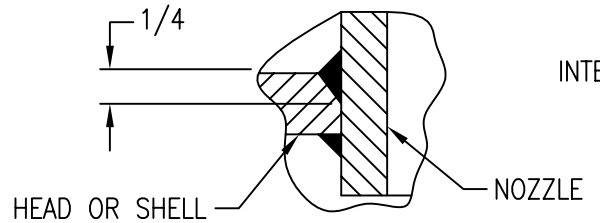
ANGI PART NUMBER 944-07263

NO.	QTY.	PART NUMBER	DESCRIPTION	LENGTH
1	1		SHELL	
2	1		HEAD– ELL. 24" DIA	
3	1		HEAD– ELL. 24" DIA	
4	1		BACK UP STRIP	
5	1		BASE RING ASS'Y	
6	1		1/4" NPT 3000# FULL CPLG.	
7	2		1/2" NPT 3000# FULL CPLG.	
8	1		3/4" NPT 3000# FULL CPLG.	
9	1		1" NPT 3000# HALF CPLG.	
10	3		1 1/2" NPT 3000# HALF CPLG.	
11	3		2" NPT 3000# HALF CPLG.	
12	2		2" NPT SQ. HD. FORGED PLUG	
13	2		LIFTING LUG	
14	1		ASME DATA PLATE	

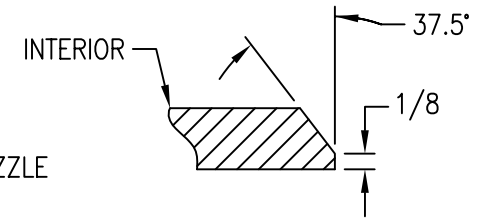


DETAIL A

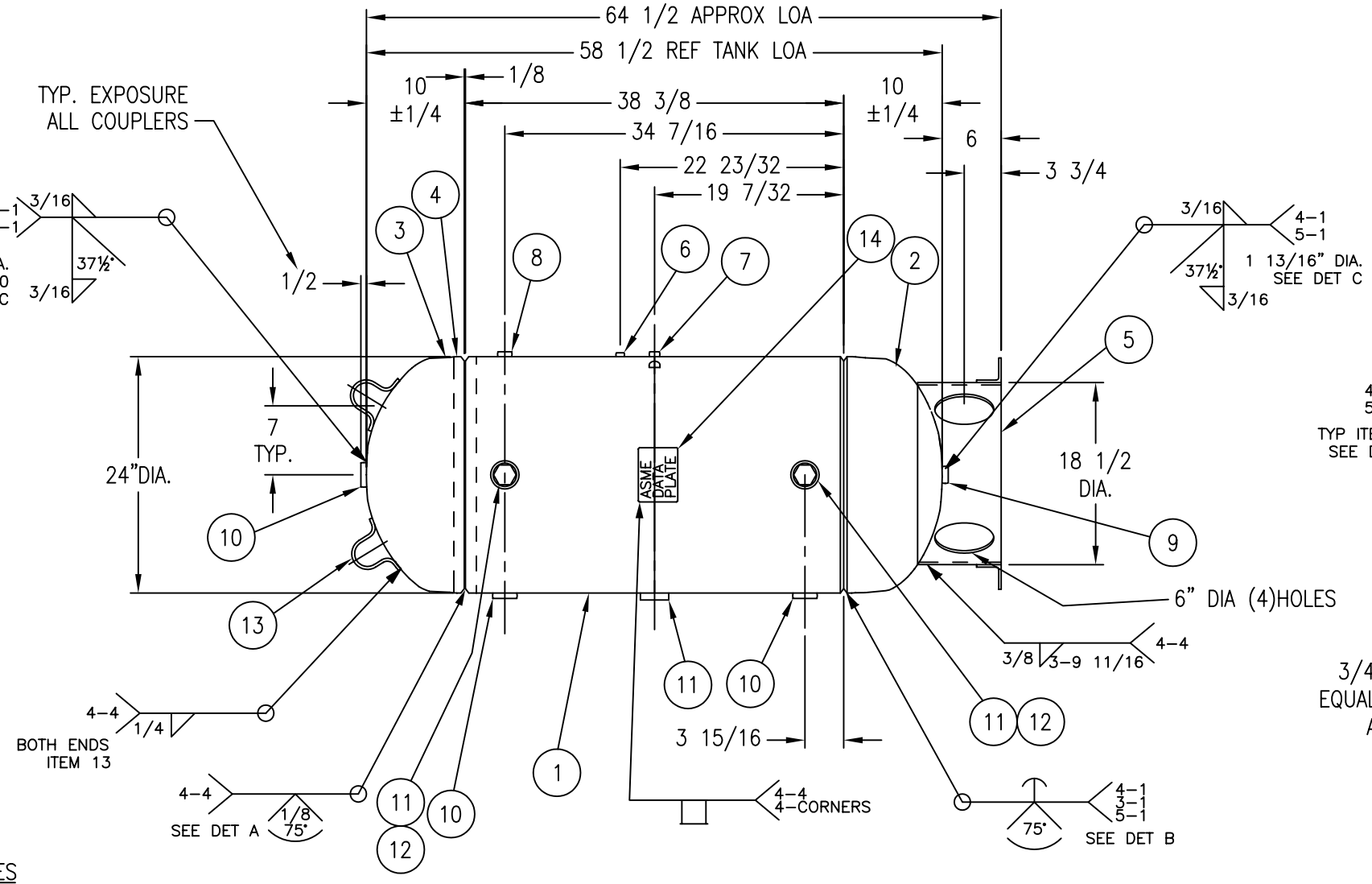
DETAIL B

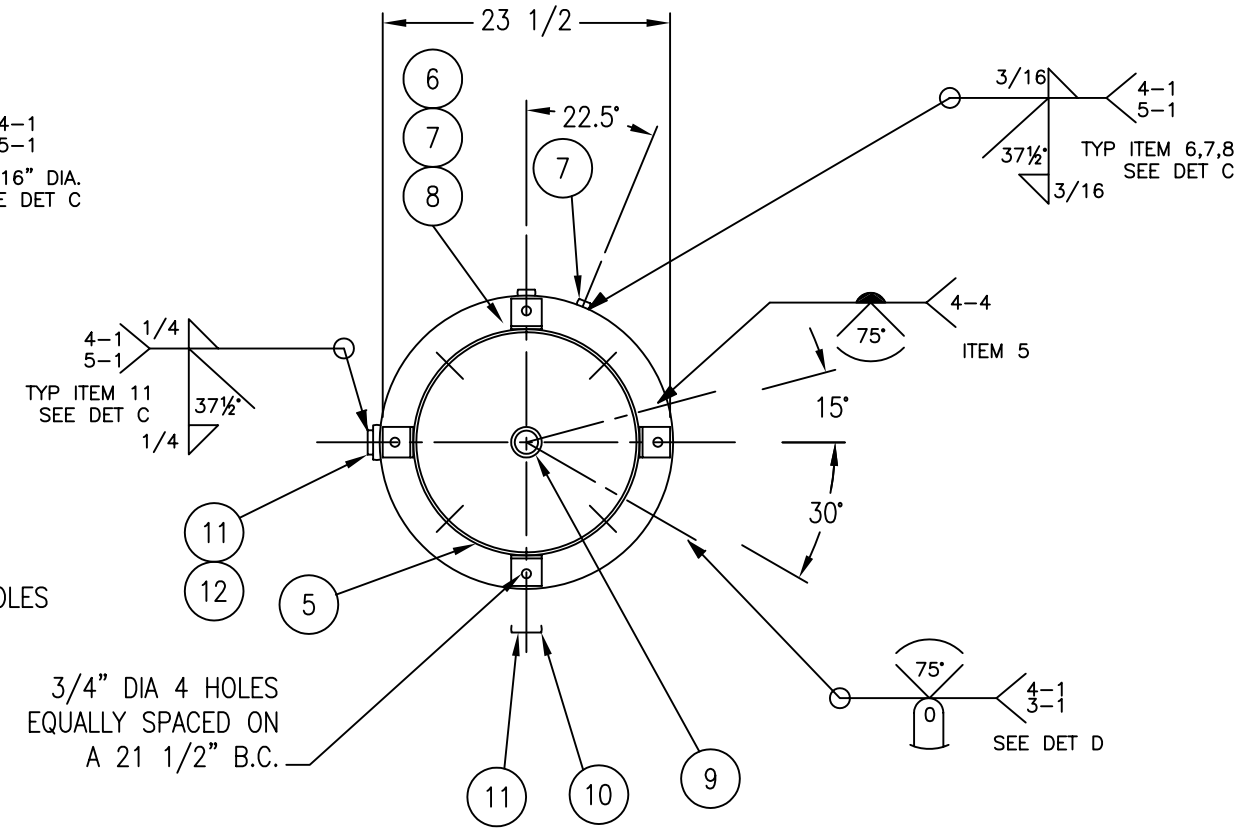


DETAIL C



DETAIL D





NOTES

1. SHELL .500 NOM. SA–455 GR. " " P.V.Q.
   DES. THK. .434 E=100%
   HEADS .500 NOM. SA–516 GR. "70" P.V.Q.
   DES. THK. .438 S=100%
2. WORKING PRESSURE 600PSI
3. TEST PRESSURE HYDRO. 796PSI
4. TEMPERATURE MIN. –20°F MAN. 450°F
5. ALL WELDED FITTINGS MUST BE HELD PERPENDICULAR TO CL WITHIN 3/8" IN 12"
6. IMPACT TEST EXEMPT PER PAR. UG–20(F)
7. SPECIFICATIONS:
   CALCULATED WEIGHT 779 LBS.
   CALCULATED CAPACITY 100 GALS.
8. CRN– NONE
9. N.D.T. – RT–4 FULL X–RAY STAKE SEAM. SPOT X–RAY GIRTH SEAM
10. FINISH – GREY URETHANE PRIMER

(BUILT IN ACCORDANCE WITH THE LATEST ADDITION OF SECTION VIII DIV 1 ASME CODE)

REV	DATE/BY	DESCRIPTION	REV	DATE/BY	DESCRIPTION
A	2/24/09 ADM	MOVED CONNECTION 6, 7, 11			

ANGI international
ANGI INTERNATIONAL
P.O. BOX 39
15 PLUMB STREET
MILTON, WI 53563
PH: 608–868–4626
FX: 608–868–2723

THIS DRAWING AND ALL INFORMATION THEREIN IS THE SOLE PROPERTY OF ANGI AND SHOULD NOT BE COPIED, REPRODUCED, OR SUBMITTED TO OTHERS WITHOUT WRITTEN AUTHORIZATION. ALL REPRODUCTIONS ARE SUBJECT TO RETURN ON DEMAND.

UNLESS OTHERWISE SPECIFIED

BREAK SHARP EDGES

ALL DIMENSIONS IN INCHES

FRACTIONAL	±.125
TWO PLACE DECIMAL	±.010
THREE PLACE DECIMAL	±.005
ANGLES	±1°

TITLE	100 GAL 600 PSI RECIEVER TANK NARROW BODY		
CUSTOMER			PROJECT NO.
SHEET	1/1	SCALE	1:16
DRAWN BY	ADM	DATE	2/7/09
			DRAWING NO. 944–07263

J:ENG/DRWG/ASSY/944

RTD 14

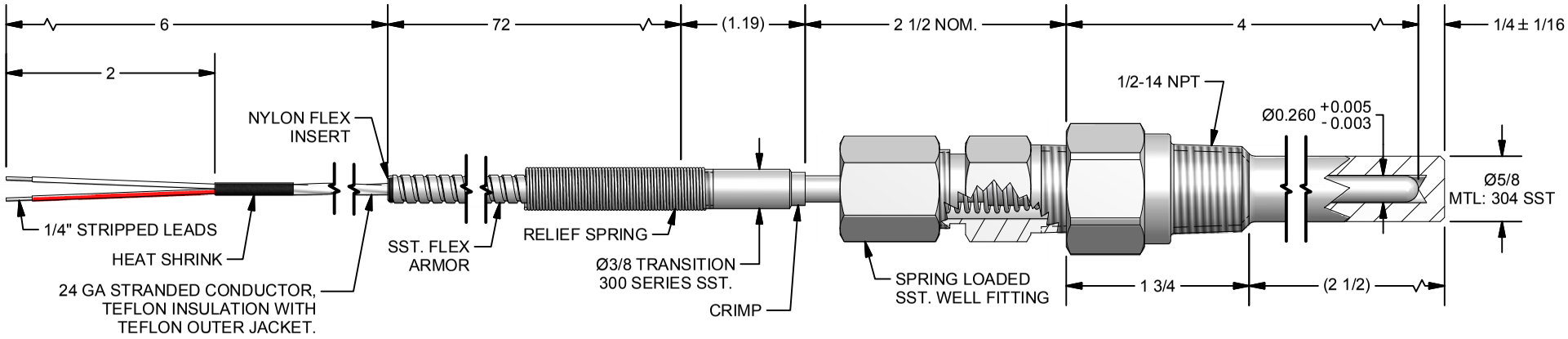
PYROMATION
PM26409-ANGI

1/2-14NPT PORT RTD ASSEMBLY, 400˚F MAX, 5700 PSI,
72” SST FLEX ARMOR CABLE,
PT100 2-WIRE W/ THERMOWELL 2.5x1/2NPT,
THERMAL GREASE IN PROBE TIP,

ANGI PART NUMBER 700-08041

REPLACEMENT ELEMENT - 400-07897

THIS PAGE LEFT INTENTIONALLY BLANK



ELEMENT IS A 2-WIRE 100 OHM RTD ASSEMBLY, 400°F (204°C) MAXIMUM TEMPERATURE.
INITIAL ACCURACY: ± 0.12% @ 0°C, 0.00385 Ω/Ω/°C NOMINAL TEMPERATURE COEFFICIENT.
ELEMENT IS EMBEDDED IN THERMALLY CONDUCTIVE EPOXY AND ENCASED IN A Ø1/4 316 SST SHEATH AND INSERTED IN A HEAVY DUTY THREADED THERMOWELL.

PYROMATION P/N: RBF185L482Z-H4C0409-19C-15-T3A072-2 (Z521)

REV	DESCRIPTION	BY	DATE
A	UPDATED PART NUMBER FROM 3 TO 2 WIRE & S4C TO H4C	JB	02/19/2010

SPEC NO:

TOLERANCES

FRACTION DIM =
DECIMAL DIM .XX =
DECIMAL DIM .XXX =
ANGULAR DIM =

This document is PROPRIETARY to Pyromation, Inc.

FOR: PYROMATION, INC.

TITLE: 100 OHM RTD, W/ WELL AND 19C

SIZE: A | DWG. NO. & SHEET NO: B075201 | REV. A

DRAWN BY: C. STRAUB | DATE: 4/22/2009

Pyromation, Inc.
FORT WAYNE, INDIANA 260-484-2580

THIS PAGE LEFT INTENTIONALLY BLANK

SRV 113

MERCER
91-12E51T11I1/275

VALVE-RELIEF 275 PSI MERCER E-ORF
¾ MNPT IN x 1 FNPT OUT 1257 SCFM

ANGI PART NUMBER 331-08013

MERCER VALVE CO., INC.
"Auto Seat Technology"®

Post Office Box 270970
Oklahoma City, Oklahoma 73137
FAX # (405) 495-8728

MERCER VALVE COMPANY, INC.
9100 SERIES THREADED SAFETY RELIEF VALVES

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

INSTALLATION

The safety relief valve should always be installed on a tank or piping run in the vertical position with the valve outlet pointing in a horizontal direction. When screwing the valve into the inlet piping, always use the wrench flats on the inlet connection. Never put a wrench on the relief valve body.

One of the most common causes of early failure of relief valves is dirt trapped on the valve seat. Welding slag and/or piping Teflon tape are among the more common items that cause difficulty. It is recommended that all piping and tank systems be cleaned prior to installation of the relief valve.

A relief valve should be connected with the minimum amount of piping between the tank and valve. Further, all piping used must be equal or larger than the inlet pipe size of the relief valve, never smaller. Any restriction of the inlet to a relief valve may cause unusual valve chatter, which could result in serious damage to the valve. Piping restrictions can also can also cause the valve to not relieve its full capacity causing the valve not to be able to reduce the pressure increase. Outlet piping from the relief valve should be less than four (4) feet in length and never of a pipe size smaller than the outlet pipe size of the relief valve. Long runs of small diameter pipe on the outlet side of a relief valve will create valve chatter and a capacity reduction that can cause the system to not be protected.

Extreme caution is required in the outlet piping if installed where liquids, if present, could form an ice block in the piping of the relief valve body in below freezing conditions. Discharge lines must be "weathered capped" and provided with a drain hole to prevent any liquid collection in the relief valve body or outlet piping. This liquid can freeze and cause the valve to not open or reduce the capacity of the valve. If these precautions are not taken the valves will not protect the system.

Additional, important installation information is contained in Paragraph UG-135, Section VIII of the ASME Code.

OPERATION

For best performance in process work is usually obtained by setting the safety relief valve to open at least 15% above the operating pressure where possible. A greater margin is desirable. However, this setting must not exceed the maximum working pressure of the vessel. All Mercer 9100 Series Safety Relief Valves are checked for bubble-tight per API 527.

In Addition to checking the set pressure versus the maximum allowable working pressure of the vessel, also check to insure that back pressure and temperature limitations of the process are consistent with valve ratings. The fluid state, capacity, temperature, set pressure, and back pressure can all be found on the tag of the valve. Pressures and Temperatures outside the normal ranges require special materials. Further, carefully check the process fluid input capacities to insure that the relief valve capacity is greater than the process capacities.

DO NOT BREAK THE SEAL WIRE Breaking the seal wire invalidates the manufacture's warranty to repair or replace the valve. If resetting is required in a field emergency situation a qualified personnel with calibrated instrumentation should perform it. With a broken seal wire this valve will be considered a non ASME code valve until it has been repaired by a VR certified repair shop.

DISASSEMBLY: **The following general procedure is recommended in disassembly inspection and cleaning of the relief valve:**

1. **Cut the wire seal and unscrew the cap to expose the adjustment screw.**
2. **Loosen the lock nut and relieve the tension on the spring by turning the adjustment screw counter clockwise. This will relieve the spring tension.**
3. **Secure the valve body so that it will not move**
   For orifice sizes C to G, unscrew and remove the inlet base
   For orifice size of H, unscrew and remove the bonnet
   For orifice sizes J and K, unbolt and remove the bonnet
4. **Inspect the replaceable seat for cuts and abrasions. If there are only minor scratches or abrasions on the seat, polish the seat area lightly with Scotch-Brite #7447. Be careful not to damage the soft seat. If the seat is damaged with deep abrasions and cuts, replace the nozzle/seat subassembly.**
5. **Refer to Figure 1 and measure the diameter of Ds with a precision caliper. This diameter must be in the range of values listed in Table 1. If this is not the case, replace the nozzle/seat subassembly.**

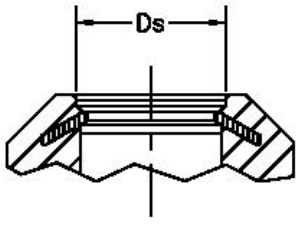


FIGURE 1

TABLE 1

ORIFICE SIZE	DIAMETER Ds (INCHES)	
	MINIMUM	MAXIMUM
"C"	.335	.337
"D"	.480	.482
"E"	.620	.622
"F"	.778	.780
"G"	.914	.916
"H"	1.242	1.2465
"J"	1.599	1.6025
"K"	1.899	1.903

6. **Remove and inspect the disk subassembly, especially the spherical surface portion that engages the seat. This surface must be clean and smooth. Polishing this surface with Scotch-Brite #7447 may restore the disk if it has only minor imperfections. If the spherical surface is damaged or scratched, replace the disk subassembly**

7. **Refer to Figure 2 and measure the diameter of Dd with a precision caliper. This diameter must be within the range of values listed in Table 2. If this is not the case, replace the disk subassembly.**

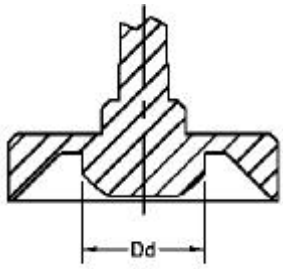


FIGURE 2

TABLE 2

ORIFICE SIZE	DIAMETER Dd (INCHES)	
	MINIMUM	MAXIMUM
"C"	.331	.333
"D"	.474	.477
"E"	.614	.616
"F"	.768	.771
"G"	.904	.906
"H"	1.228	1.231
"J"	1.580	1.583
"K"	1.876	1.880

8. **Check the disk stem of the disk subassembly to insure that the surface is smooth. Polish the stem if necessary with Scotch-Brite or fine emery. If the stem is galled, replace the disk subassembly.**
9. **Remove the spring and inspect for wear or damage. Clean and replace the spring if necessary. Be sure the spring is straight and square. If not replace the spring.**
10. **Remove the adjustment screw and guide bushing by tapping on the top of the adjustment screw with a "soft" drive rod. The guide bushing is designed to "slip fit" into the internal machined bore of the body. This "slip fit" must be maintained by cleaning the outside diameter of the guide bushing and internal bore of the valve body.**
11. **Replace the o-ring found on the adjustment screw stem.**
12. **DO NOT REMOVE THE CENTER NUT OR INDEX BRACKET SUBASSEMBLY. They are permanently installed at the factory. The purpose of the index bracket subassembly is to prevent rotation of the guide bushing. A body side pin is used in the 9100 "C" AND "D" orifices in place of the index bracket.**
13. **Lubricate the outside diameter of the adjustment screw thread, outside diameter of the guide bushing, the adjustment screw o-ring and the internal upper machined bore of the valve body with a good lubricating grease.**

REASSEMBLY: **The following general procedure is recommended in reassembly and setting of the valve:**

1. **Before reinstalling the adjustment screw and guide bushing, position the adjustment screw with the upper end of the thread protruding 1/8" from the end of the guide bushing. Carefully "slip fit" this assembly into the body, fitting the index bracket leg or body side pin into the slotted portion of the guide bushing. Note that the guide bushing must slip into the valve bore freely but with little radial play. Remove and reclean parts if the parts do not easy fit in. DO NOT FORCE THE GUIDE BUSHING INTO THE VALVE BODY. Forcing the parts may restrict valve lift and cause serious malfunction.**
2. **Swab out the internal bore of the adjustment screw to insure that is is clean and free from obstructions like dirt and grease.**
3. **Before reinstalling the spring, insert the disk subassembly into the bore of the adjustment screw and simulate the valve opening operation. The disk stem must slide freely within the bore of the adjustment screw.**
4. **Reinstall the spring and the disk subassembly. The spring should slide over the disk freely without sticking. Make sure the correct spring is installed.**
5. **Install the nozzle subassembly into the inlet base or body, for whichever applies.**
6. **For bottom entry valves reinstall the inlet base subassembly using a new base seal. Caution, the inlet base must be tight against the base seal and body.**
   For top entry valves reinstall the bonnet subassembly.
   Make sure the disk and nozzle are aligned.
7. **Check the lift of the valve by inhering a properly shaped drive rod in an arbor press into the internal bore of the inlet base and pressing on the nose of the disk subassembly. Apply a slight spring tension to the valve disk. Measure the "lift" of the valve with a dial indicator. The minimum lift can be found in NB-18 on the National Board website www.nationalboard.org.**
8. **Reinstall the lock nut and the valve is ready for setting. Valve setting at all pressures is dangerous. All eye and ear safety precautions should be observed.**
9. **Resetting should be performed on an air/gas test stand or a liquid test stand depending on the service of the valve. The test stand should have a volume under the valve of at least one (1) cubic foot capacity of the type recommended by the National Board. Test gauges should be a minimum of 6" dial with .25% accuracy. The gages should be dead weight verified for accuracy.**

10. **Repeated "popping" at set pressure is recommended. The valve should be popped approximately five (5) to ten (10) times during the setting process allowing full blowdowns.**
11. **A slight audible warning action is to be expected, starting approximately 5% below the set pressure.**
12. **All valves should be bubble tight at 10% below set pressure in accordance with API 527.**
13. **When the valve is set, tighten the lock nut securely so at least 1/4" of the stem is exposed above the lock nut. The adjustment screw must not turn when the lock nut is tightened. This will affect the set pressure. Pop the valve once more after the lock nut is tightened to verify the set pressure.**
14. **Reinstall the cap and a new lockwire. Close the lockwire and crimp the lead seal.**

BACK PRESSURE TESTING **The purpose of back pressure testing Mercer Safety Relief Valves is to check for leaks in the secondary pressure zone (the outlet side of the relief valve). This includes the body, bonnet, outlet flange and all parts included in the upper valve assembly. This is best performed before the valve seal wire has been attached.**

The back pressure test is performed after the valve has been assembled and set to the correct set pressure. The test is performed by attaching a pressure source to the outlet of the valve and submerging the valve in a solution of water treated with rust inhibitor. The pressure in the secondary pressure zone is then brought to 30 psig or to what the back pressure the valve will see. This is the pressure required by the ASME BOILER AND PRESSURE VESSEL CODE, SECTION VIII. PART UG-136(d) "Production Testing by Manufacturers and Assemblers". The valve is then visually inspected for any leaks by checking for bubbles coming from any part of the valve. If any part of the valve is producing bubbles, the valve is disassembled, repaired and the valve is reassembled and retested. If no leaks are detected, the valve is stamped with the appropriate set pressure, the valve then goes to the finishing department to be painted, tagged, and prepared for shipping.

MERCER VALVE COMPANY, INC.
9100 SERIES THREADED SAFETY RELIEF VALVES

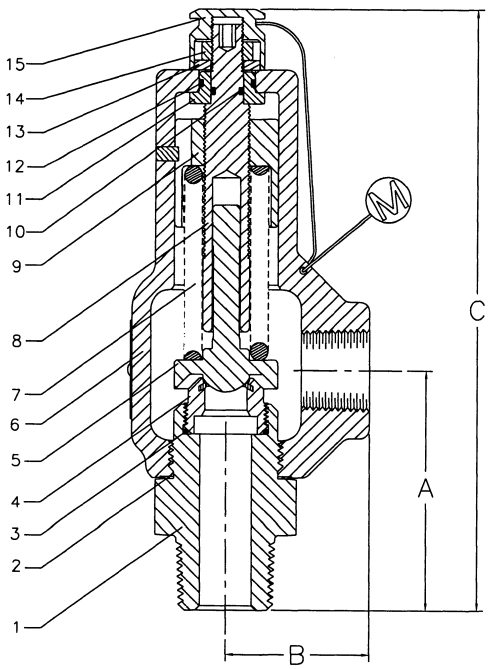
INSTALLATION, OPERATION AND MAINTENANCE MANUAL

"C", "D", AND "E" ORIFICE STANDARD BILL OF MATERIALS

"C" ORIFICE DIAMETER: .281 In.
"C" ORIFICE AREA: .062 Sq.In.
SET PRESSURE RANGE: 15-2999 PSI

"D" ORIFICE DIAMETER: .394 In.
"D" ORIFICE AREA: .122 Sq.In.
SET PRESSURE RANGE: 15-2999 PSI

"E" ORIFICE DIAMETER: .520 In.
"E" ORIFICE AREA: .212 Sq.In.
SET PRESSURE RANGE: 15-2400 PSI



"C", "D", and "E" Orifice

"C", "D", AND "E" ORIFICE				
ITEM NO.	PART NAME	"C" ORIFICE STD MTRLS "C" TRIM CODE	"D" & "E" STD MTRLS "I" TRIM CODE	"C", "D", "E" OPTIONS "U", "L", "N", OR "B" CODE
1	Inlet Base	Carbon Steel or 316 Stainless Steel	Carbon Steel or 316 Stainless Steel	Carbon Steel or 316 Stainless Steel
2	Base Seal	Carbon Steel or 316 Stainless Steel	Carbon Steel or 316 Stainless Steel	Carbon Steel or 316 Stainless Steel
3	O'Ring	Viton	Viton	Viton
4	Nozzle Subassy	17-4 Stainless Steel with Soft Seat	17-4 Stainless Steel with Soft Seat	316 Stainless Steel with Soft Seat
5	Disk Subassy	440C Stainless Steel	17-4 Stainless Steel	316 Stainless Steel
6	Body	WCB Carbon Steel or CF3M Stainless Steel	WCB Carbon Steel or CF3M Stainless Steel	WCB Carbon Steel or CF3M Stainless Steel
7	Spring	17-7 Stainless Steel	17-7 Stainless Steel	17-7 Stainless Steel or Inconel X-750 (NACE)
8	Adjustment Screw	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
9	Adjustment Bushing	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
10	O'Ring	Buna N	Buna N	Buna N
11	Center Bushing	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
12	O'Ring	Buna N	Buna N	Buna N
13	Washer	Carbon Steel	Carbon Steel	Carbon Steel
14	Lock Nut	Carbon Steel	Carbon Steel	Carbon Steel
15	Cap	Anodized Aluminum	Anodized Aluminum	Anodized Aluminum

SRV 122

MERCER
9112D51T11I1/600
600 PSI D-ORIFICE, 3/4” MNPT IN, 1” FNPT OUT
1200 SCFM
SAFETY RELIEF VALVE

ANGI PART NUMBER 331-08022

THIS PAGE LEFT INTENTIONALLY BLANK

MERCER VALVE CO., INC.
"Auto Seat Technology"®

Post Office Box 270970
Oklahoma City, Oklahoma 73137
FAX # (405) 495-8728

MERCER VALVE COMPANY, INC.
9100 SERIES THREADED SAFETY RELIEF VALVES

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

INSTALLATION

The safety relief valve should always be installed on a tank or piping run in the vertical position with the valve outlet pointing in a horizontal direction. When screwing the valve into the inlet piping, always use the wrench flats on the inlet connection. Never put a wrench on the relief valve body.

One of the most common causes of early failure of relief valves is dirt trapped on the valve seat. Welding slag and/or piping Teflon tape are among the more common items that cause difficulty. It is recommended that all piping and tank systems be cleaned prior to installation of the relief valve.

A relief valve should be connected with the minimum amount of piping between the tank and valve. Further, all piping used must be equal or larger than the inlet pipe size of the relief valve, never smaller. Any restriction of the inlet to a relief valve may cause unusual valve chatter, which could result in serious damage to the valve. Piping restrictions can also can also cause the valve to not relieve its full capacity causing the valve not to be able to reduce the pressure increase. Outlet piping from the relief valve should be less than four (4) feet in length and never of a pipe size smaller than the outlet pipe size of the relief valve. Long runs of small diameter pipe on the outlet side of a relief valve will create valve chatter and a capacity reduction that can cause the system to not be protected.

Extreme caution is required in the outlet piping if installed where liquids, if present, could form an ice block in the piping of the relief valve body in below freezing conditions. Discharge lines must be "weathered capped" and provided with a drain hole to prevent any liquid collection in the relief valve body or outlet piping. This liquid can freeze and cause the valve to not open or reduce the capacity of the valve. If these precautions are not taken the valves will not protect the system.

Additional, important installation information is contained in Paragraph UG-135, Section VIII of the ASME Code.

OPERATION

For best performance in process work is usually obtained by setting the safety relief valve to open at least 15% above the operating pressure where possible. A greater margin is desirable. However, this setting must not exceed the maximum working pressure of the vessel. All Mercer 9100 Series Safety Relief Valves are checked for bubble-tight per API 527.

In Addition to checking the set pressure versus the maximum allowable working pressure of the vessel, also check to insure that back pressure and temperature limitations of the process are consistent with valve ratings. The fluid state, capacity, temperature, set pressure, and back pressure can all be found on the tag of the valve. Pressures and Temperatures outside the normal ranges require special materials. Further, carefully check the process fluid input capacities to insure that the relief valve capacity is greater than the process capacities.

DO NOT BREAK THE SEAL WIRE Breaking the seal wire invalidates the manufacture's warranty to repair or replace the valve. If resetting is required in a field emergency situation a qualified personnel with calibrated instrumentation should perform it. With a broken seal wire this valve will be considered a non ASME code valve until it has been repaired by a VR certified repair shop.

DISASSEMBLY: **The following general procedure is recommended in disassembly inspection and cleaning of the relief valve:**

1. **Cut the wire seal and unscrew the cap to expose the adjustment screw.**
2. **Loosen the lock nut and relieve the tension on the spring by turning the adjustment screw counter clockwise. This will relieve the spring tension.**
3. **Secure the valve body so that it will not move**
   For orifice sizes C to G, unscrew and remove the inlet base
   For orifice size of H, unscrew and remove the bonnet
   For orifice sizes J and K, unbolt and remove the bonnet
4. **Inspect the replaceable seat for cuts and abrasions. If there are only minor scratches or abrasions on the seat, polish the seat area lightly with Scotch-Brite #7447. Be careful not to damage the soft seat. If the seat is damaged with deep abrasions and cuts, replace the nozzle/seat subassembly.**
5. **Refer to Figure 1 and measure the diameter of Ds with a precision caliper. This diameter must be in the range of values listed in Table 1. If this is not the case, replace the nozzle/seat subassembly.**

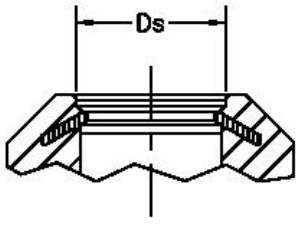


FIGURE 1

TABLE 1

ORIFICE SIZE	DIAMETER Ds (INCHES)	
	MINIMUM	MAXIMUM
"C"	.335	.337
"D"	.480	.482
"E"	.620	.622
"F"	.778	.780
"G"	.914	.916
"H"	1.242	1.2465
"J"	1.599	1.6025
"K"	1.899	1.903

6. **Remove and inspect the disk subassembly, especially the spherical surface portion that engages the seat. This surface must be clean and smooth. Polishing this surface with Scotch-Brite #7447 may restore the disk if it has only minor imperfections. If the spherical surface is damaged or scratched, replace the disk subassembly**

7. **Refer to Figure 2 and measure the diameter of Dd with a precision caliper. This diameter must be within the range of values listed in Table 2. If this is not the case, replace the disk subassembly.**

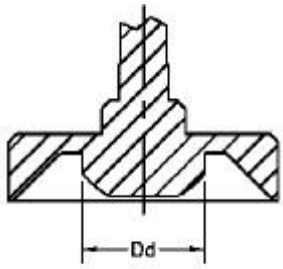


FIGURE 2

TABLE 2

ORIFICE SIZE	DIAMETER Dd (INCHES)	
	MINIMUM	MAXIMUM
"C"	.331	.333
"D"	.474	.477
"E"	.614	.616
"F"	.768	.771
"G"	.904	.906
"H"	1.228	1.231
"J"	1.580	1.583
"K"	1.876	1.880

8. **Check the disk stem of the disk subassembly to insure that the surface is smooth. Polish the stem if necessary with Scotch-Brite or fine emery. If the stem is galled, replace the disk subassembly.**
9. **Remove the spring and inspect for wear or damage. Clean and replace the spring if necessary. Be sure the spring is straight and square. If not replace the spring.**
10. **Remove the adjustment screw and guide bushing by tapping on the top of the adjustment screw with a "soft" drive rod. The guide bushing is designed to "slip fit" into the internal machined bore of the body. This "slip fit" must be maintained by cleaning the outside diameter of the guide bushing and internal bore of the valve body.**
11. **Replace the o-ring found on the adjustment screw stem.**
12. **DO NOT REMOVE THE CENTER NUT OR INDEX BRACKET SUBASSEMBLY. They are permanently installed at the factory. The purpose of the index bracket subassembly is to prevent rotation of the guide bushing. A body side pin is used in the 9100 "C" AND "D" orifices in place of the index bracket.**
13. **Lubricate the outside diameter of the adjustment screw thread, outside diameter of the guide bushing, the adjustment screw o-ring and the internal upper machined bore of the valve body with a good lubricating grease.**

REASSEMBLY: **The following general procedure is recommended in reassembly and setting of the valve:**

1. **Before reinstalling the adjustment screw and guide bushing, position the adjustment screw with the upper end of the thread protruding 1/8" from the end of the guide bushing. Carefully "slip fit" this assembly into the body, fitting the index bracket leg or body side pin into the slotted portion of the guide bushing. Note that the guide bushing must slip into the valve bore freely but with little radial play. Remove and reclean parts if the parts do not easy fit in. DO NOT FORCE THE GUIDE BUSHING INTO THE VALVE BODY. Forcing the parts may restrict valve lift and cause serious malfunction.**
2. **Swab out the internal bore of the adjustment screw to insure that is is clean and free from obstructions like dirt and grease.**
3. **Before reinstalling the spring, insert the disk subassembly into the bore of the adjustment screw and simulate the valve opening operation. The disk stem must slide freely within the bore of the adjustment screw.**
4. **Reinstall the spring and the disk subassembly. The spring should slide over the disk freely without sticking. Make sure the correct spring is installed.**
5. **Install the nozzle subassembly into the inlet base or body, for whichever applies.**
6. **For bottom entry valves reinstall the inlet base subassembly using a new base seal. Caution, the inlet base must be tight against the base seal and body.**
   For top entry valves reinstall the bonnet subassembly.
   Make sure the disk and nozzle are aligned.
7. **Check the lift of the valve by inhering a properly shaped drive rod in an arbor press into the internal bore of the inlet base and pressing on the nose of the disk subassembly. Apply a slight spring tension to the valve disk. Measure the "lift" of the valve with a dial indicator. The minimum lift can be found in NB-18 on the National Board website www.nationalboard.org.**
8. **Reinstall the lock nut and the valve is ready for setting. Valve setting at all pressures is dangerous. All eye and ear safety precautions should be observed.**
9. **Resetting should be performed on an air/gas test stand or a liquid test stand depending on the service of the valve. The test stand should have a volume under the valve of at least one (1) cubic foot capacity of the type recommended by the National Board. Test gauges should be a minimum of 6" dial with .25% accuracy. The gages should be dead weight verified for accuracy.**

10. **Repeated "popping" at set pressure is recommended. The valve should be popped approximately five (5) to ten (10) times during the setting process allowing full blowdowns.**
11. **A slight audible warning action is to be expected, starting approximately 5% below the set pressure.**
12. **All valves should be bubble tight at 10% below set pressure in accordance with API 527.**
13. **When the valve is set, tighten the lock nut securely so at least 1/4" of the stem is exposed above the lock nut. The adjustment screw must not turn when the lock nut is tightened. This will affect the set pressure. Pop the valve once more after the lock nut is tightened to verify the set pressure.**
14. **Reinstall the cap and a new lockwire. Close the lockwire and crimp the lead seal.**

BACK PRESSURE TESTING **The purpose of back pressure testing Mercer Safety Relief Valves is to check for leaks in the secondary pressure zone (the outlet side of the relief valve). This includes the body, bonnet, outlet flange and all parts included in the upper valve assembly. This is best performed before the valve seal wire has been attached.**

The back pressure test is performed after the valve has been assembled and set to the correct set pressure. The test is performed by attaching a pressure source to the outlet of the valve and submerging the valve in a solution of water treated with rust inhibitor. The pressure in the secondary pressure zone is then brought to 30 psig or to what the back pressure the valve will see. This is the pressure required by the ASME BOILER AND PRESSURE VESSEL CODE, SECTION VIII. PART UG-136(d) "Production Testing by Manufacturers and Assemblers". The valve is then visually inspected for any leaks by checking for bubbles coming from any part of the valve. If any part of the valve is producing bubbles, the valve is disassembled, repaired and the valve is reassembled and retested. If no leaks are detected, the valve is stamped with the appropriate set pressure, the valve then goes to the finishing department to be painted, tagged, and prepared for shipping.

MERCER VALVE COMPANY, INC.
9100 SERIES THREADED SAFETY RELIEF VALVES

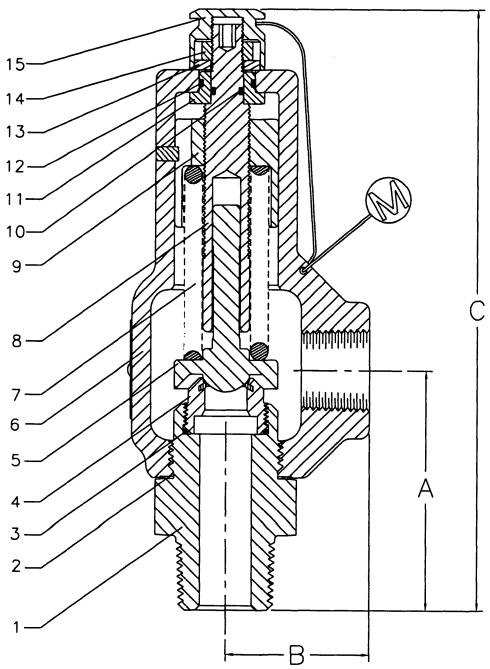
INSTALLATION, OPERATION AND MAINTENANCE MANUAL

"C", "D", AND "E" ORIFICE STANDARD BILL OF MATERIALS

"C" ORIFICE DIAMETER: .281 In.
"C" ORIFICE AREA: .062 Sq.In.
SET PRESSURE RANGE: 15-2999 PSI

"D" ORIFICE DIAMETER: .394 In.
"D" ORIFICE AREA: .122 Sq.In.
SET PRESSURE RANGE: 15-2999 PSI

"E" ORIFICE DIAMETER: .520 In.
"E" ORIFICE AREA: .212 Sq.In.
SET PRESSURE RANGE: 15-2400 PSI



"C", "D", and "E" Orifice

"C", "D", AND "E" ORIFICE				
ITEM NO.	PART NAME	"C" ORIFICE STD MTRLS "C" TRIM CODE	"D" & "E" STD MTRLS "I" TRIM CODE	"C", "D", "E" OPTIONS "U", "L", "N", OR "B" CODE
1	Inlet Base	Carbon Steel or 316 Stainless Steel	Carbon Steel or 316 Stainless Steel	Carbon Steel or 316 Stainless Steel
2	Base Seal	Carbon Steel or 316 Stainless Steel	Carbon Steel or 316 Stainless Steel	Carbon Steel or 316 Stainless Steel
3	O'Ring	Viton	Viton	Viton
4	Nozzle Subassy	17-4 Stainless Steel with Soft Seat	17-4 Stainless Steel with Soft Seat	316 Stainless Steel with Soft Seat
5	Disk Subassy	440C Stainless Steel	17-4 Stainless Steel	316 Stainless Steel
6	Body	WCB Carbon Steel or CF3M Stainless Steel	WCB Carbon Steel or CF3M Stainless Steel	WCB Carbon Steel or CF3M Stainless Steel
7	Spring	17-7 Stainless Steel	17-7 Stainless Steel	17-7 Stainless Steel or Inconel X-750 (NACE)
8	Adjustment Screw	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
9	Adjustment Bushing	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
10	O'Ring	Buna N	Buna N	Buna N
11	Center Bushing	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
12	O'Ring	Buna N	Buna N	Buna N
13	Washer	Carbon Steel	Carbon Steel	Carbon Steel
14	Lock Nut	Carbon Steel	Carbon Steel	Carbon Steel
15	Cap	Anodized Aluminum	Anodized Aluminum	Anodized Aluminum

SRV 128

MERCER
91-12D51T13I1/900
VALVE-RELIEF 900 PSI MERCER D-ORF
¾ MNPT IN x 1 FNPT OUT 1800 SCFM

ANGI PART NUMBER 331-08028

THIS PAGE LEFT INTENTIONALLY BLANK

MERCER VALVE CO., INC.
"Auto Seat Technology"®

Post Office Box 270970
Oklahoma City, Oklahoma 73137
FAX # (405) 495-8728

MERCER VALVE COMPANY, INC.
9100 SERIES THREADED SAFETY RELIEF VALVES

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

INSTALLATION

The safety relief valve should always be installed on a tank or piping run in the vertical position with the valve outlet pointing in a horizontal direction. When screwing the valve into the inlet piping, always use the wrench flats on the inlet connection. Never put a wrench on the relief valve body.

One of the most common causes of early failure of relief valves is dirt trapped on the valve seat. Welding slag and/or piping Teflon tape are among the more common items that cause difficulty. It is recommended that all piping and tank systems be cleaned prior to installation of the relief valve.

A relief valve should be connected with the minimum amount of piping between the tank and valve. Further, all piping used must be equal or larger than the inlet pipe size of the relief valve, never smaller. Any restriction of the inlet to a relief valve may cause unusual valve chatter, which could result in serious damage to the valve. Piping restrictions can also can also cause the valve to not relieve its full capacity causing the valve not to be able to reduce the pressure increase. Outlet piping from the relief valve should be less than four (4) feet in length and never of a pipe size smaller than the outlet pipe size of the relief valve. Long runs of small diameter pipe on the outlet side of a relief valve will create valve chatter and a capacity reduction that can cause the system to not be protected.

Extreme caution is required in the outlet piping if installed where liquids, if present, could form an ice block in the piping of the relief valve body in below freezing conditions. Discharge lines must be "weathered capped" and provided with a drain hole to prevent any liquid collection in the relief valve body or outlet piping. This liquid can freeze and cause the valve to not open or reduce the capacity of the valve. If these precautions are not taken the valves will not protect the system.

Additional, important installation information is contained in Paragraph UG-135, Section VIII of the ASME Code.

OPERATION

For best performance in process work is usually obtained by setting the safety relief valve to open at least 15% above the operating pressure where possible. A greater margin is desirable. However, this setting must not exceed the maximum working pressure of the vessel. All Mercer 9100 Series Safety Relief Valves are checked for bubble-tight per API 527.

In Addition to checking the set pressure versus the maximum allowable working pressure of the vessel, also check to insure that back pressure and temperature limitations of the process are consistent with valve ratings. The fluid state, capacity, temperature, set pressure, and back pressure can all be found on the tag of the valve. Pressures and Temperatures outside the normal ranges require special materials. Further, carefully check the process fluid input capacities to insure that the relief valve capacity is greater than the process capacities.

DO NOT BREAK THE SEAL WIRE Breaking the seal wire invalidates the manufacture's warranty to repair or replace the valve. If resetting is required in a field emergency situation a qualified personnel with calibrated instrumentation should perform it. With a broken seal wire this valve will be considered a non ASME code valve until it has been repaired by a VR certified repair shop.

DISASSEMBLY: **The following general procedure is recommended in disassembly inspection and cleaning of the relief valve:**

1. **Cut the wire seal and unscrew the cap to expose the adjustment screw.**
2. **Loosen the lock nut and relieve the tension on the spring by turning the adjustment screw counter clockwise. This will relieve the spring tension.**
3. **Secure the valve body so that it will not move**
   For orifice sizes C to G, unscrew and remove the inlet base
   For orifice size of H, unscrew and remove the bonnet
   For orifice sizes J and K, unbolt and remove the bonnet
4. **Inspect the replaceable seat for cuts and abrasions. If there are only minor scratches or abrasions on the seat, polish the seat area lightly with Scotch-Brite #7447. Be careful not to damage the soft seat. If the seat is damaged with deep abrasions and cuts, replace the nozzle/seat subassembly.**
5. **Refer to Figure 1 and measure the diameter of Ds with a precision caliper. This diameter must be in the range of values listed in Table 1. If this is not the case, replace the nozzle/seat subassembly.**

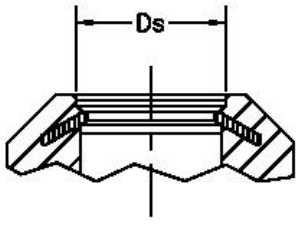


FIGURE 1

TABLE 1

ORIFICE SIZE	DIAMETER Ds (INCHES)	
	MINIMUM	MAXIMUM
"C"	.335	.337
"D"	.480	.482
"E"	.620	.622
"F"	.778	.780
"G"	.914	.916
"H"	1.242	1.2465
"J"	1.599	1.6025
"K"	1.899	1.903

6. **Remove and inspect the disk subassembly, especially the spherical surface portion that engages the seat. This surface must be clean and smooth. Polishing this surface with Scotch-Brite #7447 may restore the disk if it has only minor imperfections. If the spherical surface is damaged or scratched, replace the disk subassembly**

7. **Refer to Figure 2 and measure the diameter of Dd with a precision caliper. This diameter must be within the range of values listed in Table 2. If this is not the case, replace the disk subassembly.**

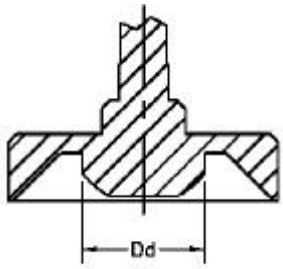


FIGURE 2

TABLE 2

ORIFICE SIZE	DIAMETER Dd (INCHES)	
	MINIMUM	MAXIMUM
"C"	.331	.333
"D"	.474	.477
"E"	.614	.616
"F"	.768	.771
"G"	.904	.906
"H"	1.228	1.231
"J"	1.580	1.583
"K"	1.876	1.880

8. **Check the disk stem of the disk subassembly to insure that the surface is smooth. Polish the stem if necessary with Scotch-Brite or fine emery. If the stem is galled, replace the disk subassembly.**
9. **Remove the spring and inspect for wear or damage. Clean and replace the spring if necessary. Be sure the spring is straight and square. If not replace the spring.**
10. **Remove the adjustment screw and guide bushing by tapping on the top of the adjustment screw with a "soft" drive rod. The guide bushing is designed to "slip fit" into the internal machined bore of the body. This "slip fit" must be maintained by cleaning the outside diameter of the guide bushing and internal bore of the valve body.**
11. **Replace the o-ring found on the adjustment screw stem.**
12. **DO NOT REMOVE THE CENTER NUT OR INDEX BRACKET SUBASSEMBLY. They are permanently installed at the factory. The purpose of the index bracket subassembly is to prevent rotation of the guide bushing. A body side pin is used in the 9100 "C" AND "D" orifices in place of the index bracket.**
13. **Lubricate the outside diameter of the adjustment screw thread, outside diameter of the guide bushing, the adjustment screw o-ring and the internal upper machined bore of the valve body with a good lubricating grease.**

REASSEMBLY: **The following general procedure is recommended in reassembly and setting of the valve:**

1. **Before reinstalling the adjustment screw and guide bushing, position the adjustment screw with the upper end of the thread protruding 1/8" from the end of the guide bushing. Carefully "slip fit" this assembly into the body, fitting the index bracket leg or body side pin into the slotted portion of the guide bushing. Note that the guide bushing must slip into the valve bore freely but with little radial play. Remove and reclean parts if the parts do not easy fit in. DO NOT FORCE THE GUIDE BUSHING INTO THE VALVE BODY. Forcing the parts may restrict valve lift and cause serious malfunction.**
2. **Swab out the internal bore of the adjustment screw to insure that is is clean and free from obstructions like dirt and grease.**
3. **Before reinstalling the spring, insert the disk subassembly into the bore of the adjustment screw and simulate the valve opening operation. The disk stem must slide freely within the bore of the adjustment screw.**
4. **Reinstall the spring and the disk subassembly. The spring should slide over the disk freely without sticking. Make sure the correct spring is installed.**
5. **Install the nozzle subassembly into the inlet base or body, for whichever applies.**
6. **For bottom entry valves reinstall the inlet base subassembly using a new base seal. Caution, the inlet base must be tight against the base seal and body.**
   For top entry valves reinstall the bonnet subassembly.
   Make sure the disk and nozzle are aligned.
7. **Check the lift of the valve by inhering a properly shaped drive rod in an arbor press into the internal bore of the inlet base and pressing on the nose of the disk subassembly. Apply a slight spring tension to the valve disk. Measure the "lift" of the valve with a dial indicator. The minimum lift can be found in NB-18 on the National Board website www.nationalboard.org.**
8. **Reinstall the lock nut and the valve is ready for setting. Valve setting at all pressures is dangerous. All eye and ear safety precautions should be observed.**
9. **Resetting should be performed on an air/gas test stand or a liquid test stand depending on the service of the valve. The test stand should have a volume under the valve of at least one (1) cubic foot capacity of the type recommended by the National Board. Test gauges should be a minimum of 6" dial with .25% accuracy. The gages should be dead weight verified for accuracy.**

10. **Repeated "popping" at set pressure is recommended. The valve should be popped approximately five (5) to ten (10) times during the setting process allowing full blowdowns.**
11. **A slight audible warning action is to be expected, starting approximately 5% below the set pressure.**
12. **All valves should be bubble tight at 10% below set pressure in accordance with API 527.**
13. **When the valve is set, tighten the lock nut securely so at least 1/4" of the stem is exposed above the lock nut. The adjustment screw must not turn when the lock nut is tightened. This will affect the set pressure. Pop the valve once more after the lock nut is tightened to verify the set pressure.**
14. **Reinstall the cap and a new lockwire. Close the lockwire and crimp the lead seal.**

BACK PRESSURE TESTING **The purpose of back pressure testing Mercer Safety Relief Valves is to check for leaks in the secondary pressure zone (the outlet side of the relief valve). This includes the body, bonnet, outlet flange and all parts included in the upper valve assembly. This is best performed before the valve seal wire has been attached.**

The back pressure test is performed after the valve has been assembled and set to the correct set pressure. The test is performed by attaching a pressure source to the outlet of the valve and submerging the valve in a solution of water treated with rust inhibitor. The pressure in the secondary pressure zone is then brought to 30 psig or to what the back pressure the valve will see. This is the pressure required by the ASME BOILER AND PRESSURE VESSEL CODE, SECTION VIII. PART UG-136(d) "Production Testing by Manufacturers and Assemblers". The valve is then visually inspected for any leaks by checking for bubbles coming from any part of the valve. If any part of the valve is producing bubbles, the valve is disassembled, repaired and the valve is reassembled and retested. If no leaks are detected, the valve is stamped with the appropriate set pressure, the valve then goes to the finishing department to be painted, tagged, and prepared for shipping.

MERCER VALVE COMPANY, INC.
9100 SERIES THREADED SAFETY RELIEF VALVES

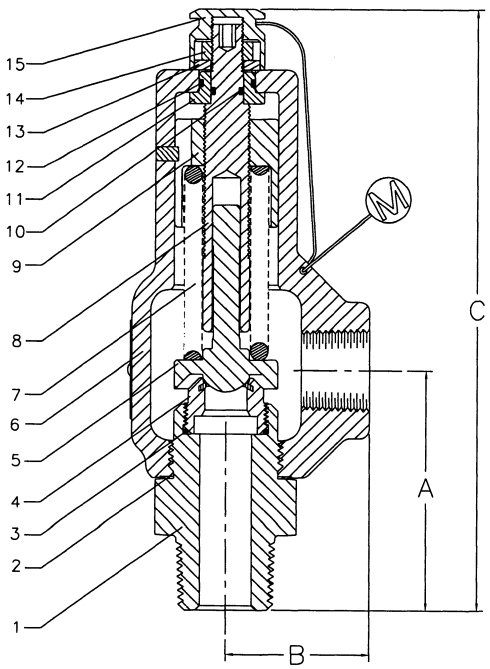
INSTALLATION, OPERATION AND MAINTENANCE MANUAL

"C", "D", AND "E" ORIFICE STANDARD BILL OF MATERIALS

"C" ORIFICE DIAMETER: .281 In.
"C" ORIFICE AREA: .062 Sq.In.
SET PRESSURE RANGE: 15-2999 PSI

"D" ORIFICE DIAMETER: .394 In.
"D" ORIFICE AREA: .122 Sq.In.
SET PRESSURE RANGE: 15-2999 PSI

"E" ORIFICE DIAMETER: .520 In.
"E" ORIFICE AREA: .212 Sq.In.
SET PRESSURE RANGE: 15-2400 PSI



"C", "D", and "E" Orifice

"C", "D", AND "E" ORIFICE				
ITEM NO.	PART NAME	"C" ORIFICE STD MTRLS "C" TRIM CODE	"D" & "E" STD MTRLS "I" TRIM CODE	"C", "D", "E" OPTIONS "U", "L", "N", OR "B" CODE
1	Inlet Base	Carbon Steel or 316 Stainless Steel	Carbon Steel or 316 Stainless Steel	Carbon Steel or 316 Stainless Steel
2	Base Seal	Carbon Steel or 316 Stainless Steel	Carbon Steel or 316 Stainless Steel	Carbon Steel or 316 Stainless Steel
3	O'Ring	Viton	Viton	Viton
4	Nozzle Subassy	17-4 Stainless Steel with Soft Seat	17-4 Stainless Steel with Soft Seat	316 Stainless Steel with Soft Seat
5	Disk Subassy	440C Stainless Steel	17-4 Stainless Steel	316 Stainless Steel
6	Body	WCB Carbon Steel or CF3M Stainless Steel	WCB Carbon Steel or CF3M Stainless Steel	WCB Carbon Steel or CF3M Stainless Steel
7	Spring	17-7 Stainless Steel	17-7 Stainless Steel	17-7 Stainless Steel or Inconel X-750 (NACE)
8	Adjustment Screw	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
9	Adjustment Bushing	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
10	O'Ring	Buna N	Buna N	Buna N
11	Center Bushing	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
12	O'Ring	Buna N	Buna N	Buna N
13	Washer	Carbon Steel	Carbon Steel	Carbon Steel
14	Lock Nut	Carbon Steel	Carbon Steel	Carbon Steel
15	Cap	Anodized Aluminum	Anodized Aluminum	Anodized Aluminum

SRV 142

MERCER
91-12C61P13C1/2400

2400 PSI, C-ORIFICE, 3/4” MNPT IN, 1” FNPT OUT
2450 SCFM
SAFETY RELIEF VALVE

ANGI PART NUMBER 331-08042

THIS PAGE LEFT INTENTIONALLY BLANK

MERCER VALVE CO., INC.
"Auto Seat Technology"®

Post Office Box 270970
Oklahoma City, Oklahoma 73137
FAX # (405) 495-8728

MERCER VALVE COMPANY, INC.
9100 SERIES THREADED SAFETY RELIEF VALVES

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

INSTALLATION

The safety relief valve should always be installed on a tank or piping run in the vertical position with the valve outlet pointing in a horizontal direction. When screwing the valve into the inlet piping, always use the wrench flats on the inlet connection. Never put a wrench on the relief valve body.

One of the most common causes of early failure of relief valves is dirt trapped on the valve seat. Welding slag and/or piping Teflon tape are among the more common items that cause difficulty. It is recommended that all piping and tank systems be cleaned prior to installation of the relief valve.

A relief valve should be connected with the minimum amount of piping between the tank and valve. Further, all piping used must be equal or larger than the inlet pipe size of the relief valve, never smaller. Any restriction of the inlet to a relief valve may cause unusual valve chatter, which could result in serious damage to the valve. Piping restrictions can also can also cause the valve to not relieve its full capacity causing the valve not to be able to reduce the pressure increase. Outlet piping from the relief valve should be less than four (4) feet in length and never of a pipe size smaller than the outlet pipe size of the relief valve. Long runs of small diameter pipe on the outlet side of a relief valve will create valve chatter and a capacity reduction that can cause the system to not be protected.

Extreme caution is required in the outlet piping if installed where liquids, if present, could form an ice block in the piping of the relief valve body in below freezing conditions. Discharge lines must be "weathered capped" and provided with a drain hole to prevent any liquid collection in the relief valve body or outlet piping. This liquid can freeze and cause the valve to not open or reduce the capacity of the valve. If these precautions are not taken the valves will not protect the system.

Additional, important installation information is contained in Paragraph UG-135, Section VIII of the ASME Code.

OPERATION

For best performance in process work is usually obtained by setting the safety relief valve to open at least 15% above the operating pressure where possible. A greater margin is desirable. However, this setting must not exceed the maximum working pressure of the vessel. All Mercer 9100 Series Safety Relief Valves are checked for bubble-tight per API 527.

In Addition to checking the set pressure versus the maximum allowable working pressure of the vessel, also check to insure that back pressure and temperature limitations of the process are consistent with valve ratings. The fluid state, capacity, temperature, set pressure, and back pressure can all be found on the tag of the valve. Pressures and Temperatures outside the normal ranges require special materials. Further, carefully check the process fluid input capacities to insure that the relief valve capacity is greater than the process capacities.

DO NOT BREAK THE SEAL WIRE Breaking the seal wire invalidates the manufacture's warranty to repair or replace the valve. If resetting is required in a field emergency situation a qualified personnel with calibrated instrumentation should perform it. With a broken seal wire this valve will be considered a non ASME code valve until it has been repaired by a VR certified repair shop.

DISASSEMBLY: **The following general procedure is recommended in disassembly inspection and cleaning of the relief valve:**

1. **Cut the wire seal and unscrew the cap to expose the adjustment screw.**
2. **Loosen the lock nut and relieve the tension on the spring by turning the adjustment screw counter clockwise. This will relieve the spring tension.**
3. **Secure the valve body so that it will not move**
   For orifice sizes C to G, unscrew and remove the inlet base
   For orifice size of H, unscrew and remove the bonnet
   For orifice sizes J and K, unbolt and remove the bonnet
4. **Inspect the replaceable seat for cuts and abrasions. If there are only minor scratches or abrasions on the seat, polish the seat area lightly with Scotch-Brite #7447. Be careful not to damage the soft seat. If the seat is damaged with deep abrasions and cuts, replace the nozzle/seat subassembly.**
5. **Refer to Figure 1 and measure the diameter of Ds with a precision caliper. This diameter must be in the range of values listed in Table 1. If this is not the case, replace the nozzle/seat subassembly.**

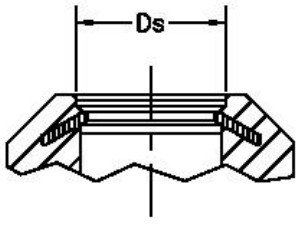


FIGURE 1

TABLE 1

ORIFICE SIZE	DIAMETER Ds (INCHES)	
	MINIMUM	MAXIMUM
"C"	.335	.337
"D"	.480	.482
"E"	.620	.622
"F"	.778	.780
"G"	.914	.916
"H"	1.242	1.2465
"J"	1.599	1.6025
"K"	1.899	1.903

6. **Remove and inspect the disk subassembly, especially the spherical surface portion that engages the seat. This surface must be clean and smooth. Polishing this surface with Scotch-Brite #7447 may restore the disk if it has only minor imperfections. If the spherical surface is damaged or scratched, replace the disk subassembly**

7. **Refer to Figure 2 and measure the diameter of Dd with a precision caliper. This diameter must be within the range of values listed in Table 2. If this is not the case, replace the disk subassembly.**

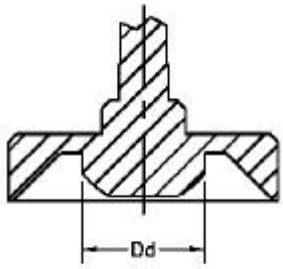


FIGURE 2

TABLE 2

ORIFICE SIZE	DIAMETER Dd (INCHES)	
	MINIMUM	MAXIMUM
"C"	.331	.333
"D"	.474	.477
"E"	.614	.616
"F"	.768	.771
"G"	.904	.906
"H"	1.228	1.231
"J"	1.580	1.583
"K"	1.876	1.880

8. **Check the disk stem of the disk subassembly to insure that the surface is smooth. Polish the stem if necessary with Scotch-Brite or fine emery. If the stem is galled, replace the disk subassembly.**
9. **Remove the spring and inspect for wear or damage. Clean and replace the spring if necessary. Be sure the spring is straight and square. If not replace the spring.**
10. **Remove the adjustment screw and guide bushing by tapping on the top of the adjustment screw with a "soft" drive rod. The guide bushing is designed to "slip fit" into the internal machined bore of the body. This "slip fit" must be maintained by cleaning the outside diameter of the guide bushing and internal bore of the valve body.**
11. **Replace the o-ring found on the adjustment screw stem.**
12. **DO NOT REMOVE THE CENTER NUT OR INDEX BRACKET SUBASSEMBLY. They are permanently installed at the factory. The purpose of the index bracket subassembly is to prevent rotation of the guide bushing. A body side pin is used in the 9100 "C" AND "D" orifices in place of the index bracket.**
13. **Lubricate the outside diameter of the adjustment screw thread, outside diameter of the guide bushing, the adjustment screw o-ring and the internal upper machined bore of the valve body with a good lubricating grease.**

REASSEMBLY: **The following general procedure is recommended in reassembly and setting of the valve:**

1. **Before reinstalling the adjustment screw and guide bushing, position the adjustment screw with the upper end of the thread protruding 1/8" from the end of the guide bushing. Carefully "slip fit" this assembly into the body, fitting the index bracket leg or body side pin into the slotted portion of the guide bushing. Note that the guide bushing must slip into the valve bore freely but with little radial play. Remove and reclean parts if the parts do not easy fit in. DO NOT FORCE THE GUIDE BUSHING INTO THE VALVE BODY. Forcing the parts may restrict valve lift and cause serious malfunction.**
2. **Swab out the internal bore of the adjustment screw to insure that is is clean and free from obstructions like dirt and grease.**
3. **Before reinstalling the spring, insert the disk subassembly into the bore of the adjustment screw and simulate the valve opening operation. The disk stem must slide freely within the bore of the adjustment screw.**
4. **Reinstall the spring and the disk subassembly. The spring should slide over the disk freely without sticking. Make sure the correct spring is installed.**
5. **Install the nozzle subassembly into the inlet base or body, for whichever applies.**
6. **For bottom entry valves reinstall the inlet base subassembly using a new base seal. Caution, the inlet base must be tight against the base seal and body.**
   For top entry valves reinstall the bonnet subassembly.
   Make sure the disk and nozzle are aligned.
7. **Check the lift of the valve by inhering a properly shaped drive rod in an arbor press into the internal bore of the inlet base and pressing on the nose of the disk subassembly. Apply a slight spring tension to the valve disk. Measure the "lift" of the valve with a dial indicator. The minimum lift can be found in NB-18 on the National Board website www.nationalboard.org.**
8. **Reinstall the lock nut and the valve is ready for setting. Valve setting at all pressures is dangerous. All eye and ear safety precautions should be observed.**
9. **Resetting should be performed on an air/gas test stand or a liquid test stand depending on the service of the valve. The test stand should have a volume under the valve of at least one (1) cubic foot capacity of the type recommended by the National Board. Test gauges should be a minimum of 6" dial with .25% accuracy. The gages should be dead weight verified for accuracy.**

10. **Repeated "popping" at set pressure is recommended. The valve should be popped approximately five (5) to ten (10) times during the setting process allowing full blowdowns.**
11. **A slight audible warning action is to be expected, starting approximately 5% below the set pressure.**
12. **All valves should be bubble tight at 10% below set pressure in accordance with API 527.**
13. **When the valve is set, tighten the lock nut securely so at least 1/4" of the stem is exposed above the lock nut. The adjustment screw must not turn when the lock nut is tightened. This will affect the set pressure. Pop the valve once more after the lock nut is tightened to verify the set pressure.**
14. **Reinstall the cap and a new lockwire. Close the lockwire and crimp the lead seal.**

BACK PRESSURE TESTING **The purpose of back pressure testing Mercer Safety Relief Valves is to check for leaks in the secondary pressure zone (the outlet side of the relief valve). This includes the body, bonnet, outlet flange and all parts included in the upper valve assembly. This is best performed before the valve seal wire has been attached.**

The back pressure test is performed after the valve has been assembled and set to the correct set pressure. The test is performed by attaching a pressure source to the outlet of the valve and submerging the valve in a solution of water treated with rust inhibitor. The pressure in the secondary pressure zone is then brought to 30 psig or to what the back pressure the valve will see. This is the pressure required by the ASME BOILER AND PRESSURE VESSEL CODE, SECTION VIII. PART UG-136(d) "Production Testing by Manufacturers and Assemblers". The valve is then visually inspected for any leaks by checking for bubbles coming from any part of the valve. If any part of the valve is producing bubbles, the valve is disassembled, repaired and the valve is reassembled and retested. If no leaks are detected, the valve is stamped with the appropriate set pressure, the valve then goes to the finishing department to be painted, tagged, and prepared for shipping.

MERCER VALVE COMPANY, INC.
9100 SERIES THREADED SAFETY RELIEF VALVES

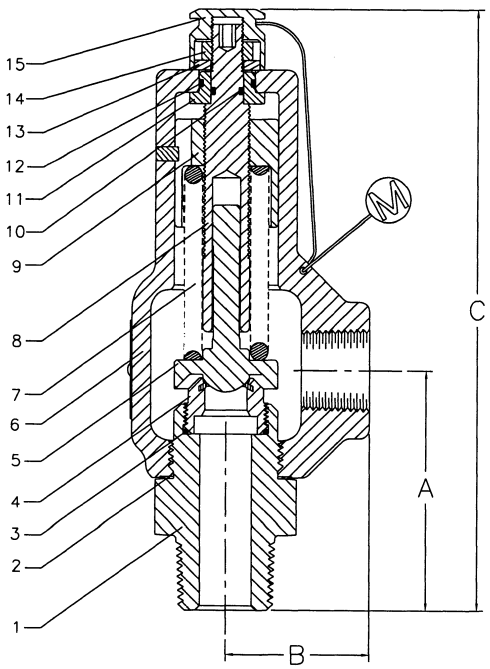
INSTALLATION, OPERATION AND MAINTENANCE MANUAL

"C", "D", AND "E" ORIFICE STANDARD BILL OF MATERIALS

"C" ORIFICE DIAMETER: .281 In.
"C" ORIFICE AREA: .062 Sq.In.
SET PRESSURE RANGE: 15-2999 PSI

"D" ORIFICE DIAMETER: .394 In.
"D" ORIFICE AREA: .122 Sq.In.
SET PRESSURE RANGE: 15-2999 PSI

"E" ORIFICE DIAMETER: .520 In.
"E" ORIFICE AREA: .212 Sq.In.
SET PRESSURE RANGE: 15-2400 PSI



"C", "D", and "E" Orifice

"C", "D", AND "E" ORIFICE				
ITEM NO.	PART NAME	"C" ORIFICE STD MTRLS "C" TRIM CODE	"D" & "E" STD MTRLS "I" TRIM CODE	"C", "D", "E" OPTIONS "U", "L", "N", OR "B" CODE
1	Inlet Base	Carbon Steel or 316 Stainless Steel	Carbon Steel or 316 Stainless Steel	Carbon Steel or 316 Stainless Steel
2	Base Seal	Carbon Steel or 316 Stainless Steel	Carbon Steel or 316 Stainless Steel	Carbon Steel or 316 Stainless Steel
3	O'Ring	Viton	Viton	Viton
4	Nozzle Subassy	17-4 Stainless Steel with Soft Seat	17-4 Stainless Steel with Soft Seat	316 Stainless Steel with Soft Seat
5	Disk Subassy	440C Stainless Steel	17-4 Stainless Steel	316 Stainless Steel
6	Body	WCB Carbon Steel or CF3M Stainless Steel	WCB Carbon Steel or CF3M Stainless Steel	WCB Carbon Steel or CF3M Stainless Steel
7	Spring	17-7 Stainless Steel	17-7 Stainless Steel	17-7 Stainless Steel or Inconel X-750 (NACE)
8	Adjustment Screw	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
9	Adjustment Bushing	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
10	O'Ring	Buna N	Buna N	Buna N
11	Center Bushing	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
12	O'Ring	Buna N	Buna N	Buna N
13	Washer	Carbon Steel	Carbon Steel	Carbon Steel
14	Lock Nut	Carbon Steel	Carbon Steel	Carbon Steel
15	Cap	Anodized Aluminum	Anodized Aluminum	Anodized Aluminum

SRV152

MERCER
91-M2C61P5641/5200

5200 PSI C-ORIFICE, ¾” MNPT IN, 1” FNPT OUT,
5300SCFM, SAFETY RELIEF VALVE

ANGI PART NUMBER 331-08052

THIS PAGE LEFT INTENTIONALLY BLANK

MERCER VALVE CO., INC.

AUTO SEAT TECHNOLOGY ®

9100 SERIES
Model 20



THINK...MERCER FIRST™

MERCER VALVE

THIS PAGE LEFT INTENTIONALLY BLANK



9100 Series Model 20 Product Overview

The 9100 Series Model 20 is a high pressure safety relief valve designed for CNG and other high pressure applications. The 9100 Series Model 20 unique design coupled with our patented **Auto Seat Technology®** allows for a longer life, less leakage and more consistent set pressures in high pressure applications. The 9100 Series Model 20 is designed for applications from 3000 psi up to 8700 psi. The patented soft seat design and fully guided disk allow the valve to continually outlast the competition. The soft seat 9100 Series has a field-proven lip seal design, which allows for a tighter seal up to set pressure. This tight seal reduces leaks and limits product loss.

9100 Series Model 20 Features

- **Designed with Auto Seat Technology®.**
- **Consistent Set Pressures allowing repeatable uses without repair or resetting.**
- **Open, Close, Seat and Seal™.**
- **Fully guided disk keeps the disk properly alligned, opening and closing, helping to reseat the valve.**
- **Mechanical Stop prevents wear on parts and controls valve lift.**
- **Low rated and fully guided spring allows for more consistent set pressures from pop to pop.**
- **Pop Action relief allows valve to go to full lift at set pressure. Helps with DOT regulated applications.**
- **Built in accordance with the requirements of ASME Boiler and Pressure Vessel Code. Sec. VIII Div 1.**
- **Non-rising stems allowing valves to be installed in small areas.**

9100 Series Model 20 Specifications

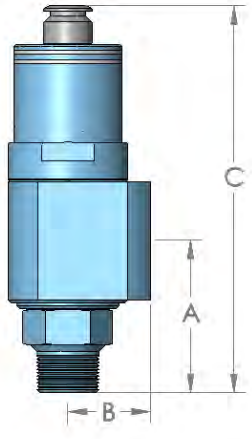
Orifice Letter	C	D
Threaded Connections	3/4″ x 1″, 1″ x 1″	1″ x 1 1/4″
Flanged Connectors	1″ x 1 1/2″	1″ x 1 1/2″, 1″ x 2″
Actual Orifice Diameter (in)	.281	.394
Actual Orifice Area (in^2)	.062	.122
API Orifice Area (in^2)	- - -	.110
Threaded Pressure Ranges (psi)	3000 to 8700	3000 to 7500
Flanged Pressure Ranges (psi)	3000 to 6170	3000 to 6170
Standard Temperature Range (ºF)	-20 to 400	-20 to 400
ASME Flow Coefficient, K_d (Gas)	.818	.818
ASME Flow Coefficient, K_d (Liquid)	.707	.707

NOTE: Mercer Valve reserves the right to change product designs and specifications without notice.

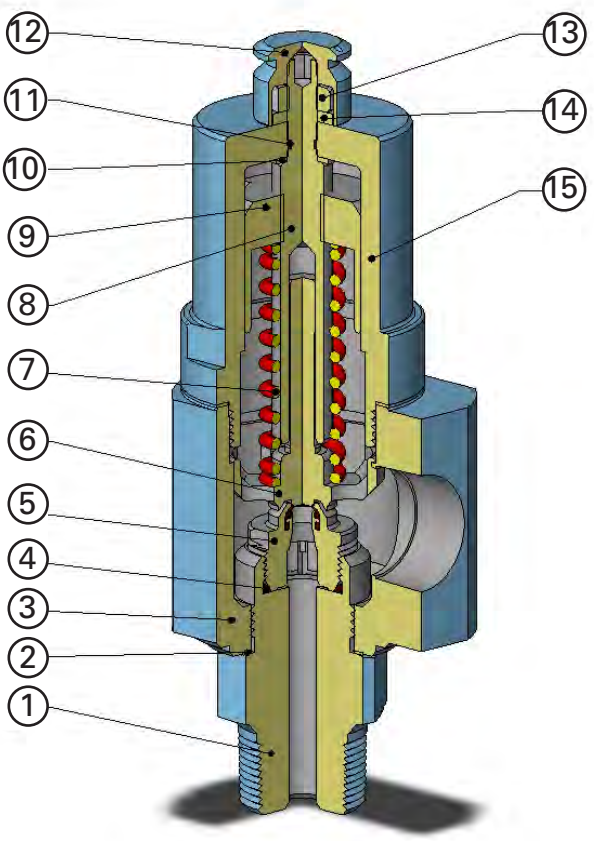
9100 Series Model 20 Dimensions and Weights

INLET AND OUTLET CODE	INLET AND OUTLET SIZE	PRESSURE LIMIT (psi)	DIMENSIONS "A" X "B" X "C" (IN.) + 1/16	APPROX. WEIGHT (lbs.)
	C ORIFICE			
M2	**3/4" MNPT x 1" FNPT**	3000 - 8700	3-1/4 x 1-13/16 x 8-1/8	4.5
M7	**1" MPT x 1" FNPT**	3000 - 8700	3-1/4 x 1-13/16 x 8-1/8	4.5
26	**1" 1500# x 1 1/2" 300#**	3000 - 3705	5 X 5-1/4 X 10	19
76	**1" 2500# x 1 1/2" 300#**	3000 - 6170	5 X 5-1/4 X 10	21
	D ORIFICE			
M7	**1" MPT x 1 1/4" FNPT**	3000 - 7500	3-1/4 x 1-13/16 x 9-1/4	5
26	**1" 1500# x 1 1/2" 300#**	3000 - 3705	5 X 5-1/4 X 11	19
76	**1" 2500# x 1 1/2" 300#**	3000 - 6170	5 X 5-1/4 X 11	21
32	**1" 1500# x 2" 300#**	3000 - 3705	5 X 5-1/4 X 11	24
77	**1" 2500# x 2" 300#**	3000 - 6170	5 X 5-1/4 X 11	21

NOTE: Mercer valve reserves the right to change product designs and specifications without notice.



9100 Series Model 20 Parts and Materials



9100 SERIES MODEL 20 C & D ORIFICES

ITEM NO	PART NAME	STANDARD MATERIALS
1	INLET BASE	STAINLESS STEEL
2	BASE SEAL	SOFT STEEL
3	BODY SUBASSEMBLY	CARBON STEEL
4	NOZZLE O-RING	VITON
5	NOZZLE SUBASSEMBLY	STAINLESS STEEL WITH SOFT SEAT
6	DISK SUBASSEMBLY	STAINLESS STEEL
7	SET SPRING	STAINLESS STEEL
8	ADJUSTMENT SCREW	STAINLESS STEEL
9	ADJUSTMENT BUSHING	CARBON STEEL
10	THRUST WASHER	STAINLESS STEEL
11	ADJUSTMENT SCREW O-RING	BUNA N
12	CLOSED CAP	ALUMINUM ALLOY
13	LOCKNUT	CARBON STEEL
14	WASHER	CARBON STEEL
15	BONNET SUBASSEMBLY	CARBON STEEL

NOTE: Mercer Valve reserves the right to change product designs and specifications without notice.

9100 Series Model 20 Capacity Charts

AIR CAPACITY AT 60°F AND STD ATMOSPHERIC CONDITIONS

Set Pressure (psi)	C 0.062 SCFM	D 0.122 SCFM
3000	3082	6064
3100	3184	6265
3200	3286	6466
3300	3388	6667
3400	3491	6869
3600	3695	7271
3800	3900	7674
4000	4104	8076
4200	4309	8479
4400	4513	8881
4600	4718	9283
4800	4922	9686
5000	5127	10088
5200	5331	10491
5400	5536	10893
5600	5740	11296
5800	5945	11698
6000	6150	12101
6200	6354	12503
6400	6559	12906
6600	6763	13308
6800	6968	13711
7000	7172	14113
7200	7377	14515
7400	7581	14918
7500	7683	15119
7600	7786	
7800	7990	
8000	8195	
8200	8399	
8400	8604	
8600	8808	
8700	8911	

NATURAL GAS CAPACITY AT 60°F AND STD ATMOSPHERIC CONDITIONS

Set Pressure (psi)	C 0.062 SCFM	D 0.122 SCFM
3000	3844	7564
3100	3972	7815
3200	4099	8067
3300	4227	8318
3400	4355	8569
3600	4610	9071
3800	4865	9573
4000	5120	10075
4200	5375	10577
4400	5630	11079
4600	5885	11581
4800	6141	12083
5000	6396	12585
5200	6651	13087
5400	6906	13589
5600	7161	14091
5800	7416	14593
6000	7671	14091
6200	7927	15597
6400	8182	16099
6600	8437	16602
6800	8692	17104
7000	8947	17606
7200	9202	18108
7400	9457	18610
7500	9585	18861
7600	9713	
7800	9968	
8000	10223	
8200	10478	
8400	10733	
8600	10988	
8700	11116	

NATURAL GAS CAPACITY AT 60°F AND STD ATMOSPHERIC CONDITIONS

Set Pressure (psi)	C 0.062 MMSCFD	D 0.122 MMSCFD
3000	5.54	10.89
3100	5.72	11.25
3200	5.90	11.62
3300	6.09	11.98
3400	6.27	12.34
3600	6.64	13.06
3800	7.01	13.78
4000	7.37	14.51
4200	7.74	15.23
4400	8.11	15.95
4600	8.47	16.68
4800	8.84	17.40
5000	9.21	18.12
5200	9.58	18.85
5400	9.94	19.57
5600	10.31	20.29
5800	10.68	21.01
6000	11.05	21.74
6200	11.41	22.46
6400	11.78	23.18
6600	12.15	23.91
6800	12.52	24.63
7000	12.88	25.35
7200	13.25	26.08
7400	13.62	26.80
7500	13.80	27.16
7600	13.99	
7800	14.35	
8000	14.72	
8200	15.09	
8400	15.46	
8600	15.82	
8700	16.01	

CAPACITY IN GPM WATER AT 60°F AND STD ATMOSPHERIC CONDITIONS

Set Pressure (psi)	C 0.062 GPM	D 0.122 GPM
3000	96	188
3100	97	191
3200	99	194
3300	100	197
3400	102	200
3600	105	206
3800	108	212
4000	110	217
4200	113	223
4400	116	228
4600	118	233
4800	121	238
5000	124	243
5200	126	248
5400	128	253
5600	131	257
5800	133	262
6000	135	266
6200	138	271
6400	140	275
6600	142	279
6800	144	283
7000	146	288
7200	148	292
7400	150	296
7500	151	298
7600	152	300
7800	154	304
8000	156	307
8200	158	311
8400	160	315
8600	162	319
8700	163	

9100 Series Model 20 Product Numbering System

91 - M2 D 6 1

VALVE SERIES

91 – 9100 Series

INLET & OUTLET COMBINATION

(See Selection Table Page 4)

ORIFICE SIZE

C or D

INLET BASE & BODY MATERIAL

FLANGED

1 – RF x RF / CARBON STEEL

2 – RF x RF / STAINLESS STEEL

3 – RTJ x RF / CARBON STEEL

4 – RTJ x RF / STAINLESS STEEL

A – RTJ x RTJ / CARBON STEEL

B – RTJ x RTJ / STAINLESS STEEL

THREADED

6 – 316 STNLS STL/WCB CARBON STEEL

7 – 316 STNLS STL/CF3M STAINLESS STEEL

CAP TYPE

1 – CLOSED CAP

2 – OPEN LIFT LEVER

3 – CLOSED LIFT LEVER

CONSULT FACTORY FOR ADDITIONAL INFORMATION AND OPTIONS

NOTE: Mercer Valve reserves the right to change product designs and specifications without notice.

P 14 4 1 ___ ___

2 – DIGIT "SPECIAL" CODE
(IF APPLICABLE ASSIGNED BY MERCER)

O-RING MATERIAL

1 – STANDARD O-RINGS (VITON & BUNA-N)

TRIM CODES

4 – 440C DISK & NOZZLE (STD GAS SERVICE)

L – LIQUID SERVICE 316 S.S. DISK & NOZZLE

N – SOUR GAS SERVICE 316 S.S. DISK & NOZZLE

B – SOUR LIQUID SERVICE 316 S.S. DISK & NOZZLE

U – GAS SERVICE 316 S.S. DISK & NOZZLE

X – ALL 316 S.S. INTERNALS

SPRING CODE
(ASSIGNED BY MERCER)

SEAT MATERIAL

P – VIRGIN PEEK

Y – VESPEL

SRV 37

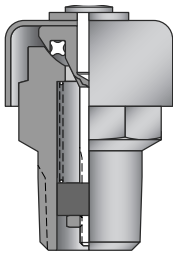
CIRCLE SEAL
D559N-2M-125 ASME

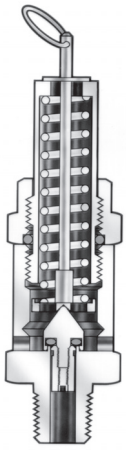
125 PSI 1/4" ASME, SAFETY RELIEF VALVE

ANGI PART NUMBER 991-07663

NO REBUILD KIT AVAILABLE

THIS PAGE LEFT INTENTIONALLY BLANK





CIRCLE SEAL CONTROLS, INC.
A division of CIRCOR International, Inc.

D500 Series 15 to 150 PSIG
M5100 Series 20 to 1200 PSIG
ASME Safety Relief Valves

Features

- D500 Features Cap Design
- M5100 Offered with Ring or Lift Handle
- MD500 Features Cup Design with Manual Override Ring.

Technical Data

ASME	• American Society of Mechanical Engineers
Body Construction Materials:	• D500 – Naval Brass or 316 Stainless Steel • M5100 – Naval Brass or 316 Stainless Steel
O-ring Materials:	• M5100 – Buna N, Neoprene, Teflon®, Viton®, and EPDM • D500 – Buna N, Neoprene, Teflon®, Viton®, EPDM, and silicone
Set Pressure:	• D500 – 15 to 150 PSIG 1/4″ • M5100 – 20 to 1,200 PSIG 1/8″, 3/4″, 1″ 50 to 1,200 PSIG 1/4″, 3/8″, 1/2″
Temperature Range:	• -100° F to +400° F (-73° C to 204° C) Based on o-ring material, see “How to Order”
Connection Sizes:	• D500 – 1/4″ Male Pipe • M5100 – 1/8″ to 1″ Male Pipe

NOTE: Proper filtration is recommended to prevent damage to sealing surfaces.

Terminology For ASME Safety Relief Valves

SAFETY RELIEF VALVES
An automatic pressure relieving device actuated by the static pressure upstream of the valve, which ones in proportion to the increase in pressure over the opening pressure.

START-TO-LEAK PRESSURE
The pressure at the valve inlet where the relieved fluid is first detected (on the down-stream side of the seat) before normal relieving action takes place.

OPENING PRESSURE (SET PRESSURE)
The valve inlet pop point pressure at which there is a measurable lift or discharge becomes continuous as determined by seeing, hearing or feeling. In the pop type of safety valve, it is the inlet pressure at which the valve opens, allowing a larger amount of fluid as compared with corresponding valve movements at higher or lower pressures.
NOTE: A safety relief valve is not considered to open when it is simmering at a pressure just below the popping point even though the simmering may be audible. This set pressure distinguishes our ASME relief valves from our standard relief valves whose cracking pressure indicates initial flow.

RELIEVING PRESSURE
(Opening Pressure plus Overpressure) The pressure measured at the valve inlet at which the relieving capacity is determined.

CLOSING PRESSURE
(Reset Pressure) The pressure measured at the valve inlet, at which the valve closes, flow is substantially shut off, and there is no measurable lift.

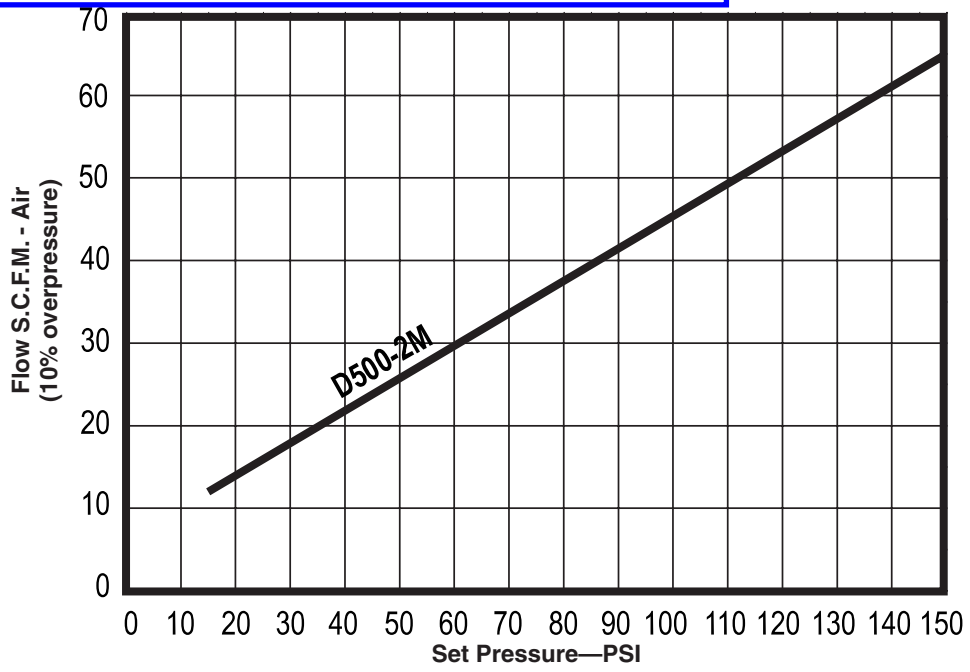
SEAL-OFF PRESSURE
The pressure (measured at the valve inlet) after closing at which no further gas is detected at the down-stream side of the seat.

OPERATING PRESSURE
The actual pressure at which a vessel is maintained in normal operation.

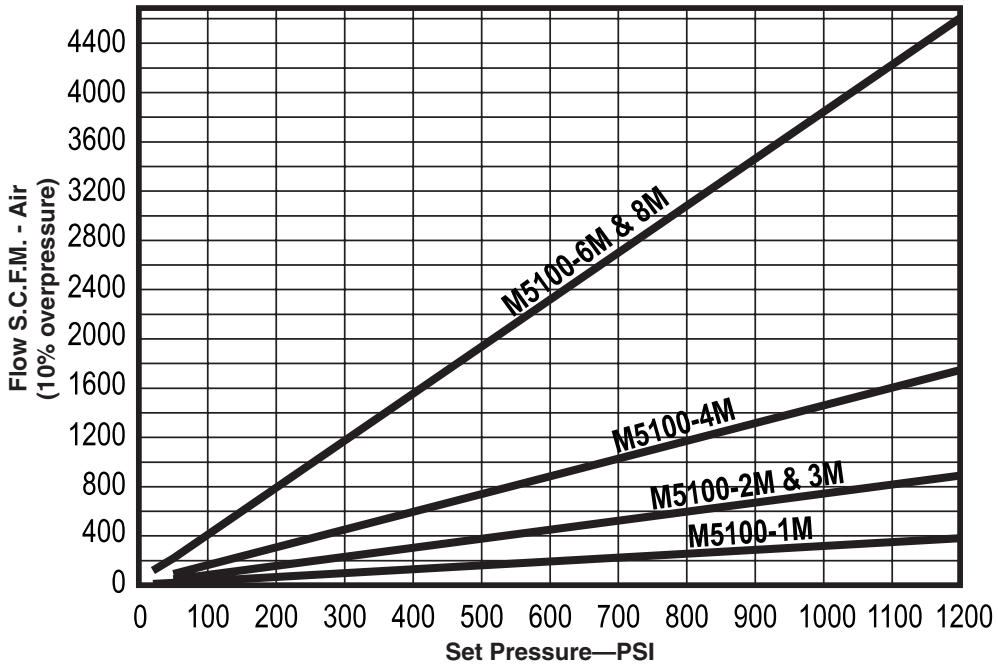
ACCUMULATION
Pressure build-up or overpressure beyond the set pressure of a safety relief valve, at which capacity flow is rated. Capacities are usually based on 10% accumulation.

D500 Series 15 to 150 PSIG
M5100 Series 20 to 1200 PSIG
ASME Safety Relief Valves

Flow Curve D500 Series ASME Safety Relief Valve



Flow Curve M5100 Series ASME Safety Relief Valve



D500 Series 15 to 150 PSIG
M5100 Series 20 to 1200 PSIG
ASME Safety Relief Valves

How to Order
D500 Series ASME Safety Relief Valve—15 to 150 PSI

M D5 32 T1 – 2 M – 20

MANUAL OVERRIDE OPTION

BASIC MODEL NUMBER
D500 Series

O-RING MATERIAL & TEMPERATURE

59 - Buna N	-40° F to +250° F
62 - Ethylene Propylene	-20° F to +250° F
33 - Neoprene	-20° F to +240° F
24 - Silicone	-65° F to +150° F
20 - Teflon®	-100° F to +400° F
32 - Viton®	-20° F to +350° F

CRACKING PRESSURE
Specify set pressure in PSIG
20 - 20 PSIG

CONNECTIONS - Inlet
M - Male Pipe

VALVE SIZE
2 - 1/4″

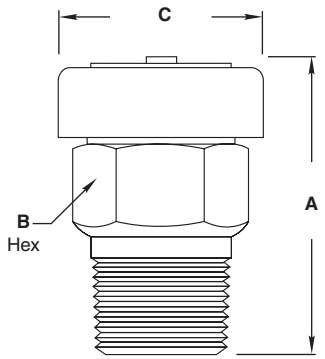
MATERIAL & OTHER PRESSURE BOUNDRY COMPONENTS
N - Naval Brass
T1 - 316 Stainless Steel

Notes:
Teflon® is a registered trademark of DuPont.
Viton® is a registered trademark of DuPont Dow Elastomers.

Please consult your Circle Seal Controls Distributor or our factory for information on special connections, lubricants, operating pressures and temperature ranges.

Dimensions (Inches)

Dash No.	Size	A	B Hex	C Dia
2M	1/4"	1.375	.625	.90



Recommended Installation

1 Before installing a new safety relief valve, we recommend that a pipe tap be used to assure clean-cut and uniform threads in the vessel opening and to allow for normal hand engagement followed by a half to one turn by wrench.
2 Avoid over-tightening as this can distort the valve seat.
3 Avoid excess “popping” of the valve. Safety relief valves should only be operated often enough to assure they are in good working order.
4 Apply only a moderate amount of pipe compound or tape to the threads, leaving the first thread clean parts.
5 Don’t oversize the valve, as this may cause chatter resulting in rapid wear of the moving parts.
6 Avoid wire, cable or chain pulls for attachments to levers that do not allow a vertical pull. The weight of these devices should not be applied to the safety relief valve.
7 Avoid having the operation pressure too near the valve set pressure. A minimum differential of 10% is recommended.

For Your Safety
It is the sole responsibility of the system designer and user to select products suitable for their specific application requirements and to ensure proper installation, operation and maintenance of these products. Material compatibility product ratings and application details should be considered in the selection. Improper selection or use of products described here in can cause personal injury or property damage.

THIS PAGE LEFT INTENTIONALLY BLANK

SV 9

ASCO
EF8320G184-120/60

1/4’’ 3-WAY, 120V, 150 PSI SOLENOID VALVE

ANGI PART NUMBER 330-07243

REBUILD KIT- ASCO 3-WAY SOLENOID 120V 150 PSI – 761-07358

THIS PAGE LEFT INTENTIONALLY BLANK

Direct Acting

General Service Solenoid Valves

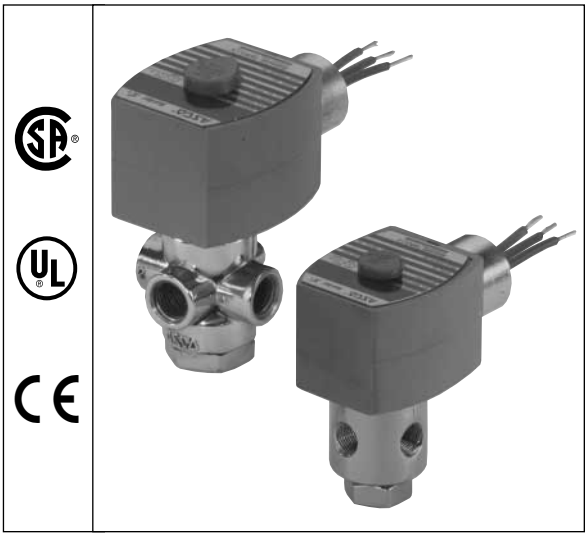
Brass or Stainless Steel Bodies
1/8" to 1/4" NPT

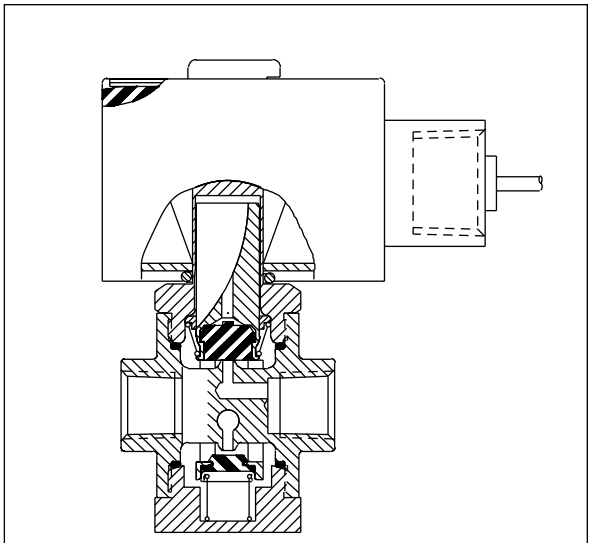
NC U NO

3/2
SERIES
8320

Features

- All NPT connections are in the valve body to allow in-line piping.
- No Minimum Operating Pressure Differential required.
- Sturdy design for long years of reliable service.
- Broadest range of applications.
- Mountable in any position.





8320 1/4" NPT

Construction

Valve Parts in Contact with Fluids		
Body	Brass	303 Stainless Steel
Seals and Discs	NBR or Cast UR, as Listed	
Core Tube	305 Stainless Steel	
Core and Plugnut	430F Stainless Steel	
Core Springs	302 Stainless Steel	
Shading Coil	Copper	Silver
Disc-Holder	CA	
Core Guide	CA (10.1 and 17.1 Watt only)	

Electrical

Standard Coil and Class of Insulation	Watt Rating and Power Consumption				Spare Coil Part No.			
		AC			General Purpose		Explosionproof	
	DC Watts	Watts	VA Holding	VA Inrush	AC	DC	AC	DC
F	10.6	6.1	16	30	238210	238310	238214	238314
F	-	9.1	25	40	238210	-	238214	-
F	11.6	10.1	25	50	238610	238710	238614	238714
F	-	17.1	40	70	238610	-	238614	-

Standard Voltages: 24, 120, 240, 480 volts AC, 60 Hz (or 110, 220, volts AC, 50 Hz). 6, 12, 24, 120, 240 volts DC. Must be specified when ordering. Other voltages are available when required.

Solenoid Enclosures

Standard: Watertight, Types 1, 2, 3, 3S, 4, and 4X.

Optional: Explosionproof and Watertight, Types 3, 3S, 4, 4X, 6, 6P, 7, and 9. (To order, add prefix "EF" to the catalog number.)
See Optional Features Section for other available options.

Nominal Ambient Temperature Ranges:

AC: 32˚F to 125˚F (0˚C to 52˚C)
DC: 32˚F to 104˚F (0˚C to 40˚C)
Refer to Engineering Section for details.

Approvals:

CSA certified. UL listed General Purpose Valves.
Meets applicable CE directives.
Refer to Engineering Section for details.

Specifications (English units)

Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor	Operating Pressure Differential (psi) Max. AC: Air-Inert Gas	Max. AC: Water	Max. AC: Lt. Oil @ 300 SSU	Max. DC: Air-Inert Gas	Max. DC: Water	Max. DC: Lt. Oil @ 300 SSU	Max. Fluid Temp. ˚F: AC	Max. Fluid Temp. ˚F: DC	Brass Body: Catalog Number	Brass Body: Constr. Ref. No.	Stainless Steel Body: Catalog Number	Stainless Steel Body: Constr. Ref. No.	Watt Rating/ Class of Coil Insulation ②: AC	Watt Rating/ Class of Coil Insulation ②: DC
UNIVERSAL OPERATION (Pressure at any port)																
1/8	3/64	.06	175	175	175	125	125	125	140	120	8320G130 ①	1	8320G140 ①	1	9.1/F	10.6/F
1/8	1/16	.09	100	100	100	65	65	65	180	120	8320G1	1	8320G41	1	9.1/F	10.6/F
1/8	3/32	.12	50	50	50	50	50	50	180	120	8320G83	1	8320G87	1	6.1/F	10.6/F
1/8	1/8	.21	30	30	30	20	20	20	180	120	8320G3	1	8320G43	1	9.1/F	10.6/F
1/4	1/16	.09	125	130	130	75	75	75	200	150	8320G172	2	--	--	10.1/F	11.6/F
1/4	3/32	.12	100	100	100	60	60	60	200	150	8320G174	2	8320G200	3	17.1/F	11.6/F
1/4	1/8	.25	50	50	50	25	25	25	200	150	8320G176	2	8320G201	3	17.1/F	11.6/F
1/4	11/64	.35	20	20	20	12	12	12	200	150	8320G178	2	--	--	10.1/F	11.6/F
NORMALLY CLOSED (Closed when de-energized)																
1/8	3/64	.06	200	200	200	200	200	200	180	120	8320G132	1	8320G142	1	6.1/F	10.6/F
1/8	1/16	.09	150	125	125	125	125	125	180	120	8320G13	1	8320G45	1	6.1/F	10.6/F
1/8	3/32	.12	100	100	100	100	100	100	180	120	8320G15	1	8320G47	1	6.1/F	10.6/F
1/8	1/8	.21	40	40	40	40	40	40	180	120	8320G17	1	8320G49	1	6.1/F	10.6/F
1/4	1/16	.09	210	225	225	160	160	160	200	150	8320G182	2	--	--	17.1/F	11.6/F
1/4	3/32	.12	150	150	150	115	115	115	200	150	8320G184	2	8320G202	3	10.1/F	11.6/F
1/4	1/8	.25	85	85	85	60	60	60	200	150	8320G186	2	8320G203	3	10.1/F	11.6/F
1/4	11/64	.35	45	45	45	25	25	25	200	150	8320G188	2	--	--	10.1/F	11.6/F
NORMALLY OPEN (Open when de-energized)																
1/8	3/64	.06	200	200	200	200	200	200	180	120	8320G136	1	8320G146	1	6.1/F	10.6/F
1/8	1/16	.09	150	125	125	125	125	125	180	120	8320G27	1	8320G51	1	6.1/F	10.6/F
1/8	3/32	.12	100	100	100	100	100	100	180	120	8320G29	1	8320G53	1	6.1/F	10.6/F
1/8	1/8	.21	40	40	40	40	40	40	180	120	8320G31	1	8320G55	1	6.1/F	10.6/F
1/4	1/16	.09	250	250	250	160	160	160	200	150	8320G192	2	--	--	17.1/F	11.6/F
1/4	3/32	.12	150	140	140	100	100	100	200	150	8320G194	2	8320G204	3	10.1./F	11.6/F
1/4	1/8	.25	70	70	70	55	55	55	200	150	8320G196	2	8320G205	3	10.1/F	11.6/F
1/4	11/64	.35	40	40	40	30	30	30	200	150	8320G198	2	--	--	10.1/F	11.6/F

Notes: ① Supplied with cast UR disc.
② On 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts; the watt rating for the 9.1/F solenoid is 11.1 watts.

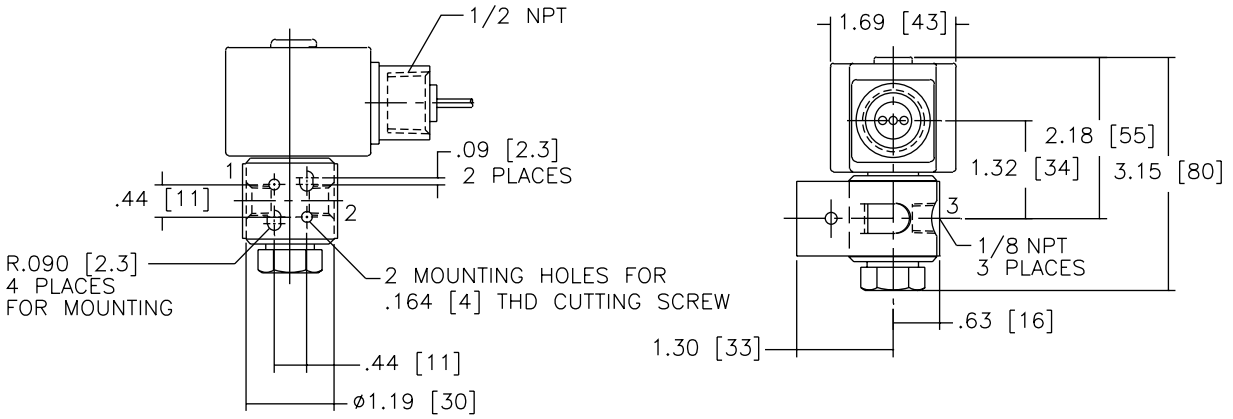
Specifications (Metric units)

Pipe Size (ins.)	Orifice Size (mm)	Kv Flow Factor (m3/h)	Operating Pressure Differential (bar)						Max. Fluid Temp. ˚C		Brass Body		Stainless Steel Body		Watt Rating/ Class of Coil Insulation ②	
			Max. AC			Max. DC										
			Air-Inert Gas	Water	Lt. Oil @ 300 SSU	Air-Inert Gas	Water	Lt. Oil @ 300 SSU	AC	DC	Catalog Number	Constr. Ref. No.	Catalog Number	Constr. Ref. No.	AC	DC
UNIVERSAL OPERATION (Pressure at any port)																
1/8	1.2	.05	12	12	12	9	9	9	59	48.4	8320G130 ①	1	8320G140 ①	1	9.1/F	10.6/F
1/8	1.6	.08	7	7	7	4	4	4	81	48.4	8320G1	1	8320G41	1	9.1/F	10.6/F
1/8	2.4	.10	3	3	3	3	3	3	81	48.4	8320G83	1	8320G87	1	6.1/F	10.6/F
1/8	3.2	.18	2	2	2	1	1	1	81	48.4	8320G3	1	8320G43	1	9.1/F	10.6/F
1/4	1.6	.08	9	9	9	5	5	5	92	64.9	8320G172	2	--	--	10.1/F	11.6/F
1/4	2.4	.10	7	7	7	4	4	4	92	64.9	8320G174	2	8320G200	3	17.1/F	11.6/F
1/4	3.2	.21	3	3	3	2	2	2	92	64.9	8320G176	2	8320G201	3	17.1/F	11.6/F
1/4	4.4	.30	1	1	1	1	1	1	92	64.9	8320G178	2	--	--	10.1/F	11.6/F
NORMALLY CLOSED (Closed when de-energized)																
1/8	1.2	.05	14	14	14	14	14	14	81	48.4	8320G132	1	8320G142	1	6.1/F	10.6/F
1/8	1.6	.08	10	9	9	9	9	9	81	48.4	8320G13	1	8320G45	1	6.1/F	10.6/F
1/8	2.4	.10	7	7	7	7	7	7	81	48.4	8320G15	1	8320G47	1	6.1/F	10.6/F
1/8	3.2	.18	3	3	3	3	3	3	81	48.4	8320G17	1	8320G49	1	6.1/F	10.6/F
1/4	1.6	.08	14	16	16	11	11	11	92	64.9	8320G182	2	--	--	17.1/F	11.6/F
1/4	2.4	.10	10	10	10	8	8	8	92	64.9	8320G184	2	8320G202	3	10.1/F	11.6/F
1/4	3.2	.21	6	6	6	4	4	4	92	64.9	8320G186	2	8320G203	3	10.1/F	11.6/F
1/4	4.4	.30	3	3	3	2	2	2	92	64.9	8320G188	2	--	--	10.1/F	11.6/F
NORMALLY OPEN (Open when de-energized)																
1/8	1.2	.05	14	14	14	14	14	14	81	48	8320G136	1	8320G146	1	6.1/F	10.6/F
1/8	1.6	.08	10	9	9	9	9	9	81	48	8320G27	1	8320G51	1	6.1/F	10.6/F
1/8	2.4	.01	7	7	7	7	7	7	81	48	8320G29	1	8320G53	1	6.1/F	10.6/F
1/8	3.2	.18	3	3	3	3	3	3	81	48	8320G31	1	8320G55	1	6.1/F	10.6/F
1/4	1.6	.08	17	17	17	11	11	11	92	65	8320G192	2	--	--	17.1/F	11.6/F
1/4	2.4	.10	10	10	10	7	7	7	92	65	8320G194	2	8320G204	3	10.1./F	11.6/F
1/4	3.2	.21	5	5	5	4	4	4	92	65	8320G196	2	8320G205	3	10.1/F	11.6/F
1/4	4.4	.30	3	3	3	2	2	2	92	65	8320G198	2	--	--	10.1/F	11.6/F

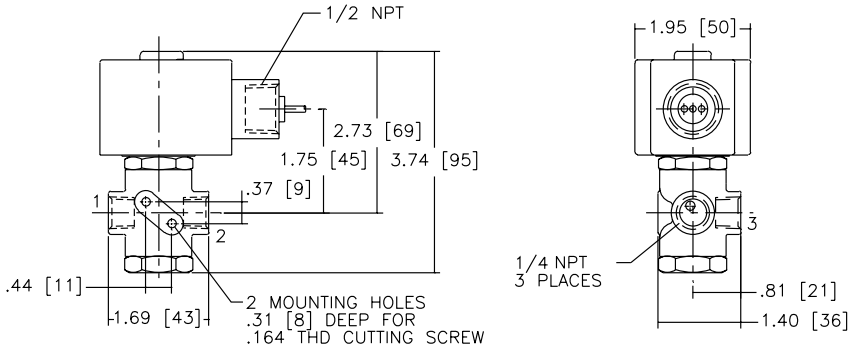
Notes: ① Supplied with cast UR disc.
② On 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts; the watt rating for the 9.1/F solenoid is 11.1 watts.

Dimensions: inches (mm)

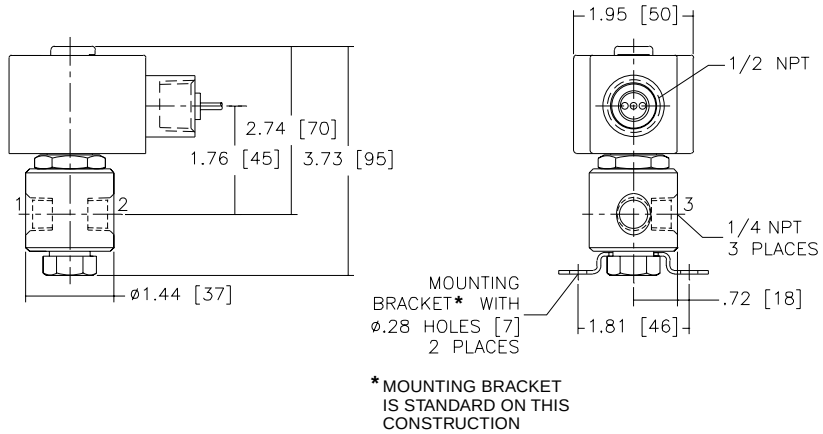
Constr. Ref. 1



Constr. Ref. 2

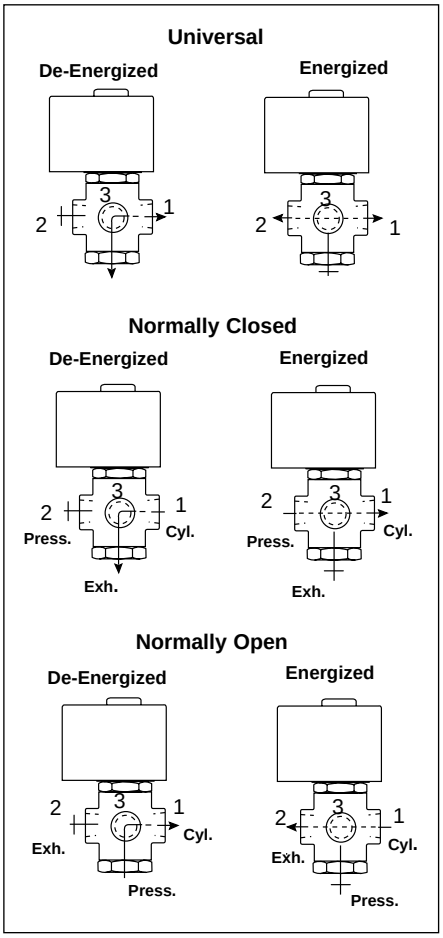


Constr. Ref. 3



*MOUNTING BRACKET IS STANDARD ON THIS CONSTRUCTION

FLOW DIAGRAMS



NOTE:
Bulletin 8320 is for General Purpose Solenoid Enclosure

For Explosion Proof Solenoid Enclosure -
See Form No. V5380

Installation & Maintenance Instructions

GENERAL PURPOSE AND EXPLOSIONPROOF SOLENOIDS

SERIES 8003

Form No.V5380R9

IMPORTANT: See separate valve installation and maintenance instructions for information on: Operation, Positioning, Mounting, Cleaning, Preventive Maintenance, Causes of Improper Operation, Disassembly, and Reassembly of basic valve.

DESCRIPTION

Catalog numbers 80031 and 80032 solenoids have a Type 1, General Purpose Solenoid Enclosure. Catalog numbers EF80031, EF80032, 80033, and 80034 solenoids have an explosionproof solenoid enclosure designed to meet Enclosure Type 3–Raintight, Type 7 (C & D) Explosionproof Class I, Division 1, Groups C & D and Type 9 (E, F, & G) – Dust Ignitionproof Class II, Division 1, Groups E, F, & G, and have a temperature range code of TC3. Series 8003 solenoids (when installed as a solenoid and not as part of an ASCO valve), are supplied with a core which has a 0.250–28 UNF–2B tapped hole with 0.38 or 0.63 minimum full thread.

OPERATION

When the solenoid is energized, the core is drawn into the solenoid base sub–assembly.

IMPORTANT: When the solenoid is de–energized, the initial return force for the core, whether developed by spring, pressure, or weight must exert a minimum force to overcome residual magnetism created by the solenoid. Minimum return force for AC construction is 1 lb. 5 oz. and 5 oz. for DC construction.

INSTALLATION

Check nameplate for correct catalog no., voltage, frequency, wattage, and service.

Enclosure Types 3, 4, 7, and 9

⚠ CAUTION: To prevent fire or explosion, do not install solenoid enclosure where ignition temperature of hazardous atmosphere is less than 160° C. On valves used for steam service or when a class "H" solenoid is used, do not install in hazardous atmosphere where ignition temperature is less than 180°C. See nameplate for service. Open circuit before disassembling. Reassemble before operating.

When used in –40°C Ambient Temperature Applications

⚠ WARNING: To prevent fire or explosion, use only conduit runs ½" in size with a sealing fitting connected within 5 feet of the solenoid enclosure.

IMPORTANT: To protect a solenoid operator or valve, install a strainer or filter, suitable for the service involved in the inlet side as close to the valve or operator as possible. Clean periodically depending on service conditions. See ASCO Series 8600, 8601 and 8602 for strainers.

Positioning

This solenoid is designed to perform properly when mounted in any position. However, for optimum life and performance, the solenoid should be mounted vertically and upright to reduce the possibility of foreign matter accumulating in the solenoid base sub–assembly area.

Wiring

Wiring must comply with local codes and the National Electrical Code. The general purpose solenoid housing has a 7/8" diameter hole to accommodate 1/2" conduit. To facilitate wiring, the general purpose solenoid enclosure may be rotated 360° by removing the retaining cap or clip.

⚠ CAUTION: When metal retaining clip disengages, it will spring upward.

Rotate solenoid enclosure to desired position. Then replace retaining cap or clip before operating. On some solenoids, a grounding wire which is green or green with yellow stripes is provided. Use rigid metallic conduit to ground all enclosures not provided with a green grounding wire. For the explosionproof solenoid enclosure, electrical fittings must be approved for use in hazardous locations. The explosionproof solenoid enclosure has a 1/2" conduit connection and may be rotated 360° to facilitate wiring.

⚠ WARNING: To prevent the possibility of death, serious injury or property damage, from accidental disengagement of solenoid from valve body, hold housing securely by wrenching flats while removing or replacing housing cover.

To rotate enclosure, loosen housing cover using a 1" socket wrench. Two wrenching flats are provided on the housing to hold it securely in place while the cover is being loosened or tightened. Rotate housing to desired position and replace cover before operating. Torque housing cover to 135 ± 15 in–lbs [15,3 ± 1,7 Nm].

NOTE: Alternating current (AC) and direct current (DC) solenoids are built differently. To convert from one to the other, it is necessary to change the complete solenoid including the core and solenoid base sub–assembly, not just the coil. Consult ASCO.

Solenoid Enclosure Assembly

Catalog 80031 and 80032 solenoids may be assembled as a complete unit. Tightening is accomplished by means of a hex flange at the base of the solenoid enclosure.

Catalog EF80031, EF80032, 80033, and 80034 solenoids may be assembled as a complete unit. Tightening is accomplished by means of two milled slots (wrenching flats) above the threaded area of the solenoid base sub–assembly. Use special ASCO wrench supplied (order No. K168146–1). An alternate type wrench adapter is also available which tightens the assembly by means of four (4) pin holes in the solenoid base sub–assembly. If this alternate wrench is used the solenoid must be completely disassembled, see ***Coil Replacement*** section.

Solenoid Temperature

Standard solenoids are supplied with coils designed for continuous duty service. When the solenoid is energized for a long period, the solenoid enclosure becomes hot and can be touched by hand only for an instant. This is a safe operating temperature. Any excessive heating will be indicated by the smoke and odor of burning coil insulation.

MAINTENANCE

⚠ WARNING: To prevent the possibility of death, serious injury or property damage, turn off electrical power, depressurize solenoid operator or valve, and vent fluid to a safe area before servicing.

Cleaning

All solenoid operators and valves should be cleaned periodically. The time between cleaning will vary depending on medium and service conditions. In general, if the voltage to the coil is correct, sluggish valve operation, excessive noise, or leakage will indicate that cleaning is required. Clean strainer or filter when cleaning the valve.

Preventive Maintenance

- Keep the medium flowing through the solenoid operator or valve as free from dirt and foreign material as possible.
- While in service, the solenoid operator or valve should be operated at least once a month to ensure proper opening and closing.
- Depending on the medium and service conditions, periodic inspection of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. Replace any parts that are worn or damaged.

 All Rights Reserved.

Causes of Improper Operation

- **Faulty Control Circuit:** Check the electrical system by energizing the solenoid. A metallic *click* indicates loss of power supply. Check for loose or blown fuses, open–circuited or grounded coil, broken lead wires or splice connections.
- **Burned–Out Coil:** Check for open–circuited coil. Replace if necessary. Check supply voltage; it must be the same as specified on nameplate and as marked on the coil.
- **Low Voltage:** Check voltage across the coil leads. Voltage must be at least 85% of nameplate rating.

Coil Replacement

Solenoid Catalog Numbers 80031 and 80032 General Purpose Enclosure (Refer to Figure 1 below)

1. Disconnect coil lead wires and grounding wire if present.
2. Remove retaining cap or clip, nameplate (if present), and housing or housing with nameplate (alternate construction).

⚠ CAUTION: When metal retaining clip disengages, it will spring upward.

3. Slip spring washer, insulating washer, and coil off the solenoid base sub–assembly. Insulating washers are omitted when a molded coil is used.
4. Coil is now accessible for replacement
5. Torque housing cover to 135 ± 15 in–lbs [15,3 ± 1,7 Nm].

Catalog Numbers EF80031, EF80032, 80033 and 80034 Explosionproof Solenoid Enclosure

NOTE: This solenoid has two constructions, refer to Figure 2 on page 3 for the first construction and Figure 3 on page 4 for the alternate construction.

1. Disconnect coil lead wires and grounding wire if present.

⚠ WARNING: To prevent the possibility of death, serious injury or property damage from accidental disengagement of solenoid from valve body, hold housing securely by wrenching flats while removing or replacing housing cover.

2. Unscrew housing cover using 1″ socket wrench. Two wrenching flats are provided to hold the housing securely in place while the cover is being removed or replaced.
3. Remove take–up spring, flux washer, insulating washer, coil and insulating washer. For the alternate construction, slide retaining cup sideways to disengage it from the top of the solenoid base sub–assembly. Then remove yoke, spring washer, insulating washer, coil and insulating washer. Insulating washers are omitted when a molded coil is used.
4. Reassemble solenoid according to exploded view. Before reassembly, refer to NOTE following for cleaning and greasing requirements.
5. Torque housing cover to 135 ± 15 in–lbs [15,3 ± 1,7 Nm].

⚠ CAUTION: Solenoid must be fully reassembled because the housing and internal parts complete the magnetic circuit. Be sure to replace an insulating washer at each end of non–molded coil.

NOTE: Solenoid Catalog Nos. EF80031, EF80032, 80033, and 80034, —Installation and maintenance of explosionproof equipment requires more than ordinary care to ensure safe performance. All finished surfaces of the solenoid are constructed to provide flame–proof seal. Be sure that the surfaces are wiped clean before reassembling. Grease the explosionproof solenoid enclosure with DOW CORNING® 111 Compound lubricant or an equivalent high–grade silicone grease. Grease all joints thoroughly including the underside of the solenoid base sub–assembly flange and internal threads of the housing cover.

Part Name	Torque Value in Inch–Pounds	Torque Value in Newton–Meters
Solenoid Base Sub–Assembly	175 ± 25	19,8 ± 2,8

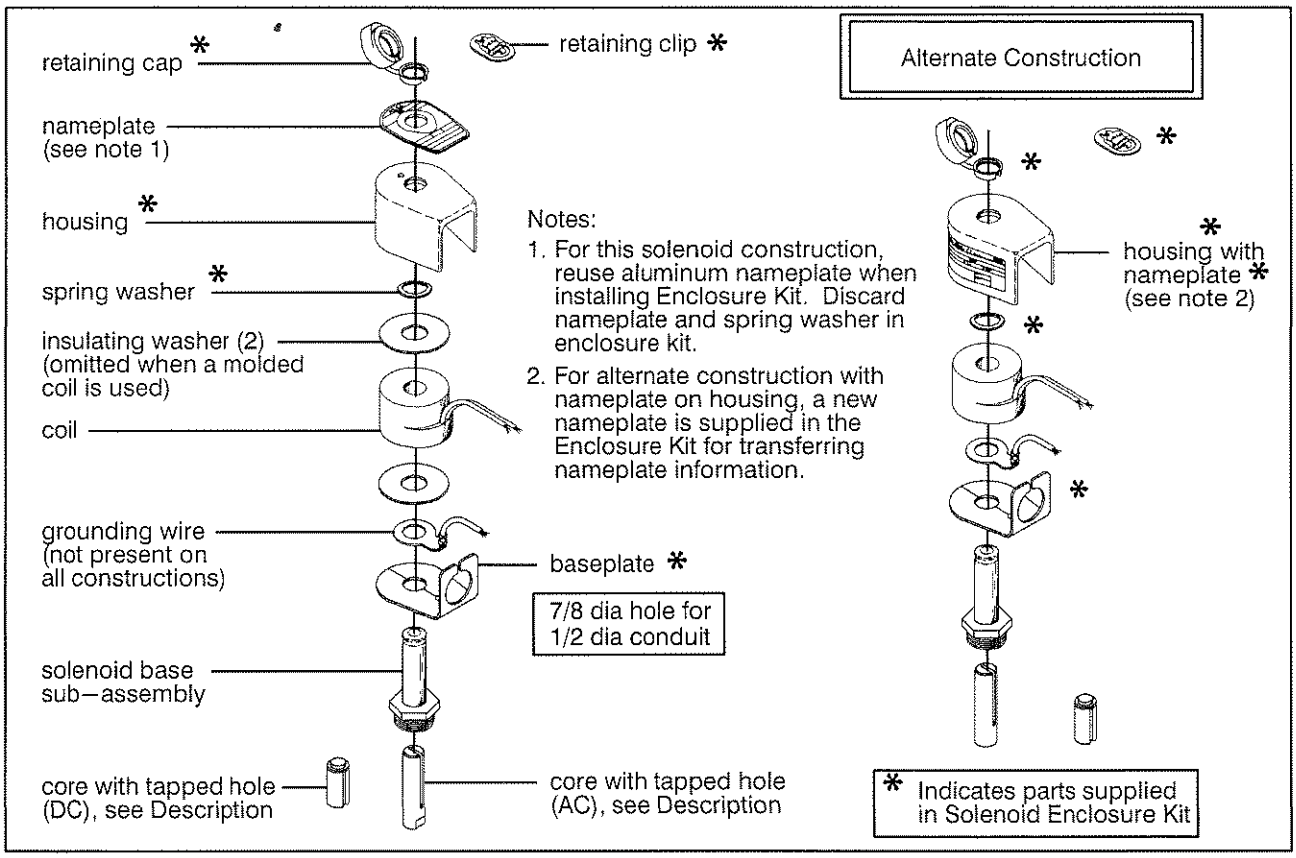


Figure 1, Catalog Nos. 80031 and 80032 General Purpose Solenoid Enclosure.

ASCO®

Torque Chart

Part Name	Torque Value in Inch–Pounds	Torque Value in Newton–Meters
Solenoid Base Sub–Assembly	175 ± 25	19,8 ± 2,8
Housing Cover	135 ± 15	15,3 ± 1,7

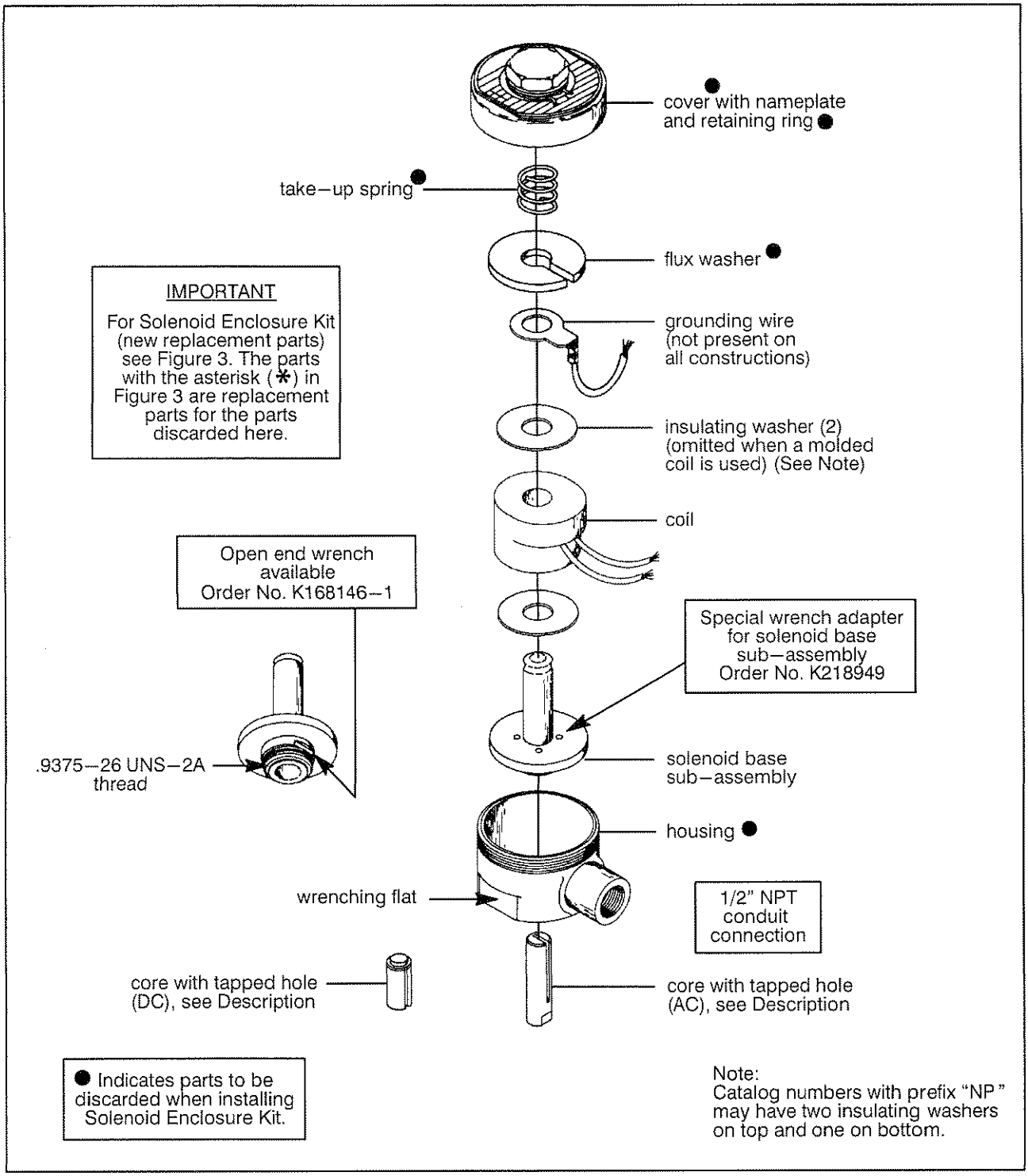


Figure 2. Catalog Nos. EF80031, EF80032 80033 and 80034 Explosionproof Solenoid Enclosure.

ASCO®

Torque Chart

Part Name	Torque Value in Inch–Pounds	Torque Value in Newton–Meters
Solenoid Base Sub–Assembly	175 ± 25	19,8 ± 2,8
Housing Cover	135 ± 15	15,3 ± 1,7

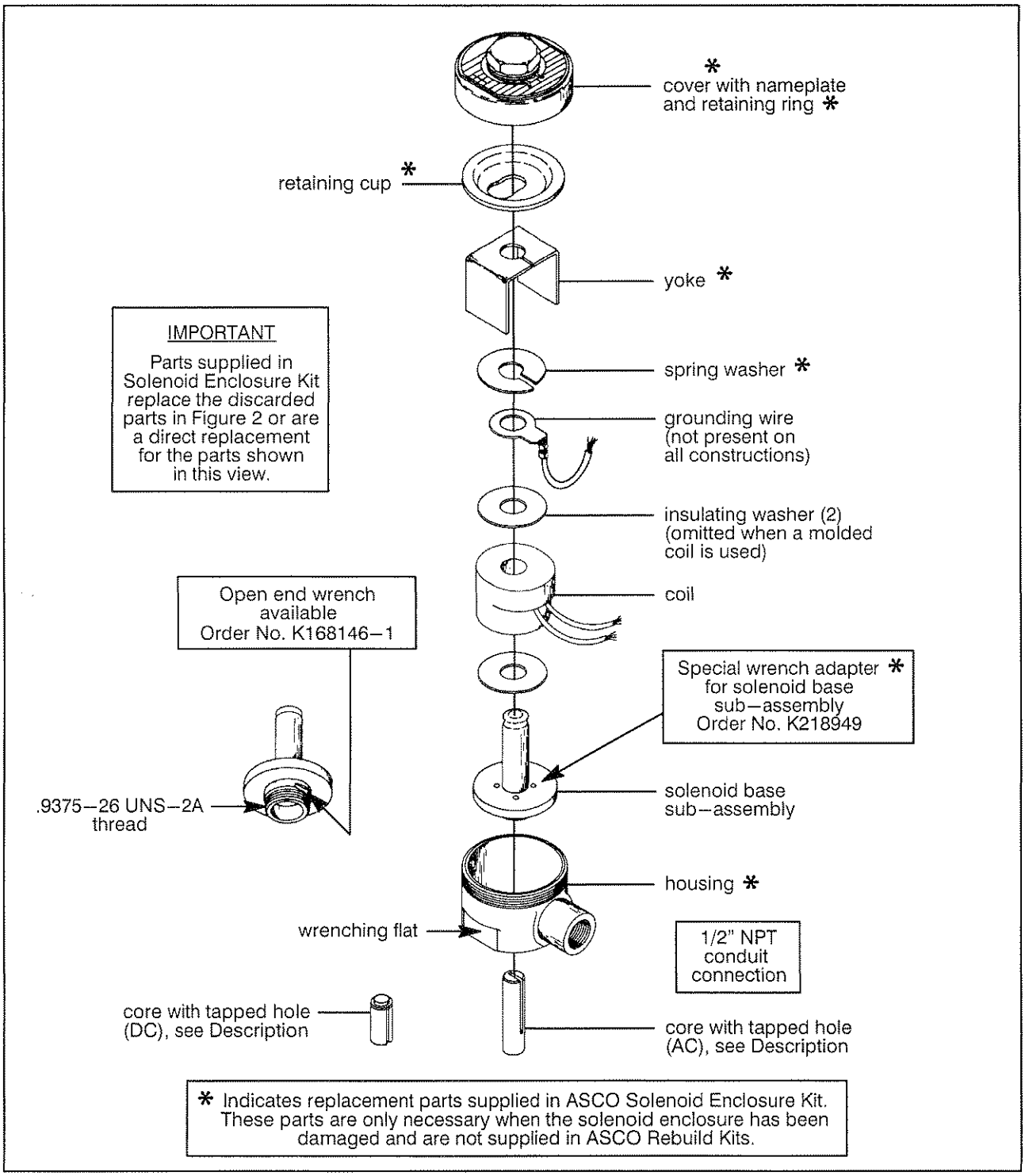


Figure 3. Catalog Nos. EF80031, EF80032, 80033 and 80034 Alternate Construction Explosionproof Solenoid Enclosure.

ASCO®

THIS PAGE LEFT INTENTIONALLY BLANK

TS 8

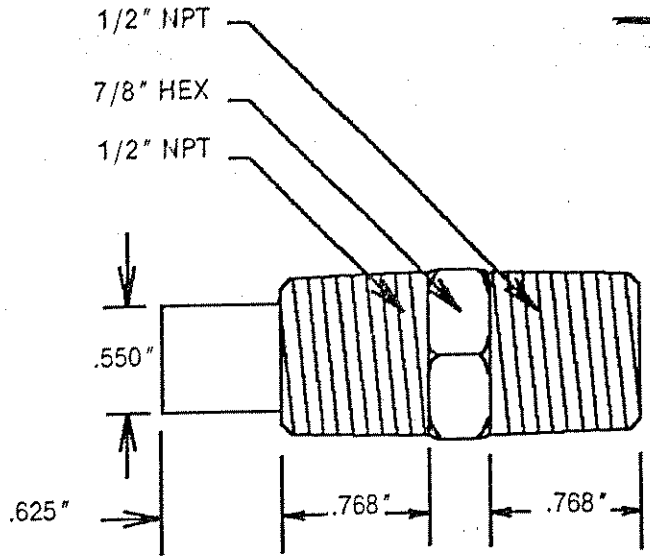
THERMTROL CORPORATION
TC-100-A1-190 DEGREE F

½'' NPT 190ºF TEMPERATURE SWITCH
NORMALLY CLOSED

ANGI PART NUMBER 480-07245

THIS PAGE LEFT INTENTIONALLY BLANK

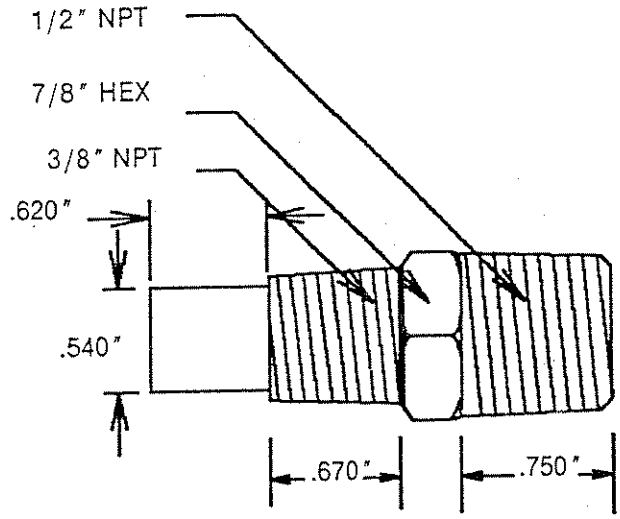
STYLE 100



MODEL	CONTACT RATING	CONTACTS	SWITCHING ACTION
TC-100	14 Amps 120VAC 10 Amps 240VAC	N.C.	Snap
TCC-100	6 Amps 120VAC 4 Amps 240VAC	N.C.	Creep
TCCR-100	6 Amps 120VAC 4 Amps 240VAC	N.O.	Creep
TCB-100	8 Amps 120VAC 4 Amps 240VAC	N.C.	Creep

- ONE-PIECE BRASS CONSTRUCTION
- 7000 PSI PRESSURE RATING
- TERMINATION CODE A, B, C, D, E, F

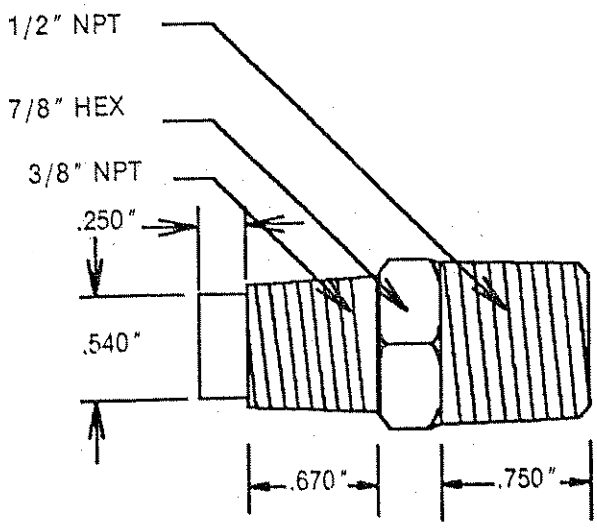
STYLE 102



MODEL	CONTACT RATING	CONTACTS	SWITCHING ACTION
TC-102	14 Amps 120VAC 10 Amps 240VAC	N.C.	Snap
TCC-102	6 Amps 120VAC 4 Amps 240VAC	N.C.	Creep
TCCR-102	6 Amps 120VAC 4 Amps 240VAC	N.O.	Creep
TCB-102	8 Amps 120VAC 4 Amps 240VAC	N.C.	Creep

- ONE-PIECE BRASS CONSTRUCTION
- 7000 PSI PRESSURE RATING
- TERMINATION CODE A, B, C, D, E, F

STYLE 103



MODEL	CONTACT RATING	CONTACTS	SWITCHING ACTION
TC-103	14 Amps 120VAC 10 Amps 240VAC	N.C.	Snap
TCC-103	6 Amps 120VAC 4 Amps 240VAC	N.C.	Creep
TCCR-103	6 Amps 120VAC 4 Amps 240VAC	N.O.	Creep
TCB-103	8 Amps 120VAC 4 Amps 240VAC	N.C.	Creep

- ONE-PIECE BRASS CONSTRUCTION
- 7000 PSI PRESSURE RATING
- TERMINATION CODE A, B, C, D, E, F

THIS PAGE LEFT INTENTIONALLY BLANK

TV 3

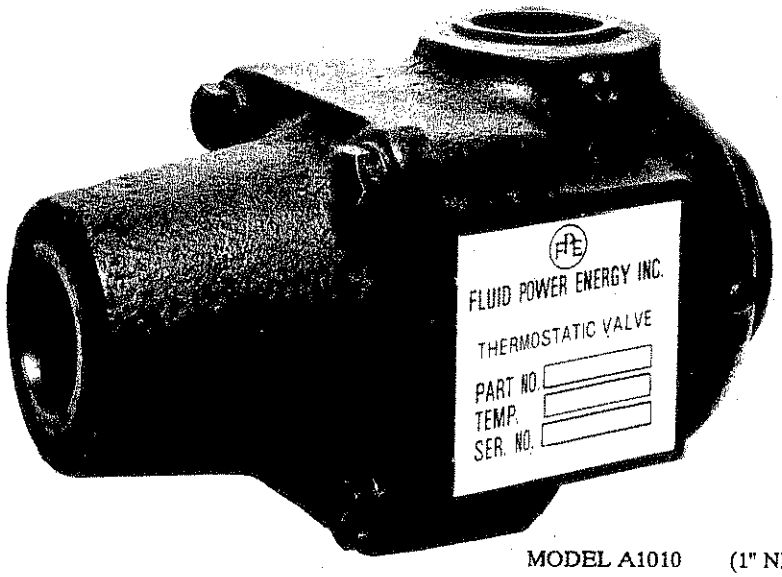
FLUID POWER ENERGY
A1010-100

1’’ 3-WAY THERMOSTIC VALVE

ANGI PART NUMBER 330-07232

THIS PAGE LEFT INTENTIONALLY BLANK

1/2" 3/4" 1" THREE-WAY THERMOSTATIC VALVE



MODEL A1010 (1" NPT)
A1110 (3/4" NPT)
A1210 (1/2"NPT)
A1010J8 (SAE #8)
A1010J12 (SAE #12)
A1010J16 (SAE #16)

FEATURES

SELF-CONTAINED • NON-ADJUSTABLE • TAMPER-PROOF • COMPACT

WIDE RANGE OF TEMPERATURES • HEAVY-DUTY • REPLACEABLE ELEMENT

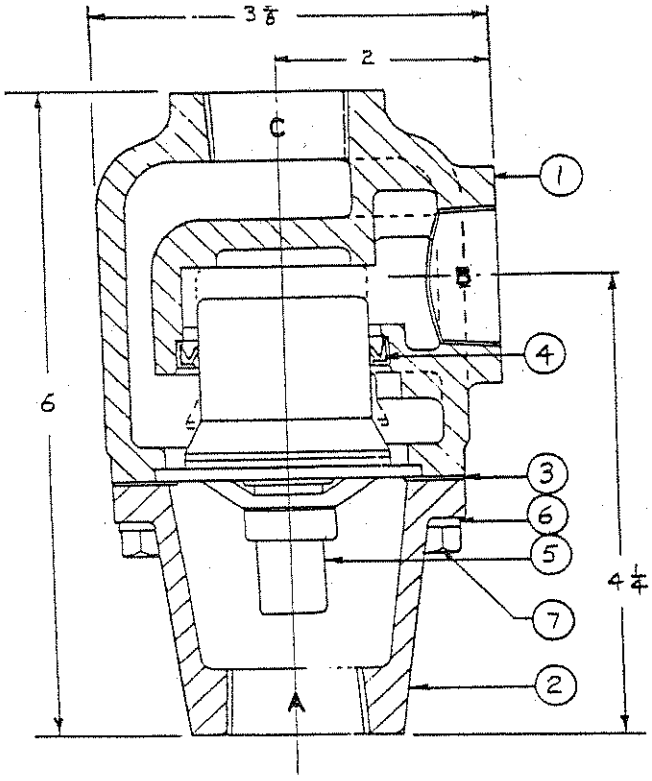
RUGGED CONSTRUCTION • OPERATE IN ANY POSITION

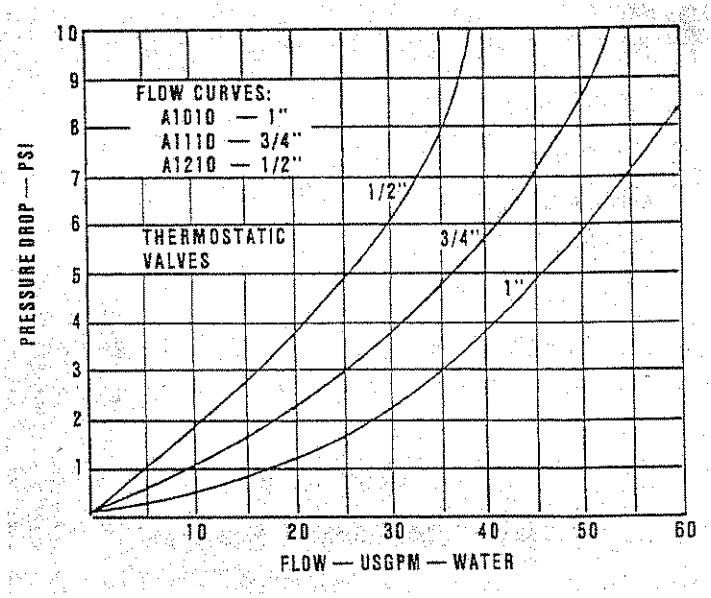
DESCRIPTION

FPE thermostatic valves utilize the principle of expanding wax, which in the semi-liquid state undergoes large expansion rates within a relatively narrow temperature range. The self-contained power element activates a stainless steel sliding sleeve which provides positive three-way valve action. All FPE thermostatic valves are factory set at predetermined temperatures; no further adjustments are necessary. A wide range of temperatures are available for water and oil temperature control applications.

On starting, the total fluid flow is in a by-pass mode. As fluid temperature rises to the control range, some fluid is diverted to the cooling system. As fluid temperature continues to increase, more flow is diverted, and when in a fully stroked condition, all fluid flow is positively directed to the cooling system. FPE thermostatic valves may be used for either mixing or diverting applications. In normal operation, fluid temperatures are controlled to within a few degrees.

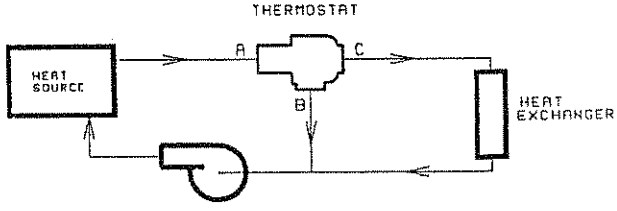
Standard FPE thermostatic valve housings are made from high quality grey iron castings; however, steel and bronze housings are available.



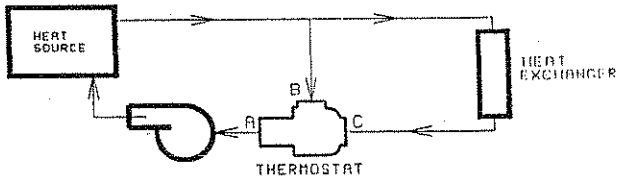


ITEM	NO.	P/N	DESCRIPTION
1	1	1010	VALVE BODY (1" NPT)
2	1	1020	VALVE COVER (1" NPT)
3	1	1572	O-RING
4	1	1071	LIP SEAL (TEFLON)
*5	1	1060	ELEMENT
6	4	1603	LOCKWASHER 5/16
7	4	1602	CAPSCREW 5/16 - 18 x 7/8
8	1	1590	NAME PLATE

* PART NO. 1060 - CARRIES A DASH NUMBER INDICATING THE NOMINAL TEMPERATURE



DIVERTING APPLICATION



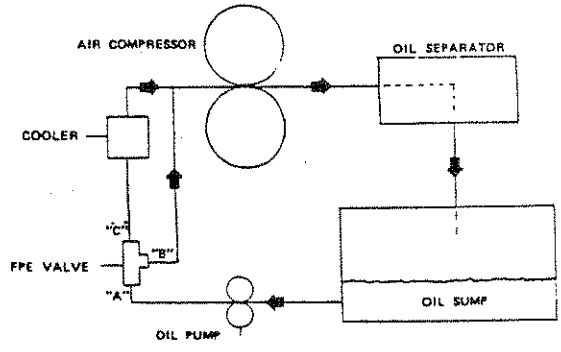
MIXING APPLICATION

PRESSURE RATINGS

MATERIAL	PRESSURE RATING	MODEL NUMBER
CAST IRON	150 PSI	A1010
STEEL	500 PSI	S1010
ALUMINUM	150 PSI	AL1010
BRONZE	150 PSI	B1010
DUCTILE IRON	250 PSI	D1010
STAINLESS STEEL	500 PSI	SS1010

PRESSURE RATINGS

MATERIAL	PRESSURE RATING	MODEL NUMBER
CAST IRON	150 PSI	A2010
STEEL	500 PSI	S2010
BRONZE	150 PSI	B2010
STAINLESS STEEL	500 PSI	SS2010



AIR COMPRESSOR APPLICATION

HOW TO ORDER: **Specify Model Number, nominal temperature desired, and housing material.**

FPE FLUID POWER ENERGY, INC.

FLUID POWER ENERGY

MODEL CODE SYSTEM

AL — 1010 — N — 160

BODY MATERIAL

A	CAST IRON
AF	CAST IRON FLG. (STD. VALVE IS NPT)
B	BRONZE
D	DUCTILE
AL	ALUMINUM
S	STEEL
SF	STEEL, FLANGED (STD. VALVE IS NPT)
SS	STAINLESS STEEL

VALVE SIZE

0750	3/4" NPT
1210	1/2" NPT (1210 BODY SIZE)
1110	3/4" NPT (1210 BODY SIZE)
1010	1" NPT (1210 BODY SIZE)
1010J8	SAE #8 THREADS (1210 BODY SIZE)
1010J12	SAE #12 THREADS (1210 BODY SIZE)
1010J16	SAE #16 THREADS (1210 BODY SIZE)
1011	1" NPT (TWO WAY 1211)
1411	1 1/4" NPT (TWO WAY 1211)
1511	1 1/2" NPT (TWO WAY 1211)
1530	1 1/2" NPT (THREE WAY)
1530J18	SAE #18 (THREE WAY)
1530J20	SAE #20 (THREE WAY)
1530J24	SAE #24 (THREE WAY)
2010-1	1 1/2" NPT (2010 BODY)
2010	2" NPT (2010 BODY)
2010J24	SAE #24 THREADS
2010J32	SAE J32 THREADS
2510	2 1/2" FF FLG.
3010	3" FF FLG.
4010	4" FF FLG.
5010	5" FF FLG.
6010	6" FF FLG.

SPECIAL DESIGNATION

C	NO COVER
E	NEOPRENE O-RING
G	PRIVATE LABEL
K	BLACK PAINT FINISH
L	SS CHANNEL
M	MANUAL OVERRIDE
N	NO NAME PLATE
P	NICKEL PLATED ELEMENT
S	STUDS
T	PRESSURE TEST *
	T20 = 200 W. PRESS.
	T22 = 220 W. PRESS.
	T24 = 240 W. PRESS.
	ETC...
V	VITON O-RING
W	WEEP HOLE FOLLOWED BY SIZE IN 32NDS OF AN INCH
	W1 = 1/32" WEEP HOLE
	W2 = 2/32" WEEP HOLE
	W3 = 3/32" WEEP HOLE
	ETC...
X	SPECIAL DESIGNATION

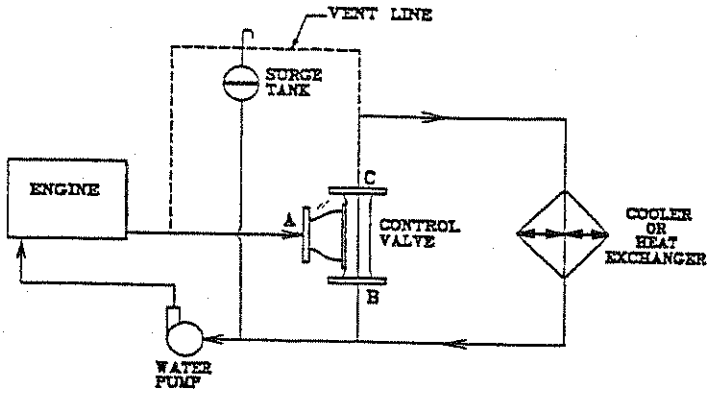
TEMPERATURE SETTING

	ELEMENT ASSEMBLY P / N				
	0760	1060	1560	2050	2096
USED IN MODEL NOS	0750	1010 1110 1210	1011 1511 1530	2010 2010-1 2510 3010 4010 5010 6010	AMOT EQUIVALENTS

NOMINAL (DEG F)	ELEMENT ASSEMBLY NUMBER 0760	1060	1560	2050	2096
45				32-50	32-50
55				47-68	47-68
65				55-75	55-75
75				68-86	68-86
80		70-90	70-90		
90		80-100	80-100	80-95	80-95
95				86-104	86-104
100	90-110	90-110	90-110	93-108	93-108
105				95-113	95-113
110	100-120	100-120	100-120	100-117	100-117
115				104-122	104-122
120	110-130	110-130	110-130	110-130	110-130
130		120-140	120-140	124-140	124-140
135		125-145	125-145	129-145	129-145
140	127-152	130-150	130-150	135-151	135-151
150		140-160	140-160	146-162	146-162
155				150-165	150-165
160	150-170	150-170	150-170	155-172	155-172
165				160-175	160-175
170	160-180	160-180	160-180	165-180	165-180
175			170-185	170-185	170-185
180	175-190	170-190	175-190	175-190	175-190
185				180-196	180-196
190		180-195	185-200	185-200	185-200
195		185-200		188-208	188-208
200	190-210	190-210	190-210		
205			198-218	195-215	195-215
210		198-218		200-215	200-215
220			212-225	209-225	209-225
230		220-235	220-240	219-239	219-239
240	230-250			226-252	226-252
250	240-265			240-260	240-260
260				250-270	250-270

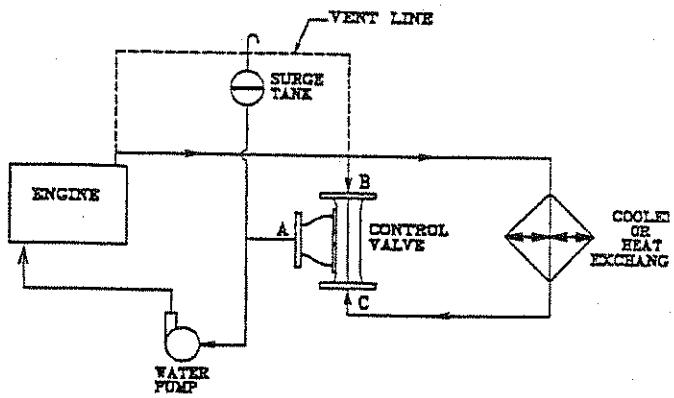
FORM: J:\DCAD\FPE\MODEL-PN.DWG (R14)
REV. 00 (3/93)
REV. 01 (6/94)
REV. 02 (11/94)
REV. 03 (1/95) ECN #011995
REV. 04 (10/96) ECN #1029
REV. 05 (07/99) ECN #1058
REV. 06 (03/01)

APPLICATION CHARTS



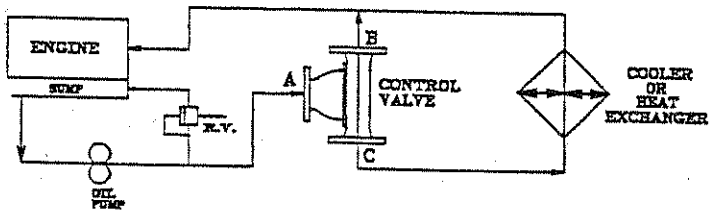
COOLING WATER DIVERTING SYSTEM

FIGURE (1)



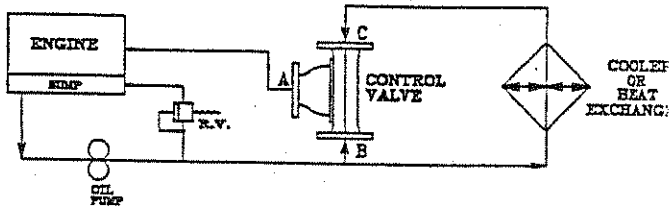
COOLING WATER MIXING SYSTEM

FIGURE (2)



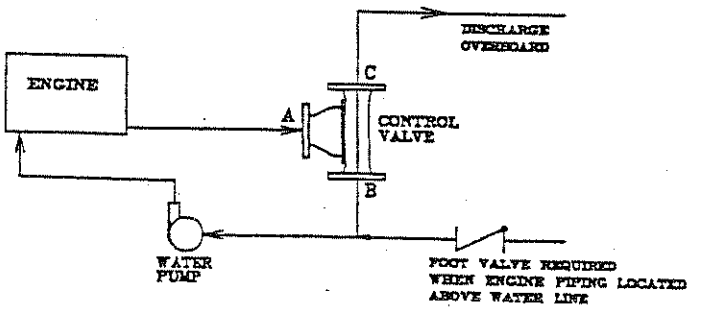
LUBE OIL TEMPERATURE CONTROL DIVERTING SYSTEM

FIGURE (3)



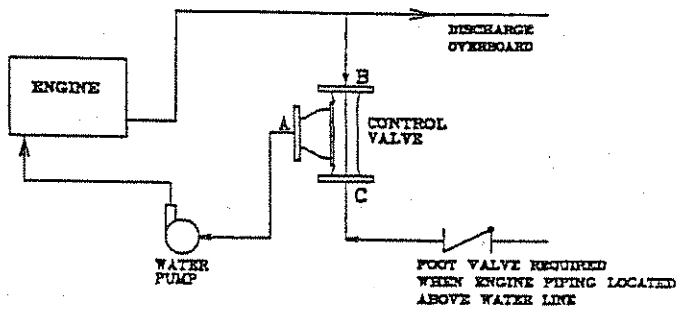
LUBE OIL TEMPERATURE CONTROL MIXING SYSTEM

FIGURE (4)



DIRECT COOLING DIVERTING SYSTEM USING WATER (140 F OR LESS)

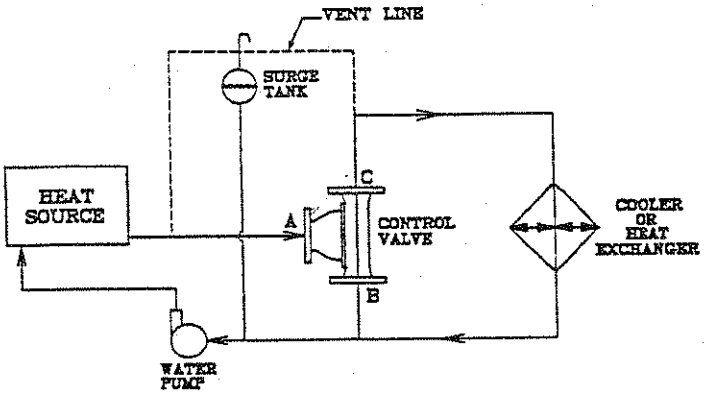
FIGURE (5)



DIRECT COOLING MIXING SYSTEM USING WATER (140 F OR LESS)

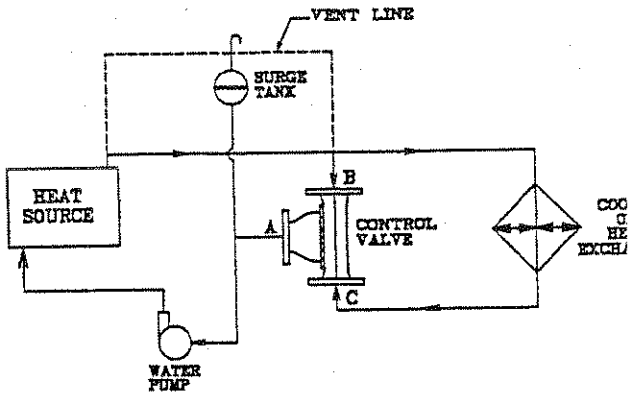
FIGURE (6)

APPLICATION CHARTS



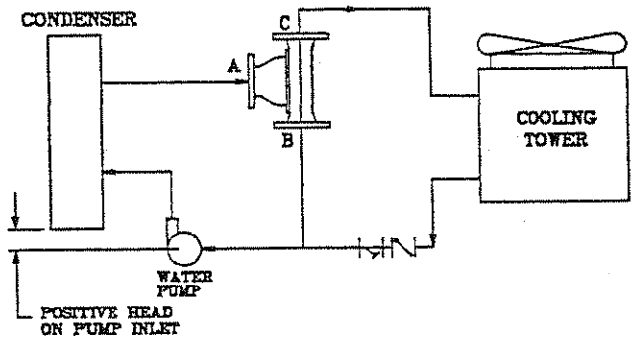
COOLING – ELECTRIC SYSTEM – DIVERTING MODE

FIGURE (7)



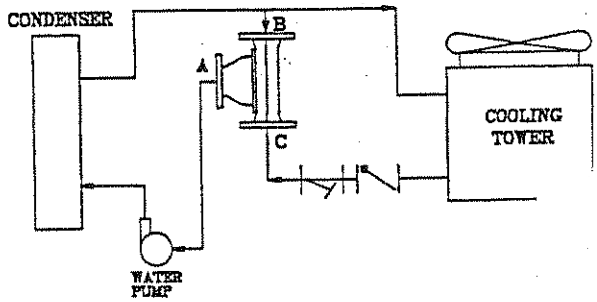
COOLING – ELECTRIC SYSTEM – MIXING MODE

FIGURE (8)



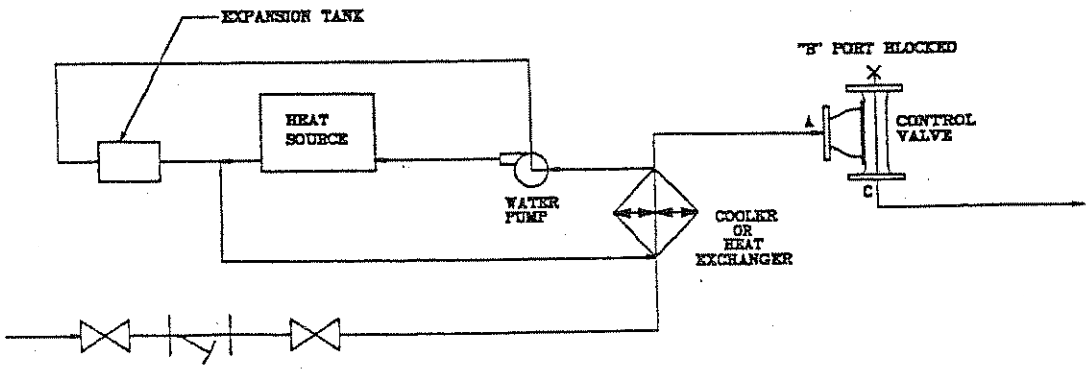
DIVERTING SYSTEM – AIR CONDITIONING

FIGURE (9)



MIXING SYSTEM – AIR CONDITIONING

FIGURE (10)



WATER SAVING APPLICATIONS

FIGURE (11)

FLUID POWER ENERGY, INC.

REPAIR INSTRUCTIONS

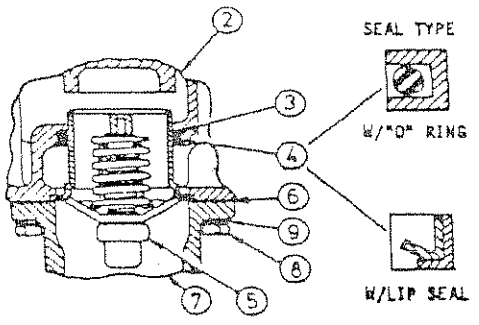
THERMOSTATIC VALVE MAINTENANCE KITS

ELEMENT TESTING

Place element in water at a temperature 15 deg. F. to 20 deg. F. above its nominal setting and stir water vigorously with the element for five minutes. The temperature stamped on the sleeve of the element is the nominal temperature. The cracking temperature and the fully open temperature are stamped on the pill of the thermostat. After stirring vigorously immediately place the element in the housing. If the element is fully stroked, the seating and over-travel spring can be felt as it is pushed down. To determine if the element will close at a specific temperature, place the element in a bath of water approximately 5 deg. F below the start to open temperature. This is the number stamped on the element. Due to the effect of hysteresys the element will close 5 deg. F. below the start to open temperature.

ELEMENT REPLACING

Remove four capscrews (8), lockwashers (9) and separate housings (2) and (7). Remove element assembly (5) and seal (4). Remove housing gasket or O-ring (6). Clean housing sections; remove any scale or foreign material from seal faces. Lubricate new element seal (4), lip seal is pressed into upper housing (2), O-ring is inserted into sleeve (3). Place the new housing gasket (6) in recess of upper housing (2). Insert element (5) into upper housing (2) to position shown in section view. Place lower housing (7) over exposed section of element (5) against face of upper housing (2). Secure housings with capscrews (8) and lockwashers (9).



Ref. No.	Description
2	Upper Housing
3	Sleeve
4	"O" Ring or Lip Seal
5	Element Assembly
6	Gasket or O-ring
7	Lower Housing
8	Cap-screw
9	Lock-washer

g) Outlet temperature is not maintained due to insufficient heat rejected to coolant.

3) ADDITIONAL ITEMS THAT MAY BE CHECKED:
   a) System thermometers should be regularly checked to make sure that they are operational
   b) Thermometers should be located on the side of horizontal pipe runs whenever possible and particularly on oil systems.
   c) Thermometers should be as far as possible downstream from the valve in a mixing application.
   d) The system should not have any bypasses or "sneak circuits" which prevent proper operation of thermostatic control valve.
   e) Cracked or broken valves may be caused by:
      i) Piping too short, and therefore, over-tightening bolts
      ii) Lack of expansion isolation between piping and valve.
      iii) Misalignment of piping.
      iv) Excessive weight
      v) Allowing untreated water to freeze in the system.

FLUID POWER ENERGY, INC.

Trouble Shooting

1) SYSTEM TEMPERATURE RUNNING TOO HOT
   a) Presence of foreign objects, dirt and solid buildup inside the valve (e.g. sliding piston, piston's seat, and lip seal area) may prevent proper operation of the valve. Example: By-pass port will not close.
   b) Valve's by-pass and cooler ports (port B & C) installed backward. As port B closes due to temperature increase, flow is greatly restricted to cooler.
   c) Valve is undersized, causing increase in pressure drop and possibly cavitation.
   d) Thermostatic wax element may have been exposed to temperature higher than the recommended maximum temperature.
   e) Excessive pressure drop (in excess of 25 psi) may cause one or more of the following conditions:
      i) Thermostatic wax element failure
      ii) Lip seal dislocation
      iii) O-ring damage
      iv) Improper piston movement.
   f) Improper system cooling capacity.
   g) Improper sizing of the valve in a mixing application. If the valve is sized too large for the application it could result in poor mixing, which could cause the temperature to run either too hot or too cold.

2) SYSTEM TEMPERATURE RUNNNG TOO COLD
   a) Incorrect selection of valve's nominal temperature.
   b) Valve's by-pass and cooler ports (port B & C) installed backward. This condition forces fluid to cooler at lower temperature.
   c) Worn Teflon lip seal.
   d) Presence of foreign object, dirt and solid buildup inside of valve (e.g. sliding piston, piston's seat, and lip seal area) may prevent proper operation of the valve.
   e) Excessive pressure drop. Refer to part 1, item E above.
   f) Thermostatic control valve is oversized.

FLUID POWER ENERGY, INC.

Maintenance

PFE thermostatic valves probably require less maintenance than any other type of similar use. Elements in normal service should be good for 6 to 10 years. Excessive temperatures, chemical, electrolytic or cavitation attack will of course shorten the life of the elements and seats which are replaceable. Carbonates, scale and other solids must not be permitted to build up on sliding valve or sensing cup surfaces. FPE does not recommend that a large stock of spare parts be maintained at the valve installation. Most commonly used elements and seals are immediately available from FPE's stocking area representatives or from the factory direct. Seals and composition gaskets are rated for a shelf life of one year from date of shipment. If adequately sealed from air, they may be good for longer periods. The shelf life of an FPE element is from one to two years, depending on storage conditions.

Operation

After installation of the valve has been completed into the system, and operating of the valve has been started, system temperatures should be monitored so that the circuit is performing satisfactorily. Water cooling systems generally operate at a temperature at or slightly below the nominal temperature of the valve. Oil systems or more viscous fluids operate at temperatures at or slightly above the nominal temperature. To check an elements temperature, place the element in a water bath at a temperature of 5 degrees below the opening temperature of the element. Make sure you stir the water vigorously with the element for at least five minutes. Check the sliding valve to make sure it is not off its seat. Next, place the element in the same water bath at 25 degrees above the full open temperature reading and again stir vigorously for five minutes. Check the element and it should now by fully stroked. This can be determined by placing the element back into the FPE valve housing and pushing the element's spider fully into the counter bore. FPE valves have an over travel spring which can be felt by pushing the element down into the counter bore. If this resistance is felt, the element is now fully stroked. Since the element has a tendency to cool quickly, you must do this last step before the element has cooled. Do not use oil as a test bath. On every high temperature elements you may use glycol solution or water.

FLUID POWER ENERGY, INC.

Installation

FPE valve dimensions are given on an attached sheet, a copy of which is supplied with each valve order and which should be checked against the actual valve on receipt of the order. If special engineered drawings have been prepared, these drawings and FPE standard instructions should be resolved before the valve is put into service. At The end of this bulletin, there are recommended methods of applying FPE valves. Figure 1 illustrates a cooling water diverting system using a radiator. Figure 2 is a cooling water mixing system using a heat exchanger. Please note the difference between a diverting system and a mixing system. In the diverting system the three-way thermostatic control valve diverts part of the fluid out of the C port into the cooler, and part of the fluid out of the B port to bypass the cooler. In a mixing situation part of the flow comes from the cooler or heat exchanger into the C port, the other part of the fluid comes form the B port or by-pass, mixes in the valve and comes out the A port at the desired temperature. In comparing these two systems, diverting and mixing, it has been found that the diverting system will provide a better and more even temperature control than the mixing system. This is because the diverting system has introduced a more temperature-even homogeneous fluid to the sensing element. On the other hand a mixing system requires two different fluid temperatures to mix in a small volume of the valve in order to exit through the temperature-sensing unit. You will note that in all of the piping diagrams, a mixing system controls the temperature of the fluid going into the engine or the compressor. The diverting system controls the temperature coming out of the engine or compressor.

FLUID POWER ENERGY, INC.

THERMOSTATIC VALVES

Instruction and Application Guidelines

Your FPE Thermostatic Valve has been manufactured with extreme care and tested to insure that it had no detectable defects at the time it left the factory. If the valve is correctly applied and installed it will give years of service under reasonable operating conditions. This instruction manual will give you service information for nearly all normal operating conditions, but for the unusual situations it may be necessary to contact your FPE representative or the FPE factory. All FPE valves use the "Expanding Wax" type of temperature sensing element set to their normal rating under closely controlled conditions, and cannot be altered once they are set. If it is ever necessary to change the nominal rating of the valve, a different set of elements must be used.

Inspecting the Valve Upon Receipt

Immediately upon receipt of your valve, check it over carefully for damage received in shipping, and be sure you have received the proper unit. In checking the model number of the valve against your order you may find that the nominal temperature rating is stamped below the part number, which is not how it was ordered. This numbering system merely allows us to identify the construction and thermostat setting on a more exact basis. If you have any questions do not hesitate to call the factory or your representative.

Materials

FPE valves are available in cast iron, steel, ductile iron, aluminum and bronze. For information concerning these different materials, please contact your factory representative. Sometimes electrolysis may be encountered in a system. If this is the case, a zinc or magnesium waste plug can be installed in the valve at port A. If the valve is installed in seawater, cast iron housings are not generally satisfactory. In this type of installation, bronze valves must be used. In mounting the valve in a system, the valve must be properly vented so that the possibility of trapping air in the valve or around the elements is eliminated. A good rule to follow on systems is to place air vents so that air can be bled from the systems to a single collection point. Please note the vent lines in the different piping diagrams.

THIS PAGE LEFT INTENTIONALLY BLANK

VS 2

MURPHY
VS2

VIBRATION SWITCH NON-EXP

ANGI PART NUMBER 480-07246

THIS PAGE LEFT INTENTIONALLY BLANK

March 19, 2011

Sensitivity Adjustment

WARNING: REMOVE ALL POWER BEFORE OPENING THE ENCLOSURE. IT IS YOUR RESPONSIBILITY TO HAVE A QUALIFIED PERSON PERFORM ADJUSTMENTS, AND MAKE SURE IT CONFORMS TO NEC AND LOCAL CODES. DO NOT ADJUST SENSITIVITY WHILE THE MACHINE IS RUNNING. STAND CLEAR OF THE MACHINE AT ALL TIMES WHEN IT IS OPERATING.

All models of the VS2 and VS94 Series cover a wide range of sensitivity. Each model is adjusted to the specific piece of machinery on which it is installed in a satisfactory location.

The sensitivity adjustment will be increased or decreased so that the switch does not trip during start-up or under normal operating conditions. Some machinery experiences a shock on start-up. Remote reset versions are available to hold the switch in reset during equipment start-up. This allows a more sensitive setting of the switch; however, it is not always practical.

Instructions are given for adjusting sensitivity to not trip on start-up. This is typically done as follows:

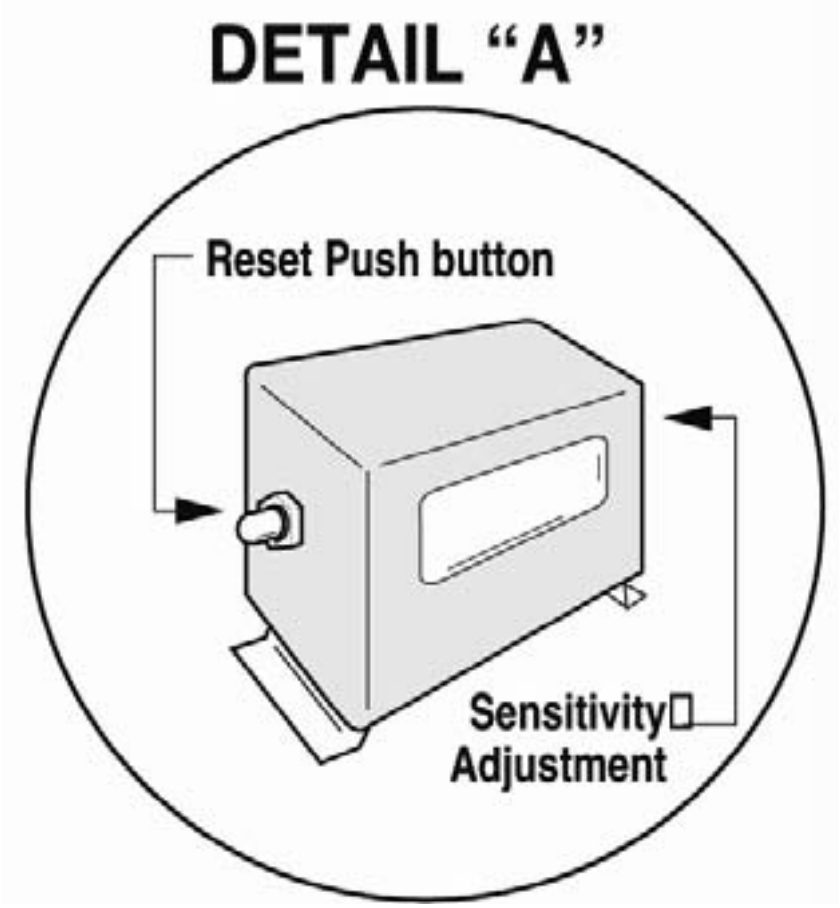
1. REPLACE ALL COVERS, LIDS AND ELECTRICAL ENCLOSURES.
2. Press the reset pushbutton to engage the magnetic latch. To be sure the magnetic latch has engaged, observe latch through the window on the VS2 and VS2C (see **DETAIL A**). On the VS2EX, VS94 Series the reset button remains depressed meaning the magnetic latch has engaged.
3. Start the machine.
4. If the instrument trips on start-up, allow the machine to stop. Turn the sensitivity adjustment ¼ turn clockwise, (adjustment for VS94 and VS2EXRB models is located within the box, see **DETAIL B**).

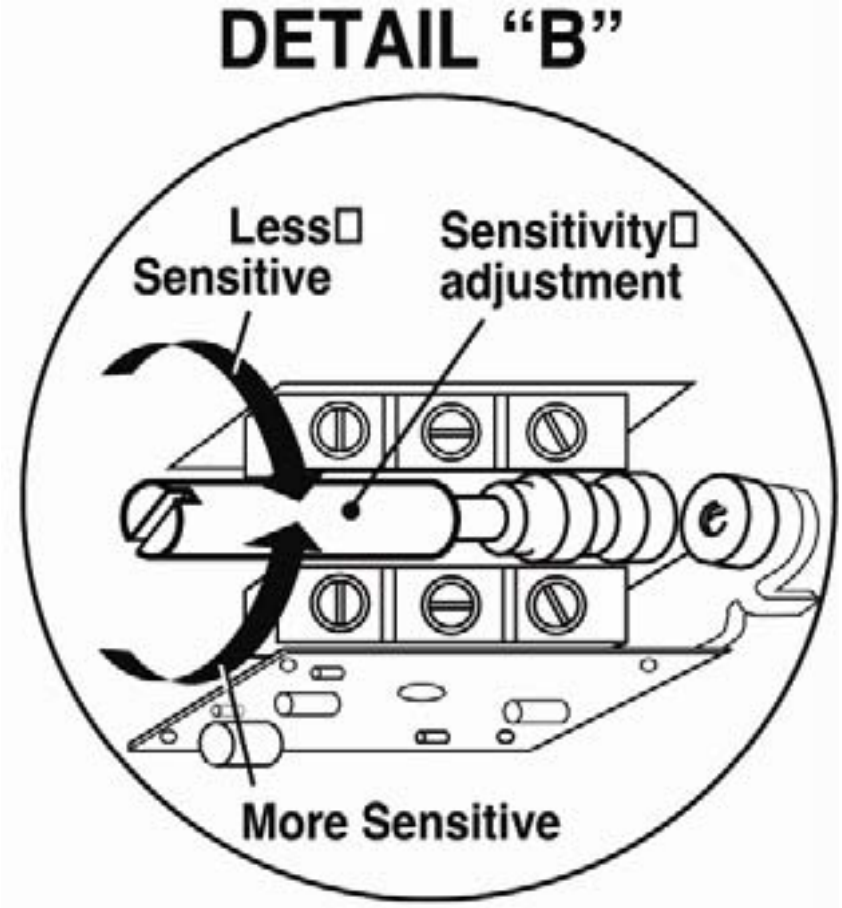
WARNING: MAKE THE AREA NON-HAZARDOUS OR DE-ENERGIZE ALL CIRCUITS BEFORE OPENING THE EXPLOSION-PROOF (-EX) ENCLOSURES.

Depress the reset button and restart the machine. Repeat this process until the unit does not trip on start-up.

5. If the instrument does NOT trip on start-up, stop the machine. Turn the sensitivity adjustment ¼ turn counterclockwise. Repeat the start-up/stop process until the instrument trips on start-up. Turn the sensitivity adjustment

¼ turn clockwise (less sensitive). Restart the machine to verify the instrument will not trip on start-up.
6. Verify that the unit will trip when abnormal shock/vibration exists.




DETAIL "B"
Less
Sensitive
Sensitivity
adjustment
More Sensitive

VS-7037N
Revised 04-05
Section 20
(00-02-0185)

Shock/Vibration Control Switches Installation Instructions

Models: VS2, VS2C, VS2EX, VS2EXR, VS2EXRB and VS94

Please read the following instructions before installing. A visual inspection of this product for damage during shipping is recommended before mounting. It is your responsibility to have a qualified person install the unit, and make sure installation conforms with NEC and local codes.

GENERAL INFORMATION

WARNING

BEFORE BEGINNING INSTALLATION OF THIS MURPHY PRODUCT

- ✔ Disconnect all electrical power to the machine.
- ✔ Make sure the machine cannot operate during installation.
- ✔ Follow all safety warnings of the machine manufacturer.
- ✔ Read and follow all installation instructions.

LISTED*



Model VS2EX

Description

The Murphy shock and vibration switches are available in a variety of models for applications on machinery or equipment where excessive vibration or shock can damage the equipment or otherwise poses a threat to safe operation. A set of contacts is held in a latched position through a mechanical latch and magnet mechanism. As the level of vibration or shock increases an inertia mass exerts force against the latch arm and forces it away from the magnetic latch causing the latch arm to operate the contacts. Sensitivity is obtained by adjusting the amount of the air gap between the magnet and the latch arm plate.

Applications include all types of rotating or reciprocating machinery such as cooling fans, engines, pumps, compressors, pump jacks, etc.

Models

VS2: Base mount; non hazardous locations.

VS2C: C-clamp mount; non hazardous locations.

VS2EX: Explosion-proof; Class I, Div. 1, Groups C and D.

VS2EXR: Explosion-proof with remote reset.

VS2EXRB: Explosion-proof; Class I, Div. 1, Group B; with remote reset.

VS94: Base mount; non hazardous locations, NEMA 4X/IP66.

Remote Reset Feature (VS2EXR, VS2EXRB and VS94 only)

Includes built-in electric solenoid which allows reset of tripped unit from a remote location. Standard on VS2EXR and VS2EXRB. Optional on VS94 (options listed below).

-R15: Remote reset for 115 VAC

-R24: Remote reset for 24 VDC

Time Delay Option (VS94 only)

Overrides trip operation on start-up. For VS94 series models, the delay time is field-adjustable from 5 seconds up to 6-1/2 minutes with a 20-turn potentiometer (15 seconds per turn approximately). Options listed below:

-T15: Time delay for 115 VAC

-T24: Time delay for 24 VDC

Space Heater Options (VS94 only)

This optional space heater board prevents moisture from condensing inside the VS94 Series case. Options listed below:

-H15: Space heater for 115 VAC

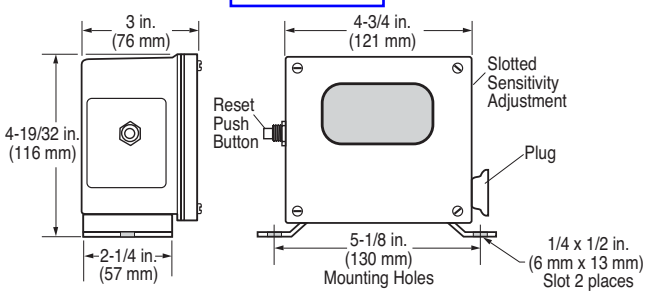
-H24: Space heater for 24 VDC

Warranty

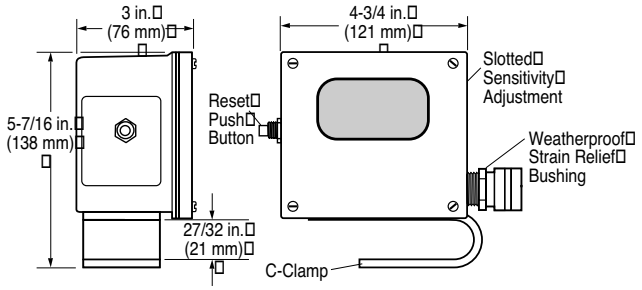
A limited warranty on materials and workmanship is given with this FW Murphy product. A copy of the warranty may be viewed or printed by going to www.fwmurphy.com/support/warranty.htm

DIMENSIONS

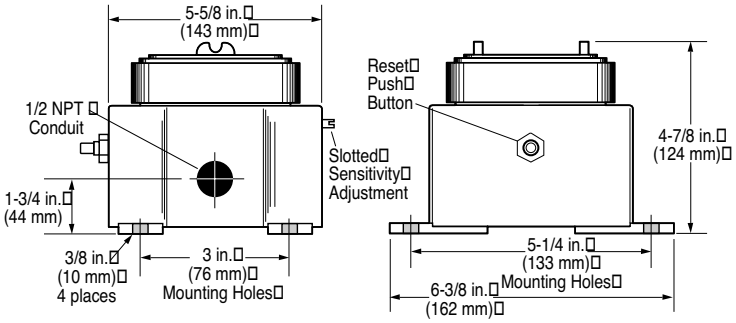
VS2



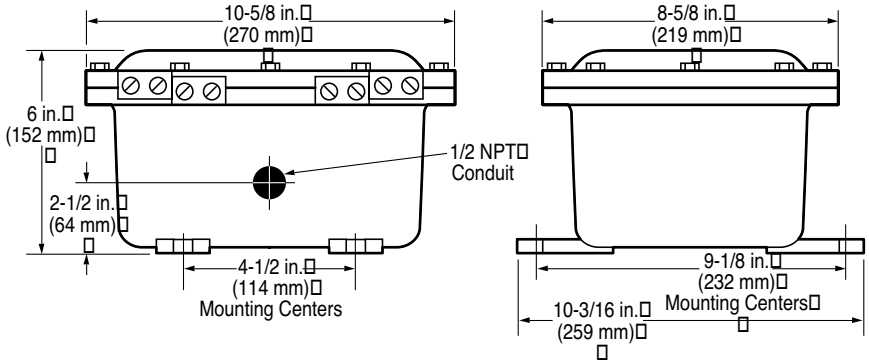
VS2C



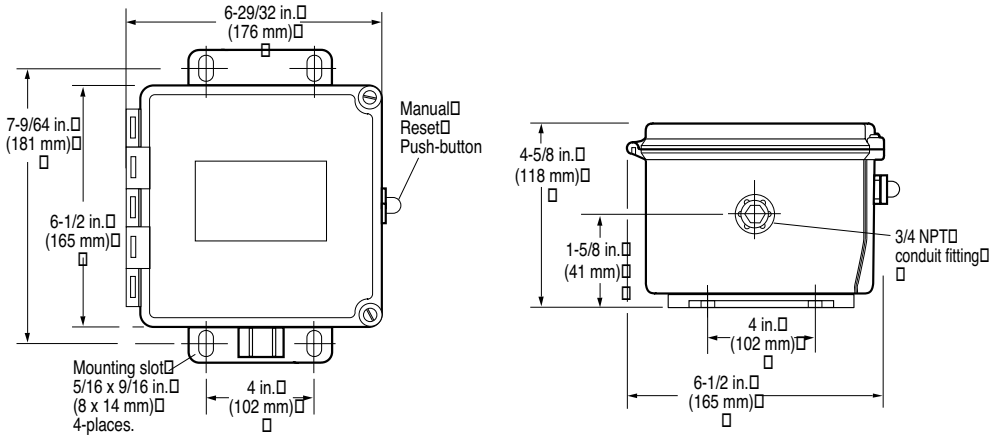
VS2EX and VS2EXR



VS2EXRB



VS94



SPECIFICATIONS

VS2 and VS2C

- **Case:** Weatherproof (equal to NEMA 3R) suitable for non-hazardous areas.
  VS2: *Base mount*
  VS2C: *C-clamp mount. Includes 45 feet (13.7 meters), 2-conductor 16 AWG, 30 strands/0.25 mm strand dia. (1.5 mm²) cable, and five cable hold down clamps.*
- **Contacts:** SPDT double make leaf contacts, 5A @ 480 VAC.
- **Range adjustment:** 0 - 7 G's; 0 - 100 Hz /0.100 in. displacement.

VS2EX

- **Case:** Explosion-proof and weatherproof aluminum alloy housing; meets NEMA 7/IP50 specifications; Class I, Division 1, Groups C & D; UL and CSA listed*
  VS2EX: *base mount.*
- **Snap-switches:** 2-SPDT snap-switches; 5A @ 480 VAC;* 2A resistive, 1A inductive, up to 30 VDC.
- **Range adjustment:** 0 - 7 G's; 0 - 100 Hz /0.100 in. displacement.
- **Normal Operating Temperature:** -40 to 140°F (-40 to 60°C).

VS2EXR

- **Case:** Same as VS2EX.
- **Snap-switch:** 1-SPDT snap-switch and reset coil; 5A @ 480 VAC;* 2A resistive, 1A inductive, up to 30 VDC.
- **Remote Reset (optional):**

Option	*Operating Current*
-R15:	*350 mA @ 115 VAC*
-R24:	*350 mA @ 24 VDC*

- **Range adjustment:** 0 - 7 G's; 0 - 100 Hz /0.100 in. displacement.
- **Normal Operating Temperature:** -40 to 140°F (-40 to 60°C).

VS2EXRB

- **Case:** Explosion-proof aluminum alloy housing; rated Class I, Division 1, Group B hazardous areas.
- **Snap-switch:** 1-SPDT snap-switch with reset coil (option available for additional SPDT switch); 5A @ 480 VAC; 2A resistive, 1A inductive, up to 30 VDC.
- **Remote Reset:**

Option	*Operating Current*
-R15:	*350 mA @ 115 VAC*
-R24:	*350 mA @ 24 VDC*

- **Range adjustment:** 0 - 7 G's; 0 - 100 Hz /0.100 in. displacement.

VS94

- **Case:** Polyester fiberglass reinforced; NEMA type 4 and 4X; IP66; CSA types 4 and 12.
- **Conduit Fitting:** 3/4 NPT conduit fitting connection.
- **Normal Operating Ambient Temperature:** 0 to 140°F (-18 to 60°C).
- **Snap-switches:** 2-SPDT snap acting switches; 5A @ 480 VAC; 2A resistive, 1A inductive, up to 30 VDC.
- **Range adjustment:** 0 - 7 G's; 0 - 100 Hz /0.100 in. displacement.
- **Heater (optional):**

Option	*Operating Current*
H15	*.023 A @ 115 VAC*
H24	*.12 A @ 24 VDC*

- **Remote Reset (optional):**

Option	*Operating Current*
R15	*.17 A @ 115 VAC*
R24	*.36 A @ 24 VDC*

- **Time Delay (optional):**

Option	*Operating Current*	*Standby Current*
T15	*.360 A @ 115 VAC*	*.01 A @ 115 VAC*
T24	*1.15 A @ 24 VDC*	*.01 A @ 24 VDC*

- **Time Delay/Remote Reset:** Adjustable 20-turn potentiometer from 5 seconds to 6-1/2 minutes (15 seconds per turn approximately).

*CSA and UL listed with 480 VAC rating.

INSTALLATION

WARNING: STOP THE MACHINE AND DISCONNECT ALL ELECTRICAL POWER BEFORE BEGINNING INSTALLATION.

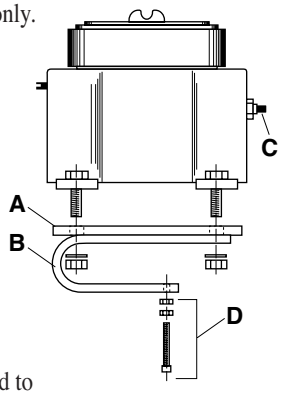
The VS2 and VS94 series shock switches are sensitive to shock and vibration in all three planes of motion - up/down, front/back and side/side. Front/back is the most sensitive (The reset pushbutton is located on the "front" of the unit). For maximum sensitivity mount the unit so that the front faces into the direction of rotation of the machine. (See Dimensions on page 2 for sensitivity adjustment location).

The VS2 and VS94 Series must be firmly attached/mounted to the machine so that all mounting surfaces are in rigid contact with the mounting surface of the machine. For best results, mount the instrument in-line with the direction of rotating shafts and/or near bearings. In other words, the reset push button should be mounted pointing into the direction of shaft rotation (see page 5). It may be necessary to provide a mounting plate or bracket to attach the VS2 and VS94 Series to the machine. The mounting bracket should be thick enough to prevent induced acceleration/vibration upon the VS2 or VS94 Series. Typically 1/2 in. (13mm) thick plate is sufficient. See illustrations on page 5 for typical mounting locations.

CAUTION: A dust boot is provided on the reset pushbutton for all series to prevent moisture or dust intrusion. The sensitivity adjustment for model VS2EX is not sealed; therefore, mounting orientation should be on a horizontal plane or with the sensitivity adjustment pointing down. Sensitivity adjustment for model VS2 is covered by a plug. The plug must be in place and tight to prevent moisture or dust intrusion.

C-Clamp Installation (VS2C model only)

A C-Clamp is supplied with the VS2C model only. The C-Clamp is shipped installed on the VS2C but must be installed on the VS2EX and VS2EXR switches.



1. The C-Clamp **(B)** will already be installed on a 1/4 in. (6 mm) thick steel mounting plate **(A)**. Bolt the VS2 switch to the mounting plate as illustrated — with four 5/16 in. bolts, nuts, and washers.
2. The mounting location should provide convenient access to the TATTLETALE® push button **(C)**.
3. The hardened set screw and nuts **(D)** are used to tighten the switch to an I-Beam or cross member such as a Sampson post of an oilwell pumpjack.

Continued on next page.

All Models

WARNING: STOP THE MACHINE AND DISCONNECT ALL ELECTRICAL POWER BEFORE BEGINNING INSTALLATION.

1. Firmly secure the unit to the equipment using the base foot mount or C-Clamp if applicable. See ***C-Clamp Installation*** page 3.

For oilwell pumpjacks attach the VS2 and VS94 Series to the Sampson post or walking beam. See ***Typical Mounting Locations*** page 5.

2. Make the necessary electrical connections to the vibration switch. See ***Internal Switches,*** page 6 for electrical terminal locations and page 7 for typical wiring diagrams. **DO NOT EXCEED VOLTAGE OR CURRENT RATINGS OF THE CONTACTS.** Follow appropriate electrical codes/methods when making electrical connections. Be sure that the run of electrical cable is secured to the machine and is well insulated from electrical shorting. Use of conduit is recommended.

NOTE: If the electrical cable crosses a pivot point such as at the pivot of the walking beam, be sure to allow enough slack in the cable so that no stress is placed on the cable when the beam moves.

If conduit is not used for the entire length of wiring, conduit should be used from the electrical supply box to a height above ground level that prevents damage to the exposed cable from the elements, rodents, etc. or as otherwise required by applicable electrical codes. If conduit is not attached directly to the VS2 and VS94 Series switch, use a strain relief bushing and a weatherproof cap on the exposed end of the conduit. A "drip loop" should be provided in the cable to prevent moisture from draining down the cable into the conduit should the weathercap fail.

Sensitivity Adjustment

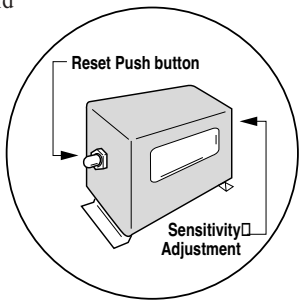
WARNING: REMOVE ALL POWER BEFORE OPENING THE ENCLOSURE. IT IS YOUR RESPONSIBILITY TO HAVE A QUALIFIED PERSON PERFORM ADJUSTMENTS, AND MAKE SURE IT CONFORMS WITH NEC AND LOCAL CODES. DO NOT ADJUST SENSITIVITY WHILE THE MACHINE IS RUNNING. STAND CLEAR OF THE MACHINE AT ALL TIMES WHEN IT IS OPERATING.

All models of the VS2 and VS94 Series cover a wide range of sensitivity. Each model is adjusted to the specific piece of machinery on which it is installed. After the switch has been installed in a satisfactory location (see page 5) the sensitivity adjustment will be increased or decreased so that the switch does not trip during start-up or under normal operating conditions. This is typically done as follows:

1. REPLACE ALL COVERS, LIDS, AND ELECTRICAL ENCLOSURES.

2. Press the reset push button to engage the magnetic latch. To be sure the magnetic latch has engaged, observe latch through the window on the VS2 and VS2C (see DETAIL "A"). On the VS2EX, VS94 series the reset button will remain depressed meaning the magnetic latch has engaged.

DETAIL "A"



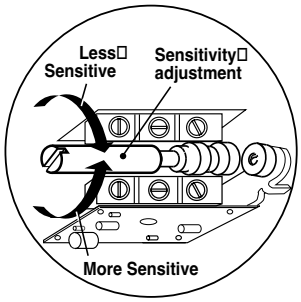
3. Start the machine.

4. If the instrument trips on start-up, allow the machine to stop. Turn the sensitivity adjustment 1/4 turn clockwise, (adjustment for VS94 and VS2EXRB models is located within the box, see DETAIL "B").

WARNING: MAKE THE AREA NON-HAZARDOUS BEFORE OPENING THE EXPLOSION-PROOF (-EX) ENCLOSURES.

Depress the reset button and restart the machine. Repeat this process until the unit does not trip on start-up.

DETAIL "B"



5. If the instrument does NOT trip on start-up, stop the machine. Turn the sensitivity adjustment 1/4 turn counter-clockwise. Repeat the start-up/stop process until the instrument trips on start-up. Turn the sensitivity adjustment 1/4 turn clockwise (less sensitive). Restart the machine to verify that the instrument will not trip on start-up.

6. Verify that the unit will trip when abnormal shock/vibration exists.

VS94 Time Delay Adjustment

1. Apply power to the time delay circuit. (see page 7 for time delay circuit). The time delay function will be initiated.

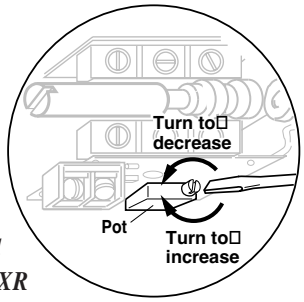
2. Time the length of the delay with a watch. Let time delay expire. After it expires, the override circuit will de-energize the solenoid, allowing the latch arm to trip. A clicking noise is heard.

WARNING: REMOVE ALL POWER BEFORE OPENING ACCESS DOOR. IT IS YOUR RESPONSIBILITY TO HAVE A QUALIFIED PERSON ADJUST THE UNIT, AND MAKE SURE IT CONFORMS WITH NEC AND LOCAL CODES.

3. TURN THE POWER OFF TO RESET THE TIME DELAY CIRCUIT.

NOTE: Allow 30 seconds bleed-time between turning the power "OFF" and "ON".

DETAIL "C"



4. Locate the time adjustment pot (DETAIL "C"). The time is factory-set at the lowest setting (5 seconds approximately). To increase time, rotate the 20-turn pot clockwise as needed (15 seconds per turn approximately).

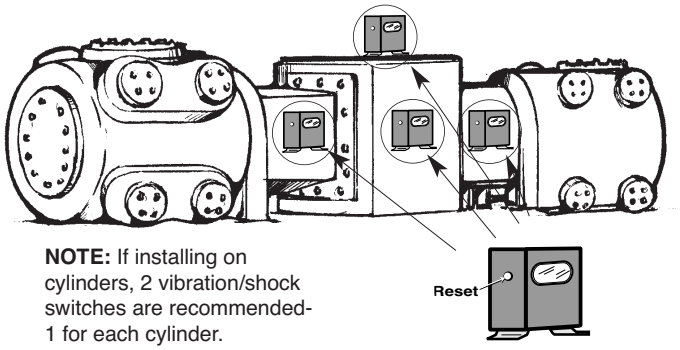
5. Repeat the above steps as necessary to obtain desired time delay.

NOTE: An external time delay can be used with the remote reset feature of the VS2EXR series to provide a remote reset and override of the trip operation on start-up. Time delay must automatically disconnect after equipment start-up.

TYPICAL MOUNTING LOCATIONS

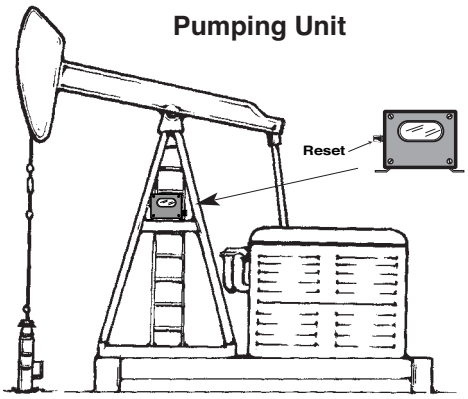
NOTE: These are typical mounting locations for best operation. Other mountings are possible. See *Installation* section on page 3.

2-Throw Balance-Opposed Compressor

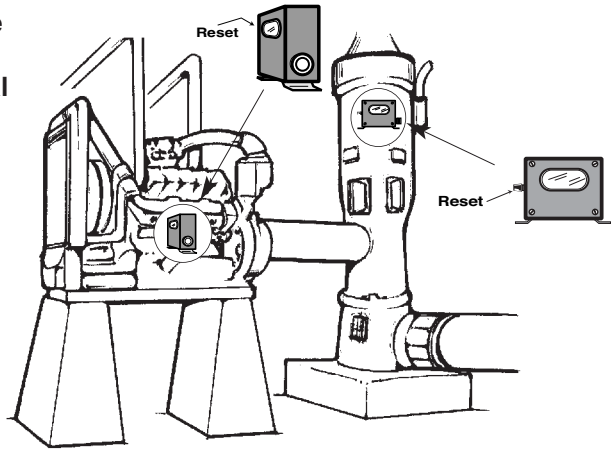


NOTE: If installing on cylinders, 2 vibration/shock switches are recommended- 1 for each cylinder.

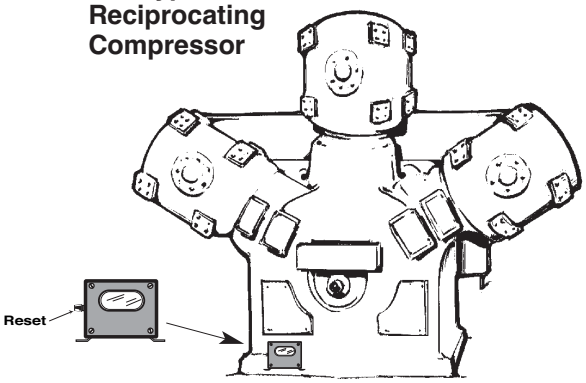
Pumping Unit



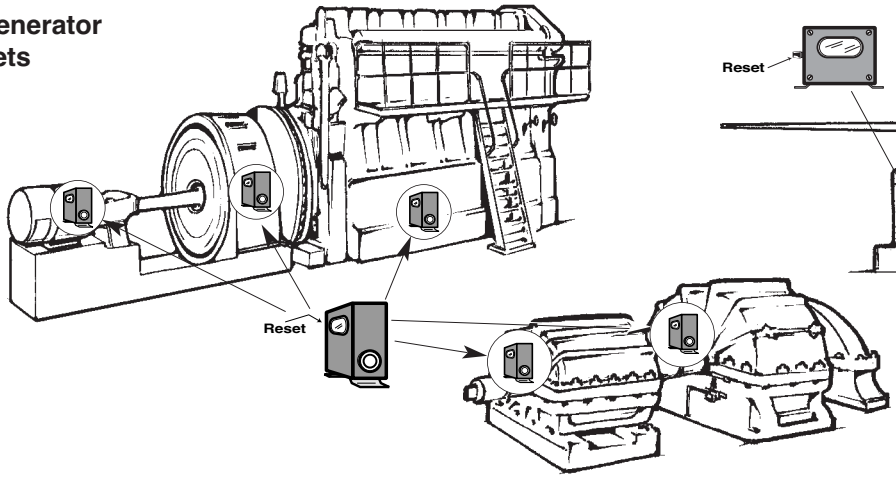
Engine and Vertical Shaft Pump



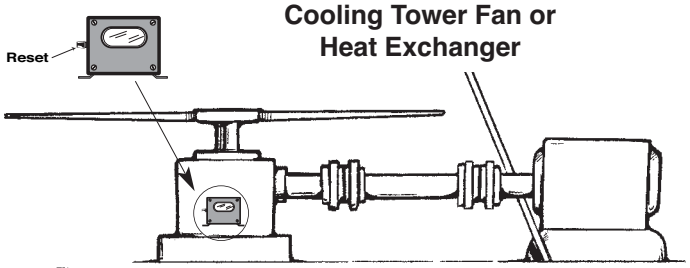
"Y" Type Reciprocating Compressor



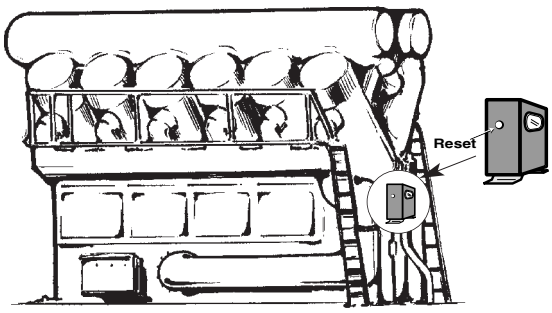
Generator Sets



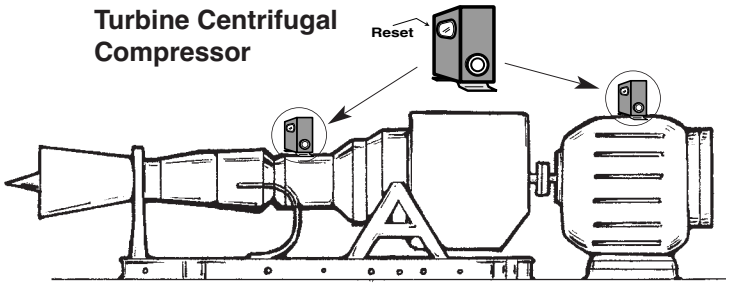
Cooling Tower Fan or Heat Exchanger



Engine Compressor

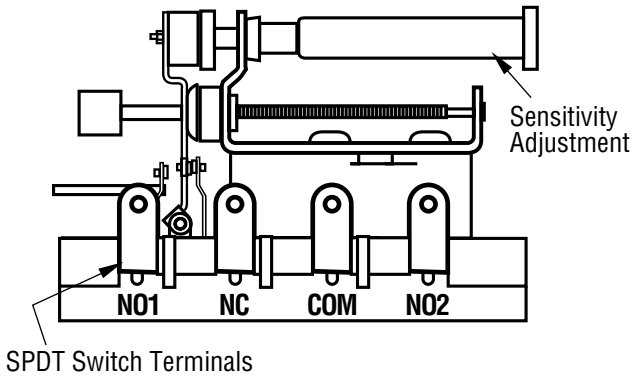


Turbine Centrifugal Compressor

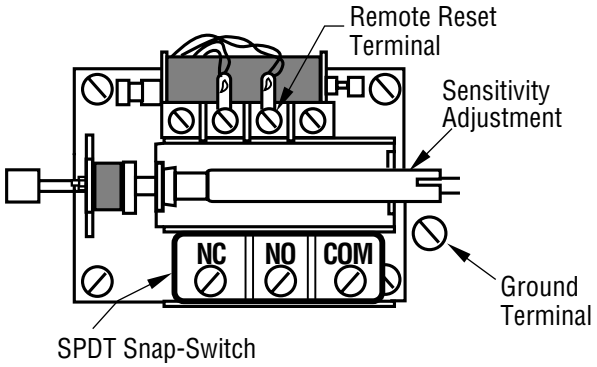


INTERNAL SWITCHES

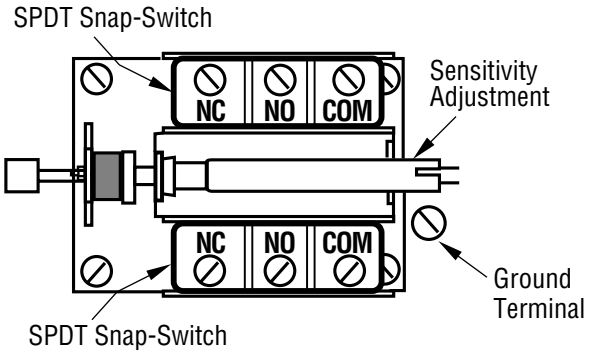
VS2 and VS2C



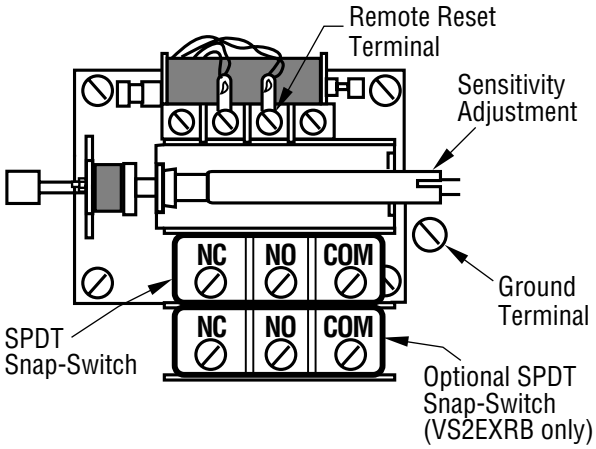
VS2EXR



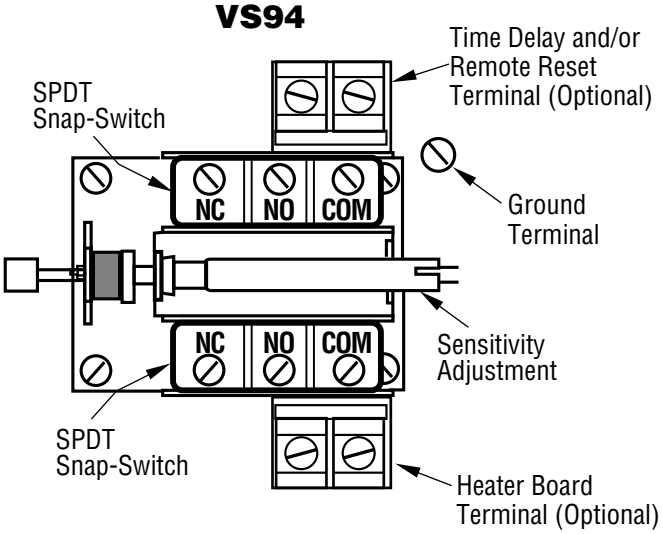
VS2EX



VS2EXB and VS2EXRB



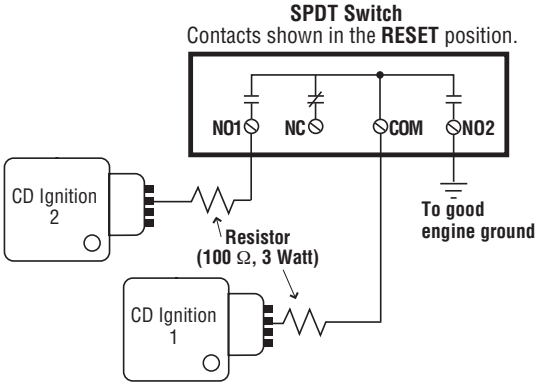
VS94



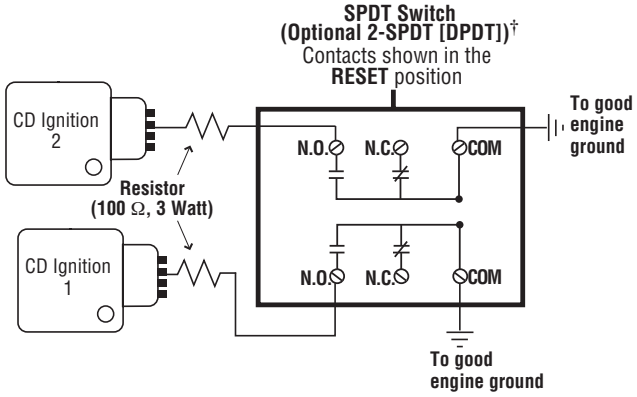
ELECTRICAL

WARNING: REMOVE POWER BEFORE OPENING THE UNIT (ACCESS DOOR). STOP THE MACHINE AND DISCONNECT ALL ELECTRICAL POWER BEFORE BEGINNING THE WIRING OPERATION. IT IS YOUR RESPONSIBILITY TO HAVE A QUALIFIED PERSON INSTALL AND WIRE THE UNIT, AND MAKE SURE IT CONFORMS WITH NEC AND APPLICABLE CODES.

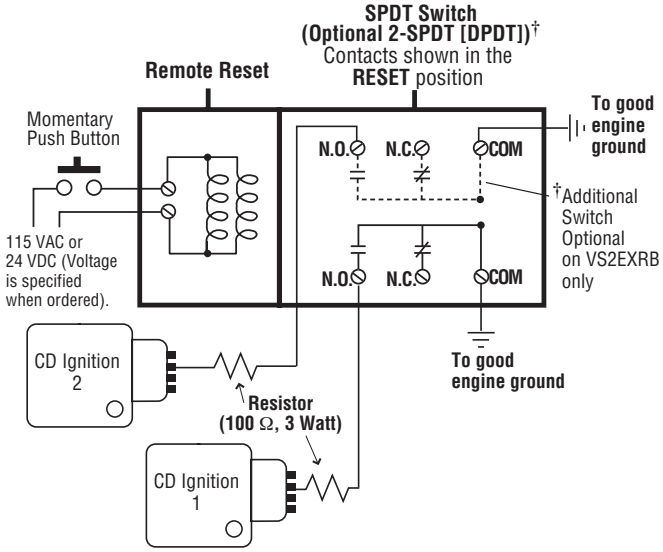
VS2 and VS2C
Typical Wiring Diagram for Single or Dual CD Ignition



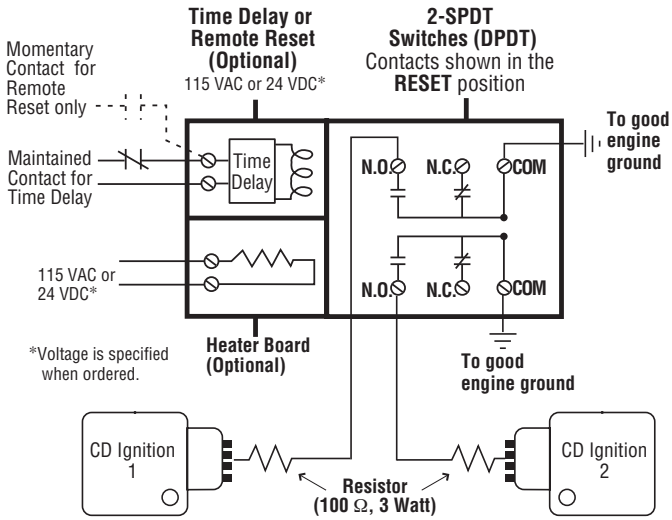
VS2EX
Typical Wiring Diagram for Single or Dual CD Ignitions



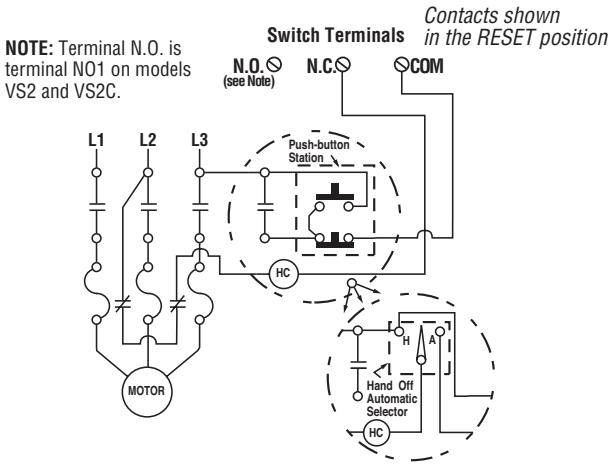
VS2EXR and VS2EXRB
Typical Wiring Diagram for Single or Dual CD Ignitions



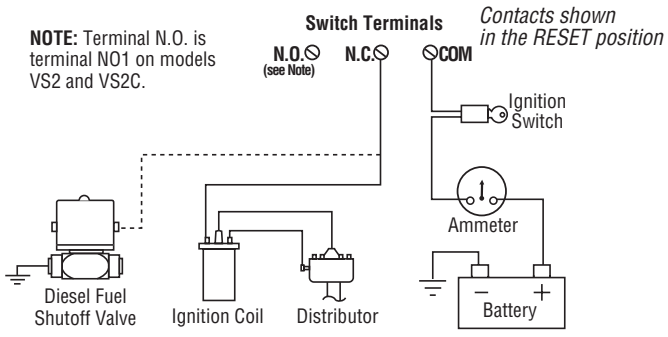
VS94
Typical Wiring Diagram for Single or Dual CD Ignitions



VS2, VS2C, VS2EX, VS2EXR, VS2EXRB and VS94
Typical Wiring Diagram for Electric Motors



VS2, VS2C, VS2EX, VS2EXR, VS2EXRB and VS94
Typical Wiring Diagram for Distributor Ignition or Diesel



SERVICE PARTS

PART NO.	DESCRIPTION
VS2	
20000030	Movement assembly
20000031	Glass and gasket assembly
20000032	Reset push button assembly
VS2C	
20000030	Movement assembly
20000031	Glass and gasket assembly
20000032	Reset push button assembly
20050021	Mounting clamp
20000185	VS2C 5-clamp hardware package assembly.
20050465	2-Conductor electrical cable, 45 feet (13.7 meters)
VS2EX	
20010091	Movement assembly
20050087	Cover
00000309	Cover gasket
20010090	Snap-switch and insulator kit (1 switch per kit) **prior to September 1, 1995.***
20000288	**Snap-switch and insulator kit (1 switch per kit) for models manufactured on September 1, 1995 or later.***
20000289	C-clamp conversion mounting kit
VS2EXR	
20000262	Movement assembly
20050087	Cover
00000309	Cover gasket
20010090	Snap-switch and insulator kit (1 switch per kit) **prior to September 1, 1995.***
20000288	**Snap-switch and insulator kit (1 switch per kit) for models manufactured on September 1, 1995 or later.***
20000049	Reset solenoid assembly (115 VAC)
20000234	Reset solenoid assembly (24 VDC)
20000289	C-clamp conversion mounting kit

PART NO.	DESCRIPTION
VS2EXRB	
20010090	Snap-switch and insulator kit (1 switch per kit) **prior to September 1, 1995.***
20000288	**Snap-switch and insulator kit (1 switch per kit) for models manufactured on September 1, 1995 or later.***
20000057	*Inside* snap-switch and insulator kit (1 switch per kit) for model VS2EXRB-D **prior to September 1, 1995.***
20000058	*Outside* snap-switch and insulator kit (1 switch per kit) for model VS2EXRB-D **prior to September 1, 1995.***
20000287	***Outside* snap-switch and insulator kit (1 switch per kit) for model VS2EXRB-D manufactured on September 1, 1995 or later.***
20000290	***Inside* snap-switch and insulator kit (1 switch per kit) for model VS2EXRB-D manufactured on September 1, 1995 or later.***
20050077	Adjustment shaft
20000262	Movement assembly
20000049	Reset solenoid assembly (115 VAC)
20000234	Reset solenoid assembly (24 VDC)
VS94 Series	
25050506	Dust boot
00000232	Conduit fitting
20010090	Snap-switch and insulator kit (1 switch per assembly) **prior to September 1, 1995.****
20000288	**Snap-switch and insulator kit (1 switch per assembly) for models manufactured on September 1, 1995 or later.*****

* If no date code is found, refer to the old switch. Models with date 0895 and before use old switch. Dated 0995 after, use straight snap-switch arm, no rollers.

** Models dated Q1 thru Q8 (formed snap-switch arm and rollers).

***Models date coded Q9 thru Q12 and R1 thru R12 (straight snap-switch arm, no rollers).

MURPHY

USA–ISO 9001:2000 FM 28221
UK–ISO 9001:2000 FM 29422

ISO 9001 REGISTERED