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

Industrial Refrigeration Control Valves Europe

Catalog C12 EU

ENGINEERING YOUR SUCCESS.


Parker
Fluid Control Division Europe
Via E.Fermi, 5 20049 Sesto MI Italy
Parker

Index

4 **Parker RACE**

5 **Market applications**

6 **Successful quality products for the cold chain**

8 **How to use this catalog**

9 **New Products**

10 **Valve Station**

14 **Inlet Pressure Regulators**

16 **Pressure Regulators**

22 **Electronic Valve**

24 **Solenoid Valve**

28 **S8 Strainer-Solenoid**

30 **S8 Valve Station**

32 **A4 Adaptomode® Series Pressure Regulators**

37 **Suction Capacities - A4**

40 **Liquid Capacities - A4**

42 **Oil Capacities - A4**

42 **Hot Gas Bypass Capacities - A4A0**

43 **Compact Pressure Regulators - A2**

44 **Compact Pressure Regulators - A2B, S6N**

45 **Suction Capacities - A2**

48 **Liquid Capacities - A2**

50 **Solenoid Valves**

57 **Gas Powered Valves**

59 **Suction Capacities – CK-2/CK-5**

61 **Gravity Flooded Capacities**

62 **Dual Position Control Valves**

64 **Coils**

65 **Check Valves (CK-1)**

66 **CK-1 Capacity Tables**

69 **In-Line Check Valves (CK-3)**

70 **In-Line Check Valves (CK4A)**

71 **CK4A Capacity Tables**

74 **Strainers**

75 **Flanges**

76 **Flanges Unions**

76 **Adapter Rings**

77 **Hot Gas Defrost Valve Group**

78 **Parker Global Hand Valve Platform**

84 **Rapid Purger (V300)**

85 **Refrigerant Float Switch (LLSS)**

86 **Liquid Level Sight Glass (SG1)**

87 **Thermostatic Expansion Valves (TXV)**

90 **Thermostatic Expansion Valves (TXV) Capacities**

92 **Oil Cooling Thermostatic Charges**

93 **Thermostatic Expansion Valves Selection Procedure**

94 **XJH and XOF Solenoid Valves**

95 **Level Master Control**

99 **APPENDIX A**
Schemate Flow Diagrams

105 **APPENDIX B**
Dimensional Diagrams

151 **APPENDIX C**
Valve Bolt Torque Specifications

154 **APPENDIX D**
Valve Classification: Pressure Equipment Directive (PED)

156 **APPENDIX E**
Safety Informations

Parker RACE

Parker RACE (Refrigeration Air Conditioning Europe) is the strategic business unit from Parker Hannifin focused on the HVAC/R segment. The main goal is to offer a complete catalog of products and solutions to satisfy any request concerning industrial, commercial refrigeration and the entire HVAC sector. RACE is part of the Fluid and Climate Control Europe (FCCE) Division that has been created to concentrate on every process that oversees the control of the fluids. Core competencies of the Division lie in the design, development and manufacture of an extensive, diverse range of fluid control products, including solenoid valves, pressure regulators and systems. In the division, RACE is focused in offering a wide range of refrigeration and air conditioning components that cover many refrigeration applications: approximately 7,000 products are grouped into 20 different technological families. The products are supported by a commercial presence throughout the EMEA area and global manufacturing facilities.

Industrial Refrigeration

We are a supplier of components and application solutions for industrial refrigeration: our many years of experience, together with the competence of our employees, makes us to the first call. We have the widest range available: Stop Valves, Regulating Valves, Relief Valves, Solenoid Valves and Pressure Regulators.

Manufacturing

Our facility uses all of the latest technologies and state-of-the art machining centers to create a highly flexible manufacturing environment. We produce products of the highest precision and uniformity, all finished products are 100 percent inspected and tested.

Product Engineering

Understanding the dynamics of industrial systems and how they affect valve performance are key in the highly specialized refrigeration industry. Innovation, reliability and decades of experience are the heart of our success.

Customer Service

Meeting customer requirements – domestic or international – is our highest priority. Representatives provide customers with the latest software and design tools to assist in valve selection. Our service professionals have extensive application knowledge and are highly skilled in valve selection and operation, this provides our customers with the solutions they need for their specific application when they need it.

We promise high innovation technologies with low energy consumption, responsible engineering and sustainable growth.

Market applications

As the world's population grows, so does its need for large scale, refrigerated food preparation and storage facilities. Food warehouses, meat processing plants, fisheries, dairies, breweries, supermarkets bottling companies and wineries all rely on our valves and system solutions. The result is fresh food of the highest quality. But it goes beyond that: we control environments that have critical temperature needs. Our components control temperature in large buildings such as malls, pharmaceutical plants, institutions, hospitals and ice arenas. We keep industrial machinery cool so that it operates more efficiently. Our components help farmers deliver fertilizer to their crops and keep produce fresh as it is transported from the fields. We help prevent mines from flooding and keep the temperature and equipment cool for the workers.

Markets

- Food & beverage
- Heating & cooling
- Agriculture
- Power generation & energy
- Mining
- Marine
- Processing

Successful quality products for the cold chain

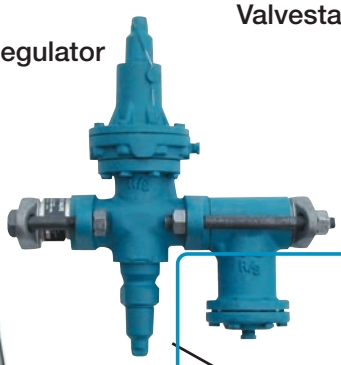
PVS

Valvestation

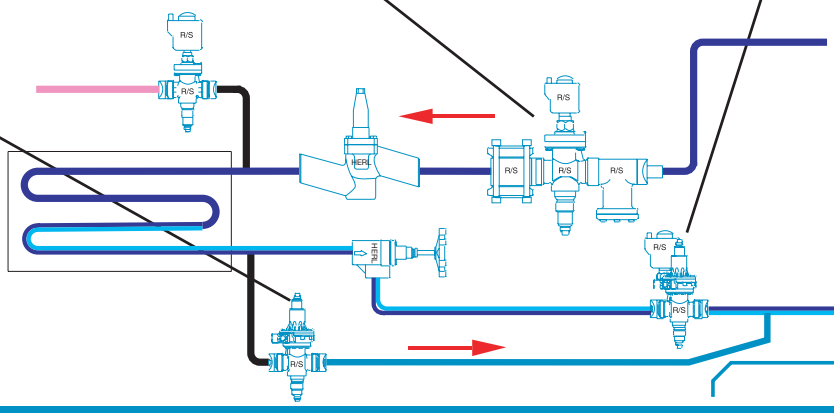
PA4C

Evaporator Pressure Regulator

Back Pressure Regulator

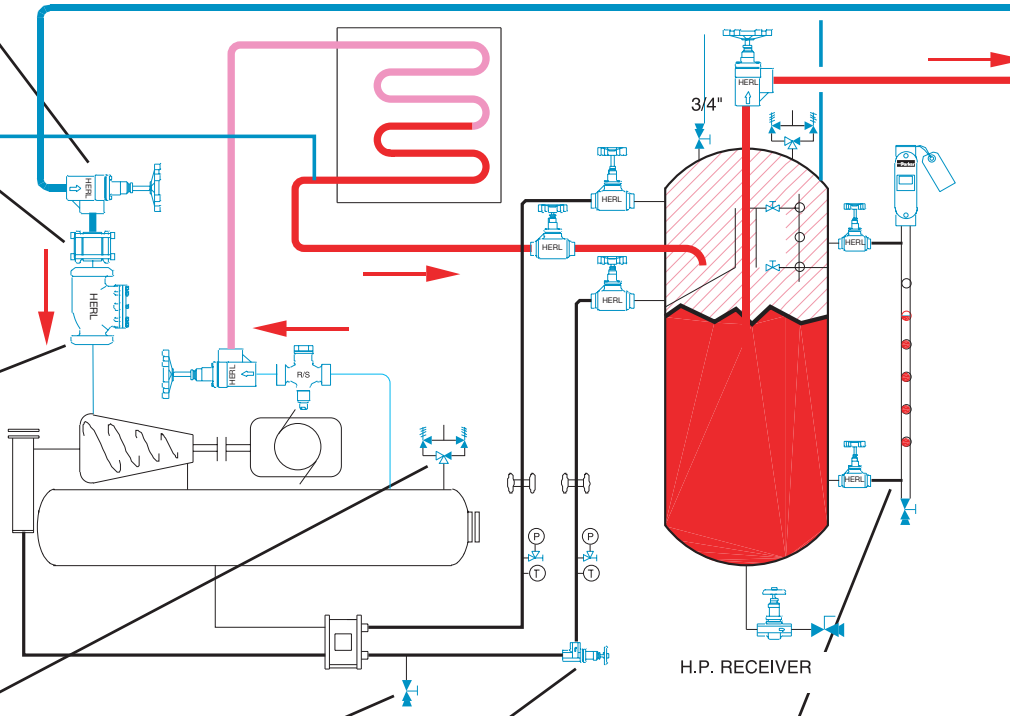


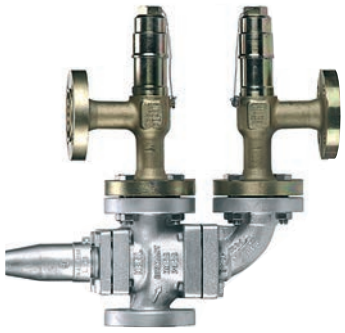
Stop Valve



Check Valve

Strainer





Dual Relief Valve

Service Valve

Gauge Valve

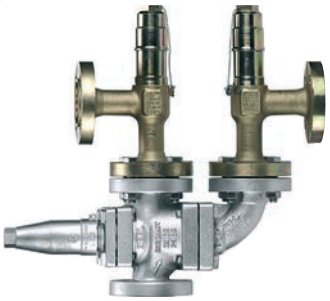
Liquid Level Sight Indicators

V300

Stainless Steel Rapid Purger

PGHV

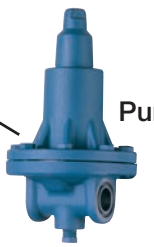
Stop Valve



Dual Relief Valve

Liquid Level
Transducer Probe

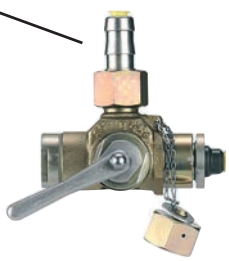
Refrigerant Float
Switch LLSS



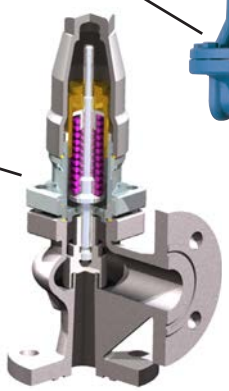
Pump Discharge
Bypass Valve

PEV

Electronic Valve



Oil Drain Valve



T23.1V

Safety Relief Valve

How to use this catalog

This catalog is specific for ammonia refrigeration but other halocarbon refrigerant sizing tables are available, for other refrigerants, please use VSP2 selection software. The catalog is organized by product group. For most sections the first page is an overview followed by product specifications, general information, application guide, selection tables to aid in selecting a specific product and "How to order" tables. Additional information, in the appendices, provide schematic flow diagrams for regulators, dimensional information on entire product line, valve torque specification and safety information.

Where cold ammonia liquid lines are used, it is necessary that certain precautions be taken to avoid damage that could result from trapped liquid expansion.

- Temperature increase in a valved off piping section completely full of liquid will cause high pressure due to the expanding liquid which can possibly rupture a gasket, pipe or valve.
- All hand valves isolating such sections should be marked, warning against accidental closing, and must not be closed until all liquid is removed.
- Check valves must never be installed upstream of solenoid valves, regulators with electric shut-off, nor should hand valves upstream of solenoid valves or downstream of check valves be closed until all liquid ammonia has been removed.
- It is advisable to install liquid relief devices suitable to safely and automatically bypass any trapped liquid ammonia to the low side of the system. This method is preferred since it operates automatically and requires little attention.
- Avoid all piping or control arrangements that might produce thermal or pressure shock. For the protection of people and products, all refrigerant must be removed from the section to be worked on before a valve, strainer, or other device is opened or removed. Flanges with ODS connections are not suitable for ammonia service.

VSP (Valve Selection program)

Parker's Valve Selection Program helps you run calculations based on a set of operating conditions such as cooling capacity, refrigerant, evaporation and condensation temperature. Then select the best components for your design.

The refrigeration software offers a simple, one stop shop in the system design process for all refrigeration projects.
One software for all your selection and calculation needs.
You can download the software here: **https://discover.parker.com/VSP**

Safety Practices

People doing any work on a refrigeration system must be qualified and completely familiar with the system and the Parker valves involved or all other precautions will be meaningless. This includes reading and understanding pertinent Parker product Bulletins and Safety Bulletin RSB prior to installation or servicing work.

PED

All valves in this catalog complies with Pressure Equipment Directive 2014/68/EU

WARNING: FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF PARKER PRODUCTS, ASSEMBLIES OR RELATED ITEMS ("PRODUCTS") CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:

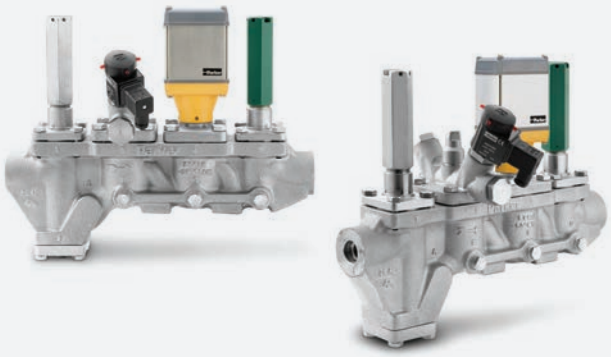
- Injuries or damage resulting from inhalation or exposure to conveyed fluids
- Injuries from lifting or supporting a heavy item
- Electric shock from contact with live electrically energized components
- Explosion

Before selecting or using any of these Products, it is important that you read and follow the operating instructions.

New Products

Valve Station

Pag. **10**



Pressure Regulators

Pag. **16**

Electronic Valve

Pag. **22**

Solenoid Valve

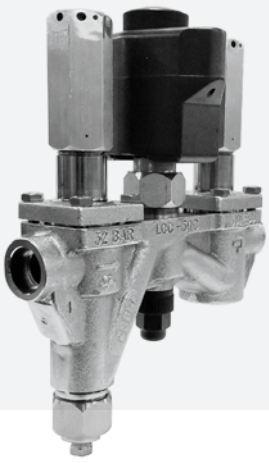
Pag. **24**

S8 Strainer-Solenoid

Pag. **28**

S8 Valve Station

Pag. **30**



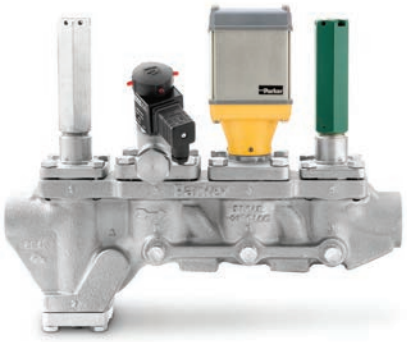
Valve Station

New Products

Type: **PVS**
Port Sizes: **20mm** – **80mm** (¾" – 3")

Purpose

The Parker Valve Station (PVS) is designed to simplify the modern industrial refrigeration system. The PVS is an integrated design featuring proven solenoid, regulator or electronic valve modules in conjunction with isolation valves, check valve and strainer. This integrated design, compared to traditional flanged setups, has the industries leading flow capacity and reduces installation time. The plated cast steel housing ensures long life without any environmental impact.
The standard applications for the PVS are pumped liquid, liquid injection and applications with hot gas defrost.



Product Features

- Suitable for ammonia, CO_2 and halocarbon refrigerants
- Plated cast steel housing
- Overall weight reduction up 50% compared to traditional flanged products
- Cartridge based design simplifies service and eliminates body wear
- Top mounted hand valves for longer life and improved reliability
- Serviceable from the top using standard tools
- Designed to ensure optimum flow
- Multiple refrigerant capacities and configurations available; two stage soft gas solenoid and gas powered suction stop modules available
- Interchangeable with other P-Series control offerings
- Coil options to meet various applications
- Lock out seal caps

Technical Data

- Liquid Temperature Range: -60°C to 120°C (-76°F to 248°F)
- Ambient Temperature Range with the Parker Electronic Valve (PEV) Option: -40°C to 50°C (-40°F to 122°F)
- Ambient Temperature Range with
- Solenoid or Regulator Option: -60°C to 60°C (-76°F to 140°F)
- Max Rated Pressure (MRP): 52 bar (754 psig)
- Maximum Operating Pressure
- Difference (MOPD): 20.7 bard (300 psid)

- Port Sizes Flow[1] / Coefficients[2]:

Port Size		K_V	C_V
mm	inch		
20	¾	9.1	10.5
25	1	12	14
32	1¼	15.7	18.2
40	1½	28	32.4
50	2	48	55
65	2½	65	75
80	3	87	100

- Connections Types and Sizes:

Port Size		SW, BW SS ANSI	BW DIN
mm	inch		
20 25	¾ 1	¾", 1", 1¼"	20, 25, 32
32	1¼	1¼", 1½"	32, 40
40	1½	1½", 2"	40, 50
50	2	2½"	50, 65
65	2½	2½", 3"	65, 80
80	3	2½", 3"	65, 80

- Pressure Regulator Range:
  Range V: 250mm Hg - 8.3 bar (10in Hg - 120 psig)
  Range A: 0.35 - 10.3 bar (5 - 150 psig)
  Range D: 5.2 - 19.3 bar (75 - 280 psig)
  Range E: 6.9 - 51.7 bar (100 - 750 psig)
- Coil Voltages: Consult Factory

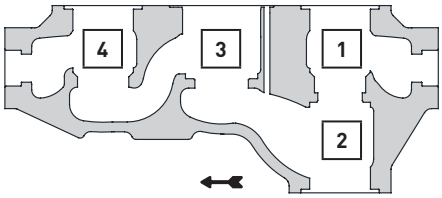
1. Capacities shown are for full ported plug. Reduced capacity plugs available upon request. Consult bulletin 10-00 for details.
2. The flow coefficient shown is for the control module in position three shown below. Full capacity Kv (Cv) shown in table. For additional flow coefficient values see product bulletin 10-00.

Valve Station

New Products

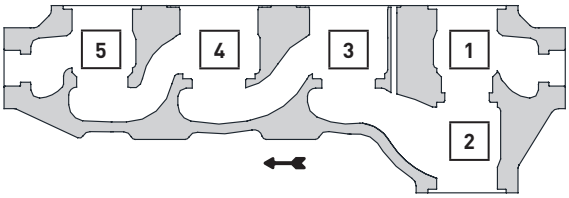
Application Guide

Four Position Valve Station

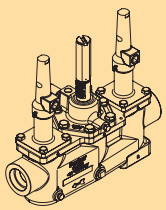
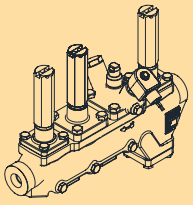
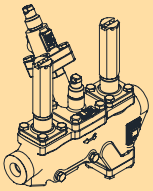
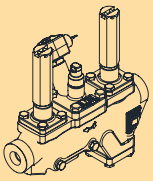
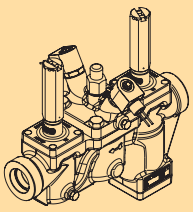
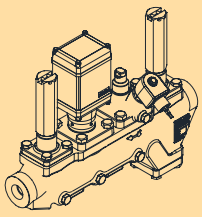


1. Shut-Off Module
2. Strainer Module (Note: Strainer module is optional for 2" and larger port sizes.)
3. Control Module (PEV/Solenoid/Regulator Option)
4. Shut-Off or Stop/Check Module

Five Position Valve Station

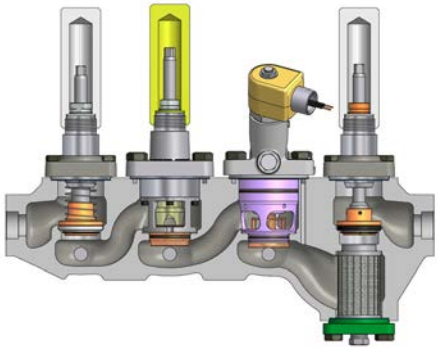


1. Shut-Off Module
2. Strainer Module
3. Control Module (Solenoid/Regulator Option)
4. Parker Electronic Valve (PEV) or Hand Expansion Valve Module
5. Shut-Off or Stop/Check Module

Common Valve Configurations					
Suction Stop Regulator	**Pumped Liquid Feed**	**Suction Regulator**	**Hot Gas Defrost**	**2 Stage Solenoid**	**Liquid Feed**
					
Shut-Off	Shut-Off	Shut-Off	Shut-Off	Shut-Off	Shut-Off
Strainer	Strainer	Strainer	Strainer	Strainer	Strainer
Regulator	Solenoid	Regulator	Solenoid	Solenoid	Solenoid
—	HEV	—	—	—	PEV
Shut-Off/Check	Shut-Off/Check	Shut-Off	Shut-Off	Shut-Off	Shut-Off

PVS Capacities (kW)

For exact calculation, please use our new VSP2 valve selection program.



Five Station Manifold Design
- Utilizes proven RS & new P-series components
- Spaced for superior flow & serviceability

Cartridge based design
- Solenoid, Regulator, Electronic
- Eliminates body wear

Reduce Installation Labor
- Eliminates up to 12 welds

Valve Station – How To Order

New Products

Type: **PVS**
Port Sizes: **20mm** – **80mm** (¾"– 3")

Valve Type	Positions	Valve Material	Port Size	Connection	Position 1 & 2	Position 3	Capacity Plug	Coil
PVS	4	W	4	S4	L	9X	1	B3

Position	
4	4 Positions
5	5 Positions

Valve Material	
W	Plated

Port Size	
3	20mm (¾")
4	25mm (1")
5	32mm (1¼")
6	40mm (1½")
8	50mm (2")
A	65mm (2½")
G	80mm (3")

Station 1 & 2	
L	HV/Strainer

Connection Type		Connection Size	
S	SW	3	¾"
B	BW ANSI	4	1"
		5	1¼"
		6	1½"
		8	2"
		A	2½"
		G	3"
D	BW (DN) Metric	3	20mm
		4	25mm
		5	32mm
		6	40mm
		8	50mm
		A	65mm
		G	80mm

Control	
0	Single Inlet Regulator
1	Hand Expansion
2	Single Outlet Regulator
4	Single Differential Regulator
6	Dual Inlet Regulator
7	Dual Outlet Regulator
8	Parker Electronic Valve (PEV)
9	Solenoid

Regulator Variation	
X	None [1]
A	No Solenoid; Regulator Only
B	Electric Wide Opening
C	Electric Shut-Off
D	Electric Wide Opening & Shut-Off

[1] The regulator variation "X" is only used when selecting "8" and "9" in the control selection box.

Port Size	Capacity Plug	
Position 3 Control Option		
20mm (¾")	1	Full
	2	65%
	3	30%
25mm (1")	1	Full
32mm (1¼")	1	Full
	2	50%
40mm (1½")	1	Full
	2	50%
50mm (2")	1	Full
	2	50%
65mm (2½")	1	Full
	2	50%
80mm (3")	1	Full
	2	35%
Electronic Option (PEV)		
20mm (¾")	1	Full
	2	70%
25mm (1")	1	Full
	2	40%
32mm (1¼")	1	Full
40mm (1½")	1	Full

Coils	
X	No Coil
AC Coils	
A	120/50
B	120/60
F	230/50
H	240/60
M	24/60
T	100/50
U	200/50
P	24/50
W	100/60
DC Coils	
R	24

Coil Style	
X	No Coil Style
1	Leaded, Standard
2	Leaded, Red LED Pilot Light
3	Leaded, Green LED Pilot Light
7	DIN, Standard [2]
8	DIN, Red LED Pilot Light
9	DIN, Green LED Pilot Light

[2] Only 24V DC option

Valve Station – How To Order

New Products

Type: **PVS**
Port Sizes: **20mm** – **80mm** (¾"– 3")

Position 4	Final Position	Range	Range Option	Set Point	Range	Range Option	Set Point
A	S						

Expansion Valve Option Capacity	
N	N/A for the four Position Station Valve
M	Cover Plate [3]

Port Size	Expansion Plug	
HEV		
20mm (¾") or 25mm (1")	A	Full
	B	Reduced
32mm (1¼")	B	Full
40mm (1½")	A	Full
	B	Reduced
Electronic Option (PEV)		
20mm (¾") or 25mm (1")	1	Full
	2	Reduced
32mm (1¼") or 40mm (1½")	1	Full

[3] When "5" is selected for positions and "8" is selected for position 3; the only available selection is "M" for position 4.

Final Station	
H	Hand Valve
S	Stop/Check
E	Stop/Expansion [4]

[4] Available only for the four position valve station

Pressure Range bar (psig)	
	No Range
A	0.35 to 10 (5 to 150)
D	5.2 to 19.3 (75 to 280)
E	6.9 to 51.7 (100 to 750)

Range Option	
	No Range Option
X	No Tamper Proof
T	Tamper Proof [5]

[5] Re-seating relief (K) option

Set Point barg (psig)	
ST	No Set Point Factory Setting [6]
UN	Unset

A		D		E	
A1	0.7 (10)	B5	5.2 (75)	C1	6.9 (100)
A2	1.0 (15)	B6	5.5 (80)	C6	8.6 (125)
A3	1.4 (20)	B7	5.9 (85)	D2	10.3 (150)
A4	1.7 (25)	B8	6.2 (90)	D7	12.1 (175)
A5	2.1 (30)	B9	6.6 (95)	E3	13.8 (200)
A6	2.4 (35)	C1	6.9 (100)	E8	15.5 (225)
A7	2.8 (40)	C2	7.2 (105)	F4	17.2 (250)
A8	3.1 (45)	C3	7.6 (110)	F9	19.0 (275)
A9	3.5 (50)	C4	7.9 (115)	G2	20.7 (300)
B1	3.8 (55)	C5	8.3 (120)	G3	22.4 (325)
B2	4.1 (60)	C6	8.6 (125)	G4	24.1 (350)
B3	4.5 (65)	C7	9.0 (130)	G5	25.9 (375)
B4	4.8 (70)	C8	9.3 (135)	G6	27.6 (400)
B5	5.2 (75)	C9	9.7 (140)	G7	29.3 (425)
B6	5.5 (80)	D1	10.0 (145)	G8	31.0 (450)
B7	5.9 (85)	D2	10.3 (150)	G9	32.8 (475)
B8	6.2 (90)	D3	10.7 (155)	H1	34.5 (500)
B9	6.6 (95)	D4	11.0 (160)	H2	36.2 (525)
C1	6.9 (100)	D5	11.4 (165)	H3	37.9 (550)
C2	7.2 (105)	D6	11.7 (170)	H4	39.7 (575)
C3	7.6 (110)	D7	12.1 (175)	H5	41.4 (600)
C4	7.9 (115)	D8	12.4 (180)	H6	43.1 (625)
C5	8.3 (120)	D9	12.8 (185)	H7	44.8 (650)
C6	8.6 (125)	E1	13.1 (190)	H8	46.6 (675)
C7	9.0 (130)	E2	13.5 (195)	H9	48.3 (700)
C8	9.3 (135)	E3	13.8 (200)	J1	50.0 (725)
C9	9.7 (140)	E4	14.1 (205)	J2	51.7 (750)
D1	10.0 (145)	E5	14.5 (210)		
D2	10.3 (150)	E6	14.8 (215)		
		E7	15.2 (220)		
		E8	15.5 (225)		
		E9	15.9 (230)		
		F1	16.2 (235)		
		F2	16.6 (240)		
		F3	16.9 (245)		
		F4	17.2 (250)		
		F5	17.6 (255)		
		F6	17.9 (260)		
		F7	18.3 (265)		
		F8	18.6 (270)		
		F9	19.0 (275)		
		G1	19.3 (280)		

[6] Factory Settings:

Inlet, Inlet Dual (low pressure) and Differential Regulator Pilots
Range V (A2): 1.0 barg (15 psig)
Range A (A7): 2.8 barg (40 psig)
Range D (C9): 9.7 barg (140 psig)
Range E (G2): 20.7 barg (300 psig)

Oulet Regulator Pilot
Range V (A7): 2.8 barg (40 psig)
Range D (C9): 9.7 barg (140 psig)
Range E (G2): 20.7 barg (300 psig)

Factory Setting for **K** (Tamper Proof) variation
Range A (B4): 4.8 barg (70 psig)
Range D (C9): 9.7 barg (140 psig)
Range E (G2): 20.7 barg (300 psig)

Dual Regulator Range Options
Repeat selections for single regulator range options Range Range Option Set Point [7]

[7] Factory Settings:

Inlet Dual (high pressure) Regulator Pilot
Range V (A7): 2.8 barg (40 psig)
Range A (B4): 4.8 barg (70 psig)
Range D (C9): 9.7 barg (140 psig)
Range E (G2): 20.7 barg (300 psig)

Oulet Dual (high pressure) Regulator Pilot
Range V ([B4): 4.8 barg (70 psig)
Range D (C9): 9.7 barg (140 psig)
Range E (G2): 20.7 barg (300 psig)

Inlet Pressure Regulators

New Products

Type: **PA4C**

Purpose

The PA4C weld-in line series inlet pressure regulators are designed to overcome corrosion problems encountered in harsh environments. Being weld-in, the valves reduce potential for connection leaks and can be entirely serviced from the top.
This improved design has a higher working pressure, greater working temperature range and higher flow capacities than competitive products.
These valves provide long-term performance and with replaceable internal components. Specially designed wear rings eliminate the need for removal of the body from the line (maintenance-free).

Product Features

- Stainless steel construction increases product life cycle
- Cartridge based design simplifies service and eliminates body wear
- Increased flow capacity enables smaller valve sizing
- Overall weight reduction up to 50% compared to traditional flanged products
- Integral features prevent contaminants from reaching the pilot section of the valve
- Suitable for ammonia, CO_2 and halocarbon refrigerants
- Multiple refrigerant capacities and configurations available
- Interchangeable with other P-Series offerings
- Coil options to meet various applications

Technical Data

- Liquid Temperature Range:
  -60°C to 120°C (-76°F to 248°F)
- Ambient Temperature Range
  AC Coil: -60°C to 60°C (-76°F to 140°F)
  DC Coil: -25°C to 60°C (-13°F to 140°F)
- Minimum Pressure Drop:
  0.14 bar (2 psig)
- Max Rated Pressure (MRP):
  52 bar (754 psig)
- Maximum Operating Pressure Difference (MOPD):
  AC Coil: 20.7 bard (300 psid)
  DC Coil: 10.0 bard (145 psid)
- Pressure Regulator Range:
  Range V: 250mm Hg - 8.3 bar (10in Hg - 120 psig)
  Range A: 0.35 - 10.3 bar (5–150 psig)
  Range D: 5.2 - 19.3 bar (75–280 psig)
  Range E: 6.9 - 51.7 bar (100–750 psig)
- Coil Voltages: Consult Factory

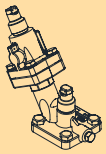
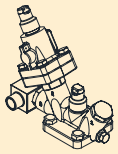
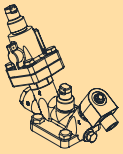
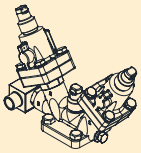
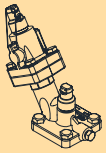
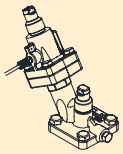
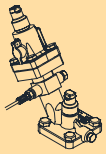
Port Size [1]		Flow Coefficient [2]		Connections	
mm	inch	K_V	C_V	SW, BW, SS ANSI	BW DIN
20	¾	9.5	11	¾", 1", 1¼"	20, 25, 32
25	1	12	14	¾", 1", 1¼"	20, 25, 32
32	1¼	15.6	18	1¼", 1½"	32, 40
40	1½	28	32	1½", 2"	40, 50
50	2	47,6	55	2", 2-1½"	50, 65
65	2½	65	75	2½" SW	65, 80
80	3	86,5	100	2½" SW	65, 80

1. The 20 mm (3/4") port is available with a standard (full), 65% and 30% reduced plugs.
   The 32 mm (11/4") port is available with a standard (full) and 50% reduced plugs.
   The 40 mm (11/2") port is available with a standard (full) and 30% reduced plugs.
2. The flow coefficient shown is for the full capacity plug. For additional flow coefficient values see product bulletin 24-05.

Inlet Pressure Regulators

New Products

Application Guide

Variation	Type Suffix	Port Plate Setup	Function
Inlet Regulator	A4		Controls inlet pressure
Regulator with Electric Shut-Off	A4S		Controls inlet pressure or shut-off regulator
Regulator with Electric Wide Opening	A4B		Controls inlet pressure or wide open /bypass regulator
Dual Regulator	A4D		Dual pressure control Position 1: high pressure pilot Position 2: low pressure pilot
Re-Seating Relief Regulator	A4K		Re-seating relief regulator
Differential Regulator	A4L		Controls differential pressure across control module
Outlet Regulator	A4O		Controls outlet pressure

New Products

Suction Capacities - PA4

NH3 (kW)

Evap. temperature pressure	Pressure Drop bar	20mm 30%	20mm 65%	20mm	25mm	32mm	40mm	50mm
+10°C 5,1 barg	0,14 0,35 0,70 1,40	36 56 78 105	58 91 126 172	79 124 171 233	100 156 217 294	130 203 282 382	233 364 505 686	396 619 859 1166
+5C° 4,1 barg	0,14 0,35 0,70 1,40	33 51 71 95	53 83 115 154	72 113 156 209	91 142 197 265	118 185 256 344	213 332 459 617	362 564 781 1049
0°C 3,3 barg	0,14 0,35 0,70	30 46 64	48 76 104	66 102 141	83 129 178	108 168 231	193 302 415	329 513 706
-5°C 2,5 barg	0,14 0,35 0,70	27 42 57	44 68 93	60 93 127	75 117 160	98 152 208	176 273 373	299 464 635
-10°C 1,9 barg	0,14 0,35 0,70	24 38 51	40 61 83	54 83 113	68 105 143	88 137 185	159 245 333	270 417 566
-15°C 1,36 barg	0,14 0,21 0,35	22 27 34	36 43 55	48 59 74	61 74 94	79 97 122	143 173 219	243 295 373
-20°C 0,9 barg	0,14 0,21	20 24	32 39	43 52	55 66	71 86	127 155	216 263
-25°C 0,5 barg	0,14	17	28	38	49	63	113	193
-30°C 0.18 barg	0,14	15	25	34	43	56	100	170
-35°C -0,08 barg	0,14	13	22	30	37	49	87	148
-40°C -0,3 barg	0,14	12	19	26	32	42	75	128

For other refrigerants please use VSP2 Valve Selection Program.

New Products

Suction Capacities - PA4

R-134a (kW)

Evap. temperature pressure	Pressure Drop bar	20mm 30%	20mm 65%	20mm	25mm	32mm	40mm	50mm
+10°C 3,1 barg	0,14 0,70	10 21	16 34	21 46	27 58	35 75	63 135	107 229
+5C° 2,5 barg	0,14 0,70	9 18	14 30	19 41	24 51	32 67	57 120	96 204
0°C 1,9 barg	0,14 0,70	8 16	13 27	17 36	22 46	28 59	51 107	86 181
-5°C 1,4 barg	0,14 0,70	7 14	11 23	15 32	19 40	25 52	45 93	77 159
-10°C 1,0 barg	0,14 0,70	6 12	10 20	14 28	17 35	23 45	41 81	69 138
-15°C 0,64 barg	0,14 0,70	6 11	9 17	12 24	15 30	20 39	36 69	61 118
-20°C 0,33 barg	0,14 0,35	5 7	8 12	11 16	13 20	17 26	31 47	53 79
-25°C 0,064 barg	0,14 0,35	4 6	7 10	9 14	12 17	15 22	27 40	46 68
-30°C -0,16 barg	0,14	4	6	8	10	13	24	41
-35°C -0,34 barg	0,14	3	5	7	9	11	20	34
-40°C -0,49 barg	0,14	3	4	6	7	10	17	29

For other refrigerants please use VSP2 Valve Selection Program.

R-404a (kW)

Evap. temperature pressure	Pressure Drop bar	20mm 30%	20mm 65%	20mm	25mm	32mm	40mm	50mm
+10°C 7,2 barg	0,14 0,70	11 23	17 38	23 51	29 65	38 84	69 151	117 256
+5C° 6,0 barg	0,14 0,70	10 21	16 34	21 46	27 58	35 76	63 136	107 231
0°C 5,0 barg	0,14 0,70	9 19	14 31	19 41	24 52	32 68	57 122	96 207
-5°C 4,1 barg	0,14 0,70	8 17	13 27	17 37	22 47	28 61	51 109	86 186
-10°C 3,3 barg	0,14 0,70	7 15	11 24	15 33	19 42	25 54	45 97	77 165
-15°C 2,6 barg	0,14 0,70	6 13	10 22	14 29	17 37	23 48	41 86	69 146
-20°C 2,0 barg	0,14 0,35	6 9	9 14	12 19	15 24	20 31	36 56	61 95
-25°C 1,5 barg	0,14 0,35	5 7	8 12	11 17	14 21	18 27	32 49	54 83
-30°C 1,02 barg	0,14	4	7	10	12	16	28	48
-35°C 0,64 barg	0,14	4	6	8	11	14	25	42
-40°C 0,31 barg	0,14	3	5	7	9	12	21	36

For other refrigerants please use VSP2 Valve Selection Program.

New Products

Suction Capacities - PA4

R-410a (kW)

Evap. temperature pressure	Pressure Drop bar	20mm 30%	20mm 65%	20mm	25mm	32mm	40mm	50mm
+10°C 9,9 barg	0,14 0,70	15 33	24 53	33 72	42 91	54 119	97 213	165 363
+5°C 8,4 barg	0,14 0,70	14 30	22 49	30 66	38 84	50 109	89 195	152 332
0°C 7,0 barg	0,14 0,70	12 27	20 45	28 60	35 76	45 99	81 178	138 303
-5°C 5,8 barg	0,14 0,70	11 25	19 40	25 55	32 69	41 90	74 161	126 274
-10°C 4,7 barg	0,14 0,70	10 22	17 37	23 50	29 63	38 81	67 146	114 248
-15°C 3,8 barg	0,14 0,70	9 20	15 33	21 45	26 56	34 73	61 131	103 223
-20°C 3,0 barg	0,14 0,35	8 13	14 21	19 29	23 37	30 48	55 85	93 145
-25°C 2,3 barg	0,14 0,35	8 12	12 19	17 26	21 33	27 42	49 76	84 129
-30°C 1,69 barg	0,14	7	11	15	19	25	44	75
-35°C 1,18 barg	0,14	6	10	13	17	22	39	66
-40°C 0,74 barg	0,14	5	9	12	15	19	34	58

For other refrigerants please use VSP2 Valve Selection Program.

R-507a (kW)

Evap. temperature pressure	Pressure Drop bar	20mm 30%	20mm 65%	20mm	25mm	32mm	40mm	50mm
+10°C 7,4 barg	0,14 0,70	10 23	17 37	23 50	29 64	38 83	68 149	116 253
+5°C 6,3 barg	0,14 0,70	10 21	16 34	21 46	27 58	35 75	62 135	105 229
0°C 5,2 barg	0,14 0,70	9 19	14 30	19 41	24 52	31 67	56 121	95 205
-5°C 4,3 barg	0,14 0,70	8 17	13 27	17 37	21 46	28 60	50 108	85 184
-10°C 3,5 barg	0,14 0,70	7 15	11 24	15 33	19 41	25 53	45 96	76 163
-15°C 2,8 barg	0,14 0,70	6 13	10 21	14 29	17 37	22 48	40 85	68 145
-20°C 2,1 barg	0,14 0,35	5 8	9 14	12 19	15 23	20 30	35 55	60 93
-25°C 1,6 barg	0,14 0,35	5 7	8 12	11 16	13 21	17 27	31 48	53 82
-30°C 1,2 barg	0,14	4	7	9	12	15	27	46
-35°C 0,71 barg	0,14	4	6	8	10	13	24	41
-40°C 0,37 barg	0,14	3	5	7	9	12	21	35

For other refrigerants please use VSP2 Valve Selection Program.

Pressure Regulators

New Products

Liquid Capacities - PA4

NH3 [kg/min. & m³/h]

Liquid Temperature	Pressure Drop	20mm 30%		20mm 65%		20mm		25mm		32mm		40mm		50mm	
		kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h
+5°C	0,7 bar	48	5	78	7	105	10	133	13	173	16	311	29	528	50
-20°C		49	4	79	7	108	10	136	12	177	16	318	29	541	49
-40°C		50	4	81	7	110	10	139	12	181	16	325	28	552	48
+5°C	1,0 bar	58	6	95	9	129	12	163	15	212	20	381	36	647	61
-20°C		60	5	97	9	132	12	167	15	217	20	389	35	662	60
-40°C		61	5	99	9	135	12	170	15	221	19	397	35	675	59
+5°C	1,4 bar	67	6	110	10	149	14	188	18	245	23	439	42	747	71
-20°C		69	6	112	10	153	14	193	17	250	23	450	41	764	69
-40°C		70	6	115	10	156	13	197	17	256	22	459	40	780	68

R-134a [kg/min. & m³/h]

Liquid Temperature	Pressure Drop	20mm 30%		20mm 65%		20mm		25mm		32mm		40mm		50mm	
		kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h
+5°C	0,7 bar	68	3	111	5	150	7	189	9	246	12	442	21	751	35
-20°C		70	3	114	5	154	7	195	9	254	11	455	20	774	34
-40°C		71	3	116	5	158	7	199	9	259	11	465	20	791	34
+5°C	1,0 bar	83	4	136	6	184	9	232	11	302	14	542	25	921	43
-20°C		86	4	140	6	189	8	239	11	311	14	558	25	949	42
-40°C		88	4	143	6	193	8	244	10	318	13	570	24	969	41
+5°C	1,4 bar	96	5	156	7	212	10	268	13	348	16	625	29	1063	50
-20°C		99	4	161	7	219	10	276	12	359	16	645	29	1096	49
-40°C		101	4	165	7	223	10	282	12	367	16	659	28	1120	48

R-404a [kg/min. & m³/h]

Liquid Temperature	Pressure Drop	20mm 30%		20mm 65%		20mm		25mm		32mm		40mm		50mm	
		kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h
+5°C	0,7 bar	64	3	104	6	141	7	178	9	232	12	416	22	707	37
-20°C		66	3	108	5	147	7	185	9	241	12	432	21	734	36
-40°C		68	3	111	5	150	7	190	9	247	12	443	21	754	35
+5°C	1,0 bar	78	4	127	7	173	9	218	12	284	15	509	27	866	46
-20°C		81	4	132	7	180	9	227	11	295	14	529	26	900	44
-40°C		83	4	136	6	184	9	233	11	303	14	543	25	924	43
+5°C	1,4 bar	90	5	147	8	200	11	252	13	328	17	588	31	1000	53
-20°C		94	5	153	8	207	10	262	13	341	17	611	30	1039	51
-40°C		96	5	157	7	213	10	269	13	350	16	627	29	1066	50

R-410a [kg/min. & m³/h]

Liquid Temperature	Pressure Drop	20mm 30%		20mm 65%		20mm		25mm		32mm		40mm		50mm	
		kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h
+5°C	0,7 bar	64	3	105	6	142	7	180	9	234	12	419	22	713	37
-20°C		67	3	109	5	148	7	187	9	243	12	436	21	741	36
-40°C		69	3	112	5	152	7	192	9	250	12	448	21	762	35
+5°C	1,0 bar	79	4	128	7	174	9	220	11	286	15	513	27	873	45
-20°C		82	4	134	7	181	9	229	11	298	14	534	26	908	44
-40°C		84	4	137	6	186	9	235	11	306	14	549	25	933	43
+5°C	1,4 bar	91	5	148	8	201	10	254	17	330	17	593	31	1008	52
-20°C		95	5	154	8	209	10	264	17	344	17	617	30	1048	51
-40°C		97	4	158	7	215	10	271	16	353	16	633	29	1077	49

Pressure Regulators

New Products

Liquid Capacities - PA4

R-507a [kg/min. & m³/h]

Liquid Temperature	Pressure Drop	20mm 30%		20mm 65%		20mm		25mm		32mm		40mm		50mm	
		kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h	kg/min	m³/h
+5°C	0,7 bar	64	3	104	6	141	7	179	9	232	12	417	22	708	37
-20°C		67	3	108	5	147	7	186	9	241	12	433	21	737	36
-40°C		68	3	111	5	151	7	191	9	248	12	445	21	757	35
+5°C	1,0 bar	78	4	128	7	173	9	219	11	285	15	511	27	868	45
-20°C		81	4	133	7	180	9	227	11	296	14	531	26	902	44
-40°C		84	4	136	6	185	9	234	11	304	14	545	25	927	43
+5°C	1,4 bar	91	5	147	8	200	11	253	13	328	17	589	31	1002	53
-20°C		94	5	153	8	208	10	263	13	342	17	613	30	1043	51
-40°C		97	5	157	7	214	10	270	13	351	16	629	29	1070	50

Pressure Regulators

New Products

Oil Capacities - PA4

300 SSU Viscosity [m³/h]

For 30°C to 50°V Oil			
Port Size [mm]	Pressure Drop		
	0,3 bar	0,7 bar	3,0 bar
30%	2,8	3,7	8,6
65%	4,5	6,0	14
20	6,1	8,1	19
25	7,7	10	24
32	10	13	31
40	18	24	56
50	31	41	95
A4A 50	27	36	84

Hot Gas Bypass Capacities - PA4

NH3 [kW]

Inlet Pressure	Outlet Pressure Range	20mm 30%	20mm 65%	20mm	25mm	32mm	40mm	50mm
2 bar		83	135	183	231	301	540	918
11 bar		266	433	588	743	966	1733	2947

How to order

How to order								
	1	2	3	4	5	6	7	
	PA4	. C	. B	. 020	. WN	. 025	. A	
1	Parker Pressure Regulator							
2	C = stainless steel; W = forged steel							
3	type suffix (see table page 14)							
4	port size							
5	DIN, butt weld ends							
6	connection size							
7	code pressure setting range (see table)							

Please order coils separately

How to order coils		
Article No.:	Volts	Herz
SPULE.RS.024.50.PS4	24	DC
SPULE.RS.230.50.PS4	230	50

All coils with quick connector

Electronic Valve

New Products

Type: **PEV**
Port Sizes: **20mm** – **40mm** (¾"– 1½")

Purpose

The Parker Electronic Valve (PEV)provides a new level of control to industrial refrigeration. Managing liquid levels in vessels, superheat for direct expansion, brine temperature in chillers and hot gas defrost are just few of many applications for the PEV.
For basic liquid level control the PEV can be used directly with the HBLT-Wire level probe without the need of a controller. For more advanced applications the PEV is compatible with the HBLT-C1 controller or any other controller with a 4-20 mA output signal.
The PEV weld-in valves are designed to overcome corrosion problems encountered in harsh environments. Being weld-in, the valves reduce the potential for connection leaks and can be entirely serviced from the top.

Product Features

- Stainless steel construction increases product life cycle
- Cartridge based design simplifies service and eliminates body wear
- Multiple capacity plugs available
- Increased flow capacity enables smaller valve sizing
- Removeable actuator
- Simple user interface (UI)
- Bright LED Display
- Suitable for ammonia, CO_2 and halocarbon refrigerants
- Multiple refrigerant capacities available
- Password protected prevents tampering
- Lightweight construction
- Alarm notification
- IP67/NEMA 6 rated
- Parker Fail Safe Module available

Technical Data

- Liquid Temperature Range:
  -60°C to 120°C (-76°F to 248°F)
- Ambient Temperature Range:
  -40°C to 50°C (-40°F to 122°F)
- Max Rated Pressure (MRP):
  52 bar (754 psig)
- Max Operating Pressure Difference (MOPD):

Port Size		MOPD
mm	inch	
20	¾	52 bard (754 psid)
25	1	
32	1¼	28 bard (406 psid)
40	1½	

- Power Supply Voltage:
  24V DC @ 1.3 Amp
- Input Signal: 4 – 20 mA
  Operating Pressure Range:
- 500mm Hg to 52 bar
  (20in. Hg to 754 psig)
- Flow Coefficients:

Port Size		Kv	Cv
mm	inch		
20	¾	6.1	7.0
25	1	11.2	13.0
32	1¼	14.1	16.3
40	1½	26.9	31.1

- Port sizes[1]:
  20mm (3/4"), 25mm (1")
  32mm (1 1/4"), 40mm (1 1/2")
- Protection Rating: IP67/NEMA 6
- Connections Types and Sizes:

Port Size		SW, BW SS ANSI	BW DIN
mm	inch		
20	¾	¾", 1", 1¼"	20, 25, 32
25	1		
32	1¼	1¼", 1½"	32, 40
40	1½	1½", 2"	40, 50

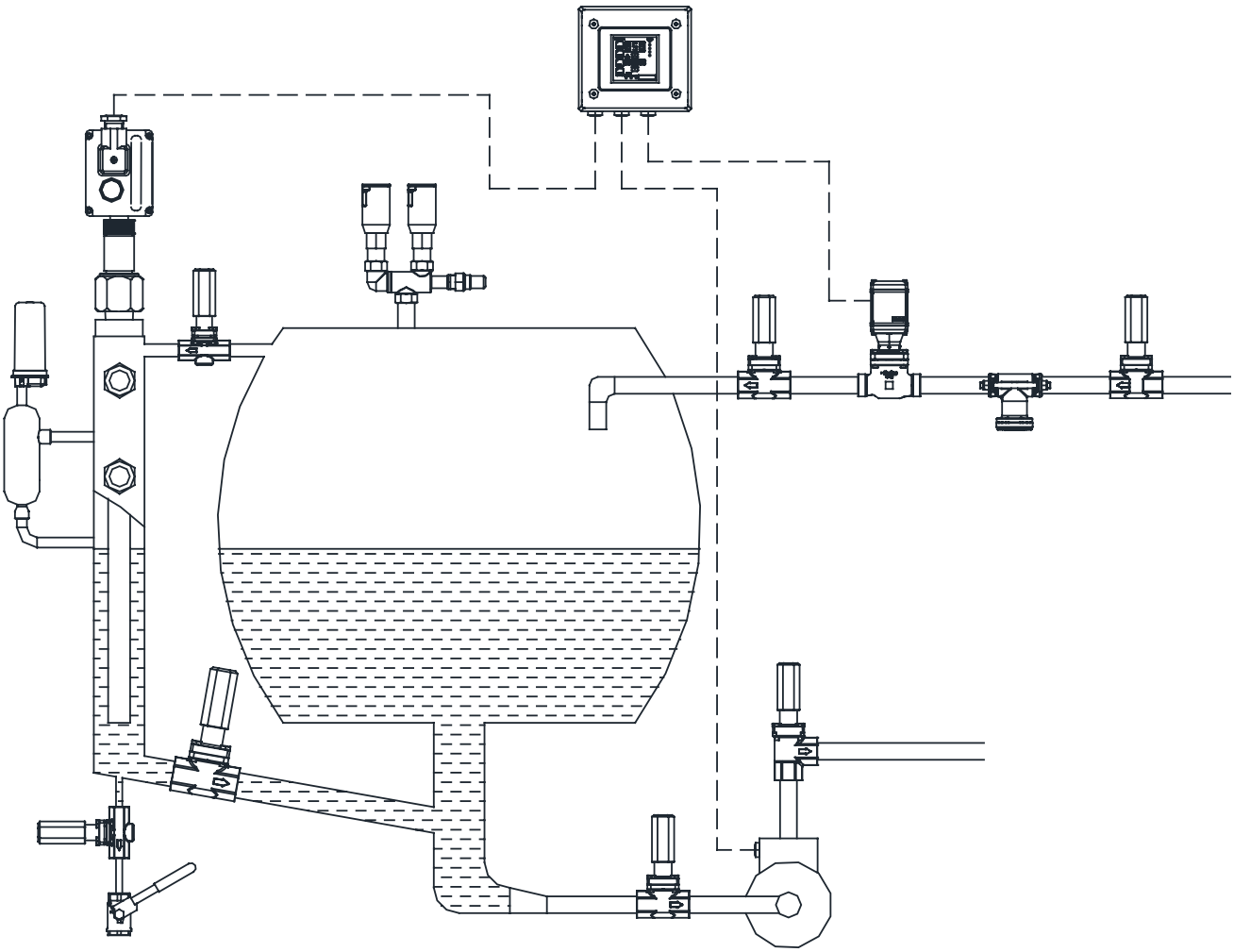
1. The 20 mm (3/4") port is available with a standard and 70% reduced plug.
   The 25 mm (1") port is available with a standard and 40% reduced plug.

Electronic Valve

New Products

Type: **PEV**
Port Sizes: **20mm** – **40mm** (¾" – 1½")

Application Example: Low Pressure (LP) Liquid Level Control



How to order

	How to order											
	1		2		3		4		5		6	
	PEV	.	020	.	VA	.	WN	.	025	.	EXP	
1	Parker Electronic Valve											
2	port size											
3	VA = stainless steel; blank = forged steel											
4	DIN, butt weld ends											
5	connection size											
6	EXP = expansion plug; blank = 100% capacity											

For other refrigerants please use VSP2 Valve Selection Program.

Solenoid Valves

New Products

Type: **PS4C**

Purpose

The PS4C weld-in line series solenoid valves are designed to overcome corrosion problems encountered in harsh environments. Being weld-in, the valves reduce the potential for connection leaks and can be entirely serviced from the top.
This improved design has a higher working pressure, greater working temperature range and higher flow capacities than competitive products.
These valves provide long-term performance and with replaceable internal components. Specially designed wear rings eliminate the need for removal of the body from the line (maintenance-free).

Product Features

- Stainless steel construction increases product life cycle
- Cartridge based design simplifies service and eliminates body wear
- Increased flow capacity enables smaller valve sizing
- Overall weight reduction up to 50% compared to traditional flanged products
- Integral features prevent contaminants from reaching the pilot section of the valve
- Suitable for ammonia, CO_2 and halocarbon refrigerants
- Multiple refrigerant capacities available
- Interchangeable with other P-Series offerings
- Coil options to meet various applications

Technical Data

- Liquid Temperature Range:
  -60°C to 120°C (-76°F to 248°F)
- Ambient Temperature Range
  AC Coil: -60°C to 60°C (-76°F to 140°F)
  DC Coil: -25°C to 60°C (-13°F to 140°F)
- Minimum Pressure Drop:
  0.14 bar (2 psig)
- Max Rated Pressure (MRP):
  52 bar (754 psig)
- Maximum Operating Pressure Difference (MOPD):
  AC Coil: 20.7 bard (300 psid)
  DC Coil: 10.0 bard (145 psid)
- Coil Voltages: Consult Factory

Port Size [1]		Flow Coefficient [2]		Connections	
mm	inch	K_V	C_V	SW, BW, SS ANSI	BW DIN
20	¾	9.5	11	¾", 1", 1¼"	20, 25, 32
25	1	12	14	¾", 1", 1¼"	20, 25, 32
32	1¼	15.6	18	1¼", 1½"	32, 40
40	1½	28	32	1½", 2"	40, 50
50	2	47,6	55	2, 2-1½"	50,65

1. The 20 mm (3/4") port is available with a standard (full), 65% and 30% reduced plugs.
   The 32 mm (11/4") port is available with a standard (full) and 50% reduced plugs.
   The 40 mm (11/2") port is available with a standard (full) and 30% reduced plugs.
2. The flow coefficient shown is for the full capacity plug. For additional flow coefficient values see product bulletin 24-05.

Solenoid Valves

New Products

R-717 (KW)

Port Size	kv	Liquid Capacities ①		Suction Capacities ②		Hot Gas Reclaim ③					
		0.14 bar ΔP	0.27 bar ΔP	0.14 bar ΔP		21°C Condensing		30°C Condensing		35°C Condensing	
mm	m³/h			-10°C	-20°C	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP
20 30%	4,3	462	642	24	20	56	66	63	73	72	86
20 65%	7	752	1045	39	32	92	108	102	118	118	140
20	9,5	1021	1418	54	43	124	146	139	161	160	190
25	12	1290	1791	68	55	157	185	175	203	202	240
32	15,6	1677	2328	88	71	204	240	228	264	262	312
40	28	3010	4178	158	128	366	431	409	474	471	561
50	47,6	5116	7103	268	217	622	732	696	806	801	953

All capacities are maximum for the conditions listed and have no reserve for excess loads.

① R717 capacities are based on -7°C liquid with no flashing, -15°C evaporator temperature and no liquid overfeed. For liquid overfeed, multiply evaporator KW by recirculating rate and size valve to the KW result. Use of -7°C liquid for capacities in this table is sufficiently accurate for most liquid overfeed systems. To convert for 30°C input, multiply values in the table by 0.9.

② R717 capacities are based on 30°C condensing temperature and the evaporator temperatures listed. See A4A suction capacities on page 37 for other pressure drops and for corrections for liquid overfeed and sub-cooled liquid.

③ Hot gas heat reclaim capacities are in terms of heat of condensation rejected at the condenser and are based on saturated inlet conditions at pressures equivalent to the condensing temperatures and for the pressure drops listed.

For other refrigerants please use VSP2 Valve Selection Program.

R-134a (KW)

Port Size	kv	Liquid Capacities ①		Suction Capacities ②		Hot Gas Reclaim ③					
		0.14 bar ΔP	0.27 bar ΔP	0.14 bar ΔP		21°C Condensing		30°C Condensing		35°C Condensing	
mm	m³/h			-10°C	-20°C	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP
20 30%	4,3	69	96	6	5	22	26	24	28	25	30
20 65%	7	113	156	10	8	35	42	38	46	41	49
20	9,5	153	212	14	11	48	57	52	62	56	66
25	12	193	268	17	13	60	71	66	78	70	84
32	15,6	251	348	22	17	78	93	85	102	91	109
40	28	450	625	40	31	140	167	153	182	164	195
50	47,6	765	1063	68	53	238	283	260	310	279	332

All capacities are maximum for the conditions listed and have no reserve for excess loads.

① Liquid capacities for R134a are based on 40°C condensing and 5°C evaporator temperatures with no flashing through the valve for the pressure drops listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.

② Suction capacities for R134a are based on 40°C liquid and 5°C superheat entering the valve at the pressure drops and evaporator temperatures listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.

③ Hot gas heat reclaim capacities are in terms of heat of condensation rejected at the condenser and are based on saturated inlet conditions at pressures equivalent to the condensing temperatures and for the pressure drops listed.

For other refrigerants please use VSP2 Valve Selection Program.

Solenoid Valve

New Products

R-404a (KW)

Port Size	kv	Liquid Capacities ①		Suction Capacities ②		Hot Gas Reclaim ③					
		0.14 bar ΔP	0.27 bar ΔP	0.14 bar ΔP		21°C Condensing		30°C Condensing		35°C Condensing	
mm	m³/h			-10°C	-20°C	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP
20 30%	4,3	47	66	7	5	23	28	24	29	24	28
20 65%	7	77	107	11	9	38	46	40	47	39	46
20	9,5	105	145	15	12	52	62	54	64	53	63
25	12	132	183	19	15	66	78	68	81	67	79
32	15,6	172	238	25	20	85	101	88	105	87	103
40	28	308	428	45	35	153	182	158	188	155	185
50	47,6	524	727	76	60	260	309	269	320	264	314

All capacities are maximum for the conditions listed and have no reserve for excess loads.

① Liquid capacities for R404a are based on 40°C condensing and 5°C evaporator temperatures with no flashing through the valve for the pressure drops listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.

② Suction capacities for R404a are based on 40°C liquid and 5°C superheat entering the valve at the pressure drops and evaporator temperatures listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.

③ Hot gas heat reclaim capacities are in terms of heat of condensation rejected at the condenser and are based on saturated inlet conditions at pressures equivalent to the condensing temperatures and for the pressure drops listed.

For other refrigerants please use VSP2 Valve Selection Program.

R-410a (KW)

Port Size	kv	Liquid Capacities ①		Suction Capacities ②		Hot Gas Reclaim ③					
		0.14 bar ΔP	0.27 bar ΔP	0.14 bar ΔP		21°C Condensing		30°C Condensing		35°C Condensing	
mm	m³/h			-10°C	-20°C	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP
20 30%	4,3	69	96	10	8	31	37	32	39	32	38
20 65%	7	112	156	17	14	51	61	53	63	51	61
20	9,5	152	211	22	18	69	82	71	85	70	83
25	12	192	267	28	23	87	104	90	107	88	105
32	15,6	250	347	37	30	114	135	117	140	115	136
40	28	448	623	66	54	204	243	211	251	206	245
50	47,6	762	1059	112	92	347	413	358	426	350	416

All capacities are maximum for the conditions listed and have no reserve for excess loads.

① Liquid capacities for R410a are based on 40°C condensing and 5°C evaporator temperatures with no flashing through the valve for the pressure drops listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.

② Suction capacities for R410a are based on 40°C liquid and 5°C superheat entering the valve at the pressure drops and evaporator temperatures listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.

③ Hot gas heat reclaim capacities are in terms of heat of condensation rejected at the condenser and are based on saturated inlet conditions at pressures equivalent to the condensing temperatures and for the pressure drops listed.

For other refrigerants please use VSP2 Valve Selection Program.

Solenoid Valve

New Products

R-507a (KW)

Port Size	kv	Liquid Capacities ①		Suction Capacities ②		Hot Gas Reclaim ③					
		0.14 bar ΔP	0.27 bar ΔP	0.14 bar ΔP		21°C Condensing		30°C Condensing		35°C Condensing	
mm	m³/h			-10°C	-20°C	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP
20 30%	4,3	43	69	7	5	23	28	24	29	23	28
20 65%	7	70	112	11	9	38	45	39	47	38	45
20	9,5	95	152	15	12	52	62	53	63	52	62
25	12	120	192	19	15	65	78	67	80	65	78
32	15,6	155	249	25	20	85	101	87	104	85	101
40	28	279	447	44	35	152	181	157	187	152	182
50	47,6	474	760	75	60	259	308	267	317	259	309

All capacities are maximum for the conditions listed and have no reserve for excess loads.

① Liquid capacities for R507a are based on 40°C condensing and 5°C evaporator temperatures with no flashing through the valve for the pressure drops listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.

② Suction capacities for R507a are based on 40°C liquid and 5°C superheat entering the valve at the pressure drops and evaporator temperatures listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.

③ Hot gas heat reclaim capacities are in terms of heat of condensation rejected at the condenser and are based on saturated inlet conditions at pressures equivalent to the condensing temperatures and for the pressure drops listed.

For other refrigerants please use VSP2 Valve Selection Program.

How to order

How to order										
	1		2		3		4		5	
	PS4	.	C	.	020	.	WN	.	025	
1	Parker Solenoid Valve									
2	C = stainless steel; W = forged steel									
3	port size									
4	DIN, butt weld ends									
5	connection size									

Please order coils separately

How to order coils		
Article No.:	**Volts**	**Herz**
SPULE.RS.024.50.PS4	24	DC
SPULE.RS.230.50.PS4	230	50

All coils with quick connector

S8 Strainer-Solenoid

New Products

Type: **S8ST**
Port Sizes: **15mm** (½")

Purpose

The S8ST provides a safe and economical solution for small capacity lines. These products feature a weld-in construction which offers increased safety over traditional two-bolt flange connections. These valve stations come standard with an integrated strainer which eliminates the need to order and install additional components. The S8ST is based on the proven S8F solenoid valves and RSF strainers; sharing common components which reduces complexity and spare part requirements.

Product Features

- Suitable for ammonia and halocarbon refrigerants
- Integrated 60 mesh strainer
- Interchangeable components with S8F solenoids and RSF strainer
- Comes standard with corrosion resistant plating
- Weld in design eliminates potential leak points
- Coils options to meet various applications
- Complies with PED 2014/68/EU
- DN15 (½") and DN20 (¾") connections in SW, ANSI BW, or DIN BW designs

Technical Data

- Liquid Temperature Range:
  -50°C to 105°C (-58°F to 221°F)
- Ambient Temperature Range:
  During operation
  50°C to 60°C (-58°F to 140°F)
- Max Working Pressure:
  32 bar (465 psig)
- MOPD: 21 bar (305 psid)
- Port Size: DN15 (½")
- Connections (SW, ANSI BW, DIN BW):
  DN15 (½")
  DN20 (¾")

S8 Strainer-Solenoid

New Products

Type: **S8ST**
Port Sizes: **15mm** (½")

Refrigerant	Liquid Capacities [kW] ①		Suction Capacities [kW] ②				Notes
	0.14 bar ΔP	0.27 bar ΔP	0.07 bar ΔP		0.14 bar ΔP		
			-10°C	-20°C	-10°C	-20°C	
R717	249	346	9.3	7.5	13	11	① Liquid capacities are based on -7°C with no flashing and -15°C evaporator temperature and no liquid overfeed. For liquid overfeed, multiply evaporator KW by recirculating rate and size valve to the KW result. Use of -7°C liquid for capacities in this table is sufficiently accurate for most liquid overfeed systems. To convert for 30°C input, multiply values in the table by 0.9. ② Suction capacities are based on 30°C condensing temperature and the evaporator temperatures listed.
R134a	38	52	2.4	1.9	3.4	2.6	① Liquid capacities are based on 40°C condensing and 5°C evaporator temperatures with no flashing through the valve for the pressure drops listed. For each 5°C liquid is below 40°C, INCREASE values by 5%. ② Suction capacities are based on 40°C liquid and 5°C superheat entering the valve at the pressure drops and evaporator temperatures listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.
R404a	26	36	2.6	2.1	3.7	3.0	
R410a	37	52	3.9	3.2	5.5	4.5	
R507a	25	35	2.6	2.1	3.7	2.9	

All capacities are maximum for the conditions listed and have no reserve for excess loads.

For other refrigerants please use VSP2 Valve Selection Program.

How to order

How to order							
	1		2		3		4
	S8FST	.	013	.	WN	.	015
1	S8 solenoid valve with strainer						
2	valve port size						
3	DIN, butt weld ends						
4	connection size						

Please order coils separately

How to order coils		
Article No.:	**Volts**	**Herz**
SPULE.RS.024.50	24	50
SPULE.RS.115.50	115	50
SPULE.RS.230.50	230	50
SPULE.RS.240.50	240	50

All coils with quick connector

S8 Valve Station

New Products

Type: **S8VS**
Port Sizes: **15mm** (½")

Purpose

The S8VS provides a safe and economical solution for small capacity lines. These products feature a weld-in construction which offers increased safety over traditional two-bolt flange connections. These valve stations come standard with an integrated strainer which eliminates the need to order and install additional components. The S8VS is based on the proven S8F solenoid valves and RSF strainers and R/S hand valves; sharing common components which reduces complexity and spare part requirements.

Product Features

- Suitable for ammonia and halocarbon refrigerants
- Integrated 60 mesh strainer
- Interchangeable components with S8F solenoids and RSF strainer
- Comes standard with corrosion resistant plating
- Weld in design eliminates potential leak points
- Coils options to meet various applications
- Complies with PED 2014/68/EU
- DN15 (½") and DN20 (¾") connections in SW, ANSI BW, or DIN BW designs
- Seal caps have integral wrench feature with provision for lock out/tag out or valve tag

Technical Data

- Liquid Temperature Range:
  -50°C to 105°C (-58°F to 221°F)
- Ambient Temperature Range:
  During operation
  -50°C to 60°C (-58°F to 140°F)
- Max Working Pressure:
  32 bar (465 psig)
- MOPD: 21 bar (305 psid)
- Port Size: DN15 (½")
- Connections (SW, ANSI BW, DIN BW):
  DN15 (½")
  DN20 (¾")
- Position 4 options:
  Isolation valve
  Stop expansion valve
  Stop/check

S8 Valve Station

New Products

Type: **S8VS**
Port Sizes: **15mm** (½")

Refrigerant	Liquid Capacities [kW] ①		Suction Capacities [kW] ②				Notes
	0.14 bar ΔP	0.27 bar ΔP	0.07 bar ΔP		0.14 bar ΔP		
			-10°C	-20°C	-10°C	-20°C	
R717	249	346	9.3	7.5	13	11	① Liquid capacities are based on -7°C with no flashing and -15°C evaporator temperature and no liquid overfeed. For liquid overfeed, multiply evaporator KW by recirculating rate and size valve to the KW result. Use of -7°C liquid for capacities in this table is sufficiently accurate for most liquid overfeed systems. To convert for 30°C input, multiply values in the table by 0.9. ② Suction capacities are based on 30°C condensing temperature and the evaporator temperatures listed.
R134a	38	52	2.4	1.9	3.4	2.6	① Liquid capacities are based on 40°C condensing and 5°C evaporator temperatures with no flashing through the valve for the pressure drops listed. For each 5°C liquid is below 40°C, INCREASE values by 5%. ② Suction capacities are based on 40°C liquid and 5°C superheat entering the valve at the pressure drops and evaporator temperatures listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.
R404a	26	36	2.6	2.1	3.7	3.0	
R410a	37	52	3.9	3.2	5.5	4.5	
R507a	25	35	2.6	2.1	3.7	2.9	

All capacities are maximum for the conditions listed and have no reserve for excess loads.

For other refrigerants please use VSP2 Valve Selection Program.

How to order

How to order									
	1		2		3		4		5
	S8VS	.	013	.	WN	.	015	.	1
1	S8 solenoid valve with strainer								
2	valve port size								
3	DIN, butt weld ends								
4	connection size								
5	last position: 1=shut-off; 2=expansion; 3=stop/check; 4=stop/check/expansion								

Please order coils separately

How to order coils		
Article No.:	**Volts**	**Herz**
SPULE.RS.024.50	24	50
SPULE.RS.115.50	115	50
SPULE.RS.230.50	230	50
SPULE.RS.240.50	240	50

All coils with quick connector

A4 Adaptomode® Series Pressure Regulators

The A4 family of regulators includes valves that control inlet, outlet or differential pressure. Each regulator is available with an assortment of additional variations which enable one regulator to perform several functions. The most common arrangements are shown on the following pages 33.

DIN Specifications

Body: 20mm - 100mm (3/4"–4")	Ductile Iron (DIN GGG 40.3)
Temperature Range: 20mm -100mm (3/4"–4")	-45°C – 105°C (-50°F – 220°F)
Maximum Rated Pressure (MRP)	28 bar (406 psig)
Maximum Operating Pressure Differeance (MOPD) S, B and D verisons only	20.7 bard (300 psid)

General Information

Port Size		Reduced Capacity Plugs	Type	Flow Coefficient		Connections Available			
mm	inch			Kv	Cv	FPT	SW, WN	ODS	WN (DN)
20	3/4	50% 17%	A4A A4A A4A	6.2 3.1 1.0	7.2 3.6 1.2	3/4", 1", 1 1/4"	3/4", 1", 1 1/4"	7/8", 1 1/8", 1 3/8"	20, 25, 32
25	1	①	A4A	8.6	10	3/4", 1", 1 1/4"	3/4", 1", 1 1/4"	7/8", 1 1/8", 1 3/8"	20, 25, 32
32	1 1/4	35%	A4A A4A	15 5.2	18 6.1	1 1/4", 1 1/2"	1 1/4", 1 1/2"	1 5/8"	32
40	1 5/8	35%	A4A A4A	29 10	33 12	1 1/2", 2"	1 1/2", 2"	2 1/8", 2 5/8"	38, 50
50	2	②	A4A	42	50	1 1/2", 2"	1 1/2", 2"	2 1/8", 2 5/8"	38, 50
65	2 1/2	35%	A4A A4A	60 21	70 25	—	2 1/2", 3"	2 5/8", 3 1/8"	65, 75
75	3	35%	A4A A4A	86 30	100 35	—	3"	3 1/8", 3 5/8"	75
100	4	35%	A4A A4A	130 38	150 44	—	4"	4 1/8	100
125	5	STD	A4W	170	200	—	5" WN only	—	—

Standard connection styles: FPT for 20mm - 50mm (3/4" - 2"); SW for 65mm - 100mm (21/2" - 4").
Standard size and style will be furnished unless specified otherwise.

① All 20mm (3/4") plugs also fit in 25mm (1") valves.
② All 40mm (15/8") plugs also fit in 50mm (2") valves.

A4 regulators with variations are factory assembled and tested.

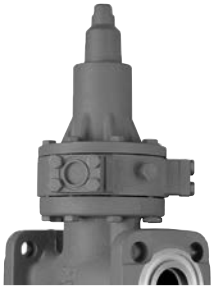
For other refrigerants please use VSP2 Valve Selection Program.

A4 Adaptomode® Series Pressure Regulators

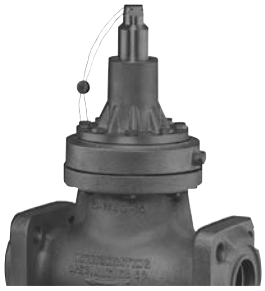
A4A
Basic Inlet

A4A0
Outlet Pressure Regulator

A4AL
Differential Pressure Regulator



A4AZ
Inlet Pressure Regulator
with Modudapter®

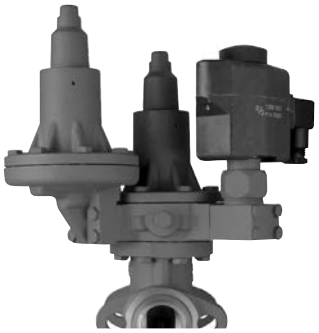


A4AK
Re-seating Relief
Regulator

A4AP
Pneumatically
Compensated Regulator

A4AB
Inlet Pressure Regulator
with Wide Opening Feature

A4AS
Inlet Pressure Regulator
with Electric Shut-Off Feature



A4AD
Dual Inlet Pressure Regulator

A4AM
Electrically Compensated
Inlet Pressure Regulator

A4 Adaptomode® Series Pressure Regulators

Application Guide

There are many possible combinations of A4 regulator variations. The electric shut-off (S), electric wide-opening (B) and dual pressure (D) variations are often combined with each other. Or they may be used in combination with the compensated (M, P, 3P and T), outlet pressure (O) or differential pressure (L) regulators. Remote configurations of most variations are available using the A4R regulator separate from pilot controls.
The A4A Series flanged body regulators are available with 20mm – 100mm (3/4" – 4") ports.
The A4W Series weld end body regulators are available with 125mm (5") ports.

Variation	Type Suffix	Type	Function	Operation	Typical Applications
Basic Regulator	—	A4A A4W	Control inlet pressure	Operates at present inlet pressure. Can be field adjusted. Opens on rising inlet pressure.	1. Evaporator pressure control 2. Condenser pressure control 3. Any inlet pressure control
Electric Shut-Off	S	A4AS A4WS	Control inlet pressure or shut off regulator	Regulates when electrically energized; closed when not energized.	1. Open for temperature control 2. Closed for defrosting
Electric Wide Opening	B	A4AB A4WB	Control inlet pressure or wide open regulator	Regulates when not electrically energized; wide open when energized.	1. Wide open for maximum cooling 2. Regulating for defrost 3. Regulating for temperature control.
Dual Pressure	D	A4AD A4WD	Dual pressure control	Regulates at lower pressure when electrically energized; at higher pressure when not energized.	1. Higher pressure for defrost 2. Higher pressure for temperature control. 3. Internal pressure relief.
Re-seating Relief	K	A4AK	Re-seating relief regulator	Open wide above set point. Repeatedly re-seats after operation.	1. Defrost relief 2. Non-atmospheric relief 3. High to low relief
Outlet Pressure Regulator	O	A4AO A4WOE	Control outlet pressure	Regulates at preset outlet pressure. Can be field adjusted. Opens on a drop in outlet pressure.	1. Crankcase pressure regulation 2. Hot gas bypass; booster loading 3. Receiver pressure control
Differential Pressure Regulator	L	A4AL	Control pressure difference across regulator	Regulates pressure difference at or below a pre-set amount.	1. Liquid pump relief regulator 2. Reduce liquid or vapor line pressure
Electrically Compensated	M	A4AM A4WM	Motor changes pressure set-point	Potentiometer or solid state type thermostat readjusts set-point to match evaporator temperature to a varying load.	1. Precise control of process cooling 2. Liquid chillers 3. For load change compensation
Pneumatically Compensated	P 3P	A4AP A4WP A4A3P A4W3P	Air pressure changes set-point (1:1 ratio); A4A3P for 3:1 ratio	Pneumatic thermostat readjusts set-point to match evaporator temperature to a varying load.	1. Precise control of process cooling 2. Liquid chillers 3. For load change compensation
Electronic Pilot Operated	J	A4AJ	Electronic signal controls regulator opening	Pilot position is proportional to electronic signal.	1. Precise control 2. Liquid chiller 3. System with load change
Externally Equalized	E	A4AE A4AOE A4AOES	Control at external pressure sensed remote from valve	Same as standard regulator except controlled pressure is sensed away from regulator.	1. Low Pressure drop (A4AE) 2. Hot gas bypass (A4AOE)
Main regulator for Remote Pilot	R	A4AR A4WR	Main regulator is controlled by separate pilots	Main regulator modulates, closes or opens in response to remote pilots.	1. Simple inventory of regulator and pilots 2. Convenient placement of pilots 3. Unusual pilots or circuits
Basic Regulator Assembly	Z	A4AZ	Complete regulator assembly to which modules can be added.	Can be built into most of the A4A variation regulators. Has a Modudapter® and two Moduplates®.	Versatile unit for inventory along with Adaptomode Modules sold separately.

These are the most common variations of the type A4 regulator. For other combinations, please consult factory.

A4 Adaptomode® Series Pressure Regulators

Modudapter® (MD, SMD)

The special adapter to which the modular solenoid pilot, modular pressure pilot and Moduplate are bolted.
The Series Modudapter (SMD) is used with special regulators such as A4ADS, A4ABDS, etc. and with all A4W regulators.

Furnished with bolts and gaskets. (Standard part of regulators with S, B, D and Z variations)

Port Sizes:
MD25: 20mm - 25mm (3/4"-1")
MD32: 32mm (1 1/4")
MD50: 40mm - 50mm (1 5/8" to 2")
MD65: 65mm (2 1/2")
MD75: 75mm (3")
MD100: 100mm (4")
SMD65: 20mm - 65mm (3/4"-2 1/2") and 125mm - 200mm (5"-8")
SMD100: 75mm - 100mm (3"-4")

Outlet Regulator Kit (OR)

An auxiliary adapter which converts A4A inlet regulators to outlet regulators with OE variation.

Furnished with all internal parts, bolts and gaskets.

Port Sizes:
OR50 for 20mm - 50mm (3/4" - 2")
OR200 for 65mm - 200mm (2 1/2" - 8")

Moduplate® (MP)

Provides blank off or cross-over of pilot circuit on Type A4S or Type A4B.

Attaches to Modudapter. Same for all regulator sizes.

Furnished with bolts and three O-rings.

Vacuum Cartridge (VC)

A pilot seat with vacuum range cartridge. Will change A range A4, A2B or A2D to vacuum range:

500mm Hg - 8.3 bar (20" Hg - 120 psig)

Furnished with diaphragm and necessary gasket. Same for all regulator sizes.

A2D Modular Pressure Pilot

Adds dual (D) variation when combined with Modular Solenoid Pilot. Provides a second higher control pressure.

Furnished with bolts and O-rings. Mounts to Modudapter®.

Port Sizes:
Use A2D2 with 20mm - 25mm (3/4" - 1")
Use A2D with 65mm - 200mm (2 1/2" - 8")
Range A: (standard)
0.35 bar - 10 bar (5 psig - 150 psig)
Range D:
5.2 bar - 19.3 bar (75 psig - 280 psig)

Pressure Bonnet Kit (PK)

Converts any A4, A4O or A2 Series regulator to 1:1 Pressure Compensation (P) variation . Standard in A range. Use with Type VC vacuum cartridge for V range.

Also available 3:1 pressure compensation (3P) variation. Furnished with ¼" FPT bonnet connection for air or refrigerant pressure, bolts and gaskets. 3:1 kit includes above plus auxiliary adapter.

Same for all port sizes.

Type:
PK1 for 1:1 ratio
PK3 for 3:1 ratio

Motor Bonnet Kit (MB)

Converts to electric compensation (M) variation any A4 Series regulator. Standard in A range. Combine with VC vacuum cartridge for V range.

Furnished with bonnet, all internal parts, cam, bolts, gaskets, motor and transformer with 24 Volt secondary to operate motor.

Same for all port sizes.

A4 Adaptomode® Series Pressure Regulators

Pressure Setting Ranges

Code	Set Point Range	Approx. Pressure Change per Turn of Adjustment Screw	Factory Set Point (unless other wise specified)	Factory Set Point "T" (unless other wise specified)
A ①	0.35 - 10 bar (5 - 150 psig)	1.7 bar (25 psig)	2.8 bar (40 psig)	5.5 bar (80 psig)
V	500mm Hg - 8.3 bar (20 in Hg - 120 psig)	1.7 bar (25 psig)	1.0 bar (15 psig)	–
D	5.2 - 19.3 bar (75 - 280 psig)	3.7 bar (53 psig)	9.7 bar (140 psig)	9.7 bar (140 psig)

① Standard
For variations "K" and "BK", the set point is factory set and sealed. Standard set point for each range is shown in the table above. A custom setting may be specified.

Manual Opening and Pressure Adjusting Stem

Port Size		Manual Opening Stem		Pressure Adjusting Stem
mm	inch	Bypass Mode	Regulating Mode	
20 - 100	¾ - 4	Counter-Clockwise	Clockwise	In Increases Set Point
125	5	Clockwise	Counter-Clockwise	In Increases Set Point

How to order

	How to order							
	1		2		3		4	
	A4A	.	B	.	020	.	A	
1	pressure regulator (A4W = with butt weld ends)							
2	type suffix (see table page 35)							
3	port size							
4	code pressure setting range (see table)							

Please order coils and mating flanges separately (see page 77)

How to order coils		
Article No.:	Volts	Herz
SPULE.RS.024.50	24	50
SPULE.RS.115.50	115	50
SPULE.RS.230.50	230	50
SPULE.RS.240.50	240	50

All coils with quick connector

Suction Capacities – A4

R-717 (KW)

Evap T (°C) P (bar)	Pressure Drop (bar)	20mm	25mm	32mm	40mm	50mm	65mm	75mm	100mm	125mm	150mm	200mm
10° 5.14	0.14 0.35 0.70 1.40	51 79 110 150	70 110 153 208	123 193 268 364	235 368 512 694	349 546 758 1029	493 772 1072 1455	704 1103 1532 2079	951 1488 2068 2807	1409 2205 3063 4158	2536 3969 5514 7485	3874 6064 8424 11435
5° 4.14	0.14 0.35 0.70 1.40	46 72 100 135	64 101 139 187	113 176 244 327	215 336 465 625	319 498 689 926	451 704 975 1310	644 1006 1393 1871	869 1359 1880 2526	1288 2013 2785 3742	2319 3623 5014 6736	3542 5535 7660 10291
0° 3.28	0.14 0.35 0.70	42 66 91	59 91 126	103 160 220	196 305 421	290 453 623	411 640 882	587 915 1259	792 1235 1700	1174 1829 2519	2112 3292 4534	3227 5030 6927
-5° 2.53	0.14 0.35 0.70	38 60 81	53 83 113	93 145 198	178 276 378	264 409 560	373 579 792	532 827 1131	719 1117 1527	1065 1654 2263	1917 2978 4073	2928 4549 6223
-10° 1.89	0.14 0.35 0.70	35 54 73	48 74 101	84 130 176	161 249 337	238 368 499	337 521 706	481 744 1008	649 1004 1361	962 1488 2017	1731 2678 3630	2645 4092 5546
-15° 1.35	0.14 0.21 0.35	31 38 48	43 52 66	76 92 116	144 175 222	214 260 329	303 367 465	432 525 665	584 709 898	865 1050 1330	1556 1889 2394	2378 2887 3657
-20° 0.89	0.035 0.14 0.21	14 28 34	20 39 47	34 68 82	66 129 156	97 191 232	137 271 328	196 386 468	265 522 632	392 773 936	706 1391 1685	1079 2126 2575
-25° 0.50	0.035 ① 0.14	13 25	18 34	31 60	58 115	87 170	123 240	175 343	236 464	350 687	630 1236	963 1888
-30° 0.18	0.035 ① 0.14	11 22	16 30	27 53	52 101	77 150	109 212	155 303	210 409	311 606	559 1090	854 1666
-35° *-0.08*	0.035 ① 0.14	10 19	14 26	24 46	46 88	68 131	96 185	137 265	185 358	274 530	493 954	753 1457
-40° *-0.30*	0.035 0.14	8.6 17	12 23	21 40	40 77	59 113	84 161	120 229	162 310	240 459	432 825	660 1261

Capacities for R717 are based on 30°C liquid. Capacities are maximum and have no reserve for excess loads. Capacities apply to any A4A or A4W regulator (or S4A and S4W) regardless of variation used.

Sub-cooled liquid: For each 5°C liquid is colder than base temperature, increase table valves 3% for R717.

① 0.034 bar pressure drop capacities apply only to regulators with LPD (low pressure drop) variation.
② The 20mm regulator is available with throttling plug capacities equivalent to approximately 50% and 17% of the ratings in the tables.
③ The 32mm, 40mm, and 65mm - 100mm are available with throttling plug capacities equivalent to approximately 35% of the ratings in the tables.

Note: For liquid overfeed applications (nominal 2:1 to 5:1 ratio), add 20% to the evaporator load and select a regulator based on this increased load value.

For other refrigerants please use VSP2 Valve Selection Program.

Suction Capacities – A4

R-134a (KW)

Evap T (°C) P (bar)	Pressure Drop (bar)	20mm	25mm	32mm	40mm	50mm	65mm	75mm	100mm	125mm	150mm	200mm
10° 3.13	0.14 0.7	14 29	19 41	33 71	64 136	94 202	133 285	190 407	257 550	381 815	686 1466	1047 2240
5° 2.48	0.14 0.7	12 26	17 36	30 64	57 122	85 180	120 255	172 364	232 491	343 728	618 1310	944 2001
0° 1.91	0.14 0.7	11 23	15 32	27 56	51 108	76 160	108 226	154 323	208 436	308 645	555 1162	848 1775
-5° 1.42	0.14 0.7	10 20	14 28	24 50	46 95	68 140	96 198	138 284	186 383	275 567	496 1021	757 1560
-10° 0.99	0.14 0.7	8.8 18	12 25	21 43	41 82	61 122	86 172	122 246	165 332	245 492	441 886	674 1354
-15° 0.63	0.14 0.7	7.8 15	11 21	19 37	36 70	54 104	76 147	108 210	146 284	217 420	390 756	596 1155
-20° 0.31	0.14 0.35	6.9 10	10 14	17 25	32 48	47 70	67 100	95 142	129 192	190 285	343 512	524 783
-25° 0.05	0.14 0.35	6.0 8.8	8.3 12	15 21	28 41	41 60	58 85	83 122	112 164	166 243	299 438	457 670
-30° *-0.17*	0.035 ① 0.14	2.7 5.2	3.7 7.2	6.5 13	12 24	18 36	26 50	37 72	50 97	75 144	134 259	205 395
-35° *-0.35*	0.035 ① 0.14	2.3 4.4	3.2 6.1	5.7 11	11 21	16 30	23 43	32 61	44 83	65 123	116 221	178 338
-40° *-0.50*	0.035 ① 0.14	2.0 3.7	2.8 5.2	4.9 9.1	9.3 17	14 26	19 36	28 52	38 70	56 104	100 187	153 285

R-404a (KW)

Evap T (°C) P (bar)	Pressure Drop (bar)	20mm	25mm	32mm	40mm	50mm	65mm	75mm	100mm	125mm	150mm	200mm
10° 7.26	0.14 0.7	15 33	21 46	37 80	70 152	103 226	146 319	209 456	282 616	417 912	751 1641	1147 2508
5° 6.11	0.14 0.7	14 30	19 41	33 72	63 138	94 204	132 288	189 412	255 556	378 824	681 1483	1040 2265
0° 5.09	0.14 0.7	12 27	17 37	30 65	57 124	85 183	120 259	171 370	231 500	342 741	615 1334	939 2038
-5° 4.18	0.14 0.7	11 24	15 33	27 58	51 111	76 164	108 232	154 332	207 448	307 663	553 1194	845 1824
-10° 3.38	0.14 0.7	10 21	14 30	24 52	46 99	68 146	96 207	138 295	186 398	275 590	496 1063	757 1624
-15° 2.67	0.14 0.7	8.8 19	12 26	21 46	41 87	61 129	86 183	123 261	166 352	246 522	442 940	676 1436
-20° 2.06	0.14 0.35	7.9 12	11 17	19 30	36 56	54 84	76 118	109 169	147 228	218 338	393 608	600 928
-25° 1.52	0.14 0.35	6.9 11	10 15	17 26	32 50	48 73	67 104	96 148	130 200	193 297	347 534	530 816
-30° 1.06	0.035 ① 0.14	3.1 6.1	4.3 8.5	7.5 15	14 28	21 42	30 59	43 85	58 114	86 169	154 304	236 465
-35° 0.67	0.035 ① 0.14	2.7 5.3	3.8 7.4	6.6 13	13 25	19 37	26 52	38 74	51 100	75 147	135 265	206 406
-40° 0.34	0.035 ① 0.14	2.4 4.6	3.3 6.4	5.7 11	11 21	16 32	23 45	33 64	44 86	65 128	118 230	180 351

Capacities for R134a and R404a are based on 40°C (100°F) liquid and 5°C (10°F) superheat entering the regulator. Capacities are maximum and have no reserve for excess loads. Capacities apply to any A4A or A4W regulator (or S4A and S4W) regardless of variation used.

Sub-cooled liquid: For each 5°C/10°F liquid is colder than base temperature, increase table valves 4% for R134a and R404a.

① 0.034 bar (0.5 psig) pressure drop capacities apply only to regulators with LPD (low pressure drop) Variation.
② 20mm (3/4") regulator is available with throttling plug capacities equivalent to approximately 50% and 17% of the ratings in the tables.
③ The 32mm (11/4"), 40mm (15/8"), and 65mm - 100mm (21/2" - 4") are available with throttling plug capacities equivalent to approximately 35% of the ratings in the tables.

Note: For liquid overfeed applications (nominal 2:1 to 5:1 ratio), add 20% to the evaporator load and select a regulator based on this increased load value.

For other refrigerants please use VSP2 Valve Selection Program.

Suction Capacities – A4

R-410a (KW)

Evap T (°C) P (bar)	Pressure Drop (bar)	20mm	25mm	32mm	40mm	50mm	65mm	75mm	100mm	125mm	150mm	200mm
10° 9.87	0.14 0.7	21 47	29 65	51 113	98 216	146 320	206 453	294 647	397 873	589 1293	1059 2328	1618 3557
5° 8.35	0.14 0.7	19 43	27 59	47 104	90 198	134 293	189 414	270 592	364 799	540 1183	972 2130	1484 3254
0° 6.99	0.14 0.7	18 39	25 54	43 94	82 180	122 267	173 377	247 539	333 728	493 1079	888 1941	1357 2966
-5° 5.79	0.14 0.7	16 35	22 49	39 86	75 163	111 242	157 343	225 489	303 661	450 979	809 1762	1236 2692
-10° 4.73	0.14 0.7	15 32	20 44	36 77	68 148	101 219	143 310	204 442	276 597	408 884	735 1592	1122 2432
-15° 3.80	0.14 0.7	13 29	18 40	32 70	62 133	91 197	129 278	185 397	249 536	369 795	664 1431	1015 2186
-20° 2.99	0.14 0.35	12 19	17 26	29 45	55 86	82 128	116 181	166 259	224 349	332 517	598 931	914 1422
-25° 2.29	0.14 0.35	11 17	15 23	26 40	50 77	74 114	104 162	149 231	201 312	298 462	536 831	819 1270
-30° 1.69	0.035 ① 0.14	4.8 9.6	6.7 13	12 23	22 44	33 66	47 93	67 133	91 179	134 266	242 478	369 730
-35° 1.18	0.035 ① 0.14	4.3 8.5	6.0 12	10.4 21	20 39	30 58	42 82	60 118	81 159	119 235	215 424	328 647
-40° 0.74	0.035 ① 0.14	3.8 7.5	5.3 10.4	9.2 18	18 35	26 51	37 73	53 104	71 140	105 207	190 373	290 570

R-507a (KW)

Evap T (°C) P (bar)	Pressure Drop (bar)	20mm	25mm	32mm	40mm	50mm	65mm	75mm	100mm	125mm	150mm	200mm
10° 7.45	0.14 0.7	15 33	21 45	36 79	69 151	102 223	144 316	206 451	279 609	413 903	743 1625	1135 2483
5° 6.28	0.14 0.7	13 29	19 41	33 71	62 136	93 202	131 285	187 408	252 550	374 815	673 1467	1028 2242
0° 5.23	0.14 0.7	12 26	17 37	30 64	56 122	84 181	118 257	169 366	228 495	338 733	608 1319	928 2016
-5° 4.30	0.14 0.7	11 24	15 33	27 57	51 110	75 162	106 230	152 328	205 443	304 656	547 1180	835 1804
-10° 3.48	0.14 0.7	10 21	14 29	24 51	45 97	67 144	95 204	136 292	184 394	272 584	489 1050	748 1605
-15° 2.76	0.14 0.7	8.7 19	12 26	21 45	40 86	60 128	85 181	121 258	164 348	242 516	436 929	667 1419
-20° 2.13	0.14 0.35	7.7 12	11 17	19 29	36 56	53 82	75 117	108 167	145 225	215 333	387 600	592 916
-25° 1.59	0.14 0.35	6.8 11	9.5 15	17 26	32 49	47 72	66 102	95 146	128 197	190 293	342 527	522 805
-30° 1.12	0.035 ① 0.14	3.0 6.0	4.2 8.3	7.4 15	14 28	21 41	30 58	42 83	57 112	84 167	152 300	232 458
-35° 0.71	0.035 ① 0.14	2.7 5.2	3.7 7.3	6.5 13	12 24	18 36	26 51	37 73	50 98	74 145	133 261	203 399
-40° 0.37	0.035 ① 0.14	2.3 4.5	3.2 6.3	5.6 11	11 21	16 31	22 44	32 63	43 85	64 125	115 226	176 345

Capacities for R410a and R507a are based on 40°C (100°F) liquid and 5°C (10°F) superheat entering the regulator. Capacities are maximum and have no reserve for excess loads. Capacities apply to any A4A or A4W regulator (or S4A and S4W) regardless of variation used.

Sub-cooled liquid: For each 5°C/10°F liquid is colder than base temperature, increase table valves 4% for R410a and R507a.

① 0.034 bar (0.5 psig) pressure drop capacities apply only to regulators with LPD (low pressure drop) Variation.
② 20mm (3/4") regulator is available with throttling plug capacities equivalent to approximately 50% and 17% of the ratings in the tables.
③ The 32mm (11/4"), 40mm (15/8"), and 65mm - 100mm (21/2" - 4") are available with throttling plug capacities equivalent to approximately 35% of the ratings in the tables.

Note: For liquid overfeed applications (nominal 2:1 to 5:1 ratio), add 20% to the evaporator load and select a regulator based on this increased load value

For other refrigerants please use VSP2 Valve Selection Program.

Liquid Capacities – A4 (typical application: screw compressor oil feed control)

R-717 (KG/MIN & M³/HR)

Liquid Temp (°C)	Press. Drop (bar)	20mm		25mm		32mm		40mm		50mm		65mm		75mm		100mm	
		kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr
5° -20° -40°	0.69	68 70 71	68 70 71	95 97 99	95 97 99	165 169 172	165 169 172	314 323 329	314 323 329	466 478 487	466 478 487	658 676 688	658 676 688	941 966 984	941 966 984	1271 1304 1328	1271 1304 1328
5° -20° -40°	1.03	83 86 87	83 86 87	116 119 121	116 119 121	202 207 211	202 207 211	385 395 402	385 395 402	571 586 597	571 586 597	806 828 843	806 828 843	1152 1183 1205	1152 1183 1205	1556 1597 1627	1556 1597 1627
5° -20° -40°	1.38	96 99 101	96 99 101	134 137 140	134 137 140	233 239 244	233 239 244	445 456 465	445 456 465	659 676 689	659 676 689	931 956 973	931 956 973	1331 1366 1391	1331 1366 1391	1797 1844 1879	1797 1844 1879

R-134a (KG/MIN & M³/HR)

Liquid Temp (°C)	Press. Drop (bar)	20mm		25mm		32mm		40mm		50mm		65mm		75mm		100mm	
		kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr
5° -20° -40°	0.69	97 100 102	4.6 4.4 4.3	134 139 142	6.3 6.1 6.0	235 242 247	11 11 10	447 461 471	21 20 20	663 683 698	31 30 30	937 966 986	44 43 42	1339 1380 1410	63 61 60	1808 1863 1904	85 82 81
5° -20° -40°	1.03	119 122 125	5.6 5.4 5.3	165 170 173	7.7 7.5 7.3	287 296 303	13 13 13	548 565 577	26 25 24	813 837 855	38 37 36	1148 1183 1208	54 52 51	1641 1690 1727	77 75 73	2216 2282 2332	104 101 99
5° -20° -40°	1.38	137 141 144	6.4 6.2 6.1	190 196 200	8.9 8.7 8.5	332 342 349	16 15 15	632 652 666	30 29 28	938 967 988	44 43 42	1325 1366 1395	62 60 59	1893 1951 1994	89 86 84	2556 2635 2692	120 116 114

R-404a (KG/MIN & M³/HR)

Liquid Temp (°C)	Press. Drop (bar)	20mm		25mm		32mm		40mm		50mm		65mm		75mm		100mm	
		kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr
5° -20° -40°	0.69	91 95 97	4.8 4.7 4.5	126 131 135	6.7 6.5 6.3	221 229 235	12 11 11	421 437 449	22 21 21	624 648 665	33 32 31	881 916 940	47 45 44	1259 1309 1343	67 64 63	1700 1767 1814	90 87 85
5° -20° -40°	1.03	112 116 119	5.9 5.7 5.6	155 161 165	8.2 7.9 7.7	270 281 288	14 14 13	515 536 550	27 26 26	764 794 815	41 39 38	1079 1122 1151	57 55 54	1542 1603 1645	82 79 77	2082 2165 2222	111 106 104
5° -20° -40°	1.38	129 134 138	6.8 6.6 6.4	179 186 191	9.5 9.1 8.9	312 324 333	17 16 16	595 618 635	32 30 30	882 917 941	47 45 44	1246 1295 1329	66 64 62	1780 1851 1900	94 91 89	2404 2499 2565	128 123 120

Capacities are based on -18°C (0°F) liquid ammonia and no flash gas.
For evaporator temperatures between 4°C to -40°C (40°F to -40°F), capacities are within 5%.
Correction factors for temperatures between -40°C (-40°F) and 30°C (86°F) are negligible.

① 20mm (3/4") regulator is available with throttling plug capacities equivalent to approximately 50% and 17% of the ratings in the tables.
② The 32mm (11/4"), 40mm (15/8"), and 65mm - 100mm (21/2" - 4") are available with throttling plug capacities equivalent to approximately 35% of the ratings in the tables.

For other refrigerants please use VSP2 Valve Selection Program.

Liquid Capacities – A4 (typical application: screw compressor oil feed control)

R-410a (KG/MIN & M³/HR)

Liquid Temp (°C)	Press. Drop (bar)	20mm		25mm		32mm		40mm		50mm		65mm		75mm		100mm	
		kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr
5° -20° -40°	0.69	92 96 98	4.8 4.6 4.5	128 133 136	6.7 6.4 6.2	222 232 238	12 11 11	424 441 453	22 21 21	629 654 672	33 32 31	888 924 949	46 45 43	1269 1321 1357	66 64 62	1714 1784 1832	89 86 84
5° -20° -40°	1.03	113 117 120	5.9 5.6 5.5	156 163 167	8.2 7.8 7.6	272 284 291	14 14 13	519 541 555	27 26 25	770 801 823	40 39 38	1088 1132 1163	57 55 53	1555 1618 1662	81 78 76	2100 2185 2244	110 105 103
5° -20° -40°	1.38	130 135 139	6.8 6.5 6.4	180 188 193	9.4 9.0 8.8	315 327 336	16 16 15	600 624 641	31 30 29	889 925 950	46 45 43	1256 1307 1343	66 63 61	1795 1868 1919	94 90 88	2424 2523 2591	127 122 118

R-507a (KG/MIN & M³/HR)

Liquid Temp (°C)	Press. Drop (bar)	20mm		25mm		32mm		40mm		50mm		65mm		75mm		100mm	
		kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr
5° -20° -40°	0.69	91 95 98	4.8 4.6 4.5	127 132 135	6.7 6.4 6.3	221 230 236	12 11 11	422 439 450	22 21 21	625 650 668	33 32 31	883 919 943	47 45 44	1262 1313 1348	67 64 62	1705 1773 1820	90 87 84
5° -20° -40°	1.03	112 116 120	5.9 5.7 5.5	155 162 166	8.2 7.9 7.7	271 282 289	14 14 13	516 537 551	27 26 26	766 796 818	40 39 38	1082 1125 1155	57 55 53	1546 1608 1651	82 78 76	2088 2171 2229	110 106 103
5° -20° -40°	1.38	129 134 138	6.8 6.6 6.4	179 187 191	9.5 9.1 8.9	313 325 334	17 16 15	596 620 637	31 30 29	884 920 944	47 45 44	1249 1299 1334	66 63 62	1785 1857 1906	94 91 88	2411 2507 2574	127 122 119

Capacities are based on -18°C (0°F) liquid ammonia and no flash gas.
For evaporator temperatures between 4°C to -40°C (40°F to -40°F), capacities are within 5%.
Correction factors for temperatures between -40°C (-40°F) and 30°C (86°F) are negligible.

① 20mm (3/4") regulator is available with throttling plug capacities equivalent to approximately 50% and 17% of the ratings in the tables.
② The 32mm (11/4"), 40mm (15/8"), and 65mm - 100mm (21/2" - 4") are available with throttling plug capacities equivalent to approximately 35% of the ratings in the tables.

For other refrigerants please use VSP2 Valve Selection Program.

Oil Capacities – A4 (typical application: screw compressor oil feed control)

300 SSU Viscosity (M^3/HR)

For 30°C to 50°C Oil ①			
Port Size (mm)	Pressure Drop		
	0.3 bar	0.7 bar	3.0 bar
20	3.9	5.4	12
25	5.4	7.5	17
32	9.3	13	30
40	18	25	57
50	27	36	84
65	39	52	120
75	54	75	170

① Based on no foaming of oil through regulator.

Hot Gas Bypass Capacities - A4AO (typical application: screw compressor oil feed control)

R-717 (KW)

Inlet Pressure	Outlet Pressure Range	Port Size						
		20mm ①	25mm	32mm	40mm	50mm	65mm	75mm
2.1 bar	0 - 45 cm Hg	120	160	290	550	810	1100	1600
10.3 bar	3.1 bar to 45 cm Hg	380	530	930	1800	2600	3700	5300

Based on near saturated inlet gas and 11 bar (150 psig) ratings for 30°C (86°F) condensing, 2 bar (30 psig) ratings for -7°C (20°F) condensing. Correction no essential for other gas or liquid temperatures.

① For capacities of larger regulators or other conditions, contact factory. Flow coefficients for all sizes are shown on page 5 and may be used for other flow calculation and for larger regulators.

For other refrigerants please use VSP2 Valve Selection Program.

Compact Pressure Regulators – A2

The A2 type pressure regulators are compact, direct diaphragm operated, for use with refrigerant liquid or vapor. The regulators are for use in systems where a small inlet or outlet pressure regulator is needed.

A2B

A2CK

DIN Specifications

Body Ductile Iron	(DIN GGG 40.3)
Temperature Range	-45°C to 105°C (-50°F to 220°F)
Maximum Rated Pressure (MRP)	28 bar (406 psig)

General Information

Type	Description	Flow Coefficient		Ranges Available ③	Connections Available ③	
		Kv	Cv		FPT, SW, WN	DIN Weld Neck
A2B A2BK ① A2BP A2BM	Small Capacity Back Pressure Regulator Relief, Give pressure setting Differential Regulator for ext. connection Electrically Compensated	0.43 0.34 0.43 0.43	0.5 0.4 0.5 0.5	V, A, D A, D A, D V, A, D	¼", ⅜", ½", ¾"	13, 20
A2A	Small Capacity Back Pressure Regulator	1.28	1.5	A, D	¼", ⅜", ½", ¾"	13, 20
A2B01 ② A2B02 ② A2B04 ②	Small Capacity Outlet Pressure Regulator	0.09 0.17 0.43	0.1 0.2 0.5	V, D	¼", ⅜", ½", ¾"	13, 20
A2CK	Relief Regulator – Liquid Lines	0.97	1.14	D	¼", ⅜", ½", ¾"	13, 20

① The A2BK re-seating relief regulator can be used for various relief to low side applications including cold liquid line sections where buildup of dangerous hydrostatic pressure is possible. See "Safe Operation" on the back cover.
② Specify for external pressure connection.
③ Bold face type is standard size. FPT will be furnished unless specified otherwise.

Pressure Setting Ranges

Code	Set Point Range	Approx. Pressure Change per Turn of Adjustment Screw	Factory Set Point (unless other wise specified)
A ①	0.35 to 10 bar (5 to 150 psig)	1.7 bar (25 psig)	2.8 bar (40 psig)
V	500mm Hg to 8.3 bar (20 in Hg to 120 psig)	1.7 bar (25 psig)	1.0 bar (15 psig)
D	5.2 to 19.3 bar (75 to 280 psig)	3.7 bar (53 psig)	9.7 bar (140 psig)

① Standard
For variations "K" and "BK", the set point is factory set and sealed. Standard set point for each range is shown in the table above. A custom setting may be specified by adding the set point in PSIG preceded by "-" at the end of the model number. Set point must be valid for the range selected.

Application Guide

Type	Function	Operation	Typical Applications
A2B	Control inlet pressure	Regulate at preset inlet pressure Filed adjustable Open on rise in inlet pressure	1. Small capacity back pressure regulator 2. Small capacity defrost relief regulator
A2A	Inlet regulator, greater capacity		
A2BO	Control outlet pressure	Regulate at preset outlet pressure Filed adjustable Open on drop in outlet pressure	1. Gas pressure reducing regulator 2. Liquid or oil pressure reducing regulator
A2CK ①	Relief Regulator	Regulate inlet pressure. Factory set	1. Prevent hydrostatic pressure build-up in isolated sections of liquid lines.

① The design of the A2CK valve allows for higher flow and a "quick release" feature. However, it does not offer the same type of controlled response which may be required for a standard regulator application. For those applications where a small regulator is needed for accurate upstream pressure control, and A2A or A2B direct operated regulator should be considered.

Compact Pressure Regulators – A2B, S6N

Function

One main regulator can be controlled by combinations of remote regulators and solenoids to provide a variety of functions. Because of the high cost of installation and the possibility of error in field remote piping, the A4A Series of self-contained regulators is preferred (see pages 5 - 9).

Applications

Typical applications include:

- **Main regulator in an inaccessible location**. Pilot can be located where it can be adjusted and serviced conveniently.
- **When better environment is required**. Remote pilots can solve electrical or pneumatic variation problems.

Typical Remote Combinations

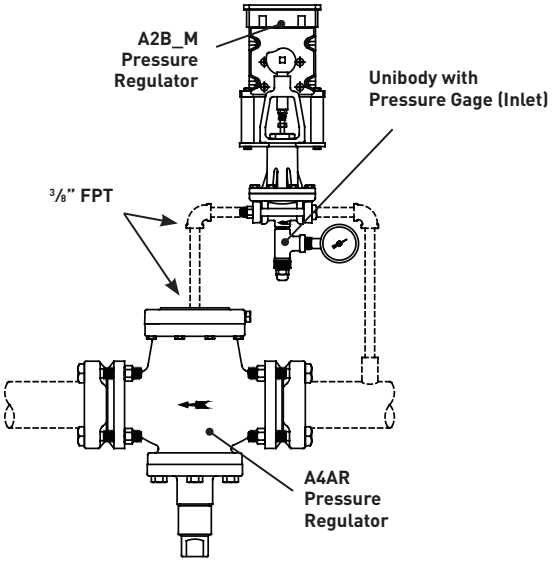


Figure 1: The remote equivalent to a 75mm (3") Type A4AM would use a 75mm (3") A4AR main valve with a A2BM pilot regulator.

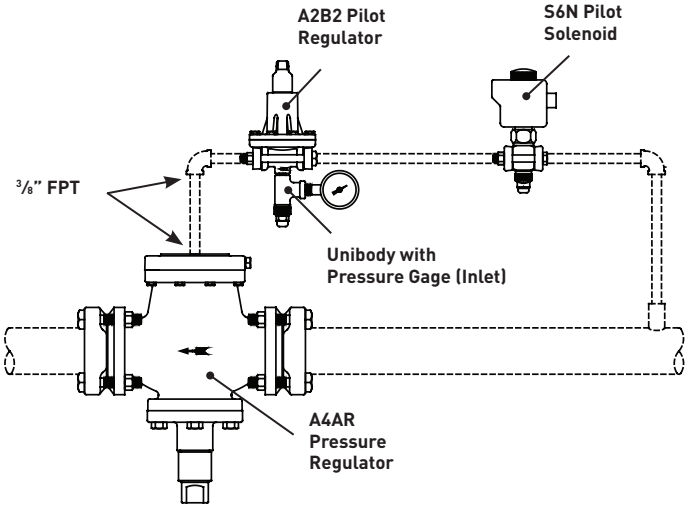


Figure 2: The remote equivalent to a 50mm (2") Type A4AS would use a 50mm (2") A4AR main valve with a A2B2 pilot regulator with an S6N pilot solenoid piped in series.

Any of the A4A or A4W regulators with or without added variations are available as a remote regulator by using an A4AR 20mm - 100mm (¾" - 4") or A4WR 125mm (5") main valve with the suitable pilots.

Type	Description	For use with Main Valve Size and Type	Ranges Available ①	Connections Available ① FPT, SW, WN
A2B2	Inlet Pressure Pilot Regulator	20mm - 50mm (¾" - 2") A4AR	V, A, D	3/8", 1/2", ¾"
A2B	Inlet Pressure Pilot Regulator	65mm - 100mm (2½" - 4") A4AR 125mm (5") A4WR		
A2B02E	Outlet Pressure Pilot Regulator	20mm - 50mm (¾" - 2") A4AR	V, D	3/8", 1/2", ¾"
A2B04E	Outlet Pressure Pilot Regulator	65mm - 100mm (2½" - 4") A4AR 125mm (5") A4WR		

① Bold face type is standard size. FPT will be furnished unless specified otherwise. FPT will be furnished unless specified otherwise.
All of the Pilot Regulators above are available as compensated controls. For Electrically Compensated, add suffix "M", as A2B2M; for Pneumatically Compensated, add suffix "P" or "3P", as A2B2P or A2B23P; for Temperature Compensated, add suffix "T", as A2BT. Temperature range and scale is -30°C to 30°C (-20°F to 80°F).

Suction Capacities – A2

R-717 (KW)

Evap T (°C) P (bar)	Pressure Drop (bar)	A2B	A2BK	A2BP	A2A	A2B01	A2B02	A2B04	A2CK
10° 5.14	0.14 0.34 0.69	3.50 5.47 7.60	2.80 4.38 6.08	3.50 5.47 7.60	10.49 16.42 22.8	0.70 1.09 1.52	1.40 2.19 3.04	3.50 5.47 7.60	16.0 25.1 34.9
5° 4.14	0.14 0.34 0.69	3.20 5.00 6.92	2.56 4.00 5.53	3.20 5.00 6.92	9.59 14.99 20.7	0.64 1.00 1.38	1.28 2.00 2.77	3.20 5.00 6.92	14.7 22.9 31.8
0° 3.28	0.14 0.34 0.69	2.91 4.54 6.25	2.33 3.63 5.00	2.91 4.54 6.25	8.74 13.62 18.7	0.58 0.91 1.25	1.16 1.82 2.50	2.91 4.54 6.25	13.4 20.8 28.7
-5° 2.53	0.14 0.34 0.69	2.64 4.11 5.62	2.11 3.29 4.50	2.64 4.11 5.62	7.93 12.32 16.8	0.53 0.82 1.12	1.06 1.64 2.25	2.64 4.11 5.62	12.1 18.8 25.8
-10° 1.89	0.14 0.34 0.69	2.39 3.69 5.01	1.91 2.96 4.01	2.39 3.69 5.01	7.16 11.08 15.0	0.48 0.74 1.00	0.95 1.48 2.00	2.39 3.69 5.01	10.9 16.9 23.0
-15° 1.35	0.14 0.34	2.15 3.30	1.72 2.64	2.15 3.30	6.44 9.91	0.43 0.66	0.86 1.32	2.15 3.30	9.87 15.1
-20° 0.89	0.14 0.34	1.92 2.93	1.53 2.34	1.92 2.93	5.75 8.79	0.38 0.59	0.77 1.17	1.92 2.93	8.82 13.4
-25° 0.50	0.14 0.34	1.70 2.57	1.36 2.06	1.70 2.57	5.11 7.72	0.34 0.51	0.68 1.03	1.70 2.57	7.84 11.8
-30° 0.18	0.14 0.34	1.50 2.23	1.20 1.79	1.50 2.23	4.51 6.70	0.30 0.45	0.60 0.89	1.50 2.23	6.92 10.2
-35° *-0.08*	0.14 0.34	1.32 1.90	1.05 1.52	1.32 1.90	3.95 5.71	0.26 0.38	0.53 0.76	1.32 1.90	6.05 8.75
-40° *-0.30*	0.14 0.34	1.14 1.57	0.91 1.26	1.14 1.57	3.42 4.71	0.23 0.31	0.46 0.63	1.14 1.57	5.24 7.23

Capacities for R717 are based on 30°C liquid. Capacities are maximum and have no reserve for excess loads. Capacities apply to any A4A or A4W regulator (or S4A and S4W) regardless of variation used.

Sub-cooled liquid: For each 5°C/10°F liquid is colder than base temperature, increase table valves 3% for R717.

Note: For liquid overfeed applications (nominal 2:1 to 5:1 ratio), add 20% to the evaporator load and select a regulator based on this increased load value.

For other refrigerants please use VSP2 Valve Selection Program.

How to order

How to order			
	1		2
	A2B	.	A
1	compact pressure regulator (type see general information table)		
2	code pressure setting range (see table)		

Please order mating flanges separately (see page 76)

Suction Capacities – A2

R-134a (KW)

Evap T (°C) P (bar)	Pressure Drop (bar)	A2B	A2BK	A2BP	A2A	A2B01	A2B02	A2B04	A2CK
10° 5.14	0.14 0.34 0.69	3.50 5.47 7.60	2.80 4.38 6.08	3.50 5.47 7.60	10.49 16.42 22.8	0.70 1.09 1.52	1.40 2.19 3.04	3.50 5.47 7.60	16.0 25.1 34.9
5° 4.14	0.14 0.34 0.69	3.20 5.00 6.92	2.56 4.00 5.53	3.20 5.00 6.92	9.59 14.99 20.7	0.64 1.00 1.38	1.28 2.00 2.77	3.20 5.00 6.92	14.7 22.9 31.8
0° 3.28	0.14 0.34 0.69	2.91 4.54 6.25	2.33 3.63 5.00	2.91 4.54 6.25	8.74 13.62 18.7	0.58 0.91 1.25	1.16 1.82 2.50	2.91 4.54 6.25	13.4 20.8 28.7
-5° 2.53	0.14 0.34 0.69	2.64 4.11 5.62	2.11 3.29 4.50	2.64 4.11 5.62	7.93 12.32 16.8	0.53 0.82 1.12	1.06 1.64 2.25	2.64 4.11 5.62	12.1 18.8 25.8
-10° 1.89	0.14 0.34 0.69	2.39 3.69 5.01	1.91 2.96 4.01	2.39 3.69 5.01	7.16 11.08 15.0	0.48 0.74 1.00	0.95 1.48 2.00	2.39 3.69 5.01	10.9 16.9 23.0
-15° 1.35	0.14 0.34	2.15 3.30	1.72 2.64	2.15 3.30	6.44 9.91	0.43 0.66	0.86 1.32	2.15 3.30	9.87 15.1
-20° 0.89	0.14 0.34	1.92 2.93	1.53 2.34	1.92 2.93	5.75 8.79	0.38 0.59	0.77 1.17	1.92 2.93	8.82 13.4
-25° 0.50	0.14 0.34	1.70 2.57	1.36 2.06	1.70 2.57	5.11 7.72	0.34 0.51	0.68 1.03	1.70 2.57	7.84 11.8
-30° 0.18	0.14 0.34	1.50 2.23	1.20 1.79	1.50 2.23	4.51 6.70	0.30 0.45	0.60 0.89	1.50 2.23	6.92 10.2
-35° *-0.08*	0.14 0.34	1.32 1.90	1.05 1.52	1.32 1.90	3.95 5.71	0.26 0.38	0.53 0.76	1.32 1.90	6.05 8.75
-40° *-0.30*	0.14 0.34	1.14 1.57	0.91 1.26	1.14 1.57	3.42 4.71	0.23 0.31	0.46 0.63	1.14 1.57	5.24 7.23

R-404a (KW)

Evap T (°C) P (bar)	Pressure Drop (bar)	A2B	A2BK	A2BP	A2A	A2B01	A2B02	A2B04	A2CK
10° 7.26	0.14 0.34	0.89 1.39	0.71 1.11	0.89 1.39	2.66 4.17	0.18 0.28	0.35 0.56	0.89 1.39	4.08 6.39
5° 6.11	0.14 0.34	0.80 1.26	0.64 1.01	0.80 1.26	2.41 3.78	0.16 0.25	0.32 0.50	0.80 1.26	3.70 5.79
0° 5.09	0.14 0.34	0.73 1.13	0.58 0.91	0.73 1.13	2.18 3.40	0.15 0.23	0.29 0.45	0.73 1.13	3.34 5.22
-5° 4.18	0.14 0.34	0.65 1.02	0.52 0.82	0.65 1.02	1.96 3.06	0.13 0.20	0.26 0.41	0.65 1.02	3.00 4.69
-10° 3.38	0.14 0.34	0.59 0.91	0.47 0.73	0.59 0.91	1.76 2.73	0.12 0.18	0.23 0.36	0.59 0.91	2.69 4.19
-15° 2.67	0.14 0.34	0.52 0.81	0.42 0.65	0.52 0.81	1.57 2.43	0.10 0.16	0.21 0.32	0.52 0.81	2.40 3.73
-20° 2.06	0.14 0.34	0.46 0.72	0.37 0.57	0.46 0.72	1.39 2.15	0.09 0.14	0.19 0.29	0.46 0.72	2.13 3.30
-25° 1.52	0.14 0.34	0.41 0.63	0.33 0.50	0.41 0.63	1.23 1.89	0.08 0.13	0.16 0.25	0.41 0.63	1.88 2.90
-30° 1.06	0.14 0.34	0.36 0.55	0.29 0.44	0.36 0.55	1.08 1.65	0.07 0.11	0.14 0.22	0.36 0.55	1.65 2.53
-35° 0.67	0.14 0.34	0.31 0.48	0.25 0.38	0.31 0.48	0.94 1.43	0.06 0.10	0.13 0.19	0.31 0.48	1.44 2.19
-40° 0.34	0.14 0.34	0.27 0.41	0.22 0.33	0.27 0.41	0.81 1.22	0.05 0.08	0.11 0.16	0.27 0.41	1.25 1.87

Capacities are based on 40°C (100°F) liquid and 5°C (10°F) superheat entering the regulator. Capacities are maximum and have no reserve for excess loads. Capacities apply to any A4A or A4W regulator (or S4A and S4W) regardless of variation used.

Sub-cooled liquid: For each 5°C/10°F liquid is colder than base temperature, increase table valves 4%.

Note: For liquid overfeed applications (nominal 2:1 to 5:1 ratio), add 20% to the evaporator load and select a regulator based on this increased load value.

For other refrigerants please use VSP2 Valve Selection Program.

Suction Capacities – A2

R-410a (KW)

Evap T (°C) P (bar)	Pressure Drop (bar)	A2B	A2BK	A2BP	A2A	A2B01	A2B02	A2B04	A2CK
10° 9.87	0.14 0.34	1.25 1.96	1.00 1.57	1.25 1.96	3.75 5.89	0.25 0.39	0.50 0.79	1.25 1.96	5.75 9.04
5° 8.35	0.14 0.34	1.15 1.80	0.92 1.44	1.15 1.80	3.44 5.40	0.23 0.36	0.46 0.72	1.15 1.80	5.27 8.28
0° 6.99	0.14 0.34	1.05 1.64	0.84 1.32	1.05 1.64	3.14 4.93	0.21 0.33	0.42 0.66	1.05 1.64	4.82 7.56
-5° 5.79	0.14 0.34	0.96 1.50	0.76 1.20	0.96 1.50	2.87 4.49	0.19 0.30	0.38 0.60	0.96 1.50	4.39 6.88
-10° 4.73	0.14 0.34	0.87 1.36	0.69 1.08	0.87 1.36	2.60 4.07	0.17 0.27	0.35 0.54	0.87 1.36	3.99 6.24
-15° 3.80	0.14 0.34	0.78 1.22	0.63 0.98	0.78 1.22	2.35 3.67	0.16 0.24	0.31 0.49	0.78 1.22	3.61 5.63
-20° 2.99	0.14 0.34	0.71 1.10	0.56 0.88	0.71 1.10	2.12 3.30	0.14 0.22	0.28 0.44	0.71 1.10	3.25 5.05
-25° 2.29	0.14 0.34	0.63 0.98	0.51 0.79	0.63 0.98	1.90 2.94	0.13 0.20	0.25 0.39	0.63 0.98	2.91 4.51
-30° 1.69	0.14 0.34	0.56 0.87	0.45 0.70	0.56 0.87	1.69 2.61	0.11 0.17	0.23 0.35	0.56 0.87	2.60 4.01
-35° 1.18	0.14 0.34	0.50 0.77	0.40 0.61	0.50 0.77	1.50 2.30	0.10 0.15	0.20 0.31	0.50 0.77	2.30 3.53
-40° 0.74	0.14 0.34	0.44 0.67	0.35 0.54	0.44 0.67	1.32 2.01	0.09 0.13	0.18 0.27	0.44 0.67	2.03 3.08

R-507a (KW)

Evap T (°C) P (bar)	Pressure Drop (bar)	A2B	A2BK	A2BP	A2A	A2B01	A2B02	A2B04	A2CK
10° 7.45	0.14 0.34	0.82 1.29	0.61 0.96	0.82 1.29	2.66 4.18	0.20 0.32	0.41 0.64	0.82 1.29	4.10 6.43
5° 6.28	0.14 0.34	0.74 1.16	0.56 0.87	0.74 1.16	2.41 3.78	0.19 0.29	0.37 0.58	0.74 1.16	3.71 5.82
0° 5.23	0.14 0.34	0.67 1.05	0.50 0.79	0.67 1.05	2.18 3.41	0.17 0.26	0.34 0.52	0.67 1.05	3.35 5.24
-5° 4.30	0.14 0.34	0.60 0.94	0.45 0.71	0.60 0.94	1.96 3.06	0.15 0.24	0.30 0.47	0.60 0.94	3.01 4.71
-10° 3.48	0.14 0.34	0.54 0.84	0.40 0.63	0.54 0.84	1.75 2.73	0.13 0.21	0.27 0.42	0.54 0.84	2.70 4.21
-15° 2.76	0.14 0.34	0.48 0.75	0.36 0.56	0.48 0.75	1.56 2.43	0.12 0.19	0.24 0.37	0.48 0.75	2.41 3.74
-20° 2.13	0.14 0.34	0.43 0.66	0.32 0.50	0.43 0.66	1.39 2.15	0.11 0.17	0.21 0.33	0.43 0.66	2.14 3.31
-25° 1.59	0.14 0.34	0.38 0.58	0.28 0.44	0.38 0.58	1.22 1.89	0.09 0.15	0.19 0.29	0.38 0.58	1.88 2.91
-30° 1.12	0.14 0.34	0.33 0.51	0.25 0.38	0.33 0.51	1.07 1.65	0.08 0.13	0.17 0.25	0.33 0.51	1.65 2.53
-35° 0.71	0.14 0.34	0.29 0.44	0.22 0.33	0.29 0.44	0.94 1.42	0.07 0.11	0.14 0.22	0.29 0.44	1.44 2.19
-40° 0.37	0.14 0.34	0.25 0.37	0.19 0.28	0.25 0.37	0.81 1.22	0.06 0.09	0.12 0.19	0.25 0.37	1.25 1.87

Capacities are based on 40°C (100°F) liquid and 5°C (10°F) superheat entering the regulator. Capacities are maximum and have no reserve for excess loads. Capacities apply to any A4A or A4W regulator (or S4A and S4W) regardless of variation used.

Sub-cooled liquid: For each 5°C/10°F liquid is colder than base temperature, increase table valves 4%.

Note: For liquid overfeed applications (nominal 2:1 to 5:1 ratio), add 20% to the evaporator load and select a regulator based on this increased load value.

For other refrigerants please use VSP2 Valve Selection Program.

Liquid Capacities – A2

R-717 (KG/MIN & M³/HR)

Liquid Temp (ºC)	Press. Drop (bar)	A2B		A2BK		A2BP		A2A		A2B01		A2B02		A2B04		A2CK	
		kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr
5º	0.69	4.4	0.4	3.3	0.3	4.4	0.4	14	1.4	1.1	0.1	2.2	0.2	4.4	0.4	22	2.1
-20º		4.5	0.4	3.4	0.3	4.5	0.4	15	1.3	1.1	0.1	2.3	0.2	4.5	0.4	23	2.0
-40º		4.6	0.4	3.4	0.3	4.6	0.4	15	1.3	1.1	0.1	2.3	0.2	4.6	0.4	23	2.0
5º	1.03	5.4	0.5	4.0	0.4	5.4	0.5	18	1.7	1.3	0.1	2.7	0.3	5.4	0.5	27	2.6
-20º		5.5	0.5	4.1	0.4	5.5	0.5	18	1.6	1.4	0.1	2.8	0.2	5.5	0.5	28	2.5
-40º		5.6	0.5	4.2	0.4	5.6	0.5	18	1.6	1.4	0.1	2.8	0.2	5.6	0.5	28	2.4
5º	1.38	6.2	0.6	4.7	0.4	6.2	0.6	20	1.9	1.6	0.1	3.1	0.3	6.2	0.6	31	3.0
-20º		6.4	0.6	4.8	0.4	6.4	0.6	21	1.9	1.6	0.1	3.2	0.3	6.4	0.6	32	2.9
-40º		6.5	0.6	4.9	0.4	6.5	0.6	21	1.8	1.6	0.1	3.3	0.3	6.5	0.6	33	2.8

R-134a (KG/MIN & M³/HR)

Liquid Temp (ºC)	Press. Drop (bar)	A2B		A2BK		A2BP		A2A		A2B01		A2B02		A2B04		A2CK	
		kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr
5º	0.69	6.3	0.3	4.7	0.2	6.3	0.3	20	1.0	1.6	0.1	3.1	0.1	6.3	0.3	31	1.5
-20º		6.4	0.3	4.8	0.2	6.4	0.3	21	0.9	1.6	0.1	3.2	0.1	6.4	0.3	32	1.4
-40º		6.6	0.3	4.9	0.2	6.6	0.3	21	0.9	1.6	0.1	3.3	0.1	6.6	0.3	33	1.4
5º	1.03	7.7	0.4	5.7	0.3	7.7	0.4	25	1.2	1.9	0.1	3.8	0.2	7.7	0.4	38	1.8
-20º		7.9	0.3	5.9	0.3	7.9	0.3	26	1.1	2.0	0.1	3.9	0.2	7.9	0.3	39	1.7
-40º		8.1	0.3	6.1	0.3	8.1	0.3	26	1.1	2.0	0.1	4.0	0.2	8.1	0.3	40	1.7
5º	1.38	8.8	0.4	6.6	0.3	8.8	0.4	29	1.3	2.2	0.1	4.4	0.2	8.8	0.4	44	2.1
-20º		9.1	0.4	6.8	0.3	9.1	0.4	30	1.3	2.3	0.1	4.6	0.2	9.1	0.4	46	2.0
-40º		9.3	0.4	7.0	0.3	9.3	0.4	30	1.3	2.3	0.1	4.7	0.2	9.3	0.4	47	2.0

R-404a (KG/MIN & M³/HR)

Liquid Temp (ºC)	Press. Drop (bar)	A2B		A2BK		A2BP		A2A		A2B01		A2B02		A2B04		A2CK	
		kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr
5º	0.69	5.9	0.3	4.4	0.2	5.9	0.3	19	1.0	1.5	0.1	2.9	0.2	5.9	0.3	29	1.6
-20º		6.1	0.3	4.6	0.2	6.1	0.3	20	1.0	1.5	0.1	3.1	0.2	6.1	0.3	31	1.5
-40º		6.3	0.3	4.7	0.2	6.3	0.3	20	1.0	1.6	0.1	3.1	0.1	6.3	0.3	31	1.5
5º	1.03	7.2	0.4	5.4	0.3	7.2	0.4	23	1.2	1.8	0.1	3.6	0.2	7.2	0.4	36	1.9
-20º		7.5	0.4	5.6	0.3	7.5	0.4	24	1.2	1.9	0.1	3.7	0.2	7.5	0.4	37	1.8
-40º		7.7	0.4	5.8	0.3	7.7	0.4	25	1.2	1.9	0.1	3.8	0.2	7.7	0.4	38	1.8
5º	1.38	8.3	0.4	6.2	0.3	8.3	0.4	27	1.4	2.1	0.1	4.2	0.2	8.3	0.4	42	2.2
-20º		8.6	0.4	6.5	0.3	8.6	0.4	28	1.4	2.2	0.1	4.3	0.2	8.6	0.4	43	2.1
-40º		8.9	0.4	6.7	0.3	8.9	0.4	29	1.3	2.2	0.1	4.4	0.2	8.9	0.4	44	2.1

Liquid Capacities – A2

R-410a (KG/MIN & M³/HR)

Liquid Temp (ºC)	Press. Drop (bar)	A2B		A2BK		A2BP		A2A		A2B01		A2B02		A2B04		A2CK	
		kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr
5º	0.69	5.9	0.3	4.4	0.2	5.9	0.3	19	1.0	1.5	0.1	3.0	0.2	5.9	0.3	30	1.5
-20º		6.2	0.3	4.6	0.2	6.2	0.3	20	1.0	1.5	0.1	3.1	0.1	6.2	0.3	31	1.5
-40º		6.3	0.3	4.8	0.2	6.3	0.3	21	0.9	1.6	0.1	3.2	0.1	6.3	0.3	32	1.4
5º	1.03	7.3	0.4	5.4	0.3	7.3	0.4	24	1.2	1.8	0.1	3.6	0.2	7.3	0.4	36	1.9
-20º		7.6	0.4	5.7	0.3	7.6	0.4	25	1.2	1.9	0.1	3.8	0.2	7.6	0.4	38	1.8
-40º		7.8	0.4	5.8	0.3	7.8	0.4	25	1.2	1.9	0.1	3.9	0.2	7.8	0.4	39	1.8
5º	1.38	8.4	0.4	6.3	0.3	8.4	0.4	27	1.4	2.1	0.1	4.2	0.2	8.4	0.4	42	2.2
-20º		8.7	0.4	6.5	0.3	8.7	0.4	28	1.4	2.2	0.1	4.4	0.2	8.7	0.4	44	2.1
-40º		9.0	0.4	6.7	0.3	9.0	0.4	29	1.3	2.2	0.1	4.5	0.2	9.0	0.4	45	2.0

R-507a (KG/MIN & M³/HR)

Liquid Temp (ºC)	Press. Drop (bar)	A2B		A2BK		A2BP		A2A		A2B01		A2B02		A2B04		A2CK	
		kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr	kg/min	m³/hr
5º	0.69	5.9	0.3	4.4	0.2	5.9	0.3	19	1.0	1.5	0.1	2.9	0.2	5.9	0.3	29	1.6
-20º		6.1	0.3	4.6	0.2	6.1	0.3	20	1.0	1.5	0.1	3.1	0.1	6.1	0.3	31	1.5
-40º		6.3	0.3	4.7	0.2	6.3	0.3	20	0.9	1.6	0.1	3.1	0.1	6.3	0.3	31	1.5
5º	1.03	7.2	0.4	5.4	0.3	7.2	0.4	23	1.2	1.8	0.1	3.6	0.2	7.2	0.4	36	1.9
-20º		7.5	0.4	5.6	0.3	7.5	0.4	24	1.2	1.9	0.1	3.8	0.2	7.5	0.4	38	1.8
-40º		7.7	0.4	5.8	0.3	7.7	0.4	25	1.2	1.9	0.1	3.9	0.2	7.7	0.4	39	1.8
5º	1.38	8.3	0.4	6.3	0.3	8.3	0.4	27	1.4	2.1	0.1	4.2	0.2	8.3	0.4	42	2.2
-20º		8.7	0.4	6.5	0.3	8.7	0.4	28	1.4	2.2	0.1	4.3	0.2	8.7	0.4	43	2.1
-40º		8.9	0.4	6.7	0.3	8.9	0.4	29	1.3	2.2	0.1	4.5	0.2	8.9	0.4	45	2.1

Capacities are based on -18°C (0°F) liquid ammonia and no flash gas.
For evaporator temperatures between 4°C to -40°C (40°F to -40°F), capacities are within 5%.
Correction factors for temperatures between -40°C (-40°F) and 30°C (86°F) are negligible.

For other refrigerants please use VSP2 selection software.

Solenoid Valves

The solenoid valves include direct operated and pilot operated valves. Selections for most refrigeration applications are available – liquid, suction, hot gas and compressor unloading. Low or no pressure differential, equalizing and vent solenoid in sizes up to 50mm (2").

S4A

S6N/S8F

DIN Specifications

Maximum Opening Pressure Difference (MOPD)	20.7 bar (300 psig)
Maximum Rated Pressure (MRP)	28 bar (406 psig)

General Information

Port Size		Type	Description	Flow Coefficient		Connections Available		
mm	inch			Kv	Cv	FPT, SW, WN	ODS	WN (DN)
5	3/16	S6N	NC, Direct Operated	0.5	0.6	1/4", 3/8", 1/2", 3/4"	1/2", 5/8"	13, 20
13	1/2	S8F	NC, Spring Assisted	2.3	2.7	1/4", 3/8", 1/2", 3/4"	1/2", 5/8"	13, 20
20	3/4	S4A	NC, Spring Assisted	6.9	8.1	3/4", 1", 1 1/4"	7/8", 1 1/8", 1 3/8"	20, 25, 32
		S7A	NC, Direct Operated	8.7	10			
25	1	S4A	NC, Spring Assisted	8.4	9.9	3/4", 1", 1 1/4"	7/8", 1 1/8", 1 3/8"	20, 25, 32
		S7A	NC, Direct Operated	9.2	11			
32	1 1/4	S4A	NC, Spring Assisted	17	20	1 1/4", 1 1/2"	1 5/8"	32
		S5A	NC, Gravity Assisted	16	19			
40	1 5/8	S4A	NC, Spring Assisted	27	32	1 1/2", 2"	2 1/8", 2 5/8"	38, 50
		S5A	NC, Gravity Assisted	32	37			
50	2	S4A	NC, Spring Assisted	46	53	1 1/2", 2"	2 1/8", 2 5/8"	38, 50
		S5A	NC, Gravity Assisted	44	51			
65	2 1/2	S4A	NC, Spring Assisted	64	75	2 1/2", 3" (No FPT)	2 5/8", 3 1/8"	65
		S5A	NC, Gravity Assisted	70	82			
75	3	S4A	NC, Spring Assisted	86	100	3" (No FPT)	3 1/8", 3 5/8"	75
		S5A	NC, Gravity Assisted	98	120			
100	4	S4A	NC, Spring Assisted	130	150	4" (No FPT)	4 1/8"	100
125	5	S4W	NC, Spring Assisted	170	200	WN only		

S4A and S4W are available with 1/4" FPT connection for EXTERNAL supply of actuating pressure. Specify S4AE or S4WE. S5A is available with 1/4" FPT connection for external connection to outlet pressure.

Solenoid Valves

S7A

S5A

S4W

Specifications

Port Size		Type	Seat Material	*DIN Body Material	Minimum Pressure Drop		Temperature Range		Operation	Bulletin
mm	inch				bar	psi	°C	°F		
5	3/16	S6N	PTFE	GGG-40.3	0	0	-50 to 105	-60 to 220	Normally Closed	30-90
13	1/2	S8F	PTFE	Stainless Steel	0.07	1	-50 to 105	-60 to 220	Normally Closed	30-91
20 - 25	3/4 - 1	S7A	PTFE	GGG-40.3	0	0	-30 to 105	-25 to 220	Normally Closed	30-92
32	1 1/4	S5A	PTFE	GGG-40.3	0.07	1	-30 to 105	-25 to 220	Normally Closed	30-93
40 - 75	1 5/8 - 3	S5A	Metal	GGG-40.3	0.07	1	-30 to 105	-25 to 220	Normally Closed	30-93
20 - 32	3/4 - 1 1/4	S4A	PTFE	GGG-40.3	0.28	4	-45 to 105	-50 to 220	Normally Closed	30-94
40 - 100	1 5/8 - 4	S4A	Metal	GGG-40.3	0.14	2	-50 to 105	-60 to 220	Normally Closed	30-94
125	5	S4W	Metal	Steel	0.14	2	-50 to 105	-60 to 220	Normally Closed	30-05

Application Guide

Refrigerant Application	Refrigerant Temperature Range	Valve Recommendation - Listed by Port Size										
		5mm	13mm	20mm	25mm	32mm	40mm	50mm	65mm	75mm	100mm	125 mm
		3/16"	1/2"	3/4"	1"	1 1/4"	1 5/8"	2"	2 1/2"	3"	4"	5"
Liquid	Conventional Warm High Pressure	S6N	S8F SV2	S4A SV2	S4A SV2	S4A SV2	S4A	S4A	S4A	S4A	S4A	S4W
	Above -50°C (-60°F)	S6N	S8F	—	—	—	S4A	S4A	S4A	S4A	S4A	S4W
	Above -45°C (-50°F)	S6N	S8F SV2	S4A SV2	S4A SV2	S4A SV2	S4A	S4A	S4A	S4A	S4A	S4W
Suction	Above -30°C (-25°F)	S6N	S8F	S7A	S7A	S5A	S5A	S5A	S5A	S5A	S5A	S4W
Hot Gas Defrost	Below 105°C (220°F)	S6N	S8F SV2	S4A SV2	S4A SV2	S4A SV2	S4A	S4A	S4A	S4A	S4A	S4W
Bypass Compressor Unloading	Below 105°C (220°F)	S6N	S8F	S7A	S7A	S4AE	S4AE	S4AE	S4AE	S4AE	S4AE	—
Equalizing Lines	—	S6N	—	S7A	S7A	—	—	—	—	—	—	—

Solenoid Valves

R-717 (KW)

Port Size	Type	Liquid Capacities ①		Suction Capacities ②				Hot Gas Reclaim ③					
				0.07 bar ΔP		0.14 bar ΔP		21°C Condensing		30°C Condensing		35°C Condensing	
mm		0.14 bar ΔP	0.27 bar ΔP	-10°C	-20°C	-10°C	-20°C	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP
5	S6N	55	77	—	—	—	—	—	—	—	—	—	—
13	S8F SV2	249 —	346 385	9.3 —	7.5 —	13 —	11 —	— 35	— 41	— 38	— 46	— 40	— 48
20	S4A ④ S7A	— 739	923 1026	— 28	— 22	— 39	— 32	83 —	99 —	92 —	110 —	97 —	116 —
25	S4A S7A	— 923	1282 1282	— 34	— 28	— 49	— 39	116 —	138 —	128 —	152 —	135 —	161 —
32	S4A S5A	— 1754	2243 2436	— 65	— 53	— 93	— 75	202 —	241 —	224 —	267 —	236 —	281 —
40	S4A S5A	3083 3416	4282 4743	— 127	— 103	163 180	132 146	386 —	460 —	428 —	509 —	451 —	537 —
50	S4A S5A	4570 4708	6346 6538	— 176	— 142	241 248	195 201	572 —	681 —	634 —	755 —	668 —	795 —
65	S4A S5A	6462 7570	8974 10512	— 282	— 229	341 399	276 323	809 —	963 —	897 —	1067 —	945 —	1125 —
75	S4A S5A	9231 10616	12820 14743	— 396	— 321	487 560	394 453	1156 —	1376 —	1281 —	1525 —	1350 —	1607 —
100	S4A	14955	20768	Use CK-2 or S9A ⑤		789	639	1873	2230	2075	2470	2187	2603
125	S4W	—	—	Use CK-2 or S9A ⑤		974	788	2313	2753	2562	3049	2700	3213

All capacities are maximum for the conditions listed and have no reserve for excess loads.

① R717 capacities are based on -7°C liquid with no flashing, -15°C evaporator temperature and no liquid overfeed. For liquid overfeed, multiply evaporator KW by recirculating rate and size valve to the KW result. Use of -7°C liquid for capacities in this table is sufficiently accurate for most liquid overfeed systems. To convert for 30°C input, multiply values in the table by 0.9.

② R717 capacities are based on 30°C condensing temperature and the evaporator temperatures listed. See A4A suction capacities on page 10 for other pressure drops and for corrections for liquid overfeed and sub-cooled liquid.

③ Hot gas heat reclaim capacities are in terms of heat of condensation rejected at the condenser and are based on saturated inlet conditions at pressures equivalent to the condensing temperatures and for the pressure drops listed.

④ The 20mm port size S4A is available with capacities equal to 50% of the ratings shown.

⑤ CK-2 and S9A. See page 49 and 52 for low pressure drop at temperatures below -10°C.

For other refrigerants please use VSP2 selection software.

Solenoid Valves

R-134a (KW)

Port Size	Type	Liquid Capacities ①		Suction Capacities ②				Hot Gas Reclaim ③					
				0.07 bar ΔP		0.14 bar ΔP		21°C Condensing		30°C Condensing		35°C Condensing	
mm		0.14 bar ΔP	0.27 bar ΔP	-10°C	-20°C	-10°C	-20°C	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP
5	S6N	8.4	12	0.5	0.4	0.7	0.6	—	—	—	—	—	—
13	S8F	38	52	2.4	1.9	3.4	2.6	—	—	—	—	—	—
20	S4A ④ S7A	— 112	140 155	— 7.1	— 5.6	— 10	— 7.9	29 —	34 —	32 —	38 —	34 —	40 —
25	S4A S7A	— 140	194 194	— 8.8	— 6.9	— 12	— 10	40 —	48 —	44 —	52 —	47 —	56 —
32	S4A S5A	— 265	339 368	— 17	— 13	— 24	— 19	70 —	84 —	77 —	91 —	82 —	98 —
40	S4A S5A	466 516	647 717	— 33	— 26	42 46	33 36	134 —	160 —	147 —	174 —	157 —	187 —
50	S4A S5A	691 712	959 988	— 45	— 35	62 64	49 50	199 —	237 —	217 —	259 —	233 —	277 —
65	S4A S5A	977 1144	1357 1589	— 72	— 57	87 102	69 80	281 —	335 —	307 —	366 —	329 —	392 —
75	S4A S5A	1396 1605	1938 2229	— 100	— 80	125 144	98 113	402 —	478 —	439 —	522 —	470 —	560 —
100	S4A	2261	3140	—	—	202	159	651	774	711	846	762	907
125	S4W	—	—	—	—	—	—	803	956	878	1045	941	1119

All capacities are maximum for the conditions listed and have no reserve for excess loads.

① Liquid capacities for R134a are based on 40°C condensing and 5°C evaporator temperatures with no flashing through the valve for the pressure drops listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.

② Suction capacities for R134a are based on 40°C liquid and 5°C superheat entering the valve at the pressure drops and evaporator temperatures listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.

③ Hot gas heat reclaim capacities are in terms of heat of condensation rejected at the condenser and are based on saturated inlet conditions at pressures equivalent to the condensing temperatures and for the pressure drops listed.

④ The 20mm port size S4A is available with capacities equal to 50% of the ratings shown.

For other refrigerants please use VSP2 selection software.

Solenoid Valves

R-404a (KW)

Port Size	Type	Liquid Capacities ①		Suction Capacities ②				Hot Gas Reclaim ③					
				0.07 bar ΔP		0.14 bar ΔP		21°C Condensing		30°C Condensing		35°C Condensing	
mm		0.14 bar ΔP	0.27 bar ΔP	-10°C	-20°C	-10°C	-20°C	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP
5	S6N	5.7	7.9	0.6	0.5	0.8	0.7	—	—	—	—	—	—
13	S8F	26	36	2.6	2.1	3.7	3.0	—	—	—	—	—	—
20	S4A ④ S7A	— 76	95 106	— 7.8	— 6.2	— 11	— 8.7	32 —	38 —	33 —	39 —	32 —	38 —
25	S4A S7A	— 95	132 132	— 9.7	— 7.7	— 14	— 11	44 —	52 —	45 —	54 —	45 —	53 —
32	S4A S5A	— 181	232 252	— 19	— 15	— 26	— 21	77 —	91 —	79 —	94 —	78 —	93 —
40	S4A S5A	318 353	442 490	— 36	— 29	46 51	37 40	146 —	174 —	151 —	180 —	149 —	177 —
50	S4A S5A	472 486	655 675	— 50	— 39	68 70	54 56	217 —	258 —	224 —	267 —	220 —	262 —
65	S4A S5A	667 782	927 1086	— 80	— 63	96 113	77 90	307 —	365 —	317 —	378 —	312 —	371 —
75	S4A S5A	954 1097	1324 1523	— 110	— 89	138 158	109 126	438 —	521 —	453 —	540 —	445 —	530 —
100	S4A	1545	2145	—	—	223	178	710	845	734	874	721	858
125	S4W	—	—	—	—	—	—	876	1043	907	1079	890	1060

All capacities are maximum for the conditions listed and have no reserve for excess loads.

① Liquid capacities for R404a are based on 40°C condensing and 5°C evaporator temperatures with no flashing through the valve for the pressure drops listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.

② Suction capacities for R404a are based on 40°C liquid and 5°C superheat entering the valve at the pressure drops and evaporator temperatures listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.

③ Hot gas heat reclaim capacities are in terms of heat of condensation rejected at the condenser and are based on saturated inlet conditions at pressures equivalent to the condensing temperatures and for the pressure drops listed.

④ The 20mm port size S4A is available with capacities equal to 50% of the ratings shown.

For other refrigerants please use VSP2 selection software.

Solenoid Valves

R-410a (KW)

Port Size	Type	Liquid Capacities ①		Suction Capacities ②				Hot Gas Reclaim ③					
				0.07 bar ΔP		0.14 bar ΔP		21°C Condensing		30°C Condensing		35°C Condensing	
mm		0.14 bar ΔP	0.27 bar ΔP	-10°C	-20°C	-10°C	-20°C	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP
5	S6N	8.3	12	0.9	0.7	1.2	1.0	—	—	—	—	—	—
13	S8F	37	52	3.9	3.2	5.5	4.5	—	—	—	—	—	—
20	S4A ④ S7A	— 111	139 154	— 12	— 9.5	— 16	— 13	42 —	50 —	43 —	52 —	42 —	51 —
25	S4A S7A	— 139	193 193	— 15	— 12	— 21	— 17	58 —	70 —	60 —	72 —	59 —	70 —
32	S4A S5A	— 264	337 366	— 28	— 23	— 39	— 32	102 —	122 —	106 —	126 —	103 —	123 —
40	S4A S5A	463 513	644 713	— 54	— 44	69 76	56 62	195 —	232 —	202 —	240 —	197 —	235 —
50	S4A S5A	687 708	954 983	— 74	— 60	102 105	83 85	289 —	344 —	299 —	356 —	292 —	348 —
65	S4A S5A	971 1138	1349 1580	— 119	— 97	144 168	117 137	409 —	487 —	423 —	503 —	413 —	491 —
75	S4A S5A	1387 1596	1927 2216	— 170	— 136	205 236	168 193	585 —	696 —	604 —	718 —	590 —	702 —
100	S4A	2248	3121	—	—	331	271	947	1127	978	1164	956	1137
125	S4W	—	—	—	—	—	—	1169	1392	1207	1437	1180	1404

All capacities are maximum for the conditions listed and have no reserve for excess loads.

① Liquid capacities for R410a are based on 40°C condensing and 5°C evaporator temperatures with no flashing through the valve for the pressure drops listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.

② Suction capacities for R410a are based on 40°C liquid and 5°C superheat entering the valve at the pressure drops and evaporator temperatures listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.

③ Hot gas heat reclaim capacities are in terms of heat of condensation rejected at the condenser and are based on saturated inlet conditions at pressures equivalent to the condensing temperatures and for the pressure drops listed.

④ The 20mm port size S4A is available with capacities equal to 50% of the ratings shown.

For other refrigerants please use VSP2 selection software.

Solenoid Valves

R-507a (KW)

Port Size	Type	Liquid Capacities ①		Suction Capacities ②				Hot Gas Reclaim ③					
				0.07 bar ΔP		0.14 bar ΔP		21°C Condensing		30°C Condensing		35°C Condensing	
mm		0.14 bar ΔP	0.27 bar ΔP	-10°C	-20°C	-10°C	-20°C	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP	0.24 bar ΔP	0.34 bar ΔP
5	S6N	5.5	7.7	0.6	0.5	0.8	0.7	—	—	—	—	—	—
13	S8F	25	35	2.6	2.1	3.7	2.9	—	—	—	—	—	—
20	S4A ④ S7A	— 74	92 103	— 7.8	— 6.2	— 11	— 8.7	31 —	37 —	32 —	39 —	31 —	37 —
25	S4A S7A	— 92	128 128	— 10	— 7.7	— 14	— 11	44 —	52 —	45 —	54 —	44 —	52 —
32	S4A S5A	— 175	224 243	— 18	— 15	— 26	— 21	76 —	91 —	79 —	94 —	76 —	91 —
40	S4A S5A	308 341	428 474	— 36	— 29	46 51	36 40	146 —	174 —	150 —	179 —	146 —	174 —
50	S4A S5A	457 471	634 654	— 49	— 39	68 70	54 56	216 —	257 —	223 —	265 —	216 —	258 —
65	S4A S5A	646 757	897 1051	— 80	— 63	96 113	76 89	306 —	364 —	315 —	375 —	306 —	364 —
75	S4A S5A	923 1061	1281 1474	— 110	— 89	137 158	109 125	437 —	520 —	450 —	535 —	437 —	520 —
100	S4A	1495	2076	—	—	222	176	708	842	728	867	708	843
125	S4W	—	—	—	—	—	—	874	1040	899	1070	874	1040

All capacities are maximum for the conditions listed and have no reserve for excess loads.

① Liquid capacities for R507a are based on 40°C condensing and 5°C evaporator temperatures with no flashing through the valve for the pressure drops listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.

② Suction capacities for R507a are based on 40°C liquid and 5°C superheat entering the valve at the pressure drops and evaporator temperatures listed. For each 5°C liquid is below 40°C, INCREASE values by 5%.

③ Hot gas heat reclaim capacities are in terms of heat of condensation rejected at the condenser and are based on saturated inlet conditions at pressures equivalent to the condensing temperatures and for the pressure drops listed.

④ The 20mm port size S4A is available with capacities equal to 50% of the ratings shown.

For other refrigerants please use VSP2 selection software.

How to order

How to order						
	1	2	3	4	5	
	S4A	. E .	020	. RSF	. CK4A	
1	solenoid valve type (see table)					
2	E = external connection on S4A; blank = standard					
3	port size					
4	RSF = strainer; CK4A = check valve; blank = solenoid only					
5	CK4A = check valve; blank = without check valve					

Please order mating flanges separately
(see page 76)

How to order coils		
Article No.:	Volts	Herz
SPULE.RS.024.50	24	50
SPULE.RS.115.50	115	50
SPULE.RS.230.50	230	50
SPULE.RS.240.50	240	50

All coils with quick connector

Gas Powered Valves

The CK-2 and CK-5, normally open, gas powered suction stop valves are uniquely constructed to use discharge pressure to close. These valves are typically used for low temperature applications in wet return lines on liquid recirculation systems or on the liquid and gas return legs of flooded evaporators. Due to its normally open construction, pressure drop is minimal in suction or wet return applications. In addition, normal gravity circulation is unrestricted on flooded evaporators. For gravity flooded evaporators, both valves should be installed with their flow arrows pointing towards the surge drum. Being pressure powered to close, this valve can overcome sticking at low temperatures caused by the presence of viscous oil.
Unlike the CK-2, the CK-5 is designed to remain in a closed position in the event that power to the pilot solenoid is inadvertently interrupted (i.e. a power failure), during hot gas defrost. This prevents a "suction shock" condition under these circumstances.

DIN Specifications

Temperature Range	-50°C to 105°C (-60°F to 220°F)
Maximum Rated Pressure (MRP)	28 bar (406 psig)

*For more specifications see below table

CK-2

CK-5

Specifications

Port Size		Type	Seat Material	*DIN Body Material	Minimum Pressure Drop to Open		Minimum Pressure Drop to Close		Operation	Bulletin
mm	inch				bar	psi	bar	psi		
32	1¼	CK-2	PTFE	GGG-40.3	0	0	0.35	5	Normally Open	50-12
40 - 100	1⅝ - 4	CK-2	Metal	GGG-40.3	0	0	0.35	5	Normally Open	50-12
32	1¼	CK-5	PTFE	GGG-40.3	0	0	0.35	5	Normally Open	50-23
40 - 100	1⅝ - 4	CK-5	Metal	GGG-40.3	0	0	0.35	5	Normally Open	50-23

Gas Powered Valves

CK-5
125 - 200mm (5" - 6")

S9 Pilot Assembly

Application Guide

Refrigerant Application	Refrigerant Temperature Range	Operation	Valve Recommendation - Listed by Port Size					
			32mm	40mm	50mm	65mm	75mm	100mm
			1¼"	1⅝"	2"	2½"	3"	4"
Suction	Above -50°C (-60°F)	Normally Open	CK-2 CK-5	CK-2A CK-5	CK-2 CK-5	CK-2 CK-5	CK-2 CK-5	CK-2 CK-5

Recommendations assume no highly viscous oil, dirt, moisture or foreign substance in refrigerant; also no abnormal shock impact below -30°C (-25°F). Use CK-2 only above -30°C (-25°F) if not powered by near oil free hot gas such as in rotary screw compressor systems.

General Information

Port Size		Type	Description	Flow Coefficient		Connections Available			Pilot Solenoid
mm	inch			Kv	Cv	FPT, SW, WN	ODS	WN (DN)	
32	1¼	CK-2	Normally Open	16	19	1¼", 1½"	1⅝"	32	S6N (1)
		CK-5	Normally Open	16	19				*S6B or S6A (1)
40	1⅝	CK-2	Normally Open	32	37	1½", 2"	2⅛", 2⅝"	38, 50	S6N (1)
		CK-5	Normally Open	32	37				*S6B or S6A (1)
50	2	CK-2	Normally Open	44	51	1½", 2"	2⅛", 2⅝"	38, 50	S6N (1)
		CK-5	Normally Open	44	51				*S6B or S6A (1)
65	2½	CK-2	Normally Open	70	82	2½", 3" (No FPT)	2⅝", 3⅛"	65	S6N (1)
		CK-5	Normally Open	70	82				*S6B or S6A (1)
75	3	CK-2	Normally Open	103	120	3" (No FPT)	3⅛", 3⅝"	75	S6N (1)
		CK-5	Normally Open	103	120				*S6B or S6A (1)
100	4	CK-2	Normally Open	171	200	4" (No FPT)	4⅛"	100	S6N (1)
		CK-5	Normally Open	171	200				*S6B or S6A (1)

* Valve containing S6B coils can be installed in a vertical or horizontal position

How to order

How to order			
	1		2
	CK2	.	020
1	type CK2 or CK5		
2	port size		

Please order, mating flanges and S9 pilot separately (see page 76)

How to order coils		
Article No.:	Volts	Herz
SPULE.RS.024.50	24	50
SPULE.RS.115.50	115	50
SPULE.RS.230.50	230	50
SPULE.RS.240.50	240	50

All coils with quick connector

Suction Capacities – CK-2/CK-5

R-717 (KW)

Evap. Temp (°C)	Evap. Pressure (bar)	ΔP (bar)	Port Size					
			32mm	40mm	50mm	65mm	75mm	100mm
-10	1.89	0.035 0.017	52 37	101 71	139 98	223 158	327 231	545 385
-20	0.89	0.035 0.017	42 30	83 58	114 80	183 129	268 189	446 315
-35 ①	*-0.08*	0.035 0.017	34 24	66 47	91 64	146 103	213 151	356 252
-45 ①	*-0.47*	0.035 0.017	26 19	51 36	70 50	113 80	165 117	276 195

R-134a (KW)

Evap. Temp (°C)	Evap. Pressure (bar)	ΔP (bar)	Port Size					
			32mm	40mm	50mm	65mm	75mm	100mm
-10	0.99	0.035 0.017	17 12	33 23	45 32	73 52	107 75	178 126
-20	0.31	0.035 0.017	14 9.9	27 19	38 27	60 43	89 63	148 104
-35 ①	*-0.35*	0.035 0.017	11 8.0	22 16	30 22	49 35	72 51	119 84
-45 ①	*-0.62*	0.035 0.017	8.9 6.3	17 12	24 17	38 27	56 40	94 66

R-404a (KW)

Evap. Temp (°C)	Evap. Pressure (bar)	ΔP (bar)	Port Size					
			32mm	40mm	50mm	65mm	75mm	100mm
-10	3.38	0.035 0.017	21 15	41 29	57 40	92 65	134 95	224 158
-20	2.06	0.035 0.017	18 13	36 25	49 35	79 56	115 82	192 136
-35 ①	0.67	0.035 0.017	15 11	30 21	41 29	66 47	97 68	161 114
-45 ①	0.06	0.035 0.017	13 8.9	24 17	34 24	54 38	79 56	132 93

Capacities are based on liquid temperatures equal to evaporator temperatures. For liquid overfeed systems, nominal 2:1 to 5:1 ratio, add 20% to the evaporator load and select a valve based on the increased load.

① The CK2 may be used at these temperatures if it is powered by nearly oil free hot gas (such as in rotary screw compressor systems). If the gas is not nearly oil free, use the CK2 only at temperatures above -30°C (-25°F).

For other refrigerants please use VSP2 selection software.

Suction Capacities – CK-2/CK-5

R-410a (KW)

Evap. Temp (°C)	Evap. Pressure (bar)	ΔP (bar)	Port Size					
			32mm	40mm	50mm	65mm	75mm	100mm
-10	4.73	0.035 0.017	28 20	55 39	76 54	123 87	180 127	299 212
-20	2.99	0.035 0.017	24 17	48 34	66 46	105 75	154 109	257 182
-35 ①	1.18	0.035 0.017	21 15	40 28	55 39	89 63	130 92	216 153
-45 ①	0.38	0.035 0.017	17 12	33 23	45 32	72 51	106 75	177 125

R-507a (KW)

Evap. Temp (°C)	Evap. Pressure (bar)	ΔP (bar)	Port Size					
			32mm	40mm	50mm	65mm	75mm	100mm
-10	3.48	0.035 0.017	21 15	42 30	58 41	93 65	135 96	226 160
-20	2.13	0.035 0.017	18 13	36 25	50 35	80 56	117 83	195 138
-35 ①	0.71	0.035 0.017	16 11	30 21	42 30	67 47	98 69	164 116
-45 ①	0.09	0.035 0.017	13 9.0	25 18	34 24	55 39	81 57	134 95

Capacities are based on liquid temperatures equal to evaporator temperatures. For liquid overfeed systems, nominal 2:1 to 5:1 ratio, add 20% to the evaporator load and select a valve based on the increased load.

① The CK2 may be used at these temperatures if it is powered by nearly oil free hot gas (such as in rotary screw compressor systems). If the gas is not nearly oil free, use the CK2 only at temperatures above -30°C (-25°F).

For other refrigerants please use VSP2 selection software.

Gravity Flooded Capacities

R-717 (KW)

Port Size	Valve Type	Liquid Leg	Gas Return for Evaporator Temperature			
			-10 °C	-20 °C	-30 °C	-40 °C
32	CK-2 CK-5	14	9.1	7.3	5.6	4.2
40	CK-2 CK-5	21	14	11	8.4	6.3
50	CK-2 CK-5	39	34	27	21	16
65	CK-2 CK-5	63	56	42	34	26
75	CK-2 CK-5	100	94	73	56	42
100	CK-2 CK-5	210	200	160	120	94
125	CK-2 CK-5	350	360	290	220	160

Capacities are nominal and are based on accepted industry practice concerning surge drum height and evaporator geometry.

For other refrigerants please use VSP2 selection software.

Dual Position Control Valves

Designed to eliminate the damaging effects of hydraulic shock caused by liquid deceleration, vapor propelled liquid slugs, and condensation induced hydraulic shock, the S4AD, CK-2D, and CK-6D combine the features of hot gas/soft gas valve configurations and suction stop with equalization valve configurations. The S4AD can additionally be used for high pressure liquid make up applications to prevent liquid hammer, replacing parallel liquid line solenoid valves.
The CK-2D and CK-6D are low pressure drop, gas powered suction stop valves, for low temperature ammonia, approved CFC, HCFC, or HFC refrigerants and corresponding approved refrigerant oils or fluids. The CK-2D is a normally open valve, which uses discharge gas to power the valve closed. The CK-6D incorporates a fail safe feature, which holds the valve in the equalizing position until a safe coil pressure is reached, should a power failure occur during the defrost cycle.
The valve position is controlled via the sequencing of two integral pilot solenoids and can be held in a closed, partially open (approximately 10% of full flow) or fully open position. By sequencing the solenoids based on time, users have the flexibility to set each stage to meet their specific needs.

Use solenoid capacity tables on pages 53-57 for the S4AD valve and gas powered capacity tables on pages 60-62 for the CK-2D and CK-6D valves.

DIN Specifications

Temperature Range	-50°C to 105°C (-60°F to 220°F)
Maximum Rated Pressure (MRP)	28 bar (406 psig)

S4AD
Solenoid Valve

CK-2D
Check Valve

CK-6D
Check Valve

Specifications

Port Size		Type	Seat Material	*DIN Body Material	Minimum Pressure Drop to Open		Minimum Pressure Drop to Close		Operation	Coil	Bulletin
mm	inch				bar	psi	bar	psi			
20 - 32	¾ - 1¼	S4AD	PTFE	GGG-40.3	0.28	4	–	–	Normally Closed	S6A	30-95
40 - 100	1⅝ - 4	S4AD	Metal	GGG-40.3	0.14	2	–	–	Normally Closed	S6A	30-95
40 - 100	1⅝ - 4	CK-2D	Metal	GGG-40.3	0	0	0.35	5	Normally Open	S6A or ***S6B**	50-24
40 - 100	1⅝ - 4	CK-6D	Metal	GGG-40.3	0	0	0.35	5	Normally Open	S6A or ***S6B**	50-25

Bold* Valves containing S6B coils can be installed in a vertical or horizontal position.

Recommendations assume no highly viscous oil, dirt, moisture or foreign substance in refrigerant; also no abnormal shock impact below -30°C (-25°F). Use CK-2 only above -30°C (-25°F) if not powered by near oil free hot gas such as in rotary screw compressor systems.

Dual Position Control Valves

General Information

Port Size		Type	Description	Flow Coefficient		Connections Available		
mm	inch			Kv	Cv	FPT, SW, WN	ODS	WN (DN)
20	¾	S4AD	Spring Closing	6.9	8.1	¾", 1", 1¼"	⅞", 1⅛", 1⅜"	20, 25, 32
25	1	S4AD	Spring Closing	8.4	9.9	¾", 1", 1¼"	⅞", 1⅛", 1⅜"	20, 25, 32
32	1¼	S4AD	Spring Closing	17	20	1¼", 1½"	1⅝"	32
		CK-2D	Normally Open	16	19			
		CK-6D	Normally Open	16	19			
40	1⅝	S4AD	Spring Closing	27	32	1½", 2"	2⅛", 2⅝"	38, 50
		CK-2D	Normally Open	32	37			
		CK-6D	Normally Open	32	37			
50	2	S4AD	Spring Closing	46	53	1½", 2"	2⅛", 2⅝"	38, 50
		CK-2D	Normally Open	44	51			
		CK-6D	Normally Open	44	51			
65	2½	S4AD	Spring Closing	64	75	2½", 3" (No FPT)	2⅝", 3⅛"	65
		CK-2D	Normally Open	70	82			
		CK-6D	Normally Open	70	82			
75	3	S4AD	Spring Closing	86	100	3" (No FPT)	3⅛", 3⅝"	75
		CK-2D	Normally Open	103	120			
		CK-6D	Normally Open	103	120			
100	4	S4AD	Spring Closing	130	150	4" (No FPT)	4⅛"	100
		CK-2D	Normally Open	171	200			
		CK-6D	Normally Open	171	200			

FPT flanges are only available 20 - 50mm (3/4" - 2")

How to order

How to order			
	1		2
	S4AD	.	020
1	type S4AD, CK2D, CK6D		
2	port size		

Please order coils and mating flanges separately (see page 76)

How to order coils		
Article No.:	Volts	Herz
SPULE.RS.024.50	24	50
SPULE.RS.115.50	115	50
SPULE.RS.230.50	230	50
SPULE.RS.240.50	240	50

All coils with quick connector

Coils

S6A Modular Solenoid Pilot

Adds electric shut-off (S) or electric wide opening (B) and is used with Modular Pressure Pilot A2D/A2D2 for dual (D) variations. Class "F" U.L. approved system with housing meeting 3R and 4 requirements.
Furnished with bolts and O-rings. Mounts to Modudapter®.
Same for all regulator sizes.

Coil (Volts/Hz)	Inrush Current (Amps)	Running Current (Amps)	Fuse Size (Amps)	Temp °C (°F)
24/50	6.82	2.99	4	250 (482)
24/60	6.70	2.73	4	250 (482)
115/50	1.22	0.21	1	90 (194)
120/60	1.18	0.46	1	90 (194)
230/50	0.65	0.26	1	90 (194)
240/50	0.59	0.24	1	90 (194)

Notes: Leaded coils are provided with 18 gage wires at 914 mm (36") in length.

S6A Coil

Notes: LED knobs can only be used on AC coils.

Voltages

Available Voltages for Coils and Remote Pilot Lights	Module	Class	120/60	120/6/60	208/60	208/6/60	240/60	240/6/60	115/50	230/50	240/50	24/60	24/50	48/50	24 VDC	48 VDC
Encapsulated w/DIN Connector	S6A	F	•				•		•	•	•					
Encapsulated w/DIN & Integral Pilot Light	S6A	F	•				•		•	•	•					

Coils are available from stock with most standard voltages; see table above.
Non-standard voltages; shown in the shaded area of table.
Consult factory for other voltages.
• These voltages for the Class "H" coils are 120/60 - 110/50, 240/60 - 220/50, 480/60 - 440/50.
Notes: Remote pilot lights cannot be used with explosion proof or unleaded coils.
Consult factory for information on explosion proof coils.

How to order

S6A		
Article No.:	Volts	Hertz
SPULE.RS.024.50	24	50
SPULE.RS.115.50	115	50
SPULE.RS.230.50	230	50
SPULE.RS.240.50	240	50

All coils with quick connector

S6B		
Article No.:	Volts	Hertz
SPULE.RS.240.60.S6B	240	60

All coils with quick connector

SV2		
Article No.:	Volts	Hertz
SPULE.RS.240.60.SV2	220/240	50/60

All coils with quick connector

Check Valves (CK-1)

These piston type, gravity closing, heavy duty check valves prevent backward flow of fluid in refrigerant suction, hot gas or liquid lines. They are recommended for compressor discharge lines, also for liquid lines and suction lines.
The check valve opens by the pressure difference between valve inlet and outlet. The pressure difference must be a minimum of 0.03 bar (0.5 psi).

CK1

DIN Specifications

Port Sizes	32mm to 100mm (1 1/4" to 4")
Temperature Range	-30°C to 105°C (-25°F to 220°F)
Maximum Rate Pressure (MRP)	28 bar (406 psig)
Minimum Pressure Drop to Open	0.03 bar (0.5 psi)
Body	Ductile Iron (GGG40.3)
Seat: 20mm - 32mm (3/4" - 1 1/4")	PTFE
40mm - 150mm (1 5/8" - 6")	Metal

General Information

Port Size		Operation	Flow Coefficient		Connections Available			
mm	inch		Kv	Cv	FPT	SW, WN	ODS	WN (DN)
20	3/4	Gravity Closing	8.1	9.5	3/4", 1", 1 1/4"	3/4", 1", 1 1/4"	7/8", 1 1/8", 1 3/8"	20, 25, 32
25	1	Gravity Closing	8.6	10	3/4", 1", 1 1/4"	3/4", 1", 1 1/4"	7/8", 1 1/8", 1 3/8"	20, 25, 32
32	1 1/4	Gravity Closing	16	19	1 1/4", 1 1/2"	1 1/4", 1 1/2"	1 5/8"	32
40	1 5/8	Gravity Closing	32	37	1 1/2", 2"	1 1/2", 2"	2 1/8", 2 5/8"	38, 50
50	2	Gravity Closing	44	51	1 1/2", 2"	1 1/2", 2"	2 1/8", 2 5/8"	38, 50
65	2 1/2	Gravity Closing	70	82	—	2 1/2", 3"	2 5/8", 3 1/8"	65, 75
75	3	Gravity Closing	103	120	—	3"	3 1/8", 3 5/8"	75
100	4	Gravity Closing	171	200	—	4"	4 1/8"	100

For more information see bulletin 50-10.

Application Guide

Port Size		Operation	Mounting
mm	inch		
20 - 100	3/4 - 4	1. Slow speed compressor discharge lines 2. Liquid lines 3. Suction lines down to -30°C (-25°F) 4. Side port applications on screw compressors	Horizontal lines with opening stem in the vertical position

Note: Close coupling, valves sizes through 4", using male adapter ring to outlet of R/S control valves.

CK-1 Capacity Tables

R-717 (KW)

Port Size (mm)	Liquid Line ①		Hot Gas Discharge ②		Liquid Line ③ (m^3/hr)
	Pressure Drop (bar)		Pressure Drop (bar)		
	0.034	0.21	0.034	0.21	
20	531	1062	44	109	1.5
25	559	1118	47	114	1.6
32	1062	2124	89	217	3.0
40	2068	4135	173	423	5.9
50	2850	5700	238	583	8.1
65	4582	9165	382	937	13
75	6706	13412	560	1371	19
100	11177	22353	933	2285	32

① Liquid Line Capacities
R717 is based on -7°C (20°F) liquid and -18°C (0°F) evaporator temperatures. To correct for 30°C (86°F) liquid, multiply capacities by 0.9.

② Hot Gas Discharge Capacities
R717 is based on 30°C (86°F) condensing and -20°C (0°F) evaporator temperatures. Use at other typical conditions normally requires no capacity correction.

③ Liquid Capacities
R717 is based on -7°C (20°F) liquid temperature and 0.051 bar (0.75 psi) pressure drop. Correction factors for temperatures between -40°C (-40°F) and 30°C (86°F) are negligible.

Suction Line Capacities
CK-1 suction line capacities are the same as the values for the CK-2 valves at 0.034 bar (0.5 psi) pressure drop. Refer to the CK-2 tables on page 49.

For other refrigerants please use VSP2 selection software.

CK-1 Capacity Tables

R-134a (KW)

Port Size (mm)	Liquid Line ①		Hot Gas Discharge ②		Liquid Line ③ (m³/hr)
	Pressure Drop (bar)		Pressure Drop (bar)		
	0.034	0.21	0.034	0.21	
20	99	242	15	37	2.0
25	104	255	16	39	2.1
32	198	485	30	74	4.0
40	386	944	59	145	7.8
50	531	1302	82	200	11
65	854	2093	131	321	17
75	1250	3063	192	470	25
100	2084	5104	320	784	42

R-404a (KW)

Port Size (mm)	Liquid Line ①		Hot Gas Discharge ②		Liquid Line ③ (m³/hr)
	Pressure Drop (bar)		Pressure Drop (bar)		
	0.034	0.21	0.034	0.21	
20	79	193	8.2	20	1.8
25	83	203	8.6	21	1.9
32	158	386	16	40	3.7
40	307	752	32	78	7.2
50	423	1036	44	108	9.9
65	680	1666	71	173	16
75	996	2439	104	254	23
100	1659	4065	173	423	39

① Liquid Line Capacities
R134a is based on -7°C (20°F) liquid and -7°C (20°F) evaporator temperatures. For each 5°C/10°F liquid is below -7°C (20°F), increase capacities by 3.5%.
R404a is based on -7°C (20°F) liquid and -7°C (20°F) evaporator temperatures. For each 5°C/10°F liquid is below -7°C (20°F), increase capacities by 4.0%.

② Hot Gas Discharge Capacities
R134a and R404a are based on 38°C (100°F) condensing and -7°C (20°F) evaporator temperatures.

③ Liquid Capacities
R134a and R404a are based on 38°C (100°F) liquid temperature and 0.051 bar (0.75 psi) pressure drop. Correction factors for temperatures between -40°C (-48°F) and 30°C (86°F) are negligible.

Suction Line Capacities
CK-1 suction line capacities are the same as the values for the CK-2 valves at 0.034 bar (0.5 psi) pressure drop. Refer to the CK-2.

For other refrigerants please use VSP2 selection software.

CK-1 Capacity Tables

R-410a (KW)

Port Size (mm)	Liquid Line ①		Hot Gas Discharge ②		Liquid Line ③ (m³/hr)
	Pressure Drop (bar)		Pressure Drop (bar)		
	0.034	0.21	0.034	0.21	
20	106	260	22	53	1.9
25	112	274	23	55	2.0
32	212	520	43	105	3.7
40	414	1013	84	205	7.2
50	570	1397	116	283	10
65	917	2246	186	455	16
75	1342	3287	272	666	23
100	2236	5478	453	1110	39

① Liquid Line Capacities
R410a is based on -7°C (20°F) liquid and -7°C (20°F) evaporator temperatures. For each 5°C/10°F liquid is below -7°C (20°F), increase capacities by 3.5%.
R507a is based on -7°C (20°F) liquid and -7°C (20°F) evaporator temperatures. For each 5°C/10°F liquid is below -7°C (20°F), increase capacities by 4.0%.

② Hot Gas Discharge Capacities
R410a and R507a are based on 38°C (100°F) condensing and -7°C (20°F) evaporator temperatures.

③ Liquid Capacities
R410a and R507a are based on 38°C (100°F) liquid temperature and 0.051 bar (0.75 psi) pressure drop. Correction factors for temperatures between -40°C (-48°F) and 30°C (86°F) are negligible.

Suction Line Capacities
CK-1 suction line capacities are the same as the values for the CK-2 valves at 0.034 bar (0.5 psi) pressure drop. Refer to the CK-2 tables.

For other refrigerants please use VSP2 selection software.

How to order

How to order			
	1		2
	CK1	.	020
1	check valve type CK-1		
2	port size		

Please order mating flanges separately (see page 76)

In-Line Check Valves (CK-3)

The in-line CK-3 check valve prevents backward flow of high pressure refrigerant gases and liquid. The PTFE valve seat and stainless steel body allows the CK-3 to withstand corrosive environments associated in industrial refrigeration conditions. The spring loaded check valve requires a minimum 0.34 bar (5 psi) pressure drop to overcome the spring force and lift the valve seat, allowing the check valve to be mounted in any position. The valve opens wide for flow in the arrow direction on the body of the valve. When flow reversal occurs the CK-3 valve closes quickly and reliably.

CK-3

Specifications

Temperature Range	-30°C to 105°C (-25°F to 220°F)
Maximum Rated Pressure (MRP)	27.6 bar (400 psig)
Body	Stainless Steel
Seat	PTFE
Minimum Pressure Drop	0.34 bar (5.0 psig)

General Information

Port Size		Flow Coefficient		Connections Available
mm	inch	Kv	Cv	FPT
13	½	8.1	9.5	½"
20	¾	9.0	10.5	¾"
25	1	9.8	11.5	1"

For more information see bulletin 50-13.

Application Guide

Port Size		Operation	Mounting
mm	inch		
13 - 25	½ - 1	1. Hot gas lines from pan to evaporator 2. Liquid lines	Any position

How to order

How to order		
	1	2
	CK3 .	020
1	check valve type CK-3	
2	port size	

In-Line Check Valves (CK4A)

The in-line CK4A check valves prevent backward flow of fluid in refrigerant suction, hot gas or liquid lines. The primary use for these valves is in discharge and suction lines of screw compressor systems. They are also suited for high speed piston compressor discharge and for compressor suctions.

CK4A

13-100mm (1/2" - 4")

DIN Specifications

Port Sizes	13mm to 100mm (1/2" to 4")
Temperature Range	-50°C to 105°C (-60°F to 220°F)
Maximum Rated Pressure (MRP)	34.5 bar (500 psig)
Body	Ductile Iron (GGG-40.3)
Pressure Drop: 13mm - 100mm (1/2" - 4")	0.05 bar (0.75 psig)
125mm - 200mm (5" - 8")	0.04 bar (0.60 psig)
Operation	Spring Closing

General Information

Type	Port Size		Flow Coefficient		Connections Available			
	mm	inch	Kv	Cv	FPT	SW, WN	ODS	WN (DN)
CK4A-2	13	½	2.9	3.4	½", ⅜", ¾"	½", ⅜", ¾"	½", ⅝"	20, 25, 32
CK4A-3	20	¾	6.1	7.1	¾", 1", 1¼"	¾", 1", 1¼"	⅞", 1⅛", 1⅜"	20, 25, 32
CK4A-4	25	1	11	13	¾", 1", 1¼"	¾", 1", 1¼"	⅞", 1⅛", 1⅜"	32
CK4A-6	32	1¼	16	19	1¼", 1½"	1¼", 1½"	1⅝"	38, 50
CK4A-8	50	2	39	46	1½", 2"	1½", 2"	2⅛", 2⅝"	38, 50
CK4A-9	65	2½	60	70	—	2½", 3"	2⅝", 3⅛"	65, 75
CK4A-0	75	3	96	112	—	3"	3⅛", 3⅝"	75
CK4A-16	100	4	180	210	—	4"	4⅛"	100

Close coupling, valves sizes through 100mm (4"), using male adapter ring to outlet of R/S control valves.
For more information see bulletin 50-16 for valve types CK4A-2 to CK4A-16 and 50-20 for valve types CK4A-20 to CK4A-32.

Application Guide

Port Size		Operation	Mounting
mm	inch		
13 - 100	½ - 8	1. Liquid lines 2. High speed compressor discharge lines (Not recommended for slow speed compressor discharge lines) 3. Pump discharge lines 4. Suction lines down to -55°C (-60°F) 5. Hot gas lines from pan to evaporator 6. Defrost relief regulator venting to an intermediate pressure 7. Prevent receiver pressure from backing up into a cold condenser 8. Prevent liquid returning to compressor during shutdown 9. Prevent liquid from flowing down into drain pan 10. Prevent reverse flow in suction line due to unusual load conditions	Any position Note: not recommended for side port applications on screw compressors

CK4A Capacity Tables

R-717 (KW)

Port Size (mm)	Liquid Line ①		Hot Gas Discharge ②		Suction Line ③	Liquid Line ④ (m^3/hr)
	Pressure Drop (bar)		Pressure Drop (bar)			
	0.052	0.21	0.052	0.21		
13	190	380	19	39	7.5	0.5
20	397	794	41	81	16	1.1
25	726	1453	74	149	29	2.1
32	1062	2124	109	217	42	3.0
50	2571	5141	263	526	101	7.3
65	3912	7824	400	800	154	11
75	6259	12518	640	1280	247	18
100	11735	23471	1200	2399	463	33

① Liquid Line Capacities
R717 is based on -7°C (20°F) liquid and -18°C (0°F) evaporator temperatures. To correct for 30°C (86°F) liquid, multiply capacities by 0.9.

② Hot Gas Discharge Capacities
R717 is based on 30°C (86°F) condensing and -20°C (0°F) evaporator temperatures. Use at other typical conditions normally requires no capacity correction.

③ Suction Line Capacities
R717 is based on 32°C (90°F) liquid and -23°C (-10°F) evaporator temperatures and 0.052 bar (0.75 psi) pressure drop.

④ Liquid Capacities
R717 is based on -7°C (20°F) liquid temperature and 0.51 bar (0.75 psi) pressure drop.
Correction factors for temperatures between -40°C (-48°F) and 30°C (86°F) are negligible.

For other refrigerants please use VSP2 selection software.

CK4A Capacity Tables

R-134a (KW)

Port Size (mm)	Liquid Line ①		Hot Gas Discharge ②		Suction Line ③	Liquid Line ④ (m³/hr)
	Pressure Drop (bar)		Pressure Drop (bar)			
	0.052	0.21	0.052	0.21		
13	43	87	6.7	13	2.8	0.7
20	91	181	13.9	28	5.9	1.5
25	166	332	25	51	11	2.7
32	242	485	37	74	16	4.0
50	587	1174	90	180	38	9.7
65	893	1787	137	274	58	15
75	1429	2858	219	439	92	24
100	2680	5360	411	823	173	44

R-404a (KW)

Port Size (mm)	Liquid Line ①		Hot Gas Discharge ②		Suction Line ③	Liquid Line ④ (m³/hr)
	Pressure Drop (bar)		Pressure Drop (bar)			
	0.052	0.21	0.052	0.21		
13	35	69	7.1	14	3.1	0.7
20	72	144	15	30	6.4	1.4
25	132	264	27	54	12	2.5
32	193	386	40	79	17	3.7
50	467	935	96	191	42	8.9
65	711	1423	146	291	63	14
75	1138	2276	233	466	101	22
100	2134	4268	437	874	190	41

① Liquid Line Capacities
R134a is based on -7°C (20°F) liquid and -7°C (20°F) evaporator temperatures. For each 5°C/10°F liquid is below -7°C (20°F), increase capacities by 3.5%.
R404a is based on -7°C (20°F) liquid and -7°C (20°F) evaporator temperatures. For each 5°C/10°F liquid is below -7°C (20°F), increase capacities by 4.0%.

② Hot Gas Discharge Capacities
R134a and R404a are based on 38°C (100°F) condensing and -7°C (20°F) evaporator temperatures.

③ Suction Line Capacities
R134a and R404a are based on 38°C (100°F) liquid and -7°C (20°F) evaporator temperatures and 0.052 bar (0.75 psi) pressure drop.

④ Liquid Capacities
R134a and R404a are based on 38°C (100°F) liquid temperature and 0.051 bar (0.75 psi) pressure drop. Correction factors for temperatures between -40°C (-48°F) and 30°C (86°F) are negligible.

For other refrigerants please use VSP2 selection software.

CK4A Capacity Tables

R-410a (KW)

Port Size (mm)	Liquid Line ①		Hot Gas Discharge ②		Suction Line ③	Liquid Line ④ (m³/hr)
	Pressure Drop (bar)		Pressure Drop (bar)			
	0.052	0.21	0.052	0.21		
13	47	93	4.8	9.5	4.6	0.7
20	97	194	9.9	20	10	1.4
25	178	356	18	36	17	2.5
32	260	520	27	53	26	3.7
50	630	1260	64	129	62	9.0
65	959	1917	98	196	94	14
75	1534	3067	157	313	150	22
100	2876	5751	294	588	282	41

R-507a (KW)

Port Size (mm)	Liquid Line ①		Hot Gas Discharge ②		Suction Line ③	Liquid Line ④ (m³/hr)
	Pressure Drop (bar)		Pressure Drop (bar)			
	0.052	0.21	0.052	0.21		
13	34	68	7.0	14.1	3.1	0.7
20	71	142	14.7	29	6.4	1.4
25	130	259	27	54	12	2.5
32	189	379	39	79	17	3.7
50	459	917	95	190	41	9.0
65	698	1395	145	290	63	14
75	1116	2233	232	464	101	22
100	2093	4186	435	870	189	41

① Liquid Line Capacities
R410a is based on -7°C (20°F) liquid and -7°C (20°F) evaporator temperatures. For each 5°C/10°F liquid is below -7°C (20°F), increase capacities by 3.5%.
R507a is based on -7°C (20°F) liquid and -7°C (20°F) evaporator temperatures. For each 5°C/10°F liquid is below -7°C (20°F), increase capacities by 4.0%.

② Hot Gas Discharge Capacities
R410a and R507a are based on 38°C (100°F) condensing and -7°C (20°F) evaporator temperatures.

③ Suction Line Capacities
R410a and R507a are based on 38°C (100°F) liquid and -7°C (20°F) evaporator temperatures and 0.052 bar (0.75 psi) pressure drop.

④ Liquid Capacities
R410a and R507a are based on 38°C (100°F) liquid temperature and 0.051 bar (0.75 psi) pressure drop. Correction factors for temperatures between -40°C (-48°F) and 30°C (86°F) are negligible.

For other refrigerants please use VSP2 selection software.

How to order

How to order						
	1		2		3	
	CK4A	-	2	.	020	
1	check valve type CK4A					
2	type extension					
3	port size					

Please order mating flanges separately

Strainers

The RSF/RSW refrigerant strainers collect foreign materials and dirt in a refrigerant system at minimal pressure drop in order to minimize damage to or prevent malfunction of control valves. This, of course, is extremely important upon start-up of a new refrigeration system where dirt, scale, and weld particles may be present in the system and are disturbed and circulated when pressure testing or upon system start-up. Also when an existing system is revised, any settled dirt or foreign matter may be disturbed and circulated throughout the system.
The fine stainless screen mesh will collect particles as small as 0.009" (0.23 mm) in diameter [60 mesh @ 0.0075" (0.19 mm) wire]. Generous available screen area allows maximum dirt capacity at minimum pressure drop. The strainers may be close coupled to Refrigerating Specialties valves having the same flange gasket size.

13mm (1/2")

25mm (1")

32 - 100mm (11/4" - 4")

DIN Specifications

Port Sizes	15mm to 125mm (1/2" to 5")
Temperature Range	-50°C to 204°C (-60°F to 400°F)
Maximum Rated Pressure (MRP)	28 bar (406 psig)
Material	
Body: 15mm -100mm (1/2" - 4")	Ductile Iron (GGG40.3)
125mm (5")	Cast Steel (A-352 GR, LCB)
Cover: 20mm -100mm (3/4" - 4")	Ductile Iron (GGG40.3)
125mm (5")	Cast Iron (A126 Class B)
Screen (60 Mesh)	Stainless Steel

General Information

Type	Port Size		Flow Coefficient		Connections Available				Screen Area	
	mm	inch	Kv	Cv	FPT	SW, WN	ODS	WN (DN)	cm²	in²
RSF	15	½	2.6	3.0	⅜", ½", ¾"	⅜", ½", ¾"	½", ⅝"	10, 15, 20	39	6
RSF	25	1	8.1	9.4	¾", 1", 1¼"	¾", 1", 1¼"	⅞", 1⅛"	20, 25, 32	116	18
RSF	32	1¼	14	16	1¼", 1½"	1¼", 1½"	1⅝"	32	230	36
RSF	50	2	58	68	11/2", 2"	1½", 2"	2⅛", 2⅝"	40, 50	500	78
RSF	65	2½	96	112	—	2½"	2⅝", 3⅛"	65, 75	570	88
RSF	75	3	96	112	—	3"	3⅛", 3⅝"	75	570	88
RSF	100	4	146	170	—	4"	4⅛"	100	794	123

For more information see bulletin 00-10 for valve type RSF and 00-12 for valve types RSW.

How to order

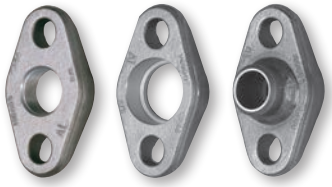
	How to order		
	1		2
	RSF	.	020
1	strainer type RSF		
2	port size		

Please order mating flanges and adapter rings separately
(see page 76)

Flanges

These forged flanges are used to connect two pieces of pipe or valve onto a line. In order to meet our customer needs they come in different connection types and sizes. For proper flange gasket sealing, care must be taken when threading or welding to assure flanges are parallel to each other and perpendicular to the pipe. Gaskets should be lightly oiled and all bolts must be tightened evenly.

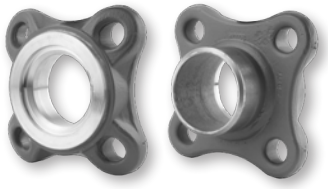
Two Bolt Flanges
Valve Port Sizes:
13mm - 100mm (½" - 1")



Standard Flange Specifications

Material: 13mm - (1/2")	ASTM A105, A352 LCB, A356 65-45-12
Temperature Range: 13mm - 100mm (1/2" - 4")	-45°C - 204°C (-50°F - 400°F)
Maximum Rated Pressure (MRP)	31 bar (450 psig)
Gasket Material: 13mm (1/2")	Garlock 2930

Four Bolt Flanges
Valve Port Sizes:
125mm - 200mm (1¼" - 4")



Stainless Steel Flange Specifications

Material: 13mm (1/2")	304SS ASTM A314
Temperature Range: 13mm (1/2")	-60°C - 150°C (-76°F - 302°F)
Maximum Rated Pressure (MRP)	28 bar (406 psig)
Gasket Material: 13mm (1/2")	Garlock 2930

General Information

Port Size		Connections Available			
mm	inch	FPT	SW, WN	ODS	WN (DN)
5	3/16	1/4", 3/8", 1/2", 3/4"	1/4", 3/8", 1/2", 3/4"	1/2", 5/8"	13, 20
13	1/2	1/4", 3/8", 1/2", 3/4"	1/4", 3/8", 1/2", 3/4"	1/2", 5/8"	13, 20
20	3/4	3/4", 1", 1 1/4"	3/4", 1", 1 1/4"	7/8", 1 1/8", 1 3/8"	20, 25, 32
25	1	3/4", 1", 1 1/4"	3/4", 1", 1 1/4"	7/8", 1 1/8", 1 3/8"	20, 25, 32
32	1 1/4	1 1/4", 1 1/2"	1 1/4", 1 1/2"	1 5/8"	32
40	1 5/8	1 1/2", 2"	1 1/2", 2"	2 1/8", 2 5/8"	38, 50
50	2	1 1/2", 2"	1 1/2", 2"	2 1/8", 2 5/8"	38, 50
65	2 1/2	—	2 1/2", 3"	2 5/8", 3 1/8"	65, 75
75	3	—	3"	3 1/8", 3 5/8"	75
100	4	—	4"	4 1/8"	100

Flange and Pipe Dimensions

US Pipe Sizes			Equivalent Metric Steel Tubing		Socket Weld Flange I.D.		Weld Neck Flange O.D.		ANSI Slip-On Socket I.D.		ANIS WN Neck O.D.	
Nominal Inch	Actual O.D.											
	mm	inch	NW	O.D. mm	mm	inch	mm	inch	mm	inch	mm	inch
1/4	13.72	0.540	8	13.5	14.22	0.560	13.72	0.540	—	—	—	—
3/8	17.14	0.675	10	17.2	17.65	0.695	17.14	0.675	—	—	—	—
1/2	21.34	0.840	15	21.3	21.84	0.860	21.34	0.840	—	—	—	—
3/4	26.67	1.050	20	26.9	27.81	1.090	26.67	1.050	—	—	—	—
1	33.40	1.315	25	33.7	34.67	1.365	33.40	1.315	—	—	—	—
1 1/4	42.16	1.660	32	42.4	43.31	1.705	42.16	1.660	—	—	—	—
1 5/8	48.26	1.900	40	48.3	59.02	1.930	48.25	1.900	—	—	—	—
2	60.32	2.375	50	60.3	62.1	2.445	60.30	2.375	—	—	—	—
2 1/2	73.02	2.875	65	76.1	74.8	2.945	73.03	2.875	—	—	—	—
3	88.90	3.500	75	88.9	90.81	3.575	88.90	3.500	—	—	—	—
4	114.30	4.500	100	114.3	116.2	4.575	114.30	4.500	—	—	—	—

Flanges Unions

The flange union kits are used to combine a male and a female flange within the same flange size code. Union kits are available for flange sizes up to 100mm (4”). The kits consists of a flange gasket and the appropriate bolts for the flange size.

Two Bolt Flange Threaded (FPT)

Four Bolt Flange Socket Weld/Outside Diameter Sweat (SW/ODS)

Four Bolt Flange Weld Neck (WN)

For proper flange gasket sealing, care must be taken when threading or welding to assure flanges are parallel to each other and perpendicular to the pipe.
Gasket should be lightly oiled and all bolts must be tightened evenly.

Adapter Rings

Adaptor rings are furnished with two matching flange gaskets.

Male Adapter Rings (MAR)

Are used to close couple CK4A or CK-1 check valves to the outlet of Refrigerating Specialties Control Valves.

Male Adaptor Ring

Female Adaptor Ring

Female Adapter Rings (FAR)

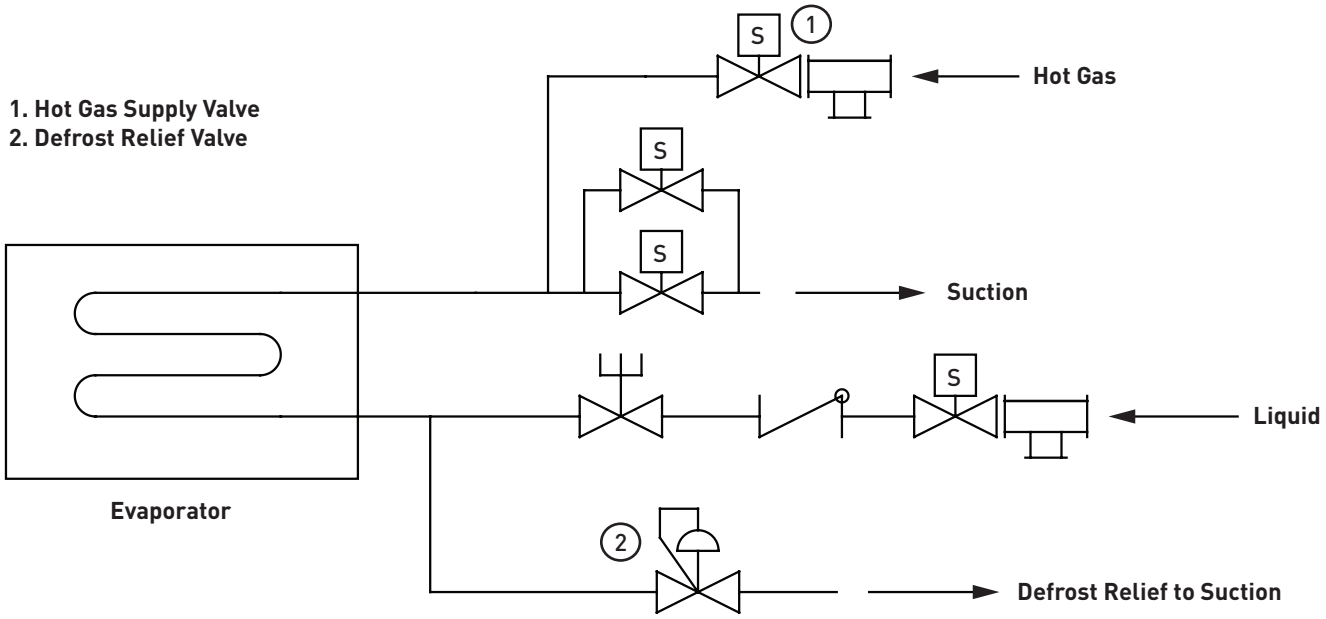
Are used in unions of two male flanges.

How to order flanges

	How to order									
	1		2		3		4		5	
	PF	.	013	.	SW	.	015	.	VA	
1	Parker flange									
2	valve port size									
3	*WN = welded neck DN; socked weld; FPT = FPT; ODS = copper									
4	connection size									
5	VA = stainless steel; blank = forged steel									

*WN = flanges are 2 flanges; SW, FPT and ODS flanges are 1 flange

Hot Gas Defrost Valve Group



R-717 (KW)

Hot Gas Supply Valve ①		Defrost Relief Valve ②		Evaporator Temperature				
Port Size (mm)	Valve Type	Port Size (mm)	Valve Type	-10 °C	-20 °C	-30 °C	-40 °C	-50 °C
13 20	S8F, SV2 50% A4AOS	20	50% A4AK	41	33	28	24	19
20	SV2, S4A, A4AOS	20	A4AK	78	73	63	56	47
25	SV2, S4A, A4AOS	25	A4AK	110	89	91	85	72
32	SV2, S4A, A4AOS	32	A4AK	210	190	16	140	120
40	S4A, A4AOS	40	A4AK	500	430	390	320	260
50	S4A, A4AOS	50	A4AK	640	570	460	390	330

Notes:
Nominal capacities listed are based on normal defrost times saturated hot gas inlet to valve no less than 30°C (86°F), a 5°C/10°F difference between evaporator, and an 8°C (47°F) defrost temperature. These capacities can be adjusted depending on the evaporator type and mass, the thickness of frost and other factors affecting the duration of the defrost process.

For other refrigerants please use VSP2 selection software.

Equalizing the coil pressure after a defrost is critical to ensure that large suction valves do not open immediately and "shock" the system after the defrost has been terminated. This is especially true on large, low temperature coils, where the difference between the defrost pressure and the house suction is the greatest, and where the internal volume of the coil is largest. The addition of a vent solenoid (usually piped in parallel to the automatic suction valve), which opens for a pre-determined period after defrost (when the hot gas solenoid de-energizes, and the suction stop valve or suction solenoid remains closed), slowly bleeds down the coil pressure. This effectively allows the defrost to terminate in a "soft" and safe manner.

Parker Global Hand Valve Platform

DN15 - DN100 (1/2" to 4")
Type: **Shut-off, Shut-off / Expansion, Shut-off / Check, Check, and Strainer**

Purpose

The Parker Global Hand Valve platform is a high quality and economical solution for industrial refrigeration applications. Featuring a 52 bar (754 psi) pressure rating and plated steel construction, these valves offer superior performance and value for a variety of applications.

Available in the following configurations:

- Shut-off
- Shut-off / expansion
- Shut-off / check
- Check
- Strainer

Product Features

- Suitable for Ammonia, CO_2, and other common refrigerants
- ASTM A350 Forged Steel Body DN15 – DN 100 (1/2" - 4")
- Fluid Temperature Range: -50 °C to 150 °C (-58 °F to 302 °F)
- Stainless Steel Bolts
- Complete Line of Bolted Bonnets
- MAWP: 52 bar (754 psi)
- Conforms to PED 2014/68/EU
- Available in angle or globe-Y body styles
- Socket weld, ANSI Butt Weld or DIN Butt Weld connections
- Plated steel construction for long life

Parker Global Hand Valve Platform

Flow Coefficients and Weights

Shut-off Valve

Port Size		Globe				Angle			
DN	Inch	Kv	Weight [kg]	Cv	Weight [lb]	Kv	Weight [kg]	Cv	Weight [lb]
15	1/2	6.7	1.3	7.6	2.9	6.6	1.3	7.5	2.9
20	3/4	11.6	1.4	13.2	3.1	12.4	1.3	14.1	2.9
25	1	21.6	2.2	24.6	4.8	17.7	2.0	20.2	4.4
32	1¼	28.3	2.4	32.3	5.3	22.7	2.0	25.9	4.4
40	1½	62.4	4.2	71.1	9.2	62.9	2.4	71.7	5.3
50	2	62.4	4.8	71.1	10.6	62.9	4.0	71.7	8.8
65	2½	87.5	12.2	99.8	26.8	137.0	10.0	156.2	22.0
80	3	148	13.0	168.7	28.6	239.0	10.5	272.5	23.1
100	4	—	—	—	—	—	—	—	—

Shut-off / Check Valve

Port Size		Globe				Angle			
DN	Inch	Kv	Weight [kg]	Cv	Weight [lb]	Kv	Weight [kg]	Cv	Weight [lb]
15	1/2	4	1.4	4.5	3.0	5.5	1.3	6.2	2.9
20	3/4	9.4	1.5	10.7	3.3	7	1.3	7.9	2.9
25	1	12.3	2.5	14.0	5.5	16.7	2.3	19.0	5.0
32	1¼	17.6	2.6	20.0	5.7	24	2.3	27.3	5.0
40	1½	52.3	4.8	59.6	10.5	40.7	4	46.3	8.8
50	2	58.4	5.2	66.5	11.4	46.4	4.5	52.8	9.9
65	2½	70.9	12.3	80.8	27.0	122.1	10	139.1	22
80	3	117.6	13.3	134.0	29.2	154.7	10.5	176.3	23.1
100	4	—	—	—	—	—	—	—	—

Shut-off / Expansion Valve

Port Size		Globe				Angle			
DN	Inch	Kv	Weight [kg]	Cv	Weight [lb]	Kv	Weight [kg]	Cv	Weight [lb]
15	1/2	6.0	1.3	6.8	2.9	6.1	1.3	7.0	2.9
20	3/4	9.8	1.4	11.2	3.1	11.1	1.3	12.7	2.9
25	1	18.7	2.2	21.3	4.8	15.0	2.0	17.1	4.4
32	1¼	24.0	2.4	27.4	5.3	18.7	2.0	21.3	4.4
40	1½	31.6	4.4	36.0	9.7	60.2	3.6	68.6	7.9
50	2	56.7	4.8	64.6	10.6	54.3	4.0	61.9	8.8
65	2½	87.5	12.8	99.8	28.2	105.0	10.5	119.7	23.1
80	3	123.0	13.5	140.2	29.7	179.0	11.0	204.1	24.2
100	4	—	—	—	—	—	—	—	—

Parker Global Hand Valve Platform

Flow Coefficients and Weights

Check Valve

Port Size		Globe				Angle			
DN	Inch	Kv	Weight [kg]	Cv	Weight [lb]	Kv	Weight [kg]	Cv	Weight [lb]
15	1/2	4.0	1.0	4.6	2.2	4.0	1.4	4.6	3.0
20	3/4	7.0	1.2	8.0	2.5	6.9	1.4	7.9	3.0
25	1	15.0	1.8	17.1	3.9	13.2	2.3	15.0	5.1
32	1¼	11.1	1.9	12.7	4.1	13.5	2.3	15.4	5.1
40	1½	57.8	3.8	65.9	8.3	46.3	4.0	52.8	8.8
50	2	60.7	4.3	69.2	9.4	48.4	4.5	55.2	9.9
65	2½	90.7	10.5	103.4	23.1	119.6	10.0	136.3	22.0
80	3	111.5	11.0	127.1	24.2	126.3	10.5	144.0	23.1
100	4	—	—	—	—	—	—	—	—

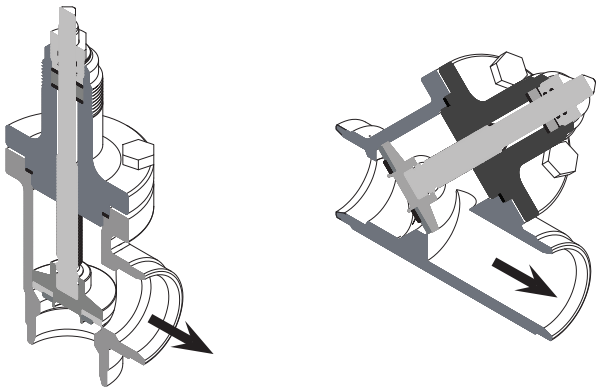
Strainer

Port Size		Globe				Angle			
DN	Inch	Kv	Weight [kg]	Cv	Weight [lb]	Kv	Weight [kg]	Cv	Weight [lb]
15	1/2	4.7	1	5.3	2.2	7.6	1.3	8.6	2.9
20	3/4	7.7	1.1	8.7	2.5	9.5	1.3	10.8	2.9
25	1	13.1	1.7	14.9	3.8	19.7	2.3	22.4	5.0
32	1¼	16.6	1.8	18.9	4.0	23.4	2.3	26.6	5.0
40	1½	24.8	3.7	28.2	8.2	39	4	44.4	8.8
50	2	35.3	4.2	40.2	9.3	45.1	4.5	51.4	9.9
65	2½	—	—	—	—	—	—	—	—
80	3	—	—	—	—	—	—	—	—
100	4	—	—	—	—	—	—	—	—

Parker Global Hand Valve Platform

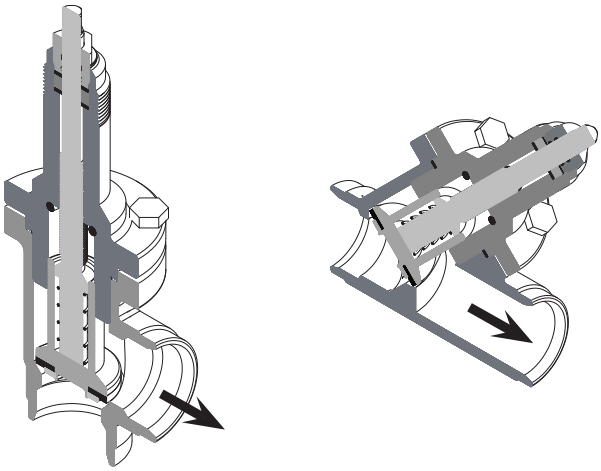
Operation

Shut-off Valve



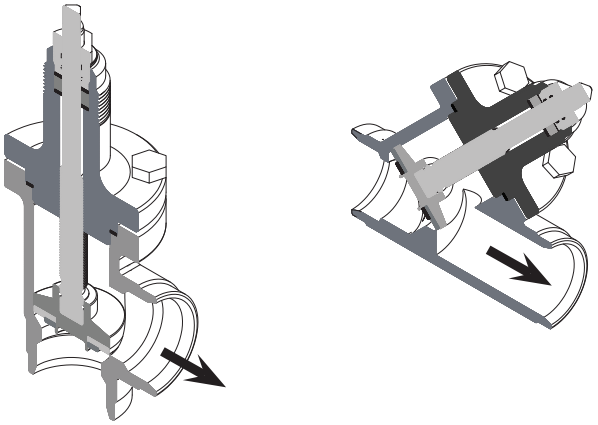
Function and Design:
The hand shut-off valves are designed to stop the flow of refrigerant to allow for service or routine maintenance of the refrigeration system. These valves are meant to be operated in their full open or full closed position.
The hand shut-off valves are available in both angle and globe-Y body configurations and either standard or extended bonnet versions. The extended bonnet allows for additional insulation to be used.

Shut-off / Check Valve



Function and Design:
The shut-off / check valves are designed to provide two functions: in the fully closed positions the valves will stop the flow of refrigerant to allow for service or routine maintenance of the refrigeration system; and in the full open position they will provide a check function which will prevent the flow of refrigerant in the reverse direction. These valves are meant to be operated in their full open or full closed position.
The shut-off / check valves are available in both angle and globe-Y body configurations and either standard or extended bonnet versions. The extended bonnet allows for additional insulation to be used.

Shut-off / Expansion Valve

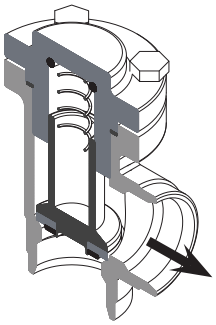


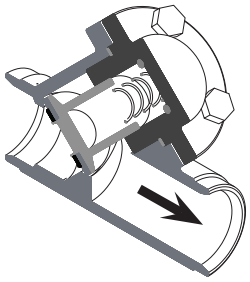
Function and Design:
The shut-off / expansion valves are designed to modulate the flow of refrigerant for liquid feed or expansion applications. By varying the percent open the flow can be adjusted to suit a variety of operating conditions. These valves also serve as shut-off valves in the full closed position.
The shut-off / expansion valves are available in both angle and globe-Y body configurations and either standard or extended bonnet versions. The extended bonnet allows for additional insulation to be used.

Parker Global Hand Valve Platform

Operation

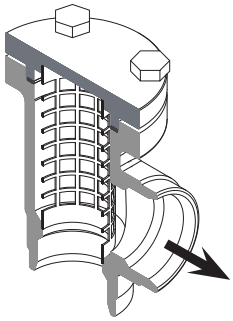
Check Valve

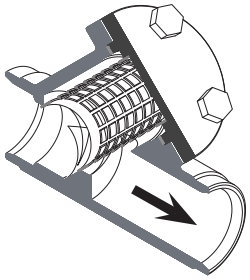




Function and Design:
The check valves are designed to prevent the flow of refrigerant in the reverse direction. These valves feature a soft seat and these valves feature a soft seat which makes them suitable for various refrigerants.
The check valves are available in both angle and globe-Y body configurations.

Strainer



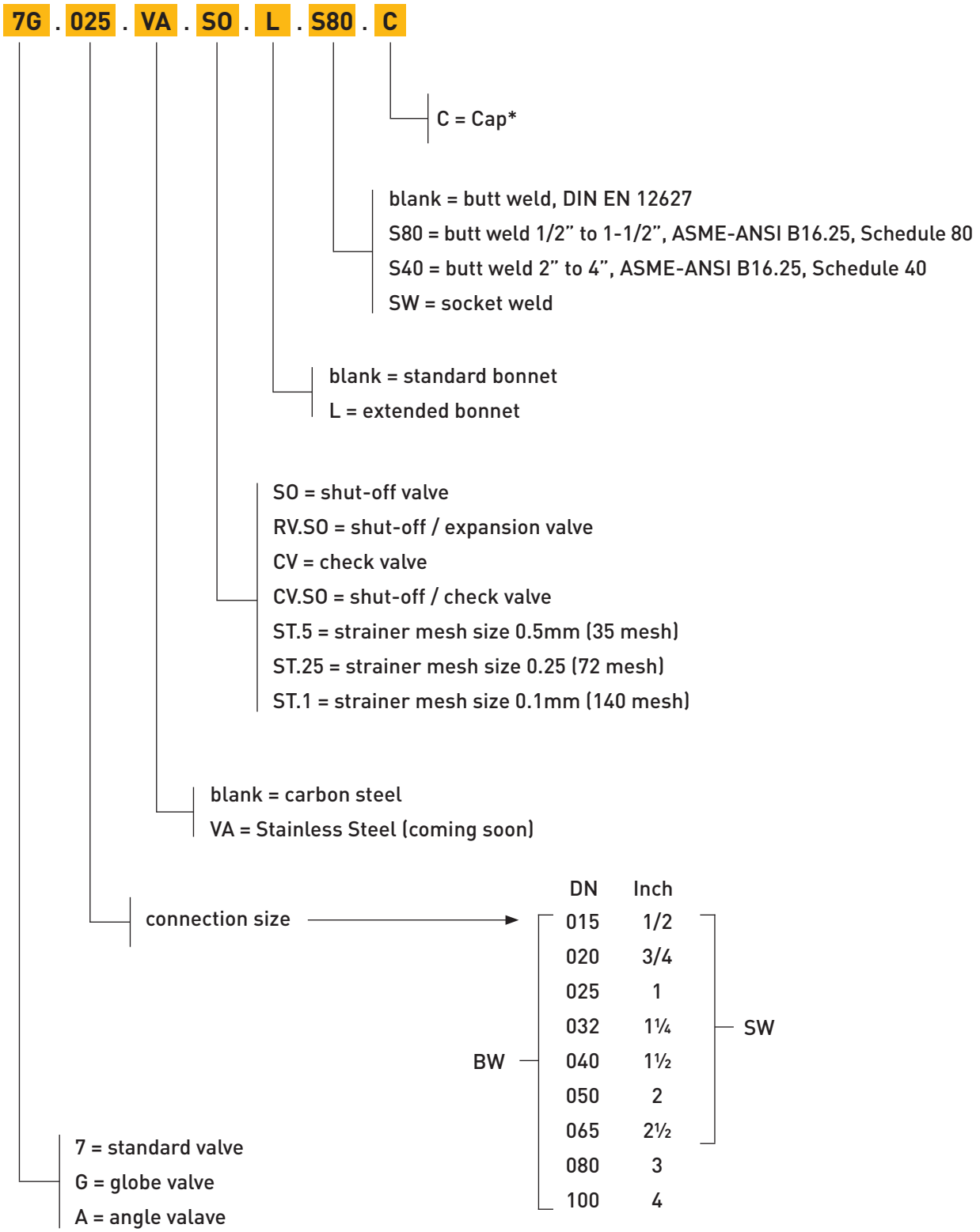


Function and Design:
The strainers are designed to reduce the amount of impurities present in the flow of refrigerant. The strainers are available in various mesh sizes (0.5 mm, 0.25mm and 0.1 mm) (35 mesh, 72 mesh, 140 mesh) and are offered in both angle and globe-Y body configurations which makes them suitable for various applications.

Parker Global Hand Valve Platform

How to order

Part Number



*Please note handwheel has to be ordered separately.

Rapid Purger (V300)

The Model V300 Rapid Purger is a unique energy-saving device designed to efficiently remove foreign non-condensable gases from ammonia refrigeration systems.

Non-condensables like air, hydrogen, nitrogen, and hydrocarbon gases reduce the overall capacity of the refrigeration system. Higher pressures, which in turn causes longer compressor runtime, longer condenser fan runtime, higher compressor discharge temperatures, increase compressor power costs, increase wear and tear on equipment, increase leaks, reduce system efficiency, increase overall system energy costs are all consequences of non-condensables in the refrigeration system.

In a refrigeration system non-condensables can be introduced by:
• Inadequate system evacuation such as servicing compressors, strainers, valves, start-up, etc.
• Refrigerant additions
• Leaks from valve stem packing, bonnet gasket, compressor shaft seal, control transducers, etc.
• Separation of ammonia molecules (hydrogen and nitrogen)
• Compressor oil breakdown (hydrocarbon gases)

The base V300 Rapid Purger removes the non-condensable gases from four purge points. With the addition purge points the auto purger is capable of a purging a total 20 purge points. This leads to lower condensing pressure, runtime of the compressors, and operating costs.

Non-condensable indicators are excessively high condensing temperatures/pressures and saturated temperature/pressure deviations. One indicator is a higher saturated condensing pressure/temperature at the condenser for the given outdoor air wet bulb and heat rejection load. Another indicator is the increasing difference between the observed condensing pressure and the saturation pressure corresponding to the liquid refrigerant temperature exiting the condenser.

Product Features

• Smaller compact design with equivalent capacity of our current model
• Light weight 29.5 kg (65 lbs)
• Proprietary microprocessor control for all sensing and control functions
• Factory calibrated and wired
• Auto or manual cycling capabilities
• Up to 20 "Purge Points"
• Automatically adjusts vent pressures
• Electronic level, temperature, and pressure monitoring for improved performance
• Records number of purger cycles and times for each purge point during a 12 weeks period
• Purger is made of corrosion resistant material

How to order

How to order							
	1		2		3		4
	V300	.	8	.	240	.	50
1	Rapid Purger						
2	purge points (4; 8; 12; 16; 20)						
3	*volts						
4	hertz						

Refrigerant Float Switch (LLSS)

The LLSS refrigerant float switch is a mechanical float device which indicates a particular level of refrigerant in a vessel. It consists of a stainless steel welded chamber containing a fl oat on the inside with a limit switch mounted on top. The chamber has a float-rod assembly inside with a metallic attractor located on the upper end of the rod. As the level in the system rises, the liquid fills the chamber causing the float ball to rise. The rising float with the attractor comes in close proximity of the magnet located inside the switch assembly. The magnet is mounted on a lever that operates a snap action switch. The switch can turn an electrical circuit on or off .
The float switch is used to open and close solenoid valves, to activate or de-activate electrical controls, to energize or de-energize magnetic starters for starting and stopping refrigerant liquid pumps and compressors, and as a safety device, to sound alarms and turn on lights when there is high or low liquid level. The electrical switch and operating mechanism are encapsulated within a UV resistant transparent housing.

Specifications

Specific Gravity Range	0.57 to 1.7
Switch Ambient Temperature	-45°C - 65°C (-150°F - 150°F)
Tank Fluid Temperature	-75°C - 65°C (-100°F - 150°F)
Maximum Tank Rated Pressure (MRP)	31 bar (450 psig)
Power	120VAC/240VAC/125VDC 10A/10A/0.5A

Features

- Suitable for Ammonia, R22, R-507, R-134a, and other common refrigerants
- Magnetically actuated switch
- UV resistant and transparent switch housing
- Stainless steel float chamber assembly
- Single pole double throw switch
- Float switch tank weighs 3.08 kg (6.8 lbs)
- Hermetically sealed
- All components in direct contact with refrigerant are stainless steel constructed
- Switch assembly is compatible with R/S liquid level models LL, LLS, and LLA

How to order

How to order	
	1
	LLSS
1	Liquid Level Switch

Liquid Level Sight Glass (SG1)

The Refrigerating Specialties liquid level sight glass SG1 provides a clear indication of liquid levels in industrial and commercial refrigeration systems.

As the refrigerant liquid level rises in the viewing area of the reflex lens, the color of the lens will turn dark. As the level decreases the color of the lens lightens.

Specifications

Temperature Range	-50°C - 115°C (-60°F - 240°F)
Maximum Rated Pressure (MRP)	27 bar (400 psig)

Features

- Suitable for Ammonia, R-22, R-507, R-134a, and other common refrigerants
- Suitable for ASME Applications
- Reflex lens
- Frost shield available

See page 138 for dimensional information. Dimensions include frost shield.

How to order

	How to order
	1
	SG1
1	sight glass standard size

Thermostatic Expansion Valves (TXV)

Ammonia Applications Only

Thermostatic expansion valves for ammonia applications require special design considerations due to the erosive effects of ammonia vapor. For this type of application, Refrigerating Specialties has developed the types D and A thermostatic expansion valves. Like other components of ammonia systems, the types D and A valves are made from steel and steel alloys.

With ammonia systems, the formation of flash vapor at the expansion valve port causes valve seat erosion or wire drawing to occur. This effect is further aggravated by high velocity ammonia mixed with dirt or scale passing through the port of the expansion valve. Fortunately, seat erosion can be minimized and valve life extended if the following steps are taken:

1. Maintain vapor-free liquid at the TXV inlet at all times
2. Maintain clean ammonia through effective filtration
3. Reduce the velocity of the ammonia through the TXV port by reducing the pressure drop across the port

Step 1: can be accomplished through proper system design. Liquid line vapor is prevented by adequately sizing liquid lines and providing sufficient subcooling.

Step 2: can be assured with the use of a Parker Replaceable Core Dryer. This filter dryer is an effective scale trap when used on ammonia systems. For further information on the use of this dryer with ammonia systems, refer to page 152 of this catalog.

Step 3: can be accomplished with the use of a removable discharge tube or the nozzle of a refrigerant distributor. These components reduce the velocity and pressure drop at the expansion valve port by introducing a restriction or added pressure drop in the valve outlet passage.

The removable discharge tube is threaded into the outlet of the type D valves, and the nominal 70.3, 105 and 176 kW (20, 30 and 50 ton) type A valves. The discharge tube is the principle difference between ammonia TXVs and TXVs used with other refrigerants.

The discharge tube in the outlet passage must be removed when the TXV is combined with a R/S Ammonia Distributor and Nozzle. If the discharge tube is not removed from the valve, the combination of the discharge tube and distributor nozzle may create an excessive pressure drop resulting in a substantial loss of TXV capacity. Refer pages 147 - 150 for further information on ammonia distributors.

The nominal 264 and 352 kW (75 and 100 ton) type A valves do not employ a discharge tube since their valve outlets are designed to serve as a secondary orifice to reduce pressure drop across the valve port.

Thermostatic Charges for Ammonia Valves

Thermostatic charges C and L are available for the Type D thermostatic expansion valve. The type L thermostatic charge is the only charge available for the type A valve. The types C thermostatic charges provide operating advantages for systems that cycle in response to a suction pressure switch or thermostat. These charges are also recommended for systems using a small capacity compressor. The table below lists the recommended temperature range for each charge.

Cold storage plants often have large centralized ammonia systems consisting of many evaporators connected to one or more large compressors. This makes for fairly stable suction pressures. The R/S type L charge responds more quickly to changes in bulb temperature, allowing for a quicker pull-down of the conditioned space temperature. Therefore, for large ammonia systems consisting of multiple evaporators, the Type L charge is recommended.

Thermostatic Charge	Evaporator Temperature
C	4°C to -18°C (40°F to 0°F)
L	-29°C to 4°C (-20°F to 40°F)

For applications at evaporator temperature below -29°C (-20°F) consult R/S

Cold storage plants often have large centralized ammonia systems consisting of many evaporators connected to one or more large compressors. This makes for fairly stable suction pressures. The R/S type L charge responds more quickly to changes in bulb temperature, allowing for a quicker pull-down of the conditioned space temperature. Therefore, for large ammonia systems consisting of multiple evaporators, the type L charge is recommended.

Thermostatic Expansion Valves (TXV)

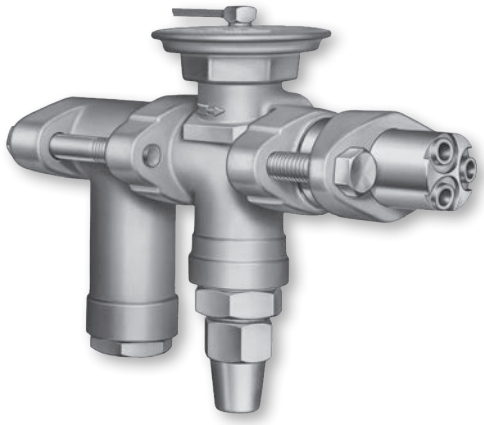
Type D - FPT Flange Connections

The type D valve is an externally adjustable valve with a gray cast iron body. It is supplied with FPT connections (1/2" SW available). The thermostatic element is replaceable, and all internal parts are serviceable. An optional XD-074 (1/2" FPT) external inlet strainer may be ordered with this valve. The nominal 3.52 and 7.03 kW (1 and 2 ton) type D valves are identical, with the exception of their discharge tubes, as are the nominal 35.2 and 52.7 kW (10 and 15 ton) valves. One of these valves can be converted to the other by exchanging the discharge tubes.

Refrigerant distributors that will mate directly to this valve are listed below.

Note: The discharge tube must be removed when a refrigerant distributor is applied to the valve.

Type D Thermostatic Expansion Valve with XD Strainer and 1132 Steel Distributor



Specifications

Maximum Rated Pressure (MRP)	27.6 bar (400 psig)
Outlet Connections	"D" flange

Distributors

1130, 1132, 1133, 1180 (aluminum)
1182 (aluminum)

Specifications - Element Size No. 23, Gasket Joint

Type		Normal Capacity		Port Size (Inches)	Discharge Tube Orifice (Inches)	Thermostatic Charges Available	Std. Tubing (Length - Ft.)	Connections FPT & SW		Flange Ring Size OD X ID (Inches)	Maximum Design Pressure		Net Weight		Shipping Weight	
Internal Equalizer	External Equalizer 1/8" FPT	kw	tons					Inlet (inches)	Outlet (inches)		bar	psi	kg	lbs	kg	lbs
DA-1	DAE-1	3.52	1	1/16	1/32	C L Y764 Y779 Y1201	**10*** 20	1/4", 3/8", or 1/2*		1.12 x 0.75	29.3	425	3.6	8	4.1	9
DA-2	DAE-2	7.03	2	1/16	1/16											
DA-5	DAE-5	17.6	5	7/64	5/64											
DA-10	DAE-10	35.2	10	3/16	7/64											
DA-15	DAE-15	52.7	15	3/16	5/32											

Bold* figures are standard and will be furnished unless other wise specified.

Material & Details of Construction

Valve Type	Body	Seat	Pin	Pin Carrier	Pushrod(s)	Type of Joints	Connection	Inlet Strainer
D	Gray Iron Casting	Stainless Steel or Steel Alloy	Tungsten Carbide	Stainless Steel	Stainless Steel	Gasket	FPT (1/2" SW only)	Removable Strainer Screen

Note: The DA to a DAE do not use the same body and are not inter changeable.
Discharge tubes are only interchangeable when thermostatic expansion valves (TXV) have the same port size.

Thermostatic Expansion Valves (TXV)

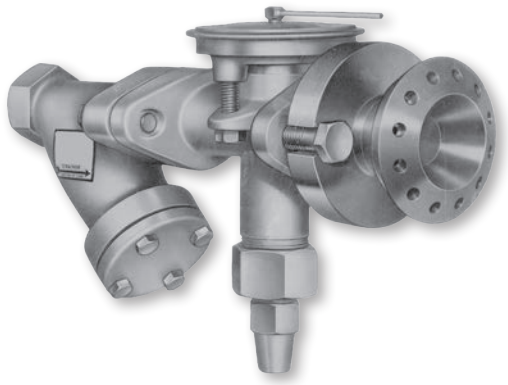
Type A - FPT Flange Connections

The type A valve is an externally adjustable valve with a gray cast iron body and either FPT or socket weld flange connections. The thermostatic element is replaceable. An optional 8004 (1/2" FPT) or 8006 (3/4" FPT) strainer may be ordered with this valve.

The nominal 70.3 and 105 kW (20 and 30 ton) type A valves are identical with the exception of their discharge tubes. One of these valves can be converted to the other by exchanging their discharge tubes. The nominal 264 and 352 kW (75 and 100 ton) type A valves do not employ a discharge tube, nor are their outlets tapped to receive one.

Refrigerant distributors that will mate directly to this valve are listed below. Note: The discharge tube must be removed from the nominal 70.3, 105 and 176 kW (20, 30 and 50 ton) type A valves when a refrigerant distributor is applied.

Type A Thermostatic Expansion Valve with Y Strainer and 1185 Steel Distributor



Specifications

Maximum Rated Pressure (MRP)	27.6 bar (400 psig)
Outlet Connections	"A" flange

Distributors

1138, 1185 (aluminum)

Specifications - Element Size No. 12, Gasket Joint

Type		Normal Capacity		Port Size (Inches)	Discharge Tube Orifice (Inches)	Thermostatic Charges Available	Std. Tubing (Length - Ft.)	Connections FPT & SW		Flange Ring Size OD X ID (Inches)	Maximum Design Pressure		Net Weight		Shipping Weight	
Internal Equalizer	External Equalizer 1/8" FPT	kw	tons					Inlet (inches)	Outlet (inches)		bar	psi	kg	lbs	kg	lbs
AA-20	AAE-20	70.3	20	5/16	1/8	L Y1182 Y830 Y832 Y1199	**10*** 20	1/2*, 3/4, or 1		1.75 x 1.25	27.6	400	4.5	10	5.0	11
AA-30	AAE-30	105	30	5/16	5/32											
AA-50	AAE-50	176	50	3/8	3/16											
AA-75	AAE-75	264	75	3/8	—			3/4*, or 1								
AA-100	AAE-100	352	100	7/16	—											

Bold* figures are standard and will be furnished unless other wise specified.

Material & Details of Construction

Valve Type	Body	Seat	Pin	Pin Carrier	Pushrod(s)	Type of Joints	Connection	Inlet Strainer
A	Gray Iron Casting	Stainless Steel or Steel Alloy	20 & 30 Ton: Tungsten Carbide 50, 75, & 100 Ton: Stainless Steel	Stainless Steel	Stainless Steel	Gasket	FPT or SW	Removable Strainer Screen

Note: The AA to a AAE do not use the same body and are not inter changeable.
Discharge tubes are only interchangeable when thermostatic expansion valves (TXV) have the same port size.

Thermostatic Expansion Valves (TXV) Capacities

These ratings are based on vapor free 30°C (86°F) liquid refrigerant entering the TXV, a maximum opening superheat of 7°F, and a standard factory air test setting.

AC and AL Thermostatic Charges 717 Capacities (KW)

Valve Type	Nominal Capacity	Port Size (inches)	Discharge Tube Size (inches)	Evaporator Temperature (°C)											
				4°				-7°				-15°			
				Pressure Drop Across Valve (bar)											
				5.5	6.9	8.3	9.7	6.9	8.3	9.7	11	6.9	8.3	9.7	11
D	3.52	1/16	1/32	3.80	4.25	4.64	5.03	3.59	3.94	4.25	4.54	2.99	3.27	3.52	3.76
	7.03	1/16	1/16	7.59	8.47	9.28	10.06	7.21	7.88	8.51	9.11	5.94	6.50	7.03	7.52
	17.6	7/64	5/64	19.0	21.2	23.2	25.1	18.0	19.7	21.3	22.7	14.9	16.3	17.6	18.8
	35.2	3/16	7/64	38.0	42.5	46.4	50.3	35.9	39.4	42.5	45.4	29.7	32.6	35.2	37.6
	52.7	3/16	5/32	57.0	63.6	69.6	75.2	54.1	59.1	64.0	68.2	44.7	48.9	52.7	56.3
A	70.3	5/16	1/8	67.9	75.9	83.0	89.7	66.1	72.4	78.1	83.3	59.4	65.0	70.3	75.2
	105	5/16	5/32	102	114	124	134	98.8	108	117	125	89.3	97.7	105	113
	176	3/8	3/16	169	190	207	224	165	181	195	208	149	163	176	188
	264	3/8	—	254	284	311	336	248	271	293	313	223	244	264	282
	352	7/16	—	339	380	415	447	330	362	390	418	297	326	352	376

AC and AL Thermostatic Charges 717 Capacities (TONS)

Valve Type	Nominal Capacity	Port Size (inches)	Discharge Tube Size (inches)	Evaporator Temperature (°F)											
				40°				20°				5°			
				Pressure Drop Across Valve (psi)											
				80	100	120	140	100	120	140	160	100	120	140	160
D	1	1/16	1/32	1.08	1.21	1.32	1.43	1.02	1.12	1.21	1.29	0.85	0.93	1.00	1.07
	2	1/16	1/16	2.16	2.41	2.64	2.86	2.05	2.24	2.42	2.59	1.69	1.85	2.00	2.14
	5	7/64	5/64	5.40	6.03	6.61	7.14	5.12	5.61	6.05	6.47	4.23	4.63	5.00	5.35
	10	3/16	7/64	10.8	12.1	13.2	14.3	10.2	11.2	12.1	12.9	8.45	9.26	10.0	10.7
	15	3/16	5/32	16.2	18.1	19.8	21.4	15.4	16.8	18.2	19.4	12.7	13.9	15.0	16.0
A	20	5/16	1/8	19.3	21.6	23.6	25.5	18.8	20.6	22.2	23.7	16.9	18.5	20.0	21.4
	30	5/16	5/32	28.9	32.3	35.4	38.2	28.1	30.8	33.3	35.6	25.4	27.8	30.0	32.1
	50	3/8	3/16	48.2	53.9	59.0	63.7	46.9	51.4	55.5	59.3	42.3	46.3	50.0	53.5
	75	3/8	—	72.3	80.8	88.5	95.6	70.4	77.1	83.3	89.0	63.4	69.4	75.0	80.2
	100	7/16	—	96.4	108	118	127	93.8	103	111	119	84.5	92.6	100	107

Correction Factor (CF) Liquid Temperature Entering TXV

Refrigerant	-18°C (0°F)	-12°C (10°F)	-7°C (20°F)	-1°C (30°F)	4°C (40°f)	10°C (50°F)	16°C (60°F)	21°C (70°F)	27°C (80°F)	30°C (86°C)	32°C (90°F)	38°C (100°F)
717	1.27	1.24	1.20	1.17	1.14	1.11	1.08	1.05	1.02	1.00	0.99	0.96

Example

Actual capacity of nominal 35.2 kW (10 ton) valve at -7°C (20°F) evaporator, 11 bar (160 psi) pressure drop and 16°C (60°F) liquid temperature.

- 45.4 bar x 1.08 = 49.0 bar
- (12.9 tons x 1.08 = 13.9 tons)

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of -18°C (0°F). However, they may be used for any evaporator temperature from -29°C to 4°C (-20°F to 40°F) since the variation in the actual factors across this range is insignificant.

Thermostatic Expansion Valves (TXV) Capacities

These ratings are based on vapor free 30°C (86°F) liquid refrigerant entering the TXV, a maximum opening superheat of 7°F, and a standard factory air test setting.

AZ and AL Thermostatic Charges 717 Capacities (KW)

Valve Type	Nominal Capacity	Port Size (inches)	Discharge Tube Size (inches)	Evaporator Temperature (°C)							
				4°				-7°			
				Pressure Drop Across Valve (bar)							
				8.3	9.7	11.0	12.4	8.3	9.7	11.0	12.4
D	3.52	1/16	1/32	2.14	2.32	2.50	2.64	1.83	1.97	2.11	2.22
	7.03	1/16	1/16	3.73	4.01	4.29	4.54	3.13	3.38	3.62	3.83
	17.6	7/64	5/64	8.72	9.42	10.1	10.7	7.35	7.95	8.51	9.00
	35.2	3/16	7/64	18.4	19.9	21.3	22.6	15.5	16.8	18.0	19.1
	52.7	3/16	5/32	25.6	27.6	29.5	31.3	21.6	23.3	24.9	26.4
A	70.3	5/16	1/8	55.9	60.5	64.7	68.6	47.8	51.7	55.6	58.7
	105	5/16	5/32	84.0	90.7	97.0	103	72.1	77.7	83.0	88.3
	176	3/8	3/16	140	152	162	172	120	130	139	147
	264	3/8	—	210	227	243	257	180	194	208	220
	352	7/16	—	280	303	324	344	240	259	277	294

AZ and AL Thermostatic Charges 717 Capacities (TONS)

Valve Type	Nominal Capacity	Port Size (inches)	Discharge Tube Size (inches)	Evaporator Temperature (°F)							
				-10°				-20°			
				Pressure Drop Across Valve (psi)							
				120	140	160	180	120	140	160	180
D	1	1/16	1/32	0.61	0.66	0.71	0.75	0.52	0.56	0.60	0.63
	2	1/16	1/16	1.06	1.14	1.22	1.29	0.89	0.96	1.03	1.09
	5	7/64	5/64	2.48	2.68	2.87	3.04	2.09	2.26	2.42	2.56
	10	3/16	7/64	5.24	5.66	6.05	6.42	4.42	4.78	5.11	5.42
	15	3/16	5/32	7.27	7.85	8.39	8.90	6.13	6.62	7.08	7.51
A	20	5/16	1/8	15.9	17.2	18.4	19.5	13.6	14.7	15.8	16.7
	30	5/16	5/32	23.9	25.8	27.6	29.3	20.5	22.1	23.6	25.1
	50	3/8	3/16	39.9	43.1	46.0	48.8	34.1	36.9	39.4	41.8
	75	3/8	—	59.8	64.6	69.1	73.2	51.2	55.3	59.1	62.7
	100	7/16	—	79.7	86.1	92.1	97.7	68.2	73.7	78.8	83.6

Correction Factor (CF) Liquid Temperature Entering TXV

Refrigerant	-18°C (0°F)	-12°C (10°F)	-7°C (20°F)	-1°C (30°F)	4°C (40°f)	10°C (50°F)	16°C (60°F)	21°C (70°F)	27°C (80°F)	30°C (86°C)	32°C (90°F)	38°C (100°F)
717	1.27	1.24	1.20	1.17	1.14	1.11	1.08	1.05	1.02	1.00	0.99	0.96

Example

Actual capacity of nominal 35.2 kW (10 ton) valve at -23°C (-10°F) evaporator, 11 bar (160 psi) pressure drop and 16°C (60°F) liquid temperature.

- 21.3 bar x 1.08 = 23.0 bar
- (6.05 tons x 1.08 = 6.53 tons)

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of -18°C (0°F). Howeaver, they may be used for any evaporator temperature from -29°C to 4°C (-20°F to 40°F) since the variation in the actual factors across this range is insignificant.

Oil Cooling Thermostatic Charges

Estimated Bulb Temperature Control Range (°C)

Equalizer Pressure	Type D Valve Charges (°C)			Type A Valve Charges (°C)			
bar	Y764	Y779	Y1201	Y1182	Y830	Y832	Y1199
2.8	31 - 39	47 - 56	73 - 82	27 - 35	31 - 39	47 - 56	73 - 82
3.4	36 - 44	52 - 60	79 - 87	32 - 39	36 - 44	52 - 60	79 - 87
4.1	41 - 48	57 - 64	84 - 92	37 - 43	41 - 48	57 - 64	84 - 92
4.8	45 - 52	62 - 69	89 - 96	41 - 47	45 - 52	62 - 69	89 - 96
5.5	49 - 56	66 - 73	94 - 100	45 - 51	49 - 56	66 - 73	94 - 100

Estimated Bulb Temperature Control Range (°F)

Equalizer Pressure	Type D Valve Charges (°F)			Type A Valve Charges (°F)			
psi	Y764	Y779	Y1201	Y1182	Y830	Y832	Y1199
40	87 - 103	116 - 132	163 - 180	81 - 95	87 - 103	116 - 132	163 - 180
50	96 - 111	126 - 140	174 - 189	90 - 103	96 - 111	126 - 140	174 - 189
60	105 - 119	135 - 148	184 - 197	98 - 110	105 - 119	135 - 148	184 - 197
70	113 - 126	144 - 156	193 - 205	106 - 117	113 - 126	144 - 156	193 - 205
80	120 - 133	151 - 163	201 - 212	113 - 123	120 - 133	151 - 163	201 - 212

- Use 40°F evaporating temperature ratings
- Liquid temperature entering TXV
- Pressure drop across TXV
- Cooling load (compressor manufacturer)

Thermostatic Expansion Valves Selection Procedure

The following procedure should be used when selecting a R717 Ammonia TXV:

1. Determine the pressure drop across the valve

Subtract the evaporating pressure from the condensing pressure. The condensing pressure used in this calculation should be the minimum operating condensing pressure of the system. From this value, subtract all other pressure losses to obtain the net pressure drop across the valve. Be sure to consider all of the following possible sources of pressure drop: (1) friction losses through refrigeration lines including the evaporator and condenser; (2) pressure drop across liquid line accessories such as a solenoid valve and filter-drier; and (3) static pressure loss (gain) due to the vertical lift (drop) of the liquid line, see Table 1.

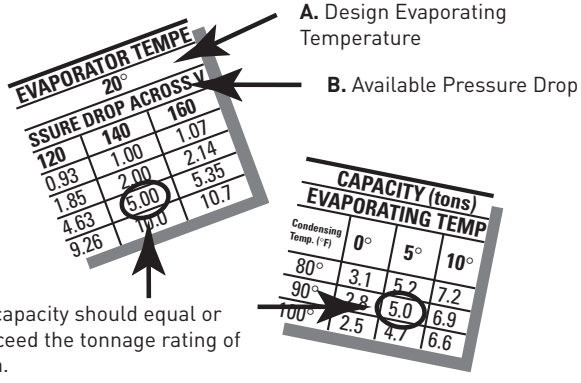
Table 1

Refrigerant	Vertical Lift				
	6.1 m (20 ft)	12.2 m (40 ft)	18.3 m (60 ft)	24.4 m (80 ft)	30.5 m (100 ft)
	Static Pressure Loss				
717 Ammonia	0.34 bar (5 psi)	0.69 bar (10 psi)	1.03 bar (15 psi)	1.38 bar (20 psi)	1.72 bar (25 psi)

It is not necessary to subtract the pressure drop across the refrigerant distributor when determining the pressure drop across a R/S Type D or type A valve with a nominal rating of 176 kW (50 tons) or less. These valves employ a discharge tube in the valve outlet passageway, and it should be removed when a distributor is connected to the valve. R/S distributors are normally selected to provide a 2.76 bar (40 psi) pressure drop at design load conditions for ammonia applications. Removing the discharge tube from the valve will compensate for this pressure drop.

2. Determine the liquid temperature of the refrigerant entering the valve

The R-717 Ammonia TXV rating tables on page 143 are based on a liquid temperature of 30°C (86°F). For other liquid temperatures, apply the correction factor given in the table.



A. Design Evaporating Temperature

B. Available Pressure Drop

The valve capacity should equal or slightly exceed the tonnage rating of the system.

Thermostatic Expansion Valves Selection Procedure

3. Select valve from the rating tables

Select a valve based on the design evaporating temperature and the available pressure drop across the valve. If possible, the valve rating should equal or slightly exceed the design rating of the system. Be sure to apply the appropriate liquid temperature correction factor to the valve ratings shown in the tables. Once the desired valve rating has been located, determine the nominal capacity of the valve from the second column of the table. On multiple evaporator systems, select each valve on the basis of individual evaporator capacity.

4. Determine if an external equalizer is required

The amount of pressure drop between the valve outlet and bulb location will determine if an external equalizer is required. The recommendations given in Table 1 are suitable for most field installed systems. Use an externally equalized valve when pressure drop between the valve outlet and bulb location exceeds values shown in Table 2. An externally equalized valve must be used on evaporators, which employ a refrigerant distributor.

Table 2

Refrigerant	Evaporator Temperature			
	4°C	-7°C	-18°C	-29°C
	Pressure Drop (psi)			
717 Ammonia	0.21 bar	0.14 bar	0.10 bar	0.07 bar

When the thermostatic expansion valve is equipped with an external equalizer, it must be connected. Do not cap off the equalizer connection, as it will prevent the valve from operating properly.

5. Select the R/S Selective Thermostatic Charge

Select the charge according to the design evaporator temperature and the valve application. The subject of R-717 thermostatic charges is discussed on page 85.

Selection Example Refrigerant 717

Application: Refrigeration, single evaporator system	
Design evaporator temperature	-15°C
Design condenser temperature	32°C
Refrigerant liquid temperature	27°C
Design evaporator capacity	17.6 kW
Available pressure drop across TXV	
Condensing pressure	11.4 bar
Evaporator pressure	1.31 bar
Pressure Drop	10.1 bar
Liquid line and accessories loss	0.48 bar
① Distributor and tubes loss	0 bar
Total Pressure Drop	9.65 bar
Refrigerant liquid correction factor	1.02

The DAE-5 has a valve capacity of: 17.6 x 1.02 = 17.93 kW (5.00 x 1.02 = 5.10 tons) at -15°C (5°F) evaporator temperature, 9.65 bar (140 psi) pressure drop, and 27°C (80°F) liquid temperature.

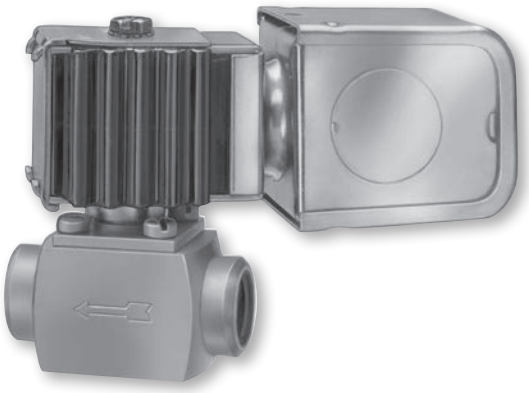
Thermostatic charge, see page 140: C

Selection: DAE-5-C

① An externally equalized valve must be used on evaporators employing a refrigerant distributor due to the pressure drop created by the distributor. Pressure drop due to the distributor is not used in the calculation to determine pressure drop across the TXV since the valve's discharge tube will be removed. Refer to step 1 of the selection procedure.

XJH and XOF Solenoid Valves

Type XJH and XOF solenoid valves are of the direct acting type and are designed for small capacity ammonia/oil service. Both of these valves may be mounted horizontally, on their side or in a vertical line.



Specifications

Flow Coefficient: Kv = 0.24

General Information

Type	Connection (Inches)	Port Size (Inches)	MOPD		Nominal Liquid Capacities kW (Tons) of Refrigeration										Standard Coil Ratings	
					Ammonia											
			AC		Pressure Drop											
			bar	psi	0.07 bar (1 psi)		0.14 bar (2 psi)		0.21 bar (3 psi)		0.28 bar (4 psi)		0.34 bar (5 psi)		Volts / Cycles	Watts
XJH	1/4" NPT Female	0.109	17.2	250	13.75	3.91	19.48	5.54	23.87	6.79	27.60	7.85	30.87	8.78	24 / 50-60 120 / 50-60 208 / 50-60 240 / 50-60	10
XOF	3/8" NPT Female															

- Safe working pressure 20.7bar (300 psi).

How to order

How to order			
	1	2	3
	XOF .	Z	J
1	XYH=1/4" FTP, XOF=3/8" FTP		
2	Z=240V/60Hz - 208V/50Hz		
3	J=Junktion Box		

CE Coil is included.

Level Master Control

Application and Installation

The R/S Level-Master Control is a positive liquid level control device suitable for application to all flooded evaporators.

Description and Operation

The LMC is a standard thermostatic expansion valve equipped with a Level-Master Element. The combination provides a simple, economical, and highly effective liquid level control. The bulb of the conventional thermostatic element has been modified to an insert type of bulb that incorporates a low wattage heater. A 15-watt heater is supplied as standard. The insert bulb is installed in the accumulator or surge drum at the point of the desired liquid level. As the level at the insert bulb drops, the electrically added heat increases the pressure within the thermostatic element and opens the valve. As the liquid level at the bulb rises, the electrical input is balanced by the heat transfer from the bulb to the liquid refrigerant and the LMC either modulates or eventually shuts off. The evaporator pressure and spring assist in providing a positive closure.

Installation – General

The Level-Master Control is applicable to any system that has been specifically designed for flooded operation.

R/S is not responsible for system design and, therefore, is not liable for any damage arising from faulty design or improper piping, or for misapplication of its products. Figures 2 through 4 are piping schematics only to illustrate possible methods of applying the LMC valves.
If these valves are applied in any manner other than as described in this bulletin, the R/S warranty is void. Actual system piping must be done to protect the compressor at all times. This includes protection against overheating, slugging with liquid refrigerant, and trapping of oil in various locations. R/S recommends that recognized piping references, such as equipment manufacturers' literature and the ASHRAE Guide and Data Book, be consulted for assistance with this subject.
The valve is usually connected to feed into the surge drum above the liquid level. It can also feed into the liquid leg or coil header.
The insert bulb can be installed directly into the shell, surge drum or liquid leg on new or existing installations. Existing float systems can be easily converted by installing the LMC insert bulb in the float chamber.
The Level-Master Control may be installed at any ambient temperature. The element is protected against excessive temperature, created by the heater, by a thermostatic switch that is an integral part of the heater assembly.

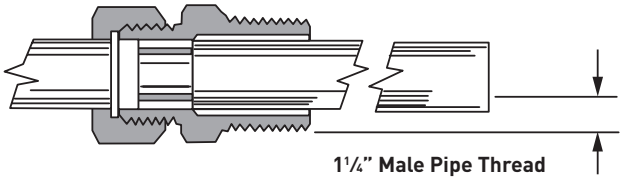


Figure 1: Horizontal Position

Installation – Insert Bulb

The insert bulb should be installed at the point where the desired liquid level is to be maintained. The bulb must be in contact with the refrigerant, i.e., NOT installed in a well. If the insert bulb is projected directly into the surge drum, it should be shielded to prevent the possibility of splash from either the valve feed or the return from the coil. While generally installed in a horizontal position, see Figure 1, it will operate effectively at any angle or vertical position.

Minor adjustments in liquid level can be made with the adjusting stem provided on the expansion valve. The insert bulb assembly is provided with a lock ring and gasket joint so that the bulb may be removed without breaking the pipe joint.

Installation – Electrical Connections

The heater is provided with a two-wire neoprene covered cord two feet in length. It runs through a moisture-proof grommet and a 1/2" male conduit connection affixed to the insert bulb assembly, see Figure 2.

The heater circuit must be interrupted when refrigeration is not required and the compressor is cycled off. This will prevent shortening the life of the heater thermostat. To accomplish this, the heater is wired in parallel (on the compressor side) with the control or power relay, the holding coil of the compressor magnetic starter, or the liquid line solenoid valve.

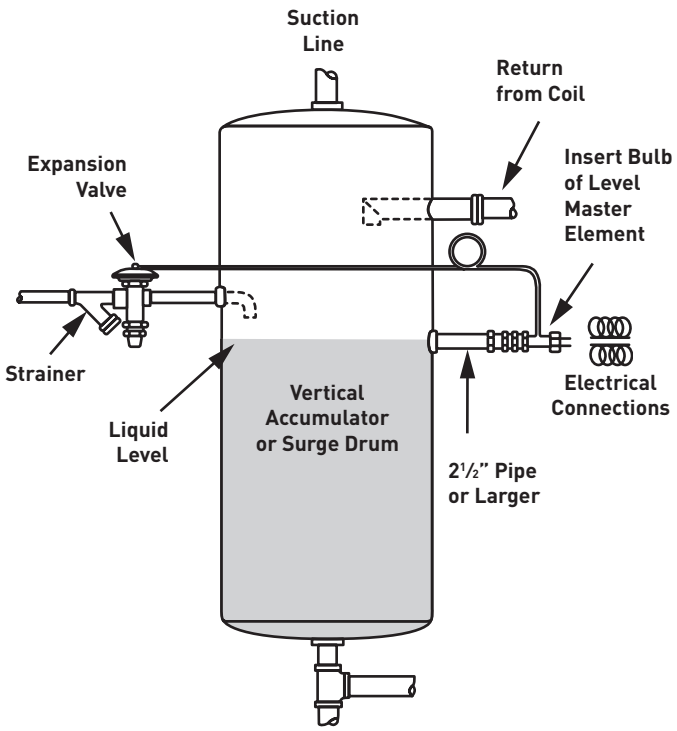


Figure 2: Typical Installation

Level Master Control Design Precautions

Hand Valves

On installations where the valve is isolated from the surge drum by a hand valve, and a two to three pound pressure drop from the valve outlet to the bulb location is likely, we recommend that an externally equalized valve be used. (See ordering instructions.)

Oil Return

General – All reciprocating compressors will allow some oil to pass into the discharge line along with the discharge gas. Mechanical oil separators are used extensively; however, they are never completely effective. The untrapped oil passes through the condenser, liquid line, expansion device and finally into the evaporator.

In a properly designed direct expansion system, the refrigerant velocity in the evaporator tubes and in the suction line is sufficiently high to ensure a continuous return of oil to the compressor crankcase. But, this is not characteristic of flooded systems. Here, we purposely design the surge drum for a relatively low vapor velocity to prevent entrainment of liquid refrigerant droplets and consequent carryover into the suction line. This design criterion also prevents the return of any oil from the low side in the normal manner.

And if oil is allowed to concentrate at the insert bulb location of the R/S Level-Master Control, overfeeding with possible floodback can occur. The tendency to overfeed is due to the fact that the oil does not convey the heat from the low wattage heater element away from the bulb as rapidly as does pure liquid refrigerant. The bulb pressure is higher than normal and the valve remains in the open or partially open position.

Oil and Ammonia Systems

Liquid ammonia and oil are immiscible for all practical purposes. And since the density of oil is greater than that of ammonia, it will fall to the bottom of any vessel containing such a mixture, if the mixture is relatively placid.

Therefore, the removal of oil from an ammonia system is a comparatively simple task. Generally, on systems equipped with a surge drum, the liquid leg is extended downward below the point where the liquid is fed off to the evaporator and a drain valve is provided to allow periodic manual draining as shown in Figure 3.

For flooded chillers that do not use a surge drum, a sump with a drain valve is usually provided at the bottom of the chiller shell.

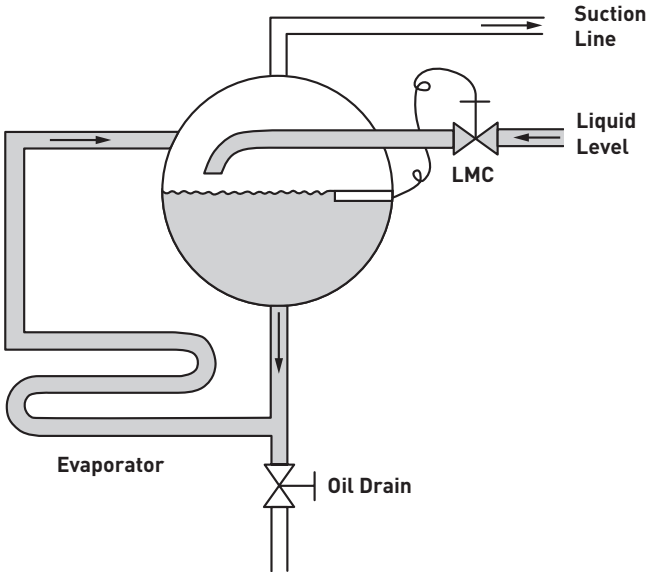


Figure 3: Surge Drum

The above methods are quite satisfactory, except possibly on some low temperature systems. Here, the drain leg or sump generally has to be warmed prior to attempting to draw off the oil since the trapped oil becomes quite viscous at lower temperatures. If oil is not drained from a flooded ammonia system, a reduction in the evaporator heat transfer rate can occur due to an increase in the refrigerant film resistance. Difficulty in maintaining the proper liquid level with any type of flooded control can also be expected.

With a float valve, you can expect the liquid level in the evaporator to increase with high concentration of oil in a remote float chamber.

If a R/S Level-Master Control is used with the insert bulb installed in a remote chamber, oil concentration at the bulb can cause overfeeding with possible floodback. The lower or liquid balance line must be free of traps and be free draining into the surge drum or chiller as shown in Figure 4. The oil drain leg or sump must be located at the lowest point in the low side.

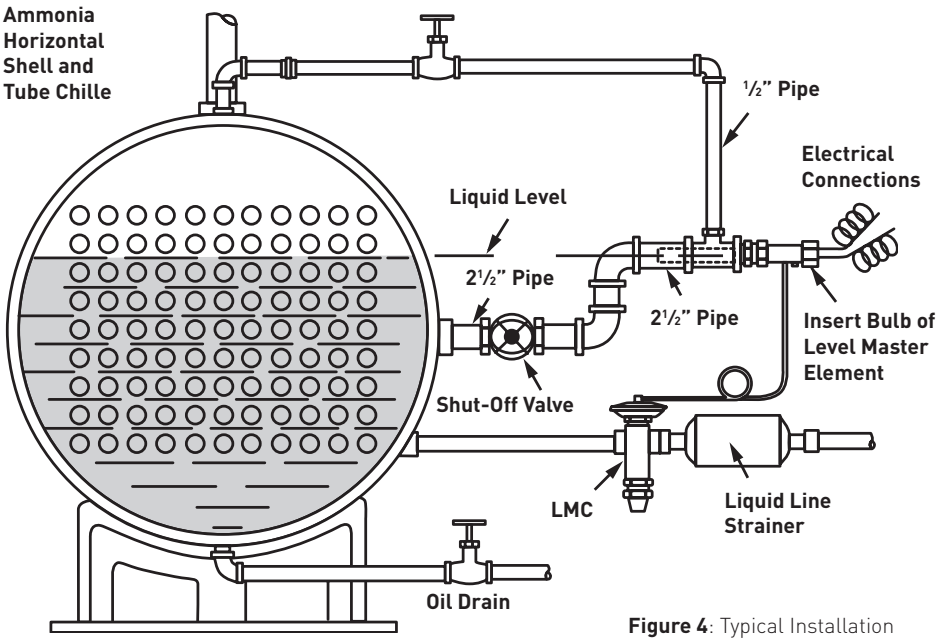
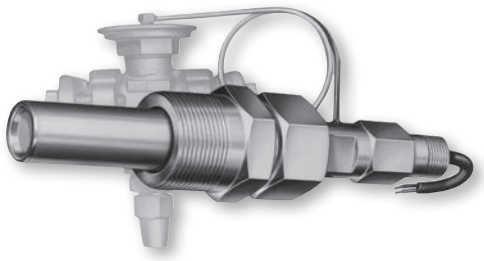


Figure 4: Typical Installation

Level Master Control

Capacity in Tons of Refrigeration

These ratings are based on vapor free (subcooled) liquid refrigerant entering the expansion valve (30°C/86°F for Refrigerant 717) and standard factory setting. Because of the artificial superheat provided by the electric heater, the Level-Master will have a greater capacity than a conventional thermostatic expansion valve. For selections for other refrigerants, contact Refrigerating Specialties.



Electrical Specifications

15/24-watt - 24v, 120v or 240v any frequency AC or DC.

Watts	Voltage	Amps
15	24	0.125
	120	0.625
	240	0.063
25	24	1.04
	120	0.20
	240	0.104

Standard Tubing Length

3.05 m (10 ft) – Other lengths in integrals of 1.54 m (5 ft) available on special order.

Replacement Parts

Internal parts kits – Same as standard thermostatic expansion valves. Specify valve type and port size.

Heater Element Assembly

Consists of heater element, lead wire, protective thermostatic switch, and moisture proof seal.

General Information

Complete Control Valve & Element		Element Only	Discharge Tube (Inches)	Standard Connections (Inches) Sizes shown in BOLD figures will be furnished unless otherwise specified	
Internal Equalizer	[1] External Equalizer			Inlet	Outlet
LMC-DA-1	LMC-DAE-1	LMC 23AL	1/32	¼, ⅜, or ½ FPT	
LMC-DA-2	LMC-DAE-2		1/16		
LMC-DA-5	LMC-DAE-5		5/64		
LMC-DA-10	LMC-DAE-10		7/64		
LMC-DA-15	LMC-DAE-15		5/32		
LMC-AA-20	LMC-AAE-20	LMC 12AL	⅛	½ or ¾ FPT	
LMC-AA-30	LMC-AAE-30		5/32		
LMC-AA-50	LMC-AAE-50		3/16		
LMC-AA-75	LMC-AAE-75		—	¾ FPT	
LMC-AA-100	LMC-AAE-100		—		

[1] Standard External Equalizer Connection (1/8" FPT) available when specified.

Level Master Control Capacities and Selections

LMC R717 Capacities (kW)

Valve Type	Nominal Capacity	Evaporator Temperature (°C)																			
		4° to -18°					-23°					-29°					-40°				
		Pressure Drop Across Valve (bar)																			
		5.5	6.9	8.3	9.7	11	6.9	8.3	9.7	11	12	6.9	8.3	9.7	11	12	6.9	8.3	9.7	11	12
D	1	3.31	3.73	4.08	4.40	4.71	3.45	3.76	4.04	4.32	4.61	3.02	3.31	3.55	3.80	4.04	2.07	2.29	2.46	2.64	2.81
	2	9.46	10.6	11.6	12.5	13.4	9.74	10.7	11.5	12.3	13.0	8.58	9.39	10.1	10.8	11.5	5.91	6.50	7.00	7.49	7.95
	5	21.4	23.9	26.2	28.3	30.2	22.0	24.1	26.1	27.8	29.5	19.4	21.2	22.9	24.5	26.0	13.4	14.7	15.9	16.9	18.0
	10	38.7	43.2	47.5	51.3	54.8	39.7	43.6	47.1	50.6	53.4	35.0	38.3	41.5	44.3	47.1	24.2	26.6	28.8	30.7	32.6
	15	52.7	59.1	64.7	70.0	74.9	54.1	59.4	64.3	68.9	73.1	47.8	52.4	56.6	60.5	64.3	33.1	36.2	39.0	41.8	44.3
A	20	62.6	69.6	76.6	82.6	88.3	64.0	70.3	75.9	81.2	86.1	56.3	61.9	66.8	71.4	75.9	39.0	42.9	46.4	49.2	52.4
	30	105	118	129	140	149	109	119	128	137	146	85.1	105	113	121	128	66.1	72.4	78.1	83.3	88.6
	50	150	168	184	199	212	154	169	183	195	207	136	149	161	172	182	94	103	111	119	126
	75	264	295	323	349	373	272	297	321	343	362	239	262	283	302	320	165	181	196	209	222
	100	373	415	457	492	527	380	422	454	485	513	336	369	397	429	454	232	256	276	295	313

These factors include corrections for liquid refrigerant density and net refrigerating effect, and are based on an average evaporating temperature of -18°C (0°F). However, they may be used for any evaporator temperature from -40°C to 4°C (-40°F to 40°F) since the variation in the actual factors across this range is insignificant.

For other refrigerants please use PSV2 selection software.

Correction Factor (CF) Liquid Temperature Entering TXV

Refrigerant	-18°C (0°F)	-12°C (10°F)	-7°C (20°F)	-1°C (30°F)	4°C (40°f)	10°C (50°F)	16°C (60°F)	21°C (70°F)	27°C (80°F)	30°C (86°C)	32°C (90°F)	38°C (100°F)
717	1.27	1.24	1.20	1.17	1.14	1.11	1.08	1.05	1.02	1.00	0.99	0.96

Example

At -29°C (-20°F) evaporator, 11 bar (160 psi) pressure drop and 10°C (50°F) liquid temperature, the capacity of an LMC-DA-10 (for ammonia) is:

- 44.3 bar x 1.11 = 49.2 bar
- (12.6 tons x 1.11 = 14.0 tons)

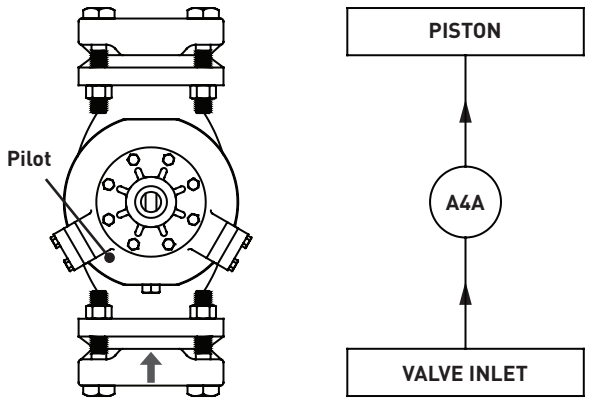
APPENDIX A

Schematic Flow Diagrams

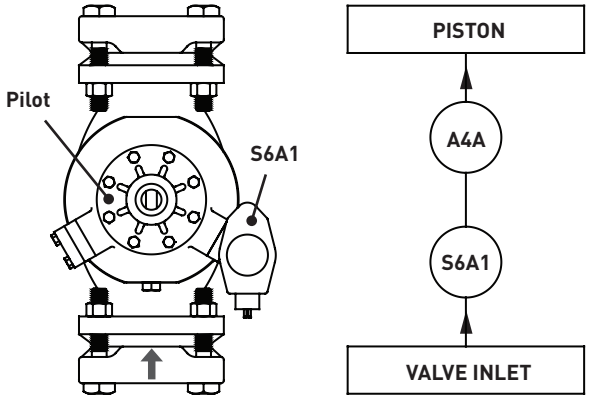
100 **A4 Adaptomode® Schematic Flow Diagrams**

104 **Dual Position Valves Schematic Flow Diagrams**

A4 Adaptomode® Schematic Flow Diagrams

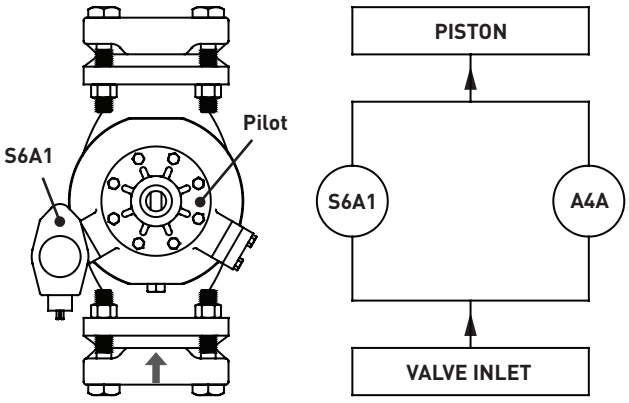


Flow Diagram: A4A, A4W, A4_Z Inlet Pressure Regulator



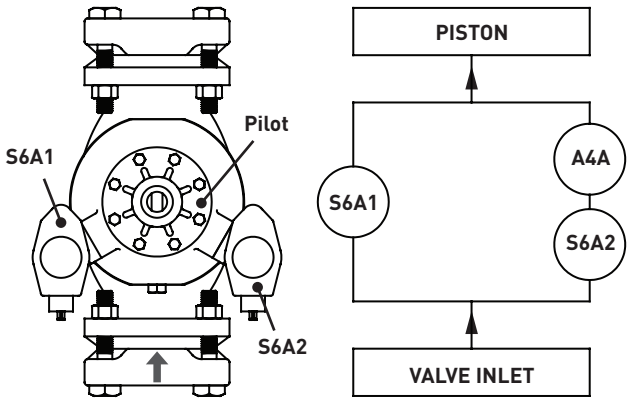
A4_S	
Control Function	Operation
	S6A1
Pressure Pilot	Energized
Shut-Off	De-Energized

Flow Diagram: A4A, A4W, A4_Z Inlet Pressure Regulator



A4_B	
Control Function	Operation
	S6A1
Pressure Pilot	De-Energized
Wide Open	Energized

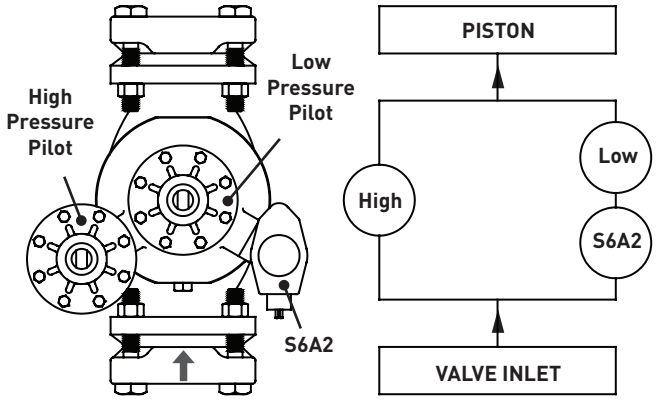
Flow Diagram: A4_B Inlet Pressure Regulator with Electric Bypass



A4_BS		
Control Function	Operation	
	S6A1	S6A2
Pressure Pilot	De-Energized	Energized
Shut-Off	De-Energized	De-Energized
Wide Open	Energized	Energized or De-Energized

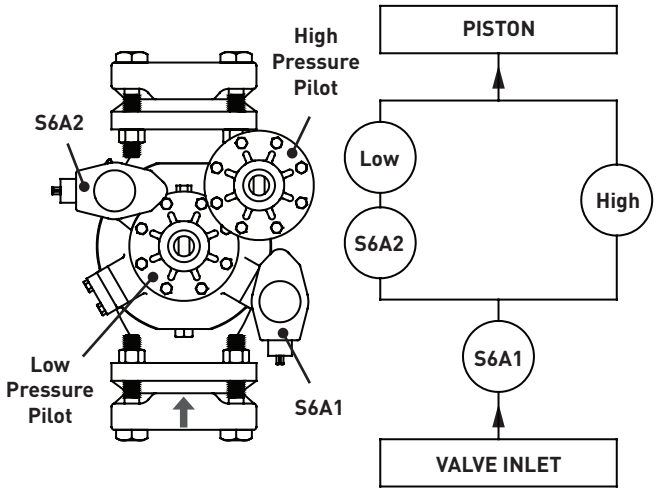
Flow Diagram: A4_BS Inlet Pressure Regulator with Electric Bypass and Shut-Off

A4 Adaptomode® Schematic Flow Diagrams



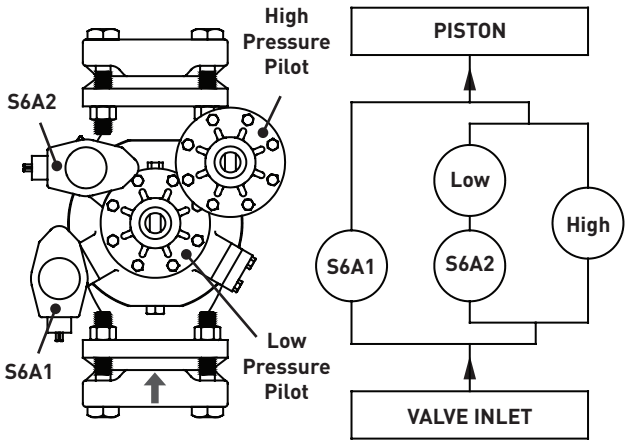
A4_D	
Control Function	Operation
	S6A2
Low Pressure Pilot	Energized
High Pressure Pilot	De-Energized

Flow Diagram: A4_D Dual Inlet Pressure Regulator



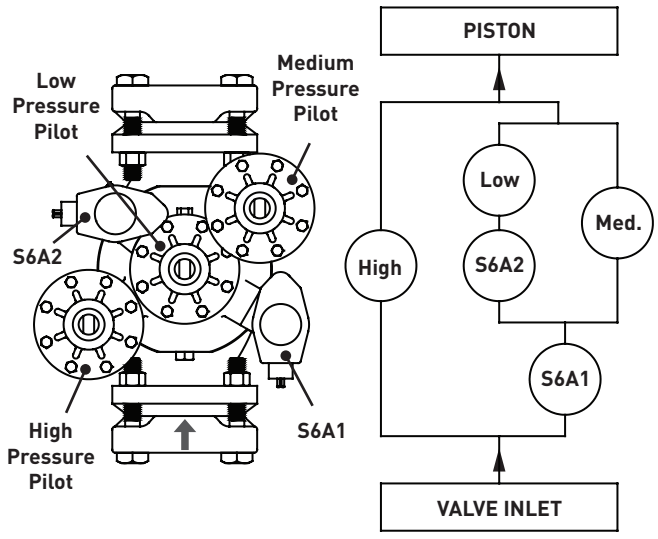
A4_DS		
Control Function	Operation	
	S6A1	S6A2
Low Pressure Pilot	Energized	Energized
High Pressure Pilot	Energized	De-Energized
Shut-Off	De-Energized	Energized or De-Energized

Flow Diagram: A4_DS Dual Inlet Pressure Regulator with Electric Shut-Off



A4_DB		
Control Function	Operation	
	S6A1	S6A2
Low Pressure Pilot	De-Energized	Energized
High Pressure Pilot	De-Energized	De-Energized
Wide Open	Energized	Energized or De-Energized

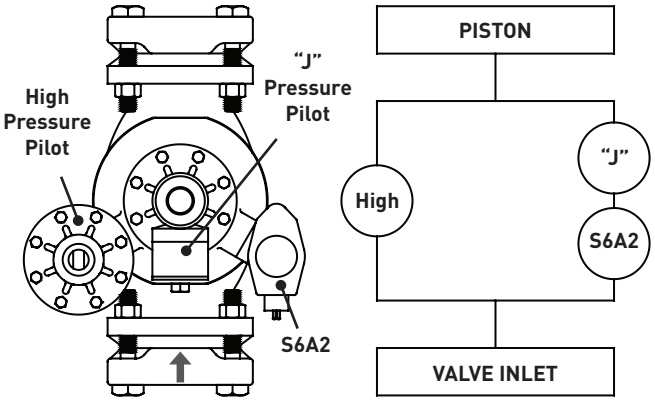
Flow Diagram: A4_DB Dual Inlet Pressure Regulator with Electric Bypass



A4_DD		
Control Function	Operation	
	S6A1	S6A2
Low Pressure Pilot	Energized	Energized
Medium Pressure Pilot	Energized	De-Energized
High Pressure Pilot	De-Energized	Energized or De-Energized

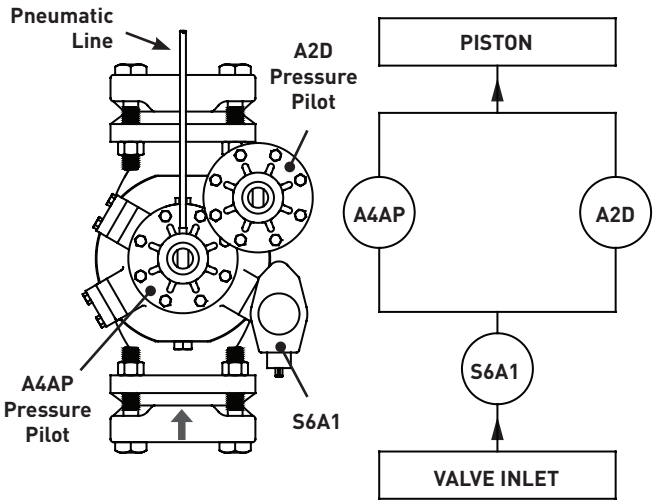
Flow Diagram: A4_DD Tri Inlet Pressure Regulator

A4 Adaptomode® Schematic Flow Diagrams



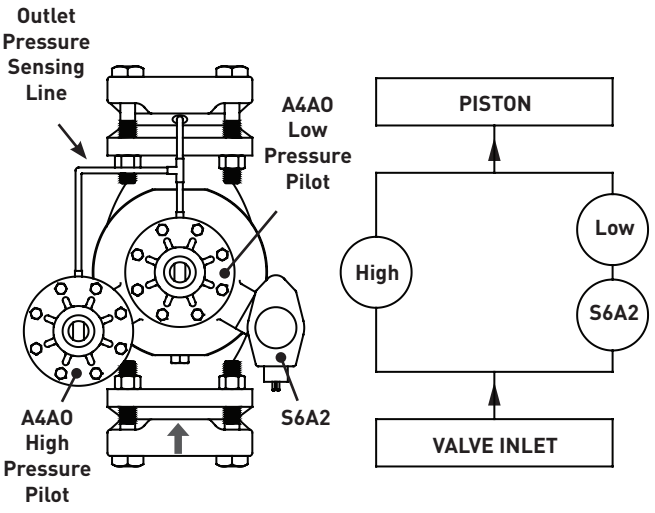
A4_DJ	
Control Function	Operation
	S6A2
"J" Pressure Pilot	Energized
High Pressure Pilot	De-Energized

Flow Diagram: A4_DJ Inlet Dual Pressure Regulator



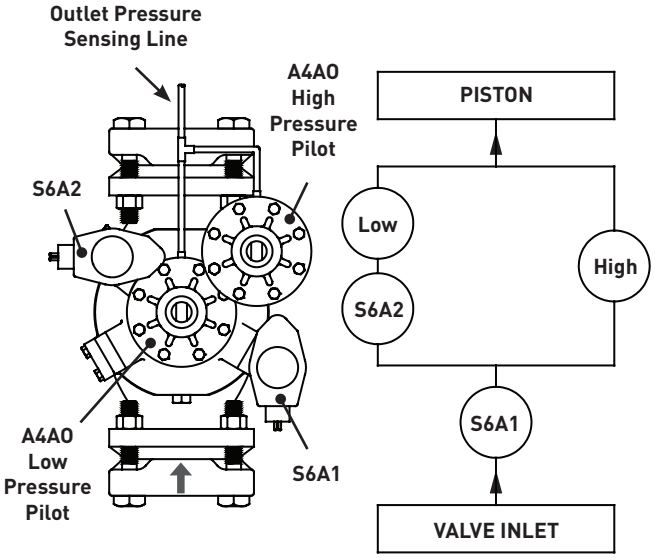
A4_DPS		
Control Function	Operation	
	S6A1	Note
A4AP Pressure Pilot	Energized	When S6A1 is energized either the A4AP or the A2D (high pressure pilot) will control, which ever has the lower set point.
A2D Pressure Pilot	Energized	
Shut-Off	De-Energized	

Flow Diagram: A4_DPS Pneumatically Compensated Inlet Pressure Regulator with Electric Shut-Off



A4_DO	
Control Function	Operation
	S6A2
Low Pressure Pilot	Energized
High Pressure Pilot	De-Energized

Flow Diagram: A4_DO Dual Outlet Pressure Regulator



A4_DOES		
Control Function	Operation	
	S6A1	S6A2
Low Pressure Pilot	Energized	Energized
High Pressure Pilot	Energized	De-Energized
Shut-Off	De-Energized	Energized or De-Energized

Flow Diagram: A4_DOES Dual Outlet Pressure Regulator with Electric Shut-Off

A4 Adaptomode® Schematic Flow Diagrams

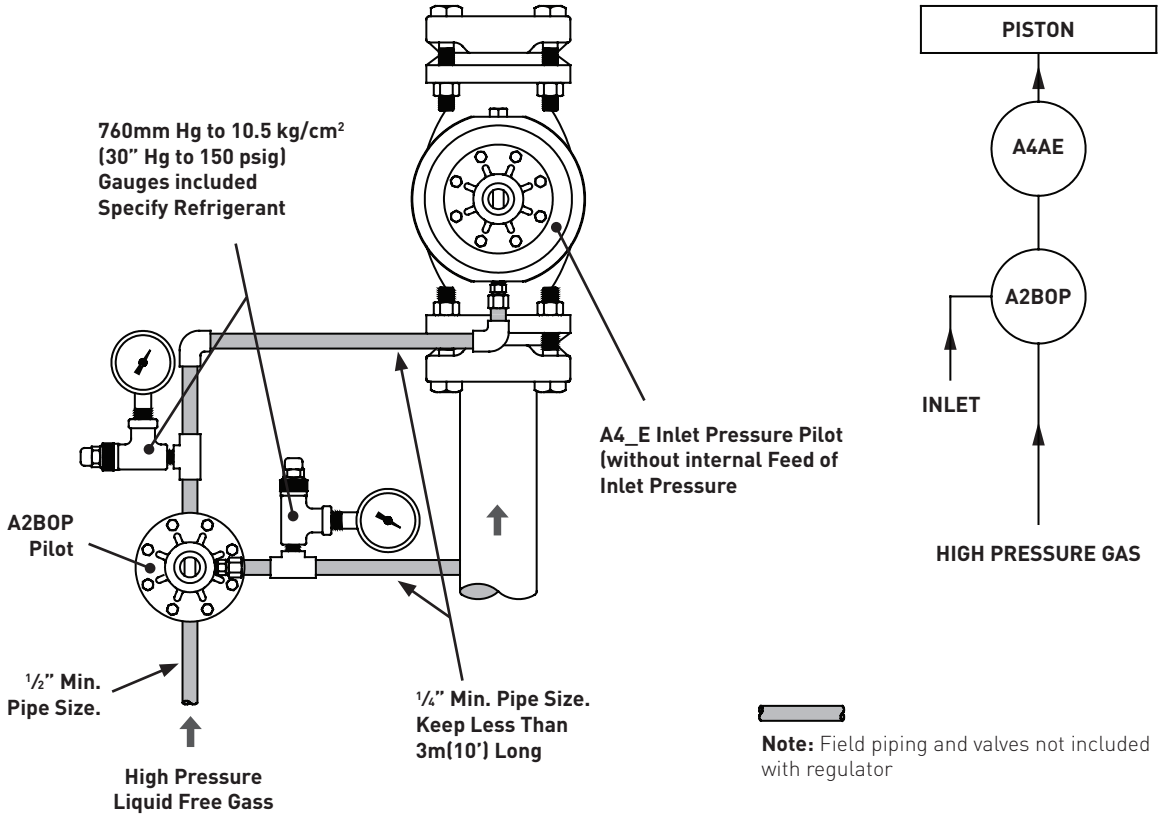
Low Pressure Drop Option (LPD)

With the conventional evaporator regulator, a minimum of 0.14 bar (2 psi) pressure across the main valve is required for the valve to be fully open. The Low Pressure Drop feature added to a Type A4 inlet or outlet pressure regulator permits full flow modulation with pressure drops down to 0.04 bar (1/2 psi).

The principle of operation for the LPD is to provide high pressure refrigerant to the A2BOP pilot inlet line. Reduce this high pressure to a lower pressure and control it to follow the main regulator upstream pressure always at a fixed differential, approximately 0.35 bar (5 psi).

Use this controlled following pressure through the pilot circuit and to the top of the piston, where it will operate the main valve independently of the main line pressure drop.
The controlled following pressure from the A2BOP must be enough higher than the upstream pressure to provide reliable operation at all times, but not so high at any time as to cause excessive leakage, which would reduce evaporator capacity.

All Type A4 Regulating Valves arranged for LPD operation must also be sized for LPD operation. The capacity of a regulator at 0.04 bar (1/2 psi) pressure drop will be 50% of the capacity at 0.14 bar (2 psi) pressure drop for the same inlet conditions.



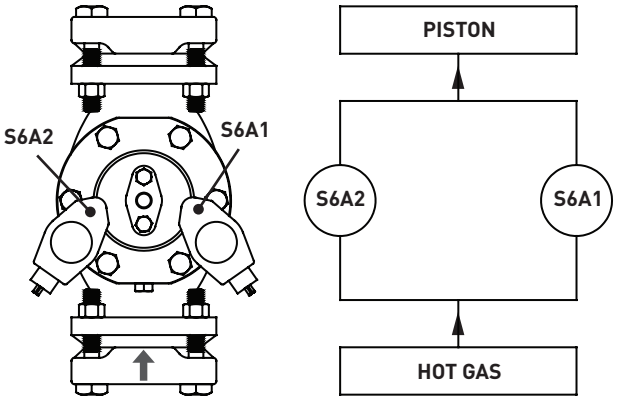
Flow Diagram: A4_ Low Pressure Drop (LPD) Inlet Dual Pressure Regulator

The basic LPD assembly includes:

- Compensated pressure regulator (A2BOP)
- Gauge valves: 2 with inlet regulator, 3 with outlet regulator
- 760mm Hg to 10.5 bar (30" Hg to 150 lb.) gauges: 2 with inlet regulator, 3 with outlet regulator

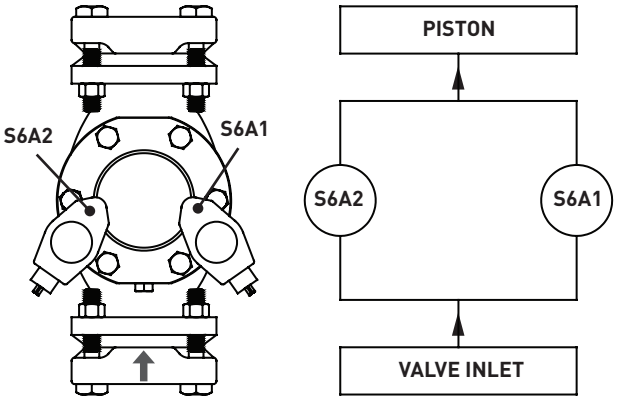
Note: Not available with Variations E, L, K or R.

Dual Position Valves Schematic Flow Diagrams



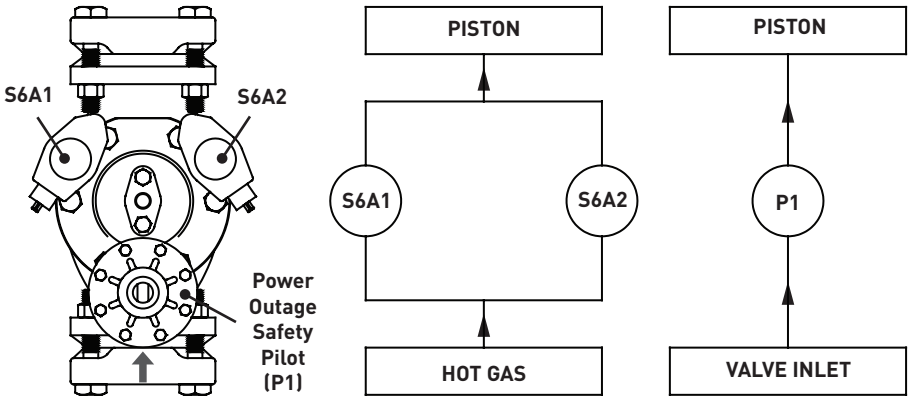
CK-2D		
Control Function	Operation	
	S6A1	S6A2
Full Open	De-Energized	De-Energized
Full Closed	Energized	Energized
Equalize	De-Energized	Energized

Flow Diagram: CK-2D Dual Position Gas Powered Suction Stop Valve



S4AD		
Control Function	Operation	
	S6A1	S6A2
Full Open	Energized	Energized
Full Closed	De-Energized	De-Energized
Equalize	De-Energized	Energized

Flow Diagram: S4AD Dual Position Solenoid Valve



CK-6D		
Control Function	Operation	
	S6A1	S6A2
Full Open	De-Energized	De-Energized
Full Closed	Energized	Energized
Equalize	De-Energized	Energized

Flow Diagram: CK-6D Dual Position Gas Powered Suction Stop Valve

APPENDIX B

Dimensional Diagrams

106 **A4 Adaptomode® Series Pressure Regulators**

116 **Compact Pressure Regulators**

117 **Solenoid Valves**

120 **Dual Position Solenoid Valves**

121 **Solenoid Valves / Gas Powered Suction Stop Valves**

122 **Gas Powered Suction Stop Valves**

125 **Dual Position Gas Powered Suction Stop Valves**

126 **Check Valves**

129 **Strainers**

131 **Industrial Valve Flanges**

136 **Liquid Level Controls**

137 **Thermostatic Expansion Valves**

138 **HJH and XOF Solenoid Valves**

139 **Parker Global Hand Valve Platform**

142 **Valve Station**

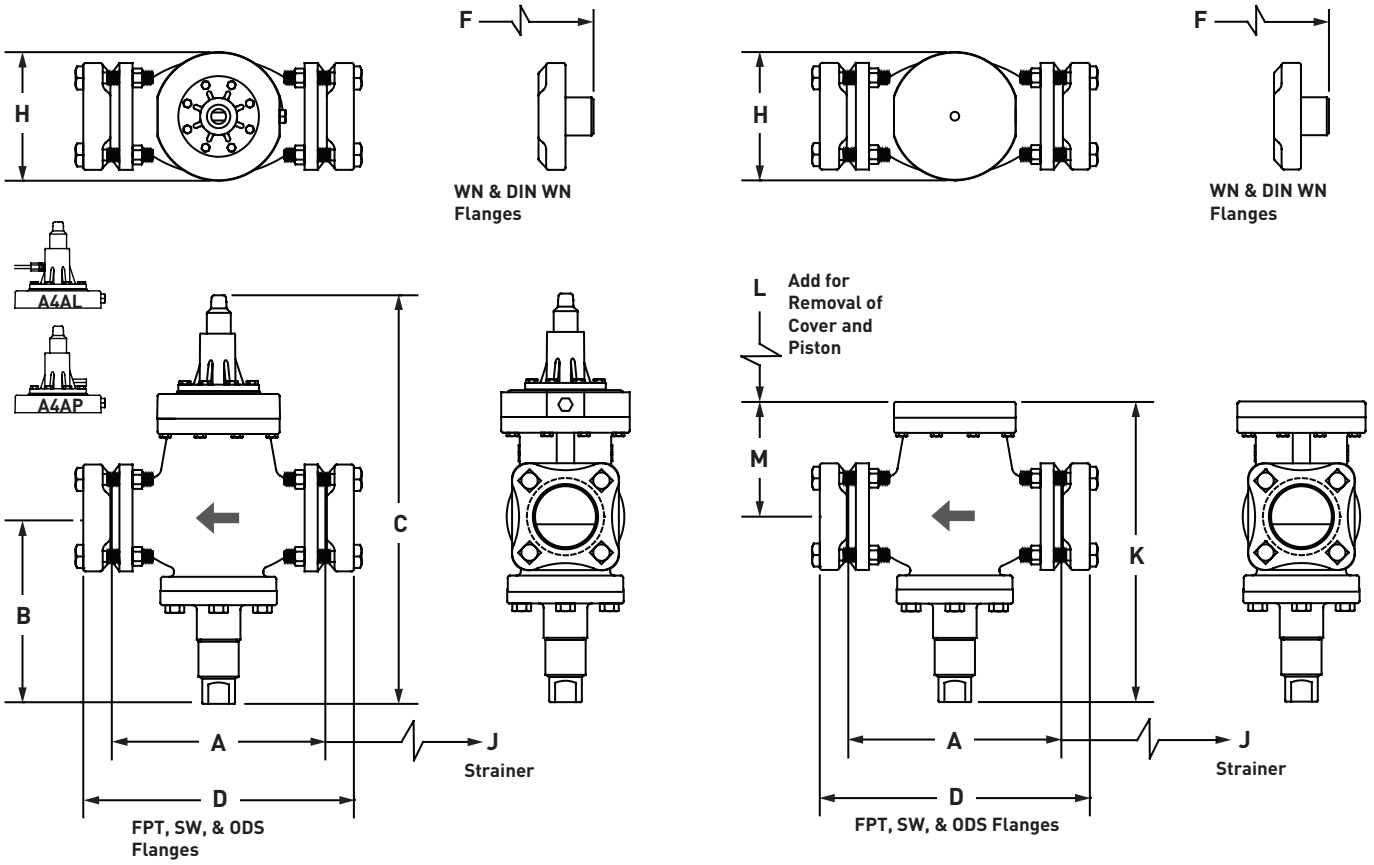
144 **P-Series Solenoids and Pressure Regulators**

148 **Electronic Valve**

149 **S8 Strainer-Solenoid**

149 **S8 Valve Station**

A4 Adaptomode® Series Pressure Regulators



Dimensional Diagram: A4A,E,K,L & P Inlet Pressure Regulator

Dimensional Diagram: A4AR Inlet Pressure Regulator

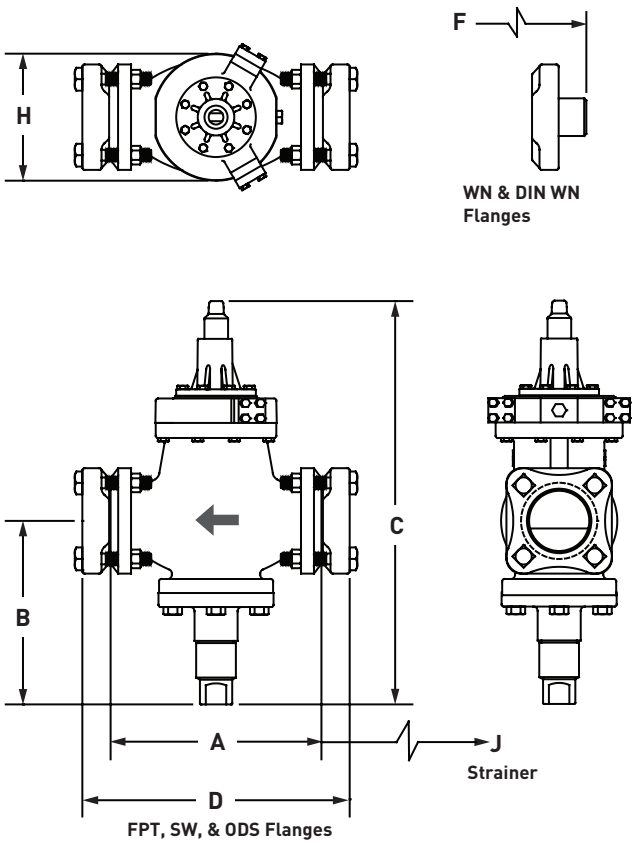
Port Size		A		B*		C		H		J		K		L		M	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20 -25	¾ - 1	164	6.2	147	5.8	392	15.4	117	4.6	150	5.9	241	9.5	71	2.8	97	3.8
32	1¼	203	8.0	160	6.3	410	16.1	117	4.6	178	7.0	254	10.0	76	3.0	102	4.0
40 - 50	1⅝ - 2	251	9.9	175	6.9	464	18.2	140	5.5	251	9.9	307	12.1	114	4.5	140	5.5
65	2½	252	9.9	180	7.1	483	19.0	159	6.2	315	12.4	325	12.8	130	5.1	155	6.1
75	3	311	12.2	272	10.7	597	23.5	176	7.0	315	12.4	432	17.0	152	6.0	178	7.0
100	4	359	14.3	292	11.5	653	25.7	222	8.9	363	14.3	478	18.8	157	6.2	183	7.2

* Allow 25mm (1") below valve to operate manual opening stem

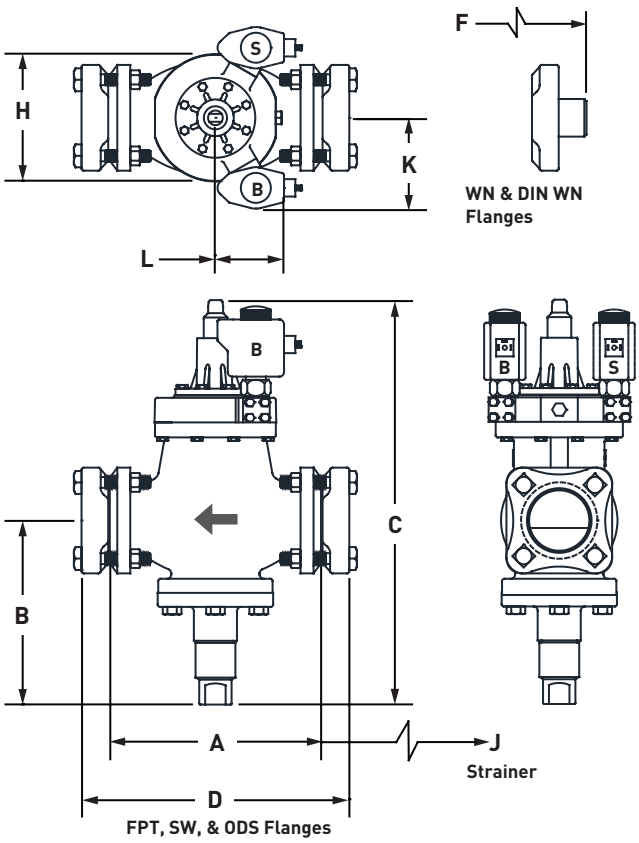
Port Size		D						F					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
20 - 25	¾ - 1	¾"	211	8.3	⅞"	211	8.3	¾"	246	9.7	20mm	248	9.8
		1"			1⅛"			1"	254	10.0	25mm	255	10.0
		1¼"			1⅜"			1¼"			32mm		
32	1¼	1¼"	254	10.0	1⅝"	254	10.0	1¼"	325	12.8	32mm	304	12.0
		1½"						1½"	312	12.3	38mm	313	12.3
40 - 50	1⅝ - 2	1½"	307	12.1	2⅛"	307	12.1	1½"	366	14.4	38mm	364	14.4
		2"			2⅝"			2"	378	14.9	50mm	371	14.6
65	2½	2½"	318	12.5	2⅝"	318	12.5	2½"	389	15.3	65mm	388	15.3
		3"			3⅛"			3"	406	16.0			
75	3	3"	376	14.8	3⅛"	376	14.8	3"	465	18.3	75mm	465	18.3
					3⅝"								
100	4	4"	432	17.0	4⅛"	432	17.0	4"	551	21.7	100mm	552	21.7

* FPT flanges are only available in 20 - 50mm (3/4" - 2")

A4 Adaptomode® Series Pressure Regulators



Dimensional Diagram: A4AZ Inlet Pressure Regulator



Dimensional Diagram 4: A4AB,S, & BS Inlet Pressure Regulator

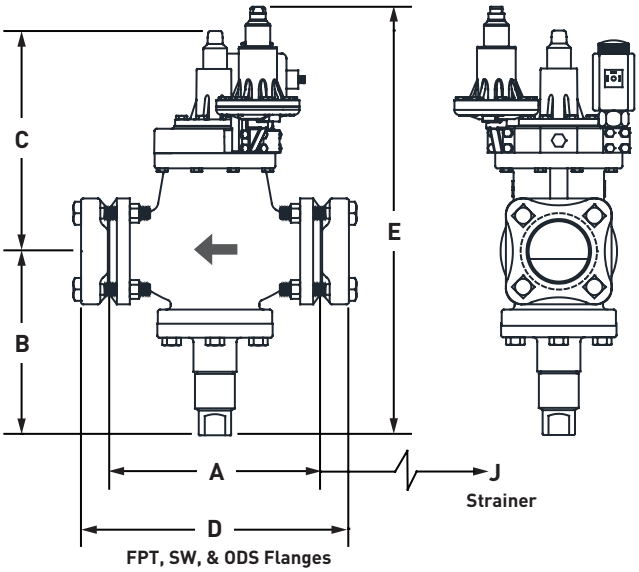
Port Size		A		B*		C		H		J		K		L	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20 -25	¾ - 1	164	6.2	147	5.8	392	15.4	117	4.6	150	5.9	112	4.4	122	4.8
32	1¼	203	8.0	160	6.3	410	16.1	117	4.6	178	7.0	112	4.4	122	4.8
40 - 50	1⅝ - 2	251	9.9	175	6.9	464	18.2	140	5.5	251	9.9	117	4.6	135	5.3
65	2½	252	9.9	180	7.1	483	19.0	159	6.2	315	12.4	124	4.9	133	5.2
75	3	311	12.2	272	10.7	597	23.5	176	7.0	315	12.4	142	5.6	122	4.8
100	4	359	14.3	292	11.5	653	25.7	222	8.9	363	14.3	157	6.2	152	6.0

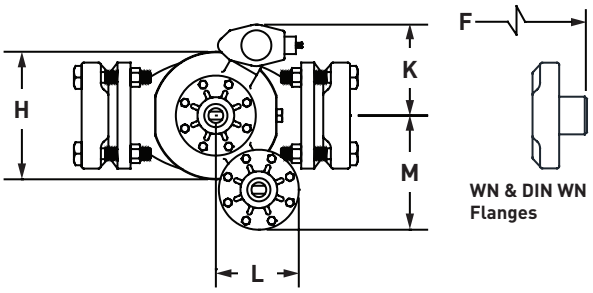
* Allow 25mm (1") below valve to operate manual opening stem

Port Size		D						F					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
20 - 25	¾ - 1	¾"	211	8.3	⅞"	211	8.3	¾"	246	9.7	20mm	248	9.8
		1"			1⅛"			1"	254	10.0	25mm	255	10.0
		1¼"			1⅜"			1¼"			32mm		
32	1¼	1¼"	254	10.0	1⅝"	254	10.0	1¼"	325	12.8	32mm	304	12.0
		1"						1½"	312	12.3	38mm	313	12.3
40 - 50	1⅝ - 2	1½"	307	12.1	2⅛"	307	12.1	1½"	366	14.4	38mm	364	14.4
		2"			2⅝"			2"	378	14.9	50mm	371	14.6
65	2½	2½"	318	12.5	2⅝"	318	12.5	2½"	389	15.3	65mm	388	15.3
		3"			3⅛"			3"	406	16.0			
75	3	3"	376	14.8	3⅛"	376	14.8	3"	465	18.3	75mm	465	18.3
					3⅝"								
100	4	4"	432	17.0	4⅛"	432	17.0	4"	551	21.7	100mm	552	21.7

* FPT flanges are only available in 20 - 50mm (3/4" - 2")

A4 Adaptomode® Series Pressure Regulators





Dimensional Diagram: A4AD Dual Inlet Pressure Regulator

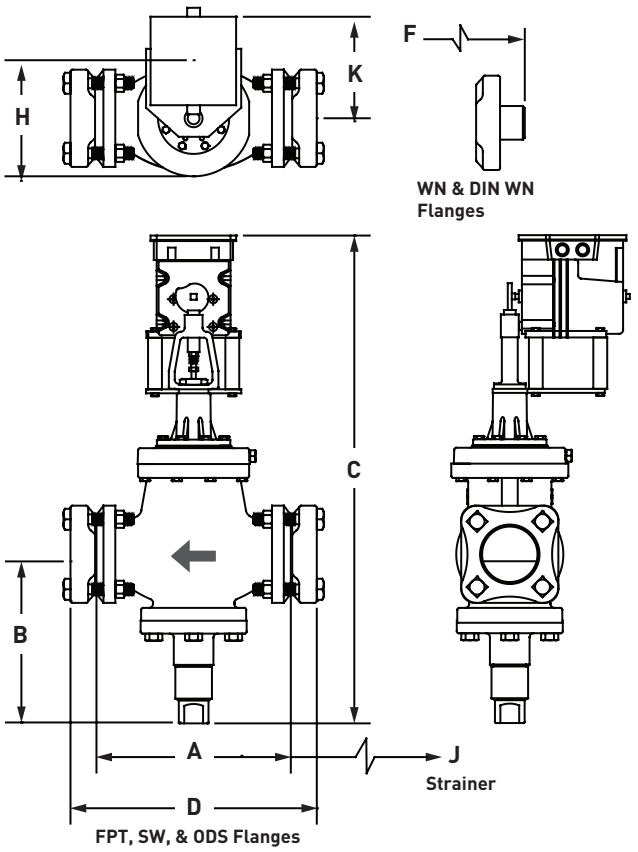
Port Size		A		B*		C		E		H		J		K		L		M	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20 -25	¾ - 1	164	6.2	147	5.8	244	9.6	427	16.8	117	4.6	150	5.9	112	4.4	122	4.8	138	5.4
32	1¼	203	8.0	160	6.3	249	9.8	442	17.4	117	4.6	178	7.0	112	4.4	122	4.8	138	5.4
40 - 50	1⅝ - 2	251	9.9	175	6.9	287	11.3	493	19.4	140	5.5	251	9.9	117	4.6	135	5.3	140	5.5
65	2½	252	9.9	180	7.1	302	11.9	513	20.2	159	6.2	315	12.4	124	4.9	133	5.2	150	5.9
75	3	311	12.2	272	10.7	325	12.8	615	24.2	176	7.0	315	12.4	142	5.6	122	4.8	170	6.6
100	4	359	14.3	292	11.5	361	14.2	671	26.4	222	8.9	363	14.3	157	6.2	152	6.0	190	7.7

* Allow 25mm (1") below valve to operate manual opening stem

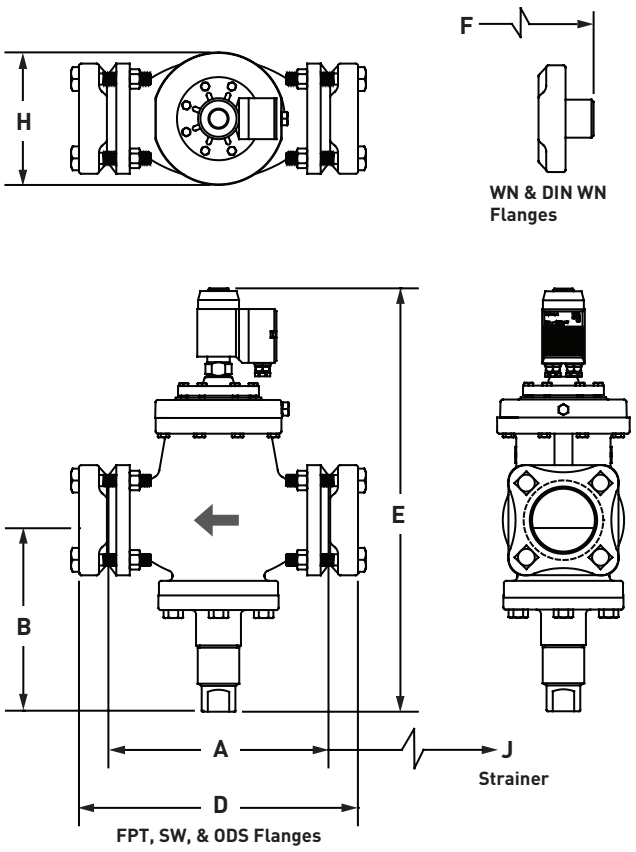
Port Size		D						F					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
20 - 25	¾ - 1	¾"	211	8.3	⅞"	211	8.3	¾"	246	9.7	20mm	248	9.8
		1"			1⅛"			1"	254	10.0	25mm	255	10.0
		1¼"			1⅜"			1¼"			32mm		
32	1¼	1¼"	254	10.0	1⅝"	254	10.0	1¼"	325	12.8	32mm	304	12.0
		1"						1½"	312	12.3	38mm	313	12.3
40 - 50	1⅝ - 2	1½"	307	12.1	2⅛"	307	12.1	1½"	366	14.4	38mm	364	14.4
		2"			2⅝"			2"	378	14.9	50mm	371	14.6
65	2½	2½"	318	12.5	2⅝"	318	12.5	2½"	389	15.3	65mm	388	15.3
		3"			3⅛"			3"	406	16.0			
75	3	3"	376	14.8	3⅛"	376	14.8	3"	465	18.3	75mm	465	18.3
					3⅝"								
100	4	4"	432	17.0	4⅛"	432	17.0	4"	551	21.7	100mm	552	21.7

* FPT flanges are only available in 20 - 50mm (3/4" - 2")

A4 Adaptomode® Series Pressure Regulators



Dimensional Diagram: A4AM, OM Electrically Compensated Pressure Regulator



Dimensional Diagram: A4AJ Electric Pilot Pressure Regulator

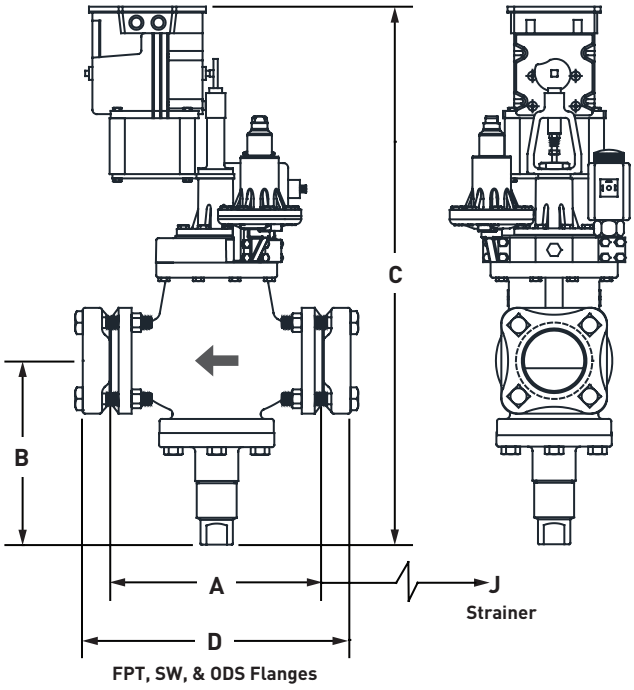
Port Size		A		B*		C (A4AM)		C (A4AOM)		E		H		J		K	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20 -25	¾ - 1	164	6.2	147	5.8	597	23.5	620	24.4	432	17.0	117	4.6	150	5.9	191	7.5
32	1¼	203	8.0	160	6.3	615	24.2	638	25.1	450	17.7	117	4.6	178	7.0	191	7.5
40 - 50	1⅝ - 2	251	9.9	175	6.9	668	26.3	691	27.2	503	19.8	140	5.5	251	9.9	191	7.5
65	2½	252	9.9	180	7.1	688	27.1	711	30.4	523	20.6	159	6.2	315	12.4	191	7.5
75	3	311	12.2	272	10.7	803	31.6	826	32.5	635	25.0	176	7.0	315	12.4	191	7.5
100	4	359	14.3	292	11.5	859	33.8	882	34.7	693	27.3	222	8.9	363	14.3	191	7.5

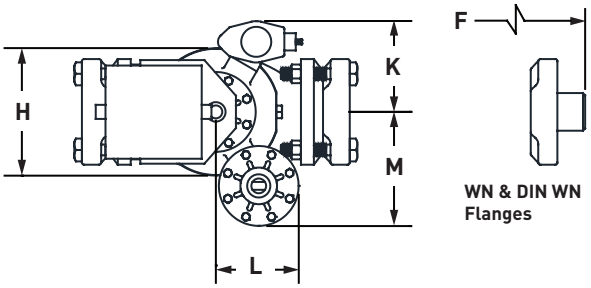
* Allow 25mm (1") below valve to operate manual opening stem

Port Size		D						F					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
20 - 25	¾ - 1	¾"	211	8.3	⅞"	211	8.3	¾"	246	9.7	20mm	248	9.8
		1"			1⅛"			1"	254	10.0	25mm	255	10.0
		1¼"			1⅜"			1¼"			32mm		
32	1¼	1¼"	254	10.0	1⅝"	254	10.0	1¼"	325	12.8	32mm	304	12.0
		1½"						1½"	312	12.3	38mm	313	12.3
40 - 50	1⅝ - 2	1½"	307	12.1	2⅛"	307	12.1	1½"	366	14.4	38mm	364	14.4
		2"			2⅝"			2"	378	14.9	50mm	371	14.6
65	2½	2½"	318	12.5	2⅝"	318	12.5	2½"	389	15.3	65mm	388	15.3
		3"			3⅛"			3"	406	16.0			
75	3	3"	376	14.8	3⅛"	376	14.8	3"	465	18.3	75mm	465	18.3
					3⅝"								
100	4	4"	432	17.0	4⅛"	432	17.0	4"	551	21.7	100mm	552	21.7

* FPT flanges are only available in 20 - 50mm (3/4" - 2")

A4 Adaptomode® Series Pressure Regulators





Dimensional Diagram: A4ADM Electrically Compensated Dual Inlet Pressure Regulator

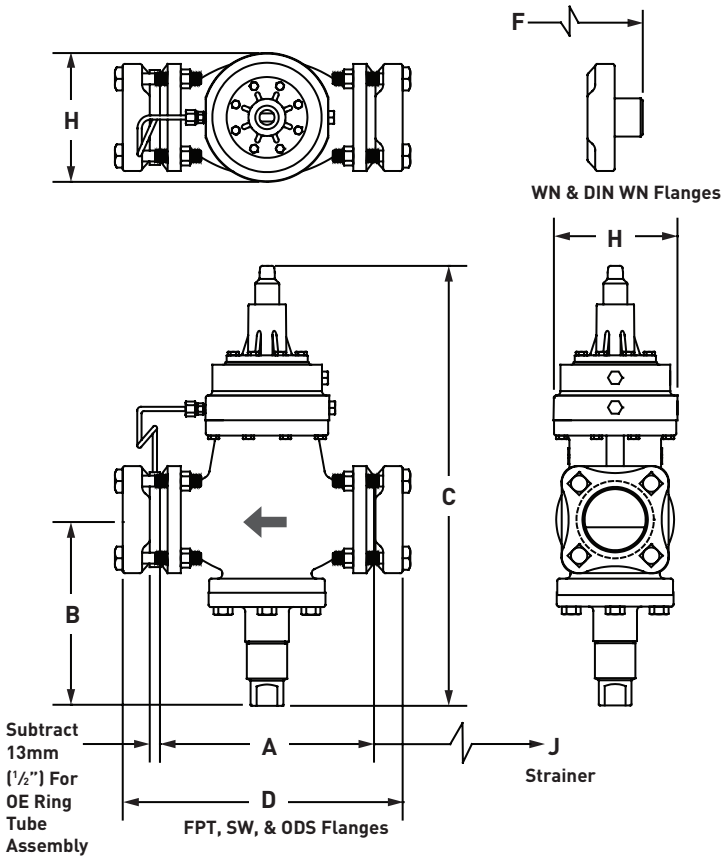
Port Size		A		B*		C		H		J		K		L		M	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20 -25	¾ - 1	164	6.2	147	5.8	734	28.9	117	4.6	150	5.9	112	4.4	122	4.8	138	5.4
32	1¼	203	8.0	160	6.3	762	30.1	117	4.6	178	7.0	112	4.4	122	4.8	138	5.4
40 - 50	1⅝ - 2	251	9.9	175	6.9	833	32.8	140	5.5	251	9.9	117	4.6	135	5.3	140	5.5
65	2½	252	9.9	180	7.1	859	33.8	159	6.2	315	12.4	124	4.9	133	5.2	150	5.9
75	3	311	12.2	272	10.7	1064	41.9	176	7.0	315	12.4	142	5.6	122	4.8	170	6.6
100	4	359	14.3	292	11.5	1140	44.9	222	8.9	363	14.3	157	6.2	152	6.0	190	7.7

* Allow 25mm (1") below valve to operate manual opening stem

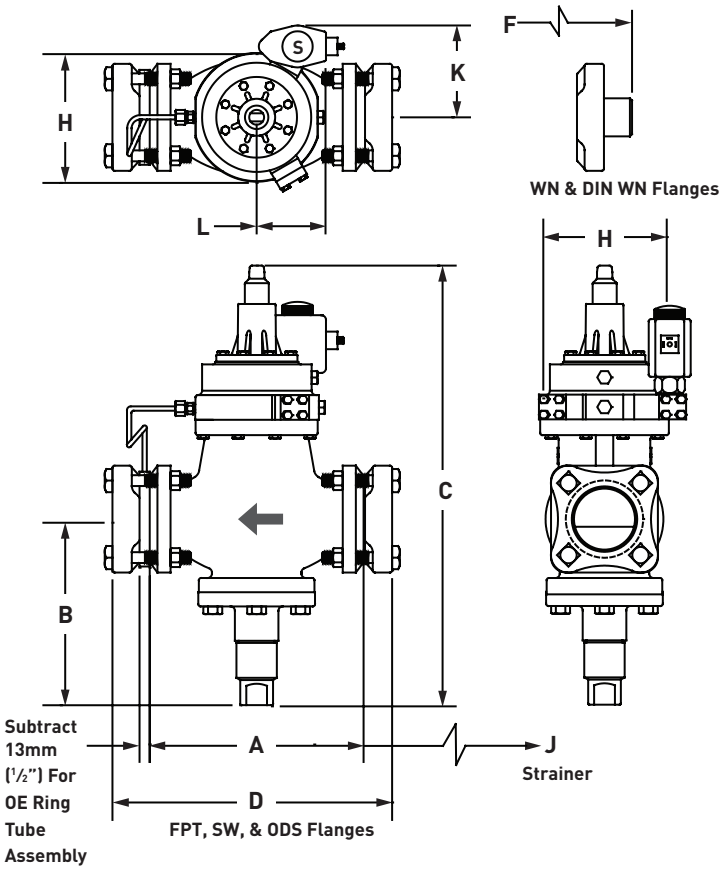
Port Size		D						F					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
20 - 25	¾ - 1	¾"	211	8.3	⅞"	211	8.3	¾"	246	9.7	20mm	248	9.8
		1"			1⅛"			1"	254	10.0	25mm	255	10.0
		1¼"			1⅜"			1¼"			32mm		
32	1¼	1¼"	254	10.0	1⅝"	254	10.0	1¼"	325	12.8	32mm	304	12.0
		1"						1½"	312	12.3	38mm	313	12.3
40 - 50	1⅝ - 2	1½"	307	12.1	2⅛"	307	12.1	1½"	366	14.4	38mm	364	14.4
		2"			2⅝"			2"	378	14.9	50mm	371	14.6
65	2½	2½"	318	12.5	2⅝"	318	12.5	2½"	389	15.3	65mm	388	15.3
		3"			3⅛"			3"	406	16.0			
75	3	3"	376	14.8	3⅛"	376	14.8	3"	465	18.3	75mm	465	18.3
					3⅝"								
100	4	4"	432	17.0	4⅛"	432	17.0	4"	551	21.7	100mm	552	21.7

* FPT flanges are only available in 20 - 50mm (3/4" - 2")

A4 Adaptomode® Series Pressure Regulators



Dimensional Diagram: A4AOE Outlet Pressure Regulator



Dimensional Diagram: A4AOES Outlet Pressure Regulator

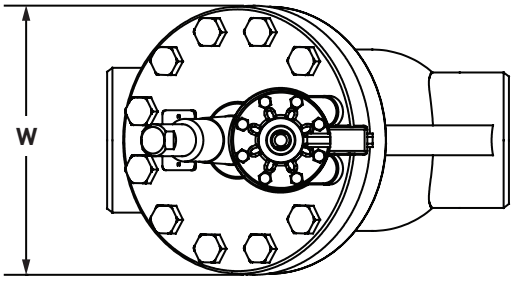
Port Size		A		B*		C		H		J		K		L	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20 -25	¾ - 1	164	6.2	147	5.8	454	17.9	117	4.6	150	5.9	241	9.5	122	4.8
32	1¼	203	8.0	160	6.3	472	18.6	117	4.6	178	7.0	254	10.0	122	4.8
40 - 50	1⅝ - 2	251	9.9	175	6.9	525	20.7	140	5.5	251	9.9	307	12.1	135	5.3
65	2½	252	9.9	180	7.1	538	21.2	159	6.2	315	12.4	325	12.8	133	5.2
75	3	311	12.2	272	10.7	657	25.9	176	7.0	315	12.4	432	17.0	122	4.8
100	4	359	14.3	292	11.5	710	28.4	222	8.9	363	14.3	478	18.8	152	6.0

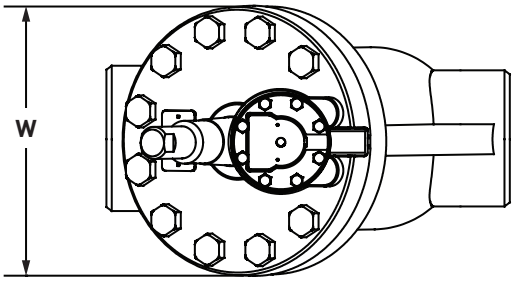
* Allow 25mm (1") below valve to operate manual opening stem

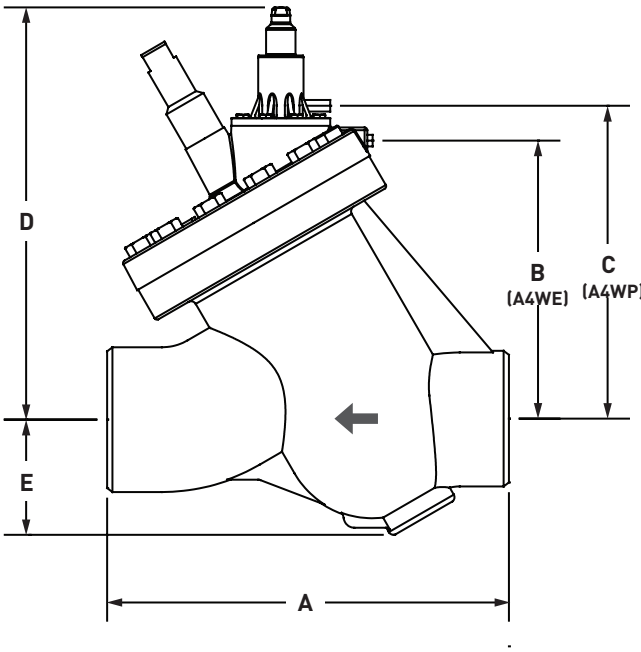
Port Size		D						F					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
20 - 25	¾ - 1	¾"	224	8.8	⅞"	224	8.8	¾"	259	10.2	20mm	261	10.3
		1"			1⅛"			1"	267	10.5	25mm	268	10.6
		1¼"			1⅜"			1¼"			32mm		
32	1¼	1¼"	267	10.5	1⅝"	267	10.5	1¼"	338	13.3	32mm	317	12.5
		1½"						1½"	325	12.8	38mm	326	12.8
40 - 50	1⅝ - 2	1½"	320	12.6	2⅛"	320	12.6	1½"	379	14.9	38mm	377	14.8
		2"			2⅝"			2"	391	15.4	50mm	384	15.1
65	2½	2½"	331	13.0	2⅝"	331	13.0	2½"	402	15.8	65mm	401	15.8
		3"			3⅛"			3"	419	16.5			
75	3	3"	389	15.3	3⅛"	389	15.3	3"	479	18.8	75mm	479	18.8
					3⅝"								
100	4	4"	445	17.5	4⅛"	445	17.5	4"	564	22.2	100mm	564	22.2

* FPT flanges are only available in 20 - 50mm (¾" - 2")

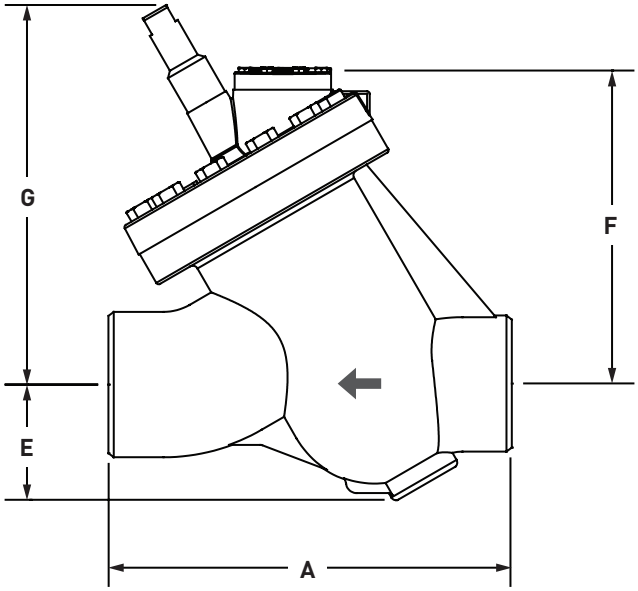
A4 Adaptomode® Series Pressure Regulators







Dimensional Diagram: A4W, E, & P Inlet Pressure Regulator

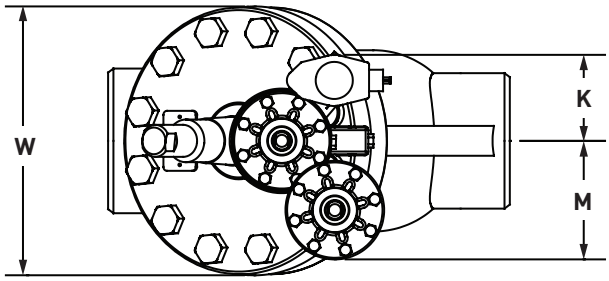


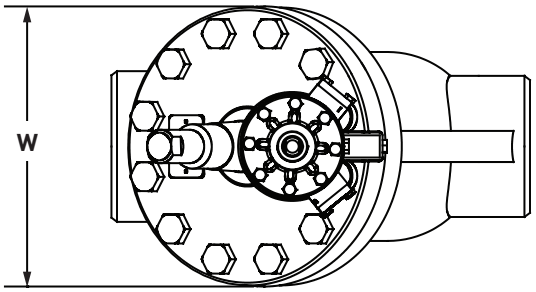
Dimensional Diagram: A4WR Inlet Pressure Regulator

Port Size		A		B		C		D*		E		F		G**		W	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
125	5	381	15.0	273	10.7	315	12.4	438	17.2	114	4.5	305	12.0	414	16.3	267	10.5
150	6	483	19.0	349	13.7	391	15.4	514	20.2	152	6.0	381	15.0	489	19.3	318	12.5
200	8	622	24.5	406	16.0	448	17.6	572	22.5	197	7.8	438	17.2	546	21.5	381	15.0

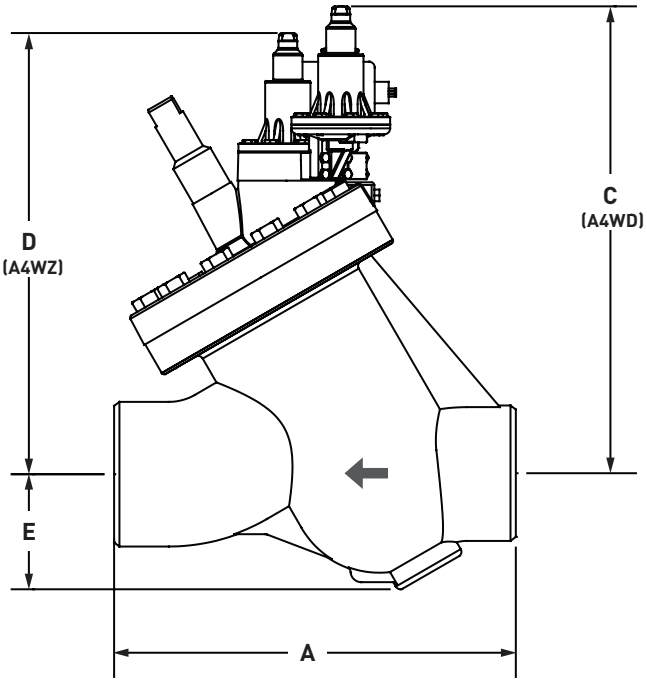
Valve body is wider than adapter for 125mm (5") A4W; Adapter wider than body for 150mm (6") & 200mm (8") A4W
* Allow 75mm (3") overhead clearance for access to adjusting stem.
** Allow 100mm (4") overhead clearance for coil or seal cap removal.

A4 Adaptomode® Series Pressure Regulators

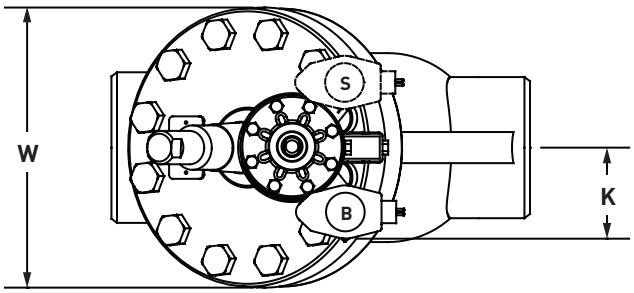




Dimensional Diagram: A4WZ Inlet Pressure Regulator



Dimensional Diagram: A4WD Inlet Dual Pressure Regulator

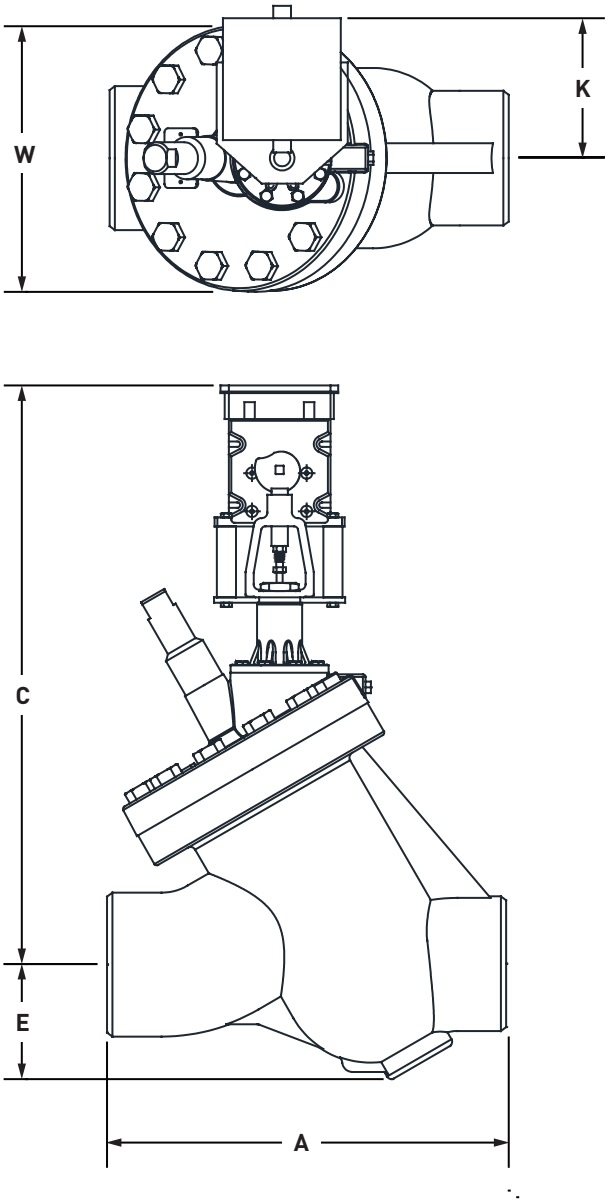


Dimensional Diagram: B, S, & BS Inlet Pressure Regulator

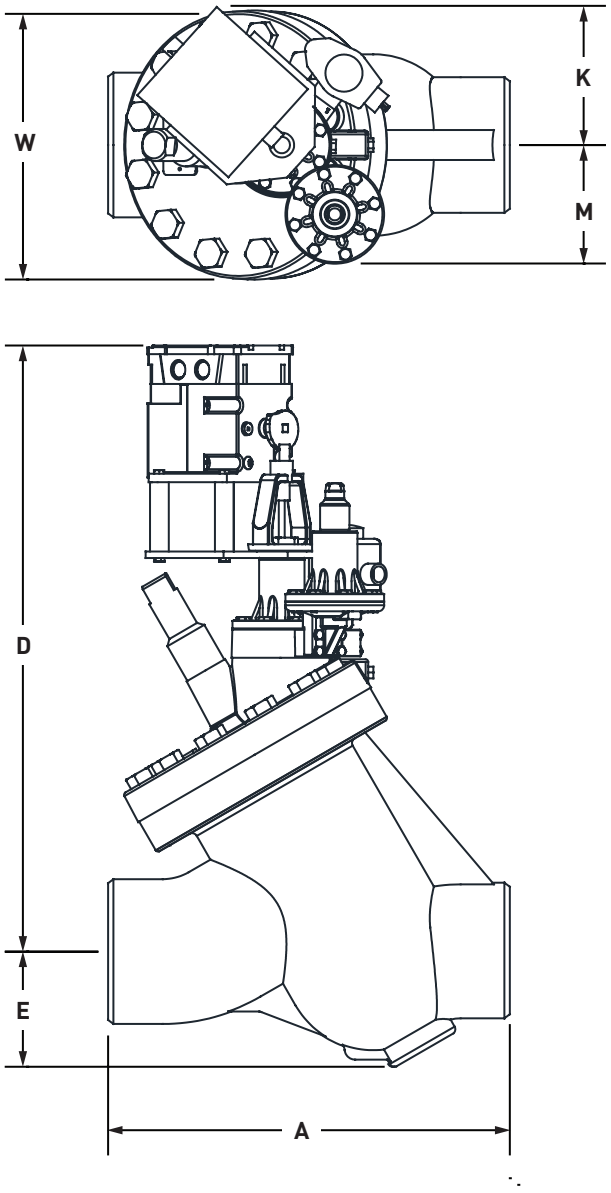
Port Size		A		C*		D*		E		K		M		W	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
125	5	381	15.0	502	19.8	476	18.7	114	4.5	100	3.9	140	5.5	267	10.5
150	6	483	19.0	578	22.8	552	21.7	152	6.0	100	3.9	140	5.5	318	12.5
200	8	622	24.5	636	25.0	610	24.0	197	7.8	100	3.9	140	5.5	381	15.0

Valve body is wider than adapter for 125mm (5") A4W; Adapter wider than body for 150mm (6") & 200mm (8") A4W
* Allow 75mm (3") overhead clearance for access to adjusting stem.

A4 Adaptomode® Series Pressure Regulators



Dimensional Diagram: A4WM Electrically Compensated Inlet Pressure Regulator

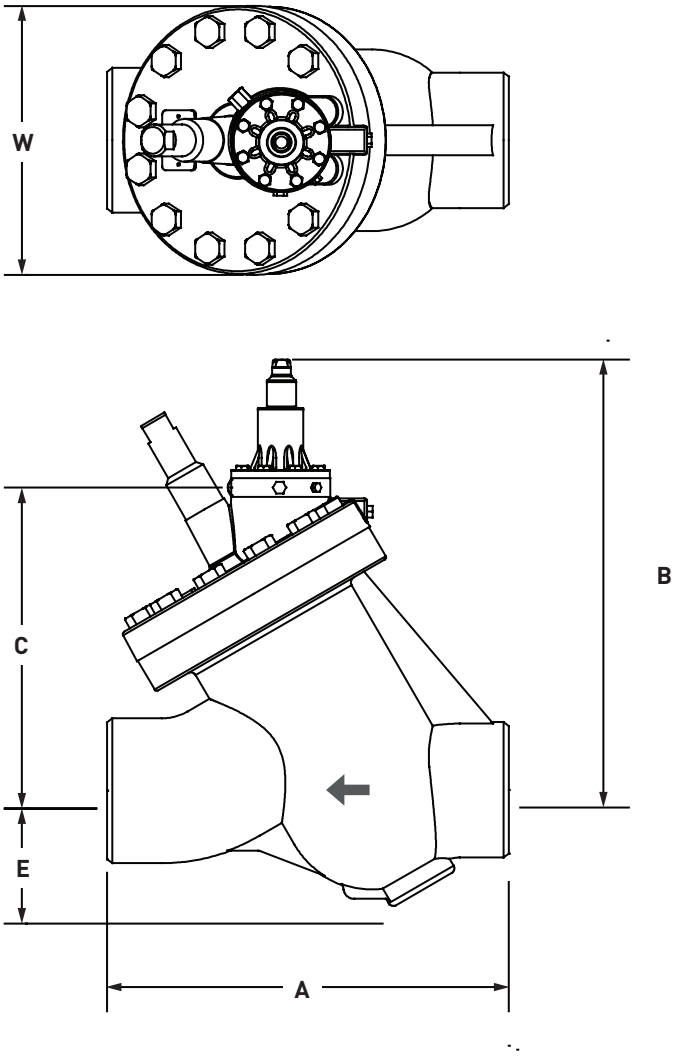


Dimensional Diagram: A4WDM Electrically Compensated Dual Inlet Pressure Regulator

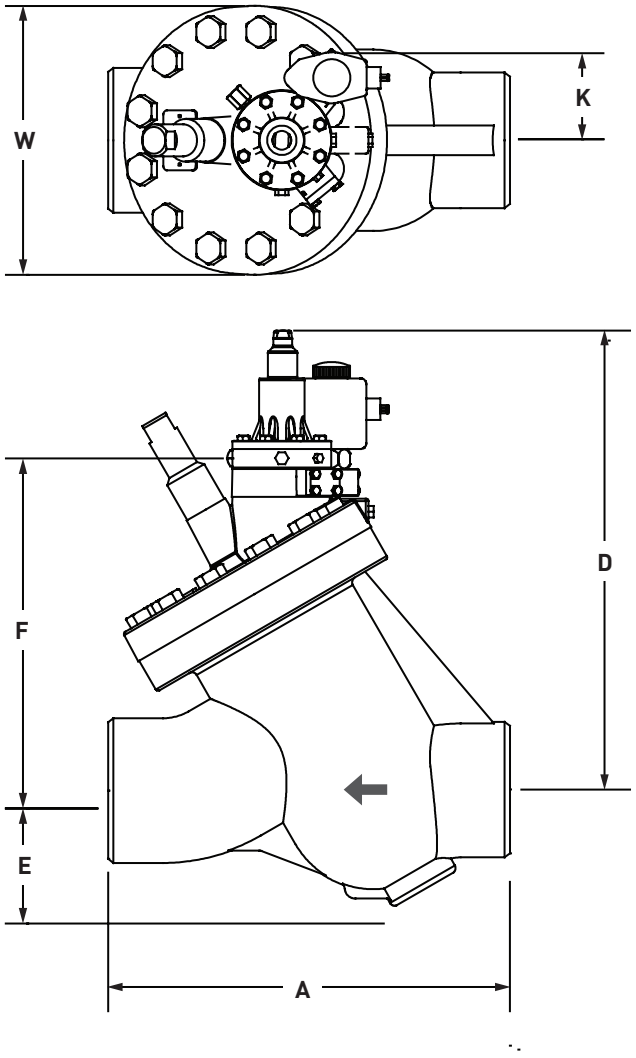
Port Size		A		C*		D*		E		K		M		W	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
125	5	381	15.0	633	24.9	668	26.3	114	4.5	175	6.9	140	5.5	267	10.5
150	6	483	19.0	686	27.0	721	28.4	152	6.0	175	6.9	140	5.5	318	12.5
200	8	622	24.5	767	30.2	800	31.5	197	7.8	175	6.9	140	5.5	381	15.0

Valve body is wider than adapter for 125mm (5") A4W; Adapter wider than body for 150mm (6") & 200mm (8") A4W
* Allow 75mm (3") overhead clearance for access to adjusting stem.

A4 Adaptomode® Series Pressure Regulators



Dimensional Diagram: A4WOE Outlet Pressure Regulator

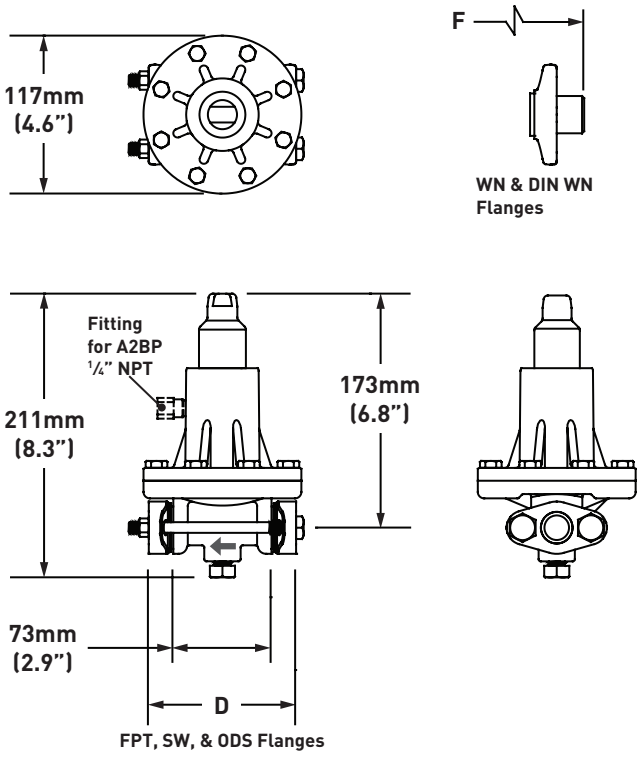


Dimensional Diagram: A4WOES Outlet Pressure Regulator

Port Size		A		B		C		D		E		F		K		W	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
125	5	381	15.0	460	18.1	305	12.0	495	19.5	114	4.5	340	13.4	100	3.9	267	10.5
150	6	483	19.0	536	21.1	381	15.0	571	22.4	152	6.0	416	16.4	100	3.9	318	12.5
200	8	622	24.5	594	23.4	438	17.2	629	24.8	197	7.8	473	18.6	100	3.9	381	15.0

Valve body is wider than adapter for 125mm (5") A4W; Adapter wider than body for 150mm (6") & 200mm (8") A4W
* Allow 75mm (3") overhead clearance for access to adjusting stem.

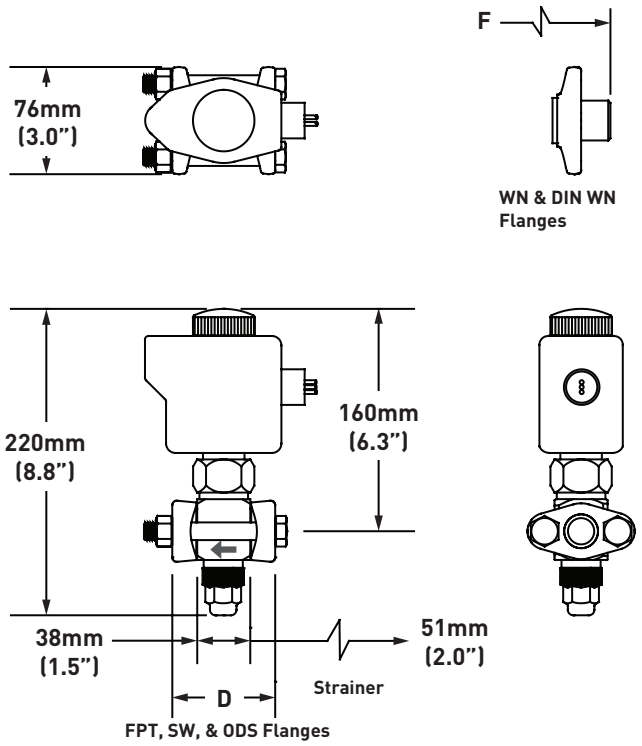
Compact Pressure Regulator



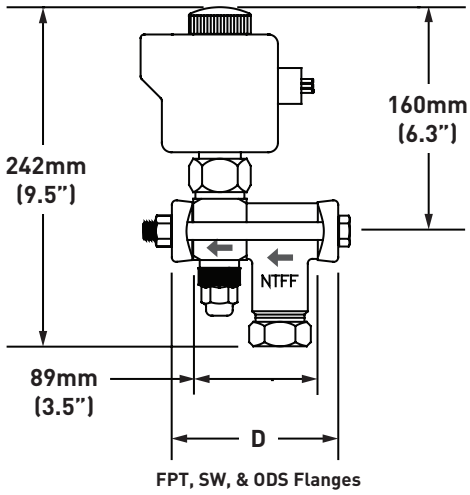
Dimensional Diagram: A2A, A2B, A2CK Pressure Regulators

Flange Port Size	D		F				
	FPT*, SW, ODS		WN		DIN WN		
	mm	inch	mm	inch	Connection	mm	inch
¼"	112	4.4	131	5.17	13mm	131	5.17
⅜"							
½"					20mm		
¾"							

Solenoid Valves



Dimensional Diagram: S6N, S8F Solenoid Valves



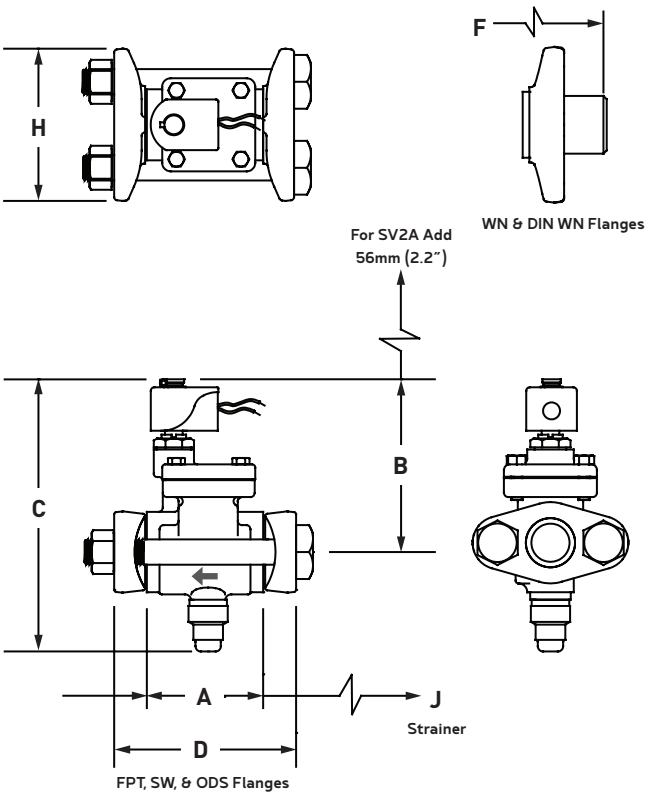
Dimensional Diagram: S6N, S8F Solenoid Valves with RSF Strainer

Valve	Flange Port Size	D		F				
		FPT*, SW, ODS		WN		DIN WN		
		mm	inch	mm	inch	Connection	mm	inch
S6N S8F	1/4"	76	3.0	96	3.77	13mm	96	3.77
	3/8"							
	1/2"					20mm		
	3/4"							

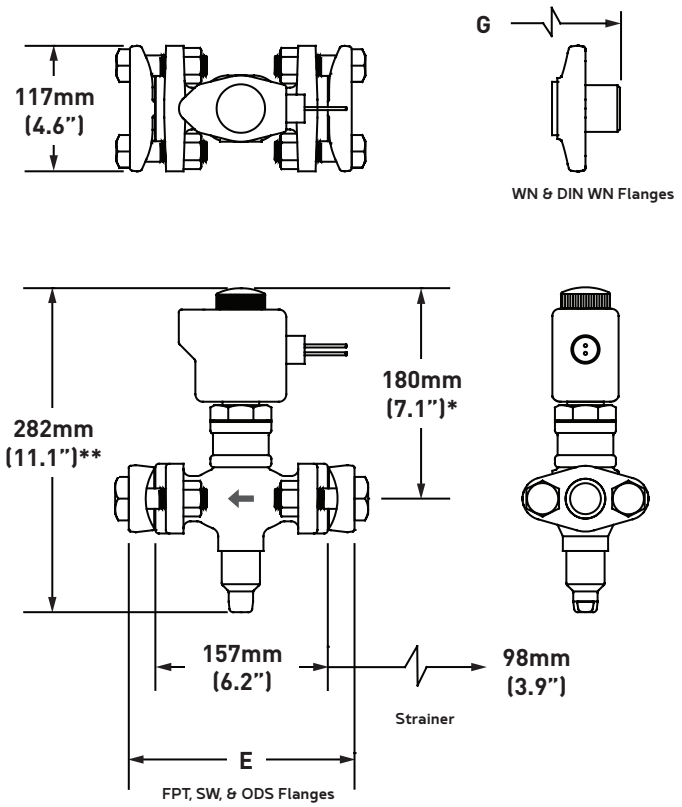
Valve	Flange Port Size	D		F				
		FPT*, SW, ODS		WN		DIN WN		
		mm	inch	mm	inch	Connection	mm	inch
S6N S8F with RSF	1/4"	127	5.0	146	5.77	13mm	146	5.77
	3/8"							
	1/2"					20mm		
	3/4"							

Allow 100mm (4") overhead clearance for removal of coil.
Allow 25mm (1") below valve to access manual opening stem.
When closed coupled with an 1/2" RSF strainer allow 82mm (3.25") below the strainer to access and replace strainer basket.

Solenoid Valves



Dimensional Diagram: SV2 Solenoid Valves



Dimensional Diagram: S7A Solenoid Valves

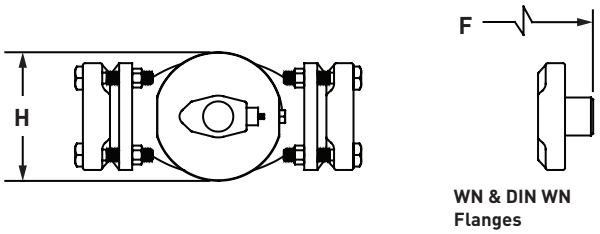
Port Size		A		B*		C**		H		J	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
13	½	58	2.3	99	3.9	170	6.7	76	3.0	97	3.8
20 -25	¾ - 1	86	3.4	124	4.9	203	8.0	117	4.6	150	5.9
32	1¼	150	5.9	130	5.1	218	8.6	97	3.8	178	7.0

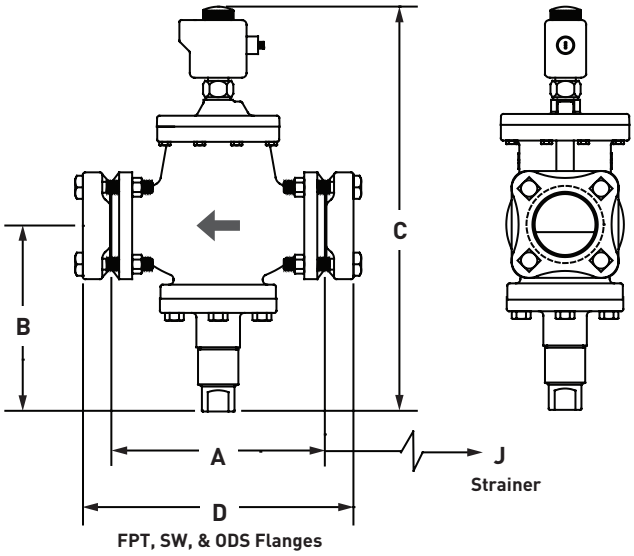
Port Size		D						F					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
13	½	¼"	97	3.8	½"	97	3.8	¼"	117	4.6	13mm	122	4.8
		⅜"						⅜"					
		½"			⅝"			½"			20mm		
		¾"						¾"					
20 - 25	¾ - 1	¾"	140	5.5	⅞"	140	5.5	¾"	170	6.7	20mm	178	7.0
		1"			1⅛"			1"	183	7.2	25mm	183	7.2
		1¼"			1⅜"			1¼"			32mm		
32	1¼	1¼"	203	8.0	1⅝"	203	8.0	1¼"	272	10.7	32mm	251	9.9
		1½"						1½"	259	10.2	38mm	259	10.2

Port Size		E						G					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
20 - 25	¾ - 1	¾"	211	8.3	⅞"	211	8.3	¾"	246	9.7	20mm	249	9.8
		1"			1⅛"			1"	254	10.0	25mm	254	10.0
		1¼"			1⅜"			1¼"			32mm		

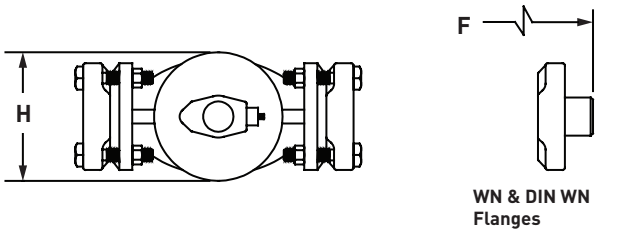
*Allow 38mm (1 1/2") above valve for removal of coil.
** Allow 25mm (1") below valve to operate manual opening stem

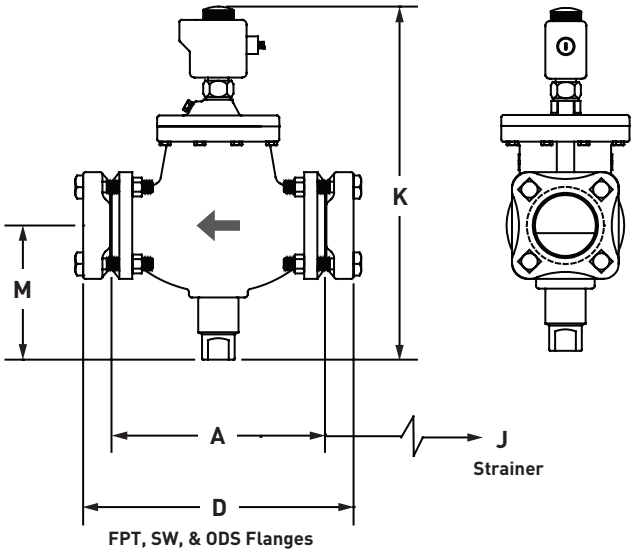
Solenoid Valves





Dimensional Diagram: S4A Solenoid Valves





Dimensional Diagram: S5A Solenoid Valves

Port Size		A		B*		C**		H		J		K**		M	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20 -25	¾ - 1	164	6.2	147	5.8	376	14.8	117	4.6	150	5.9	–	–	–	–
32	1¼	203	8.0	160	6.3	394	15.5	117	4.6	178	7.0	348	13.7	117	4.6
40 - 50	1⅝ - 2	251	9.9	175	6.9	442	17.4	140	5.5	251	9.9	411	16.2	127	5.0
65	2½	252	9.9	180	7.1	467	18.4	159	6.2	315	12.4	437	17.2	137	5.4
75	3	311	12.2	272	10.7	579	22.8	176	7.0	315	12.4	511	20.1	198	7.8
100	4	359	14.3	292	11.5	645	25.4	222	8.9	363	14.3	–	–	–	–

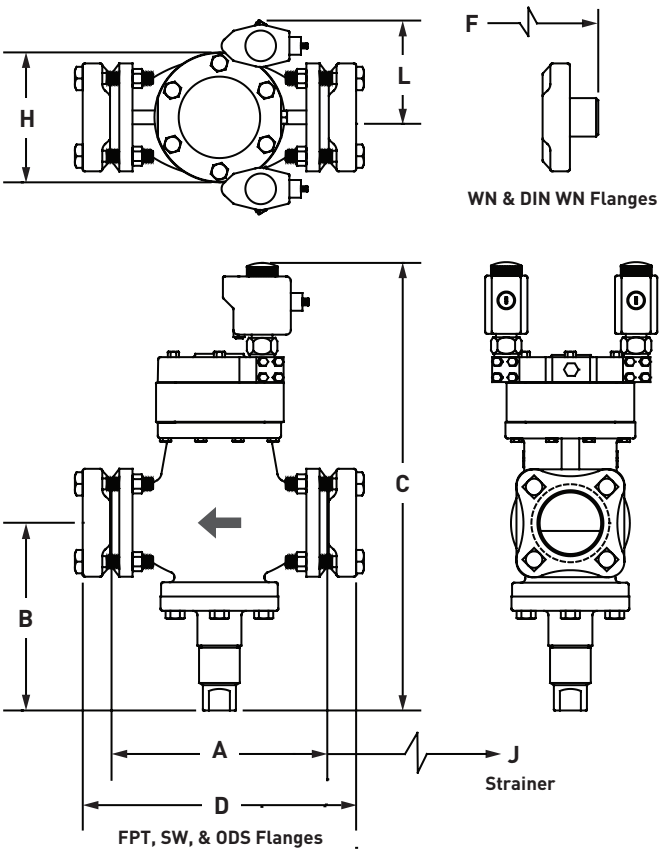
* Allow 25mm (1") below valve to operate manual opening stem

**Allow 38mm (1½") above valve for removal of coil.

Port Size		D						F					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
20 - 25	¾ - 1	¾"	211	8.3	⅞"	211	8.3	¾"	246	9.7	20mm	248	9.8
		1"			1⅛"			1"	254	10.0	25mm	255	10.0
		1¼"			1⅜"			1¼"			32mm		
32	1¼	1¼"	254	10.0	1⅝"	254	10.0	1¼"	325	12.8	32mm	304	12.0
		1½"						1½"	312	12.3	38mm	313	12.3
40 - 50	1⅝ - 2	1½"	307	12.1	2⅛"	307	12.1	1½"	366	14.4	38mm	364	14.4
		2"			2⅝"			2"	378	14.9	50mm	371	14.6
65	2½	2½"	318	12.5	2⅝"	318	12.5	2½"	389	15.3	65mm	388	15.3
		3"			3⅛"			3"	406	16.0			
75	3	3"	376	14.8	3⅛"	376	14.8	3"	465	18.3	75mm	465	18.3
					3⅝"								
100	4	4"	432	17.0	4⅛"	432	17.0	4"	551	21.7	100mm	552	21.7

* FPT flanges are only available in 20 - 50mm (¾" - 2")

Dual Position Solenoid Valves



Dimensional Diagram: S4AD Dual Position Solenoid Valves

Port Size		A		B*		C**		H		J		L	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20 -25	¾ - 1	164	6.2	147	5.8	399	15.7	117	4.6	150	5.9	86.4	3.4
32	1¼	203	8.0	160	6.3	422	16.6	117	4.6	178	7.0	107	4.2
40 - 50	1⅝ - 2	251	9.9	175	6.9	483	19.0	140	5.5	251	9.9	117	4.6
65	2½	252	9.9	180	7.1	508	20.0	159	6.2	315	12.4	124	4.9
75	3	311	12.2	272	10.7	617	24.3	176	7.0	315	12.4	142	5.6
100	4	359	14.3	292	11.5	699	27.5	222	8.9	363	14.3	158	6.2

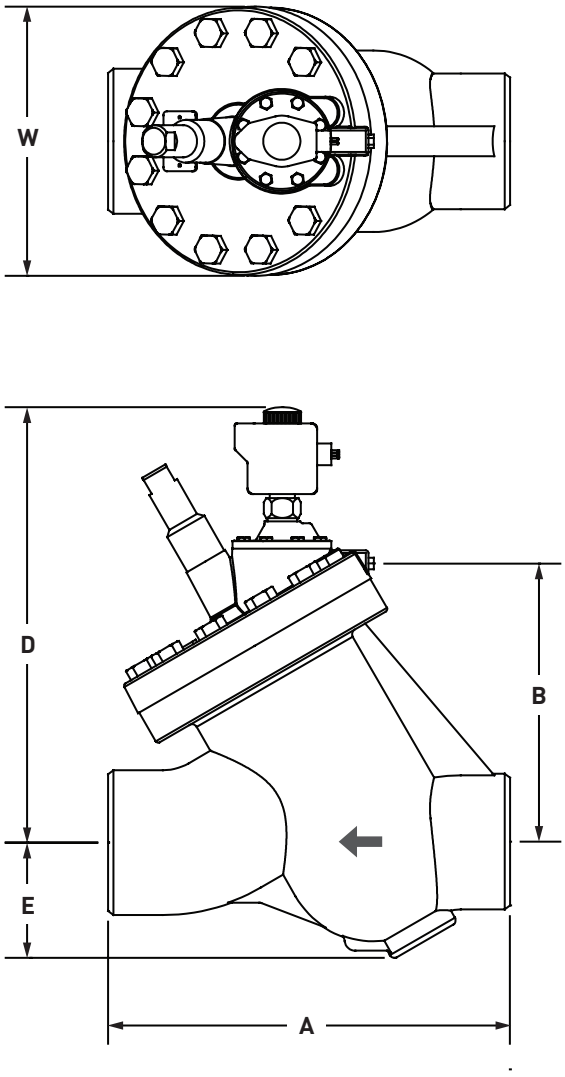
* Allow 25mm (1") below valve to operate manual opening stem

**Allow 38mm (11/2") above valve for removal of coil.

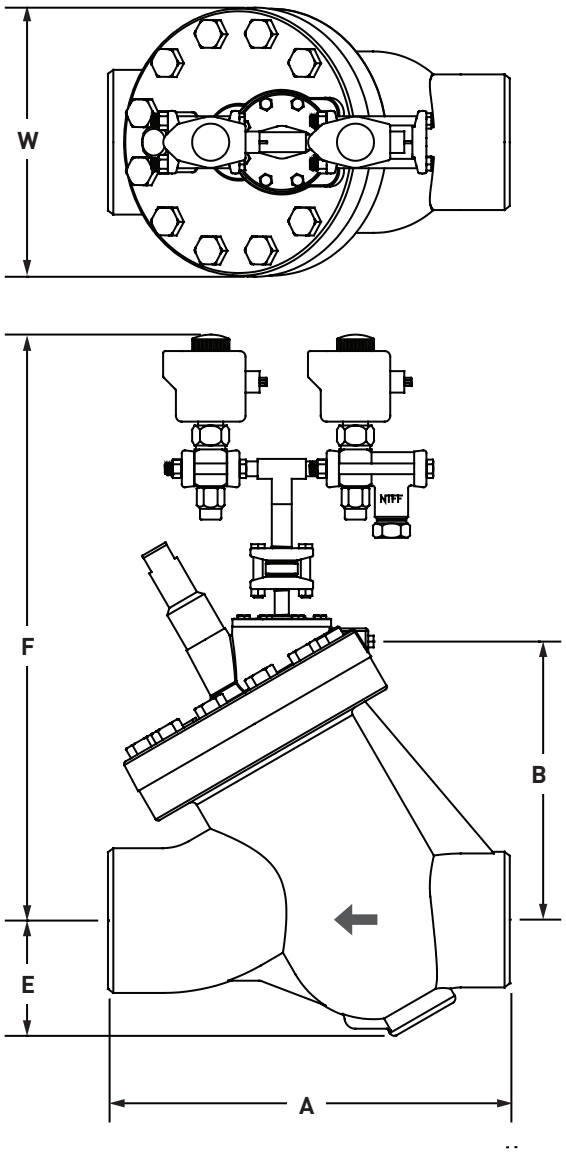
Port Size		D						F					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
20 - 25	¾ - 1	¾"	211	8.3	⅞"	211	8.3	¾"	246	9.7	20mm	248	9.8
		1"			1⅛"			1"	254	10.0	25mm	255	10.0
		1¼"			1⅜"			1¼"			32mm		
32	1¼	1¼"	254	10.0	1⅝"	254	10.0	1¼"	325	12.8	32mm	304	12.0
		1½"						1½"	312	12.3	38mm	313	12.3
40 - 50	1⅝ - 2	1½"	307	12.1	2⅛"	307	12.1	1½"	366	14.4	38mm	364	14.4
		2"			2⅝"			2"	378	14.9	50mm	371	14.6
65	2½	2½"	318	12.5	2⅝"	318	12.5	2½"	389	15.3	65mm	388	15.3
		3"			3⅛"			3"	406	16.0			
75	3	3"	376	14.8	3⅛"	376	14.8	3"	465	18.3	75mm	465	18.3
					3⅝"								
100	4	4"	432	17.0	4⅛"	432	17.0	4"	551	21.7	100mm	552	21.7

* FPT flanges are only available in 20 - 50mm (3/4" - 2")

Solenoid Valves / Gas Powered Suction Stop Valves



Dimensional Diagram: S4W Solenoid Valves

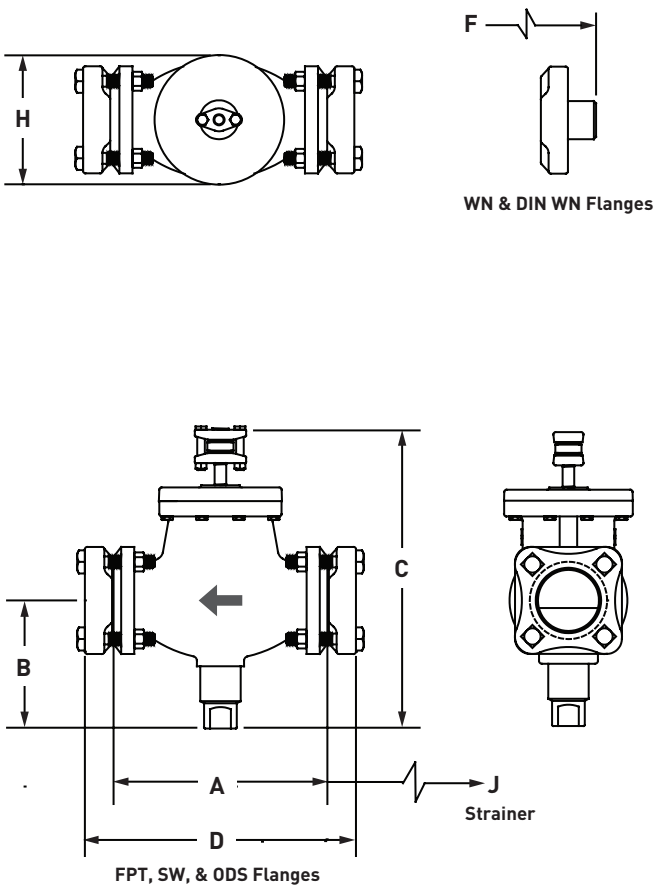


Dimensional Diagram: S9W Gas Powered Suction Stop Valves

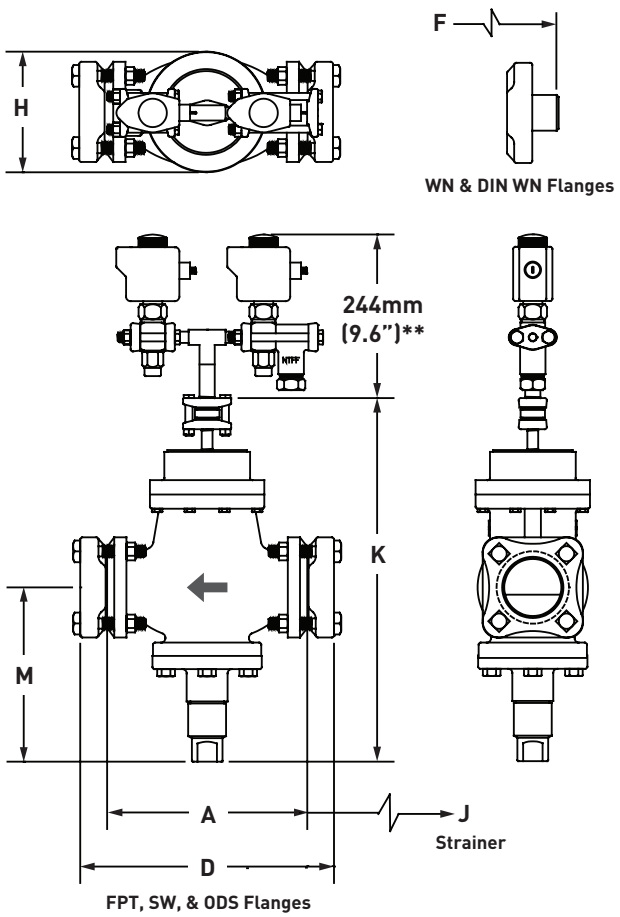
Port Size		A		B		C		D*		E		F**		W	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
125	5	381	15.0	273	10.7	315	12.4	438	17.2	114	4.5	711	28.0	267	10.5
150	6	483	19.0	349	13.7	391	15.4	514	20.2	152	6.0	825	32.5	318	12.5
200	8	622	24.5	406	16.0	448	17.6	572	22.5	197	7.8	927	36.5	381	15.0

Valve body is wider than adapter for 125mm (5") A4W; Adapter wider than body for 150mm (6") & 200mm (8") A4W
* Allow 75mm (3") overhead clearance for access to adjusting stem.
** Allow 100mm (4") overhead clearance for coil or seal cap removal.

Gas Powered Suction Stop Valves



Dimensional Diagram: CK-2 Gas Powered Suction Stop Valves



Dimensional Diagram: S9A Gas Powered Suction Stop Valves

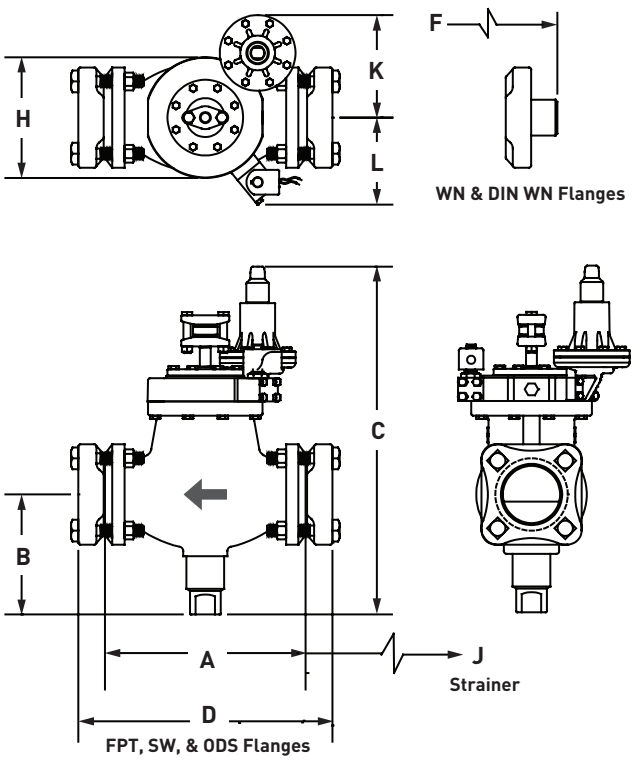
Port Size		A		B*		C		H		J		K*		M	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
32	1¼	203	8.0	122	4.8	312	12.3	117	4.6	178	7.0	–	–	–	–
40	1⅝	251	9.9	140	5.5	361	14.2	140	5.5	251	9.9	–	–	–	–
50	2	251	9.9	140	5.5	161	14.2	140	5.5	251	9.9	429	16.9	175	6.9
65	2½	252	9.9	142	5.6	396	15.6	159	6.2	315	12.4	455	17.9	180	7.1
75	3	311	12.2	216	8.5	475	18.7	176	7.0	315	12.4	569	22.4	272	10.7
100	4	359	14.3	219	8.6	518	20.4	222	8.9	363	14.3	615	24.2	292	11.5

* Allow 25mm (1") below valve to operate manual opening stem
**Allow 38mm (11/2") above valve for removal of coil.

Port Size		D						F					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
32	1¼	1¼"	254	10.0	1⅝"	254	10.0	1¼"	325	12.8	32mm	304	12.0
		1½"						1½"	312	12.3	38mm	313	12.3
40 - 50	1⅝ - 2	1½"	307	12.1	2⅛"	307	12.1	1½"	366	14.4	38mm	364	14.4
		2"			2⅝"			2"	378	14.9	50mm	371	14.6
65	2½	2½"	318	12.5	2⅝"	318	12.5	2½"	389	15.3	65mm	388	15.3
		3"			3⅛"			3"	406	16.0			
75	3	3"	376	14.8	3⅛"	376	14.8	3"	465	18.3	75mm	465	18.3
					3⅝"								
100	4	4"	432	17.0	4⅛"	432	17.0	4"	551	21.7	100mm	552	21.7

* FPT flanges are only available in 32 - 50mm (11/4" - 2")

Gas Powered Suction Stop Valves



Dimensional Diagram: CK-5 Gas Powered Suction Stop Valves

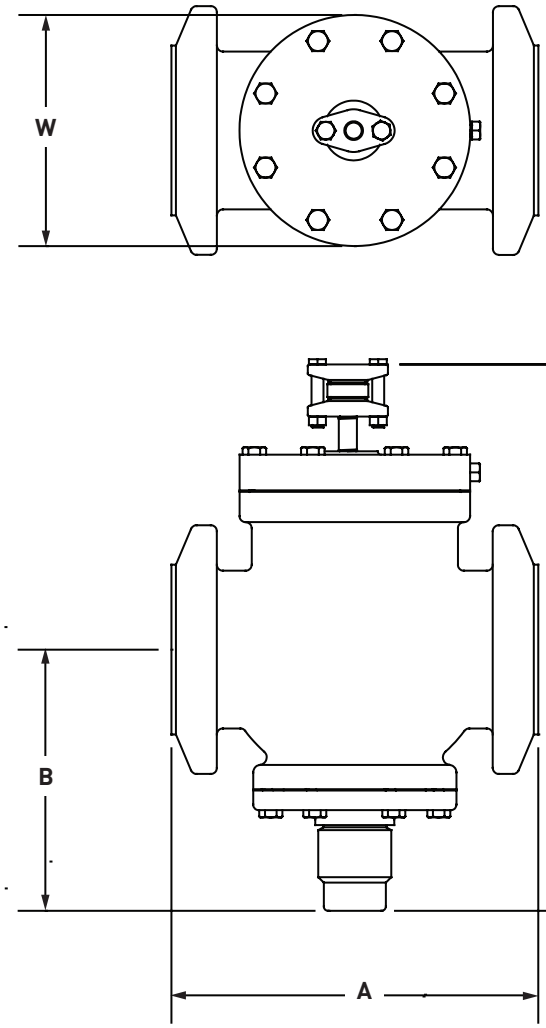
Port Size		A		B*		C		H		J		K		L	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20 -25	¾ - 1	164	6.2	147	5.8	–	–	117	4.6	150	5.9	–	–	–	–
32	1¼	203	8.0	160	6.3	447	17.6	117	4.6	178	7.0	137	5.4	112	4.4
40 - 50	1⅝ - 2	251	9.9	175	6.9	500	19.7	140	5.5	251	9.9	140	5.5	117	4.6
65	2½	252	9.9	180	7.1	513	20.2	159	6.2	315	12.4	150	5.9	124	4.9
75	3	311	12.2	272	10.7	632	24.9	176	7.0	315	12.4	168	6.6	142	5.6
100	4	359	14.3	292	11.5	686	27.0	222	8.9	363	14.3	196	7.7	158	6.2

* Allow 25mm (1") below valve to operate manual opening stem

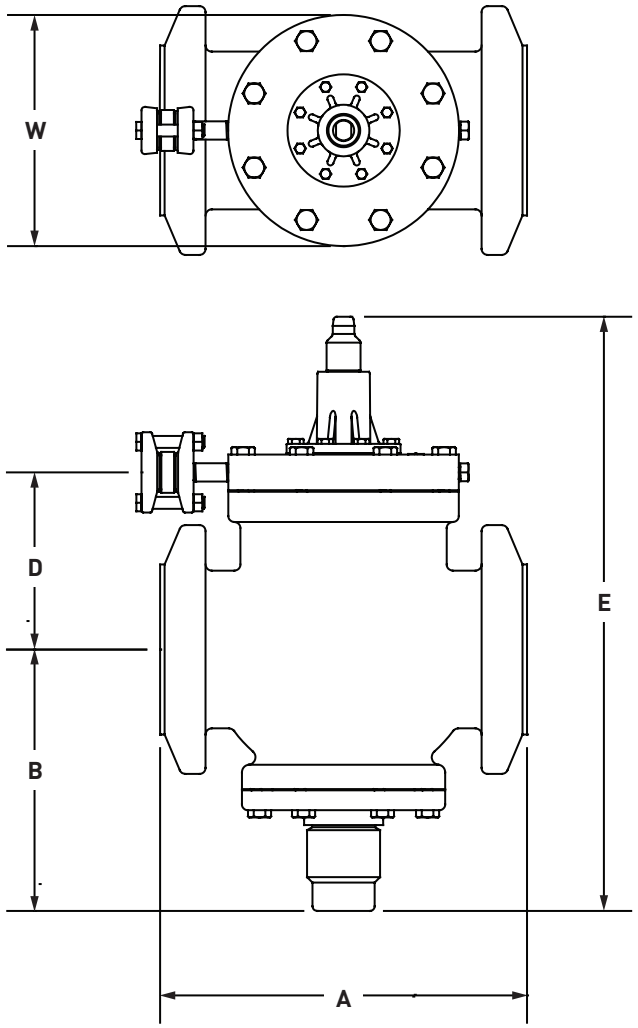
Port Size		D						F					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
20 - 25	¾ - 1	¾"	211	8.3	⅞"	211	8.3	¾"	246	9.7	20mm	248	9.8
		1"			1⅛"			1"	254	10.0	25mm	255	10.0
		1¼"			1⅜"			1¼"			32mm		
32	1¼	1¼"	254	10.0	1⅝"	254	10.0	1¼"	325	12.8	32mm	304	12.0
		1½"						1½"	312	12.3	38mm	313	12.3
40 - 50	1⅝ - 2	1½"	307	12.1	2⅛"	307	12.1	1½"	366	14.4	38mm	364	14.4
		2"			2⅝"			2"	378	14.9	50mm	371	14.6
65	2½	2½"	318	12.5	2⅝"	318	12.5	2½"	389	15.3	65mm	388	15.3
		3"			3⅛"			3"	406	16.0			
75	3	3"	376	14.8	3⅛"	376	14.8	3"	465	18.3	75mm	465	18.3
					3⅝"								
100	4	4"	432	17.0	4⅛"	432	17.0	4"	551	21.7	100mm	552	21.7

* FPT flanges are only available in 20 - 50mm (3/4" - 2")

Gas Powered Suction Stop Valves



Dimensional Diagram: CK-2 Gas Powered Suction Stop Valves

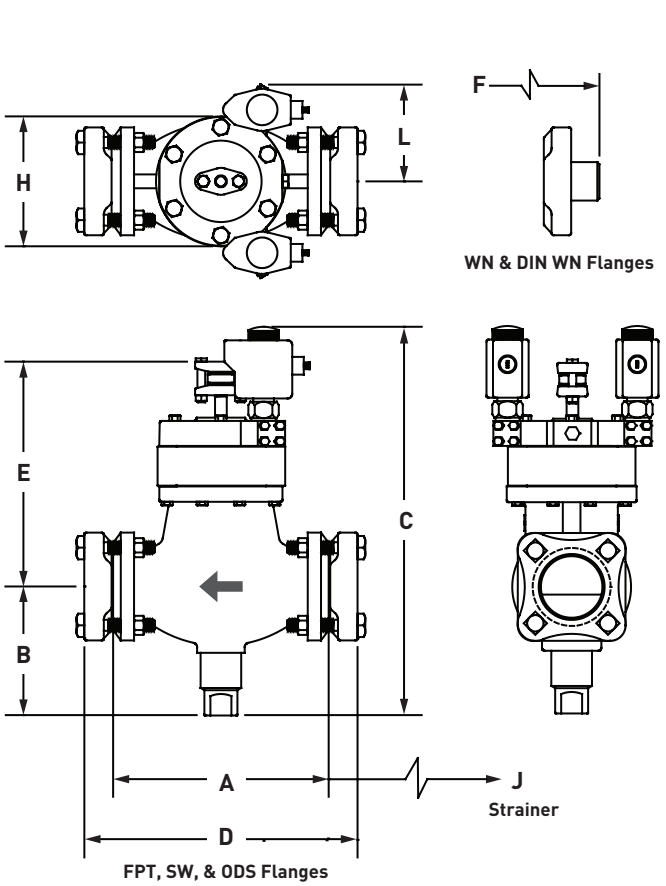


Dimensional Diagram: CK-5 Gas Powered Suction Stop Valves

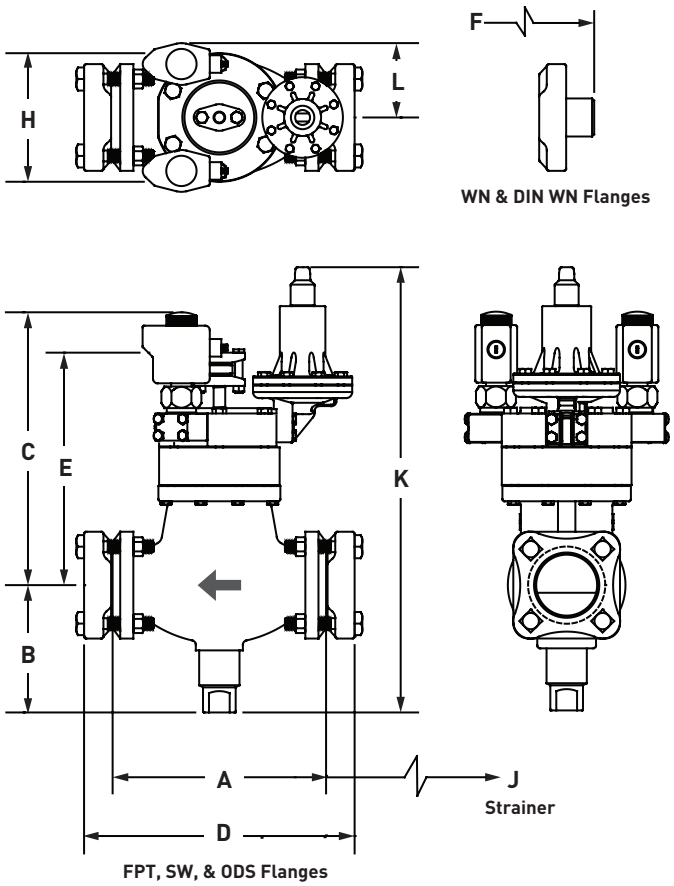
Port Size		A*		B*		C		D		E		W	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
125	5	381	15.0	297	11.7	589	23.2	213	8.4	589	23.2	229	9.0
150	6	513	20.2	356	14.0	627	24.7	196	7.7	681	26.8	295	11.6

* Allow 75mm (3") overhead clearance for access to adjusting stem.
** Allow 100mm (4") overhead clearance for coil or seal cap removal.

Dual Position Gas Powered Suction Stop Valves



Dimensional Diagram: CK-2D Dual Position Gas Powered Suction Stop Valves



Dimensional Diagram: CK-6D Dual Position Gas Powered Suction Stop Valves

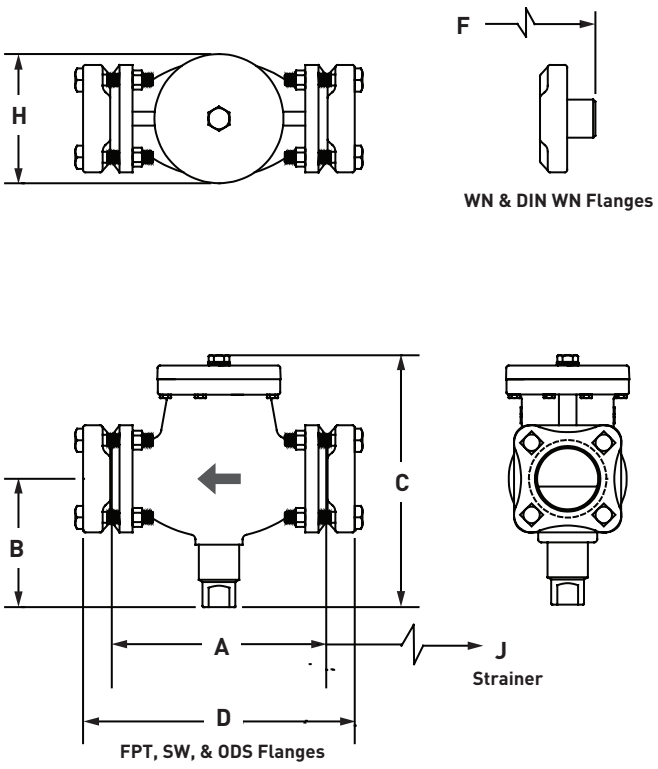
Port Size		A		B*		C**		E		H		J		K		L	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
50	2	251	9.9	140	5.5	472	18.6	272	10.7	140	5.5	251	9.9	500	19.7	117	4.6
65	2½	252	9.9	142	5.6	500	19.7	297	11.7	159	6.2	315	12.4	528	20.8	124	4.9
75	3	311	12.2	216	8.5	597	23.5	330	13.0	176	7.0	315	12.4	625	24.6	142	5.6
100	4	359	14.3	219	8.6	652	25.7	361	14.2	222	8.9	363	14.3	681	26.8	158	6.2

* Allow 25mm (1") below valve to operate manual opening stem
**Allow 38mm (11/2") above valve for removal of coil.

Port Size		D						F					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
50	2	1½"	307	12.1	2⅛"	307	12.1	1½"	366	14.4	38mm	364	14.4
		2"			2⅝"			2"	378	14.9	50mm	371	14.6
65	2½	2½"	318	12.5	2⅝"	318	12.5	2½"	389	15.3	65mm	388	15.3
		3"			3⅛"			3"	406	16.0			
75	3	3"	376	14.8	3⅛"	376	14.8	3"	465	18.3	75mm	465	18.3
					3⅝"								
100	4	4"	432	17.0	4⅛"	432	17.0	4"	551	21.7	100mm	552	21.7

* FPT flanges are only available in 50mm (2")

Check Valves



Dimensional Diagram: CK-1 Check Valves

Dimensional Diagram: CK-1 Check Valves

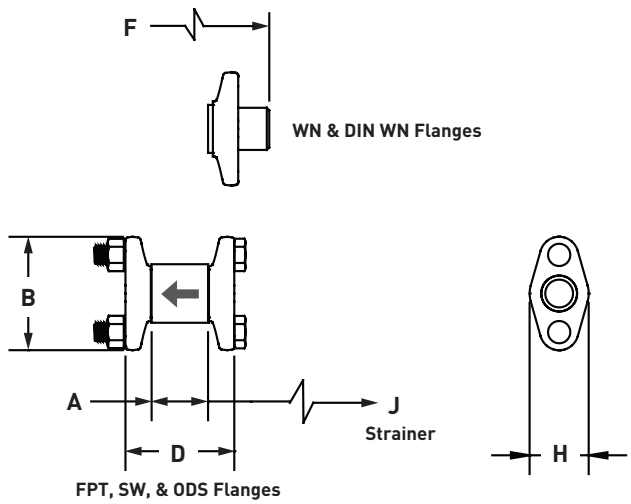
Port Size		A		B*		C		H		J		K		L		M		W	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20 -25	¾ - 1	164	6.2	147	5.8	191	7.5	117	4.6	150	5.9	–	–	–	–	–	–	–	–
32	1¼	203	8.0	160	6.3	218	8.6	117	4.6	178	7.0	–	–	–	–	–	–	–	–
40 - 50	1⅝ - 2	251	9.9	175	6.9	269	10.6	140	5.5	251	9.9	–	–	–	–	–	–	–	–
65	2½	252	9.9	180	7.1	302	11.9	159	6.2	315	12.4	–	–	–	–	–	–	–	–
75	3	311	12.2	272	10.7	384	15.1	176	7.0	315	12.4	–	–	–	–	–	–	–	–
100	4	359	14.3	292	11.5	427	16.8	222	8.9	363	14.3	–	–	–	–	–	–	–	–
125	5	–	–	–	–	–	–	–	–	–	–	381	15.0	297	11.7	495	19.5	229	9.0
150	6	–	–	–	–	–	–	–	–	–	–	513	20.2	356	14.0	536	21.1	295	11.6

* Allow 25mm (1") below valve to operate manual opening stem

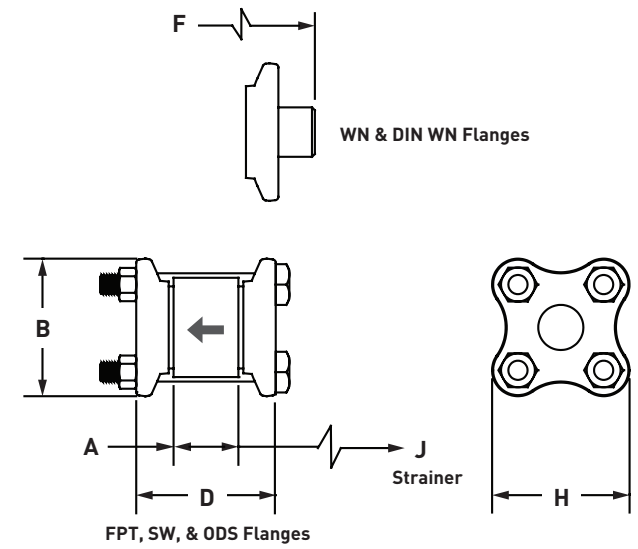
Port Size		D						F					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
20 - 25	¾ - 1	¾"	211	8.3	⅞"	211	8.3	¾"	246	9.7	20mm	248	9.8
		1"			1⅛"			1"	254	10.0	25mm	255	10.0
		1¼"			1⅜"			1¼"			32mm		
32	1¼	1¼"	254	10.0	1⅝"	254	10.0	1¼"	325	12.8	32mm	304	12.0
		1½"						1½"	312	12.3	38mm	313	12.3
40 - 50	1⅝ - 2	1½"	307	12.1	2⅛"	307	12.1	1½"	366	14.4	38mm	364	14.4
		2"			2⅝"			2"	378	14.9	50mm	371	14.6
65	2½	2½"	318	12.5	2⅝"	318	12.5	2½"	389	15.3	65mm	388	15.3
		3"			3⅛"			3"	406	16.0			
75	3	3"	376	14.8	3⅛"	376	14.8	3"	465	18.3	75mm	465	18.3
					3⅝"								
100	4	4"	432	17.0	4⅛"	432	17.0	4"	551	21.7	100mm	552	21.7

* FPT flanges are only available in 20 - 50mm (3/4" - 2")

Check Valves



Dimensional Diagram: CK4A Check Valves



Dimensional Diagram: CK4A Check Valves

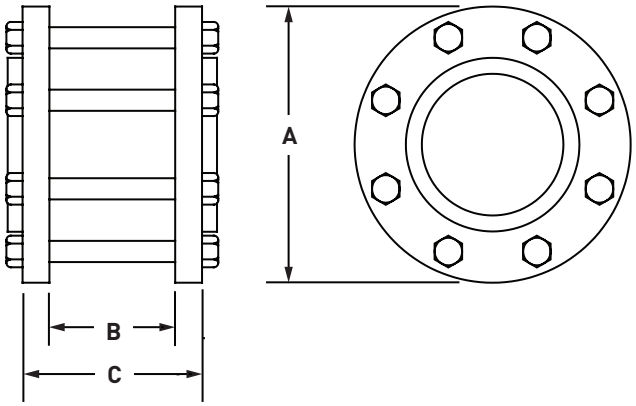
Port Size		A		B		H		J	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
13	½	28	1.1	74	2.9	38	1.5	97	3.8
20 -25	¾ - 1	33	1.3	112	4.4	61	2.4	150	5.9

Port Size		A		B		H		J	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
32	1¼	51	2.0	97	3.8	97	3.8	178	7.0
50	2	61	2.4	114	4.5	114	4.5	251	9.9
65	2½	71	2.8	147	5.8	147	5.8	315	12.4
75	3	81	3.2	147	5.8	147	5.8	315	12.4
100	4	89	3.5	180	7.1	180	7.1	363	14.3

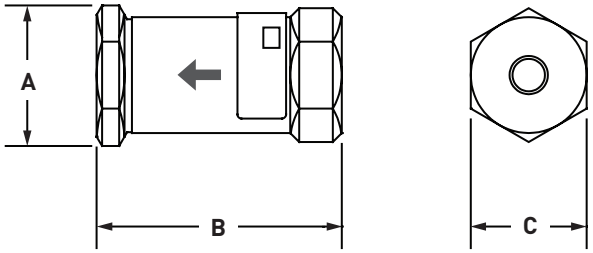
Port Size		D						F					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
13	½	¼"	66	2.6	½"	66	2.6	¼"	86	3.4	13mm	86	3.4
		⅜"						⅜"					
		½"			⅝"			½"			20mm		
		¾"						¾"					
20 - 25	¾ - 1	¾"	86	3.4	⅞"	86	3.4	¾"	121	4.8	20mm	124	4.9
		1"			1⅛"			1"	130	5.1	25mm	130	5.1
		1¼"			1⅜"			1¼"			32mm		
32	1¼	1¼"	104	4.1	1⅝"	104	4.1	1¼"	173	6.8	32mm	151	6.0
		1½"						1½"	161	6.3	38mm	161	6.3
50	2	1½"	117	4.6	2⅛"	117	4.6	1½"	174	6.9	38mm	174	6.9
		2"			2⅝"			2"	187	7.4	50mm	180	7.1
65	2½	2½"	137	5.4	2⅝"	137	5.4	2½"	207	8.2	65mm	207	8.2
		3"			3⅛"			3"	226	8.9			
75	3	3"	148	5.8	3⅛"	148	5.8	3"	236	9.3	75mm	236	9.3
					3⅝"								
100	4	4"	162	6.4	4⅛"	162	6.4	4"	283	11.1	100mm	283	11.1

* FPT flanges are only available in 13 - 50mm (1/2" - 2")

Check Valves



Dimensional Diagram: CK4A Check Valves

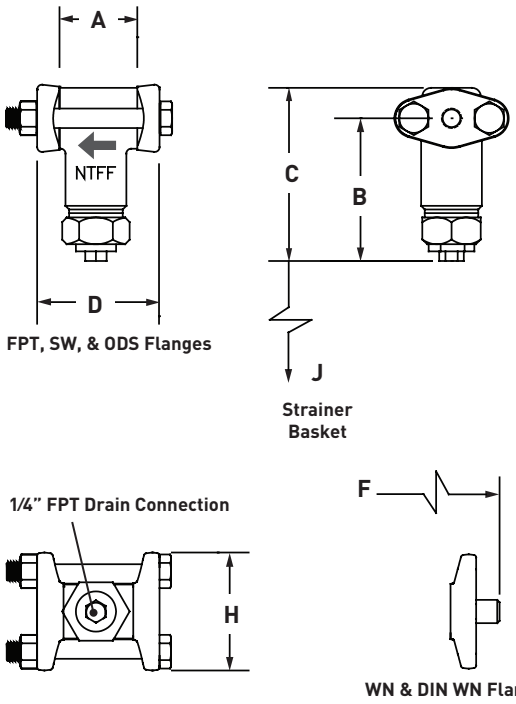


Dimensional Diagram: CK-3 Check Valves

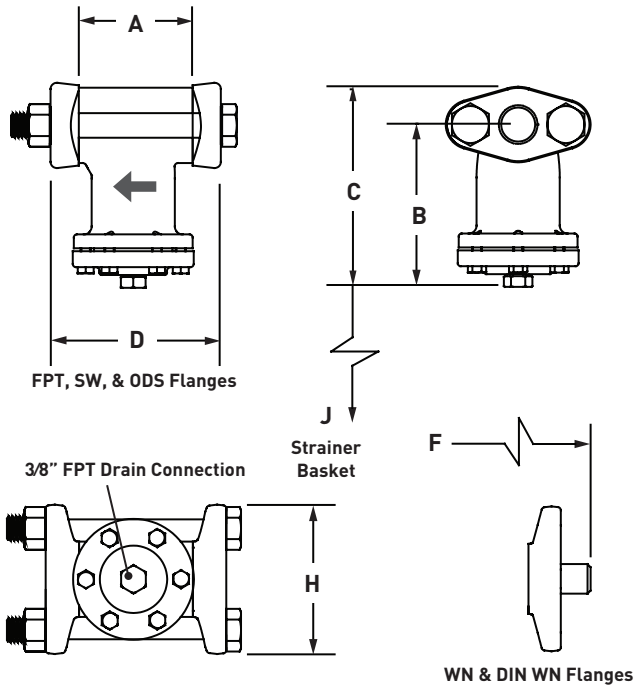
Port Size		A		B		C			
						SW		WN	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
125	5	279	11	104	4.1	150	5.9	196	7.7
150	6	318	13	122	4.8	173	6.8	218	8.6
200	8	381	15	142	5.6	–	–	–	–

Port Size		A		B		C	
mm	inch	mm	inch	mm	inch	mm	inch
13	½	58	2.3	97	3.8	51	2.0
20	¾	58	2.3	97	3.8	51	2.0
25	1	58	2.3	105	4.2	51	2.0

Strainers



Dimensional Diagram: RSF Strainers



Dimensional Diagram: RSF Strainers

Port Size		A		B		H		J*	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
13	½	50	2.0	104	4.1	74	2.9	76	3.0

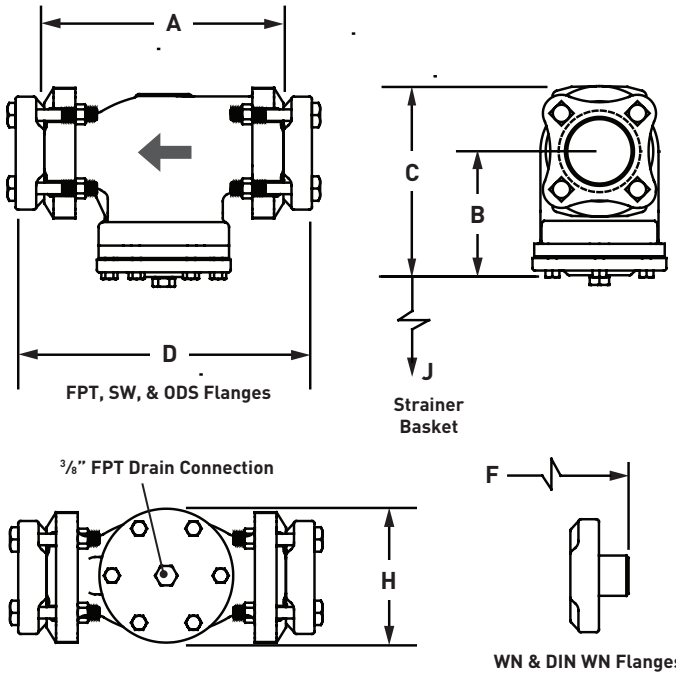
* Space required for removal of strainer screen assembly

Port Size		A		B		H		J*	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
25	1	97	3.8	112	4.4	112	4.4	127	5.0

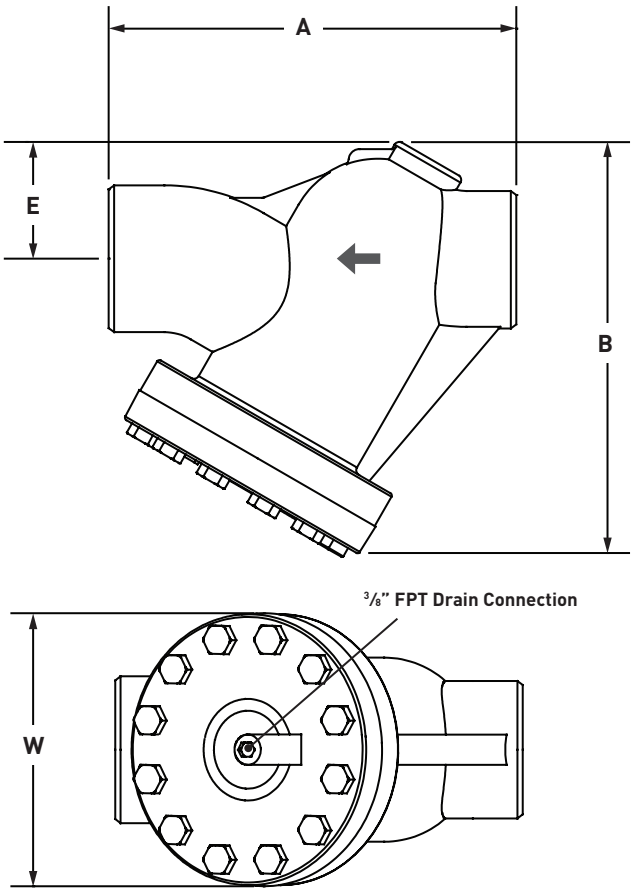
* Space required for removal of strainer screen assembly

Port Size		D						F					
		FPT, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
13	½	¼"	89	3.5	½"	89	3.5	¼"	108	4.3	13mm	108	4.3
		⅜"						⅜"					
		½"			⅝"			½"			20mm		
		¾"						¾"					
25	1	¾"	149	5.9	⅞"	149	5.9	¾"	184	7.3	20mm	187	7.4
		1"			1⅛"			1"	194	7.6	25mm	194	7.6
		1¼"			1⅜"			1¼"			32mm		

Strainers



Dimensional Diagram: RSF Strainers



Dimensional Diagram: RSW Strainers

Port Size		A		B		H		J*	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
32	1¼	173	6.8	127	5.0	97	3.8	127	5.0
50	2	249	9.8	124	4.9	114	4.5	127	5.0
65	2½	312	12.3	140	5.5	147	5.8	127	5.0
75	3	312	12.3	140	5.5	147	5.8	127	5.0
100	4	330	13.0	178	7.0	180	7.1	165	6.5

* Space required for removal of strainer screen assembly

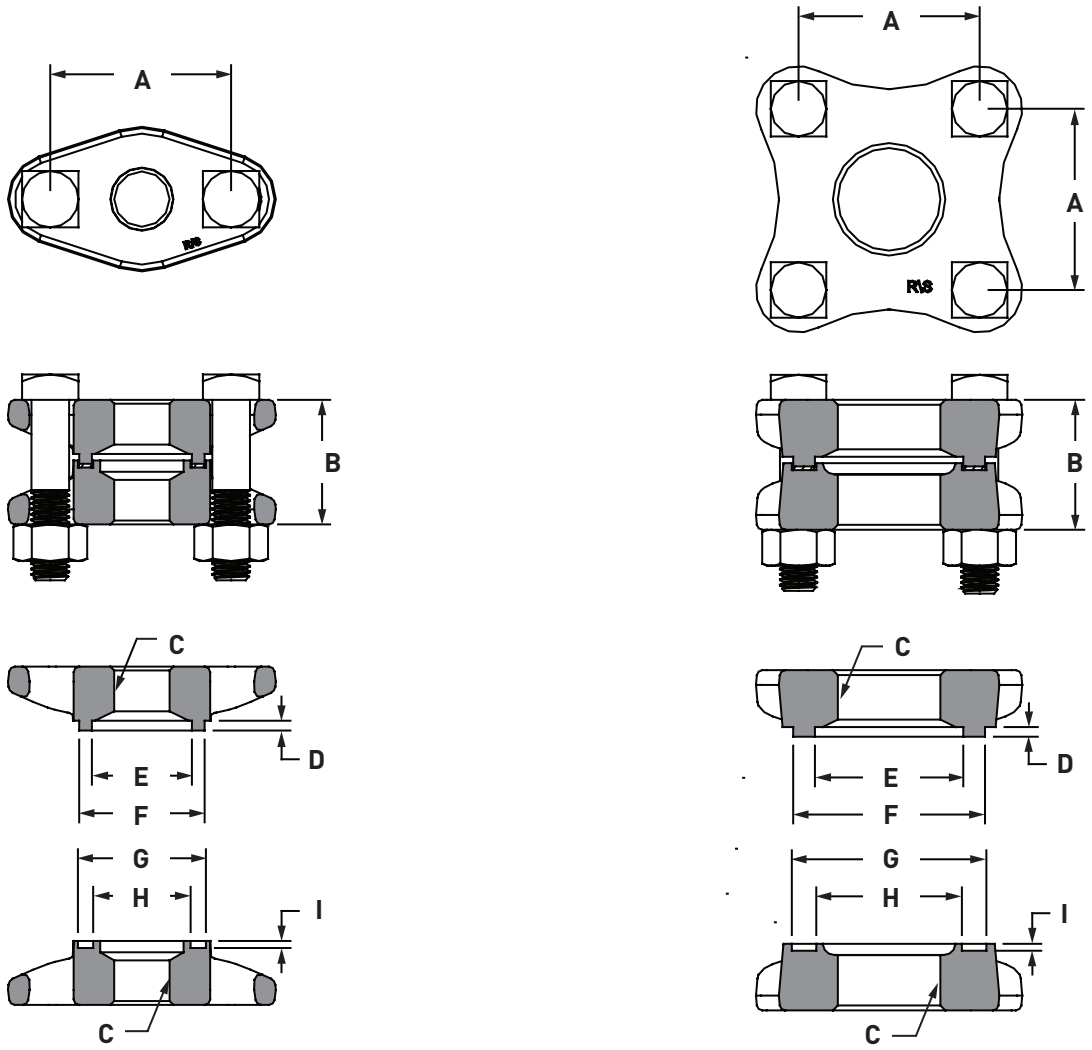
Port Size		A		B*		E		W	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
125	5	381	15.0	406	16.0	114	4.5	267	10.5
150	6	483	19.0	483	19.0	152	6.0	318	12.5
200	8	622	24.5	635	25.0	197	7.8	381	15.0

* Allow 254mm (10") below valve for removal of strainer screen assembly

Port Size		D						F					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
32	1¼	1¼"	226	8.9	1⅝"	226	8.9	1¼"	295	11.6	32mm	273	10.8
		1½"						1½"	283	11.1	38mm	283	11.1
50	2	1½"	305	12.0	2⅛"	305	12.0	1½"	362	14.3	38mm	362	14.3
		2"			2⅝"			2"	375	14.8	50mm	368	14.5
65	2½	2½"	379	14.9	2⅝"	379	14.9	2½"	449	17.7	65mm	449	17.7
		3"			3⅛"			3"	468	18.4			
75	3	3"	379	14.9	3⅛"	379	14.9	3"	468	18.4	75mm	468	18.4
					3⅝"								
100	4	4"	404	15.9	4⅛"	404	15.9	4"	524	20.6	100mm	524	20.6

* FPT flanges are only available in 32 - 50mm (11/4" - 2")

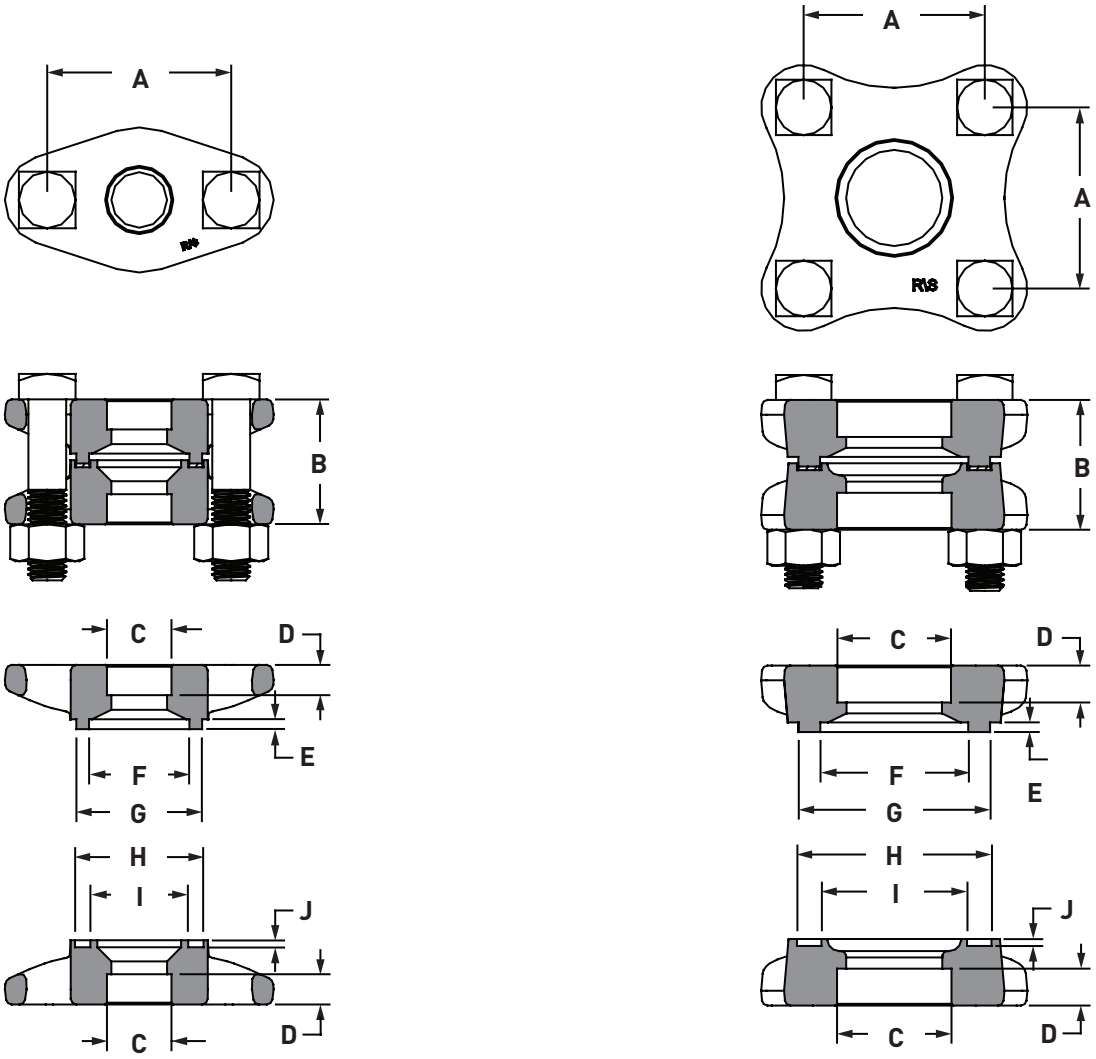
Industrial Valve Flanges - Threaded (FPT)



Dimensional Diagram: Threaded (FPT) Flanges

Port Size		Connection (IPS)	Bolt Pattern	A	B	C	Male			Female		
mm	inch						D	E	F	G	H	I
13	½	¼"	2	2.00"	1.50"	¼"-18 FPT	0.13"	1.00"	1.24"	1.26"	0.99"	0.12"
		⅜"				⅜"-18 FPT						
		½"				½"-14 FPT						
		¾"				¾"-14 FPT						
25	1	¾"	2	3.05"	2.08"	¾"-14 FPT	0.16"	1.66"	2.09"	2.13"	1.62"	0.12"
		1"				1"-11½ FPT						
		1¼"		3.13"		1¼"-11½ FPT				—	—	—
32	1¼	1¼"	4	2.38"	2.08"	1¼"-11½ FPT	0.16"	1.85"	2.27"	2.32"	1.80"	0.12"
		1½"				1½"-11½ FPT						
50	2	1½"	4	3.06"	2.20"	1½"-11½ FPT	0.16"	2.51"	3.24"	3.29"	2.46"	0.12"
		2"				2"-11½ FPT						

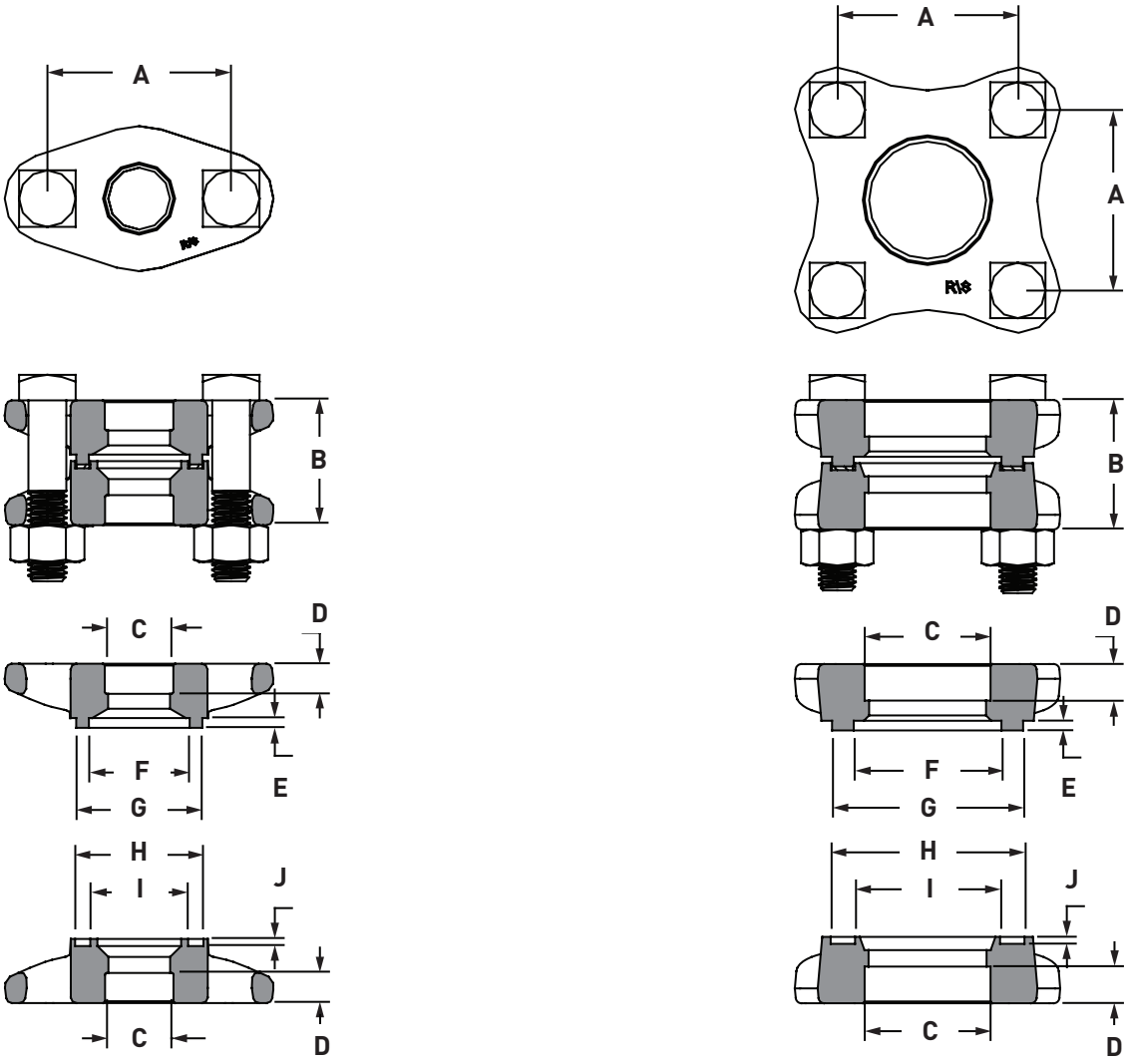
Industrial Valve Flanges - Socket Weld (SW)



Dimensional Diagram: Socket Weld (SW) Flanges

Port Size		Connection (IPS)	Bolt Pattern	A	B	C	D	Male			Female		
mm	inch							E	F	G	H	I	J
13	½	¼"	2	2.00"	1.50"	0.565"	0.375"	0.13"	1.00"	1.24"	1.26"	0.99"	0.12"
		⅜"				0.700"							
		½"				0.865"							
		¾"				1.075"	0.500"						
25	1	¾"	2	3.05"	2.08"	1.070"	0.500"	0.16"	1.66"	2.09"	2.13"	1.62"	0.12"
		1"				1.365"							
		1¼"				1.705"	0.688"						
32	1¼	1¼"	4	2.38"	2.08"	1.705"	0.625"	0.16"	1.85"	2.27"	2.32"	1.80"	0.12"
		1½"				1.930"							
50	2	1½"	4	3.06"	2.20"	1.930"	0.625"	0.16"	2.51"	3.24"	3.29"	2.46"	0.12"
		2"				2.445"							
65	2½	2½"	4	4.07"	2.61"	2.945"	0.750"	0.16"	3.00"	3.74"	3.79"	2.96"	0.12"
		3"				3.575"	0.810"						
75	3	3"	4	4.07"	2.61"	3.575"	0.875"	0.16"	3.63"	4.37"	4.41"	3.59"	0.12"
100	4	4"	4	5.00"	2.89"	4.575"	0.875"	0.16"	4.76"	5.49"	5.54"	4.71"	0.12"

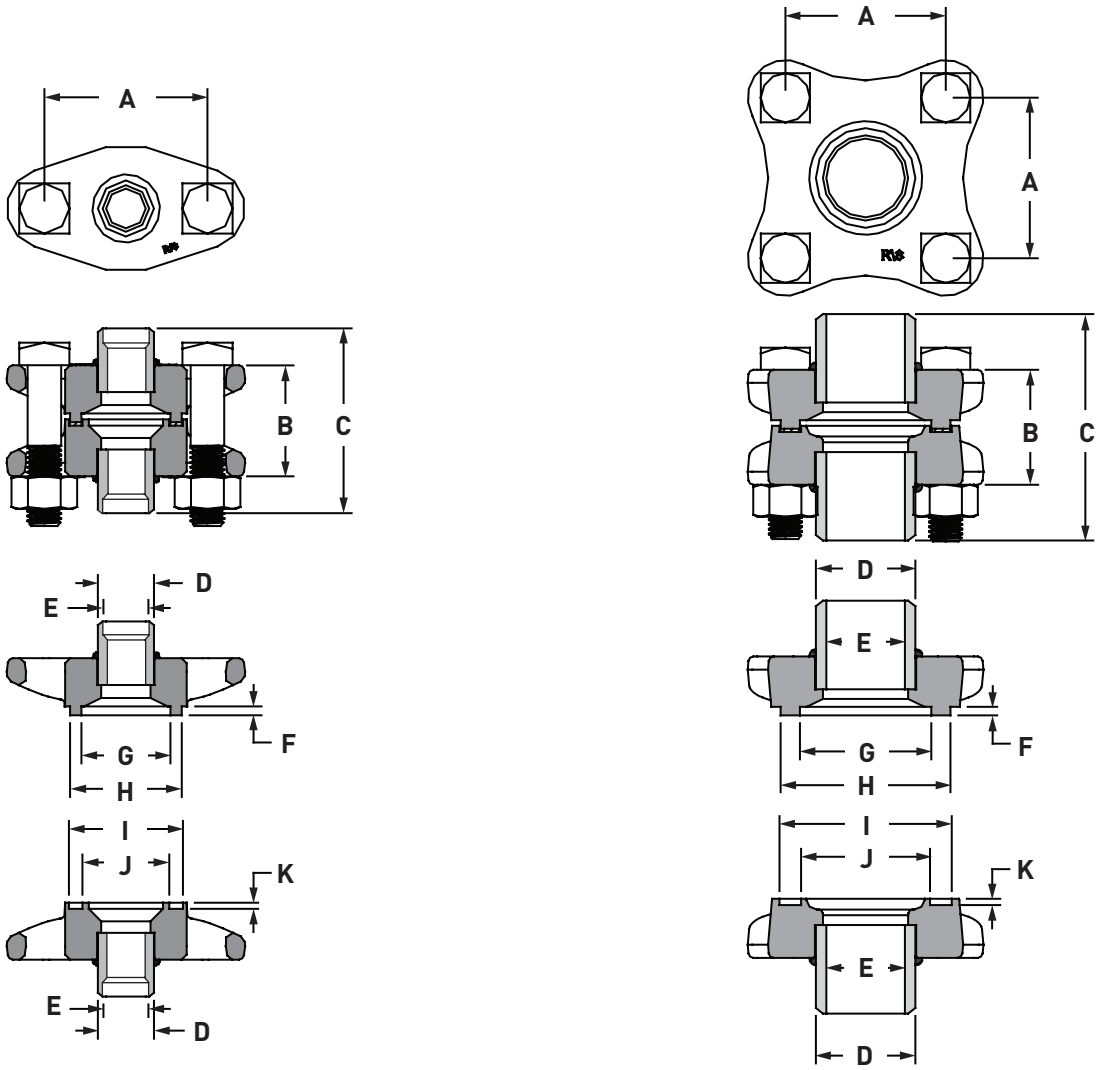
Industrial Valve Flanges - Outside Diameter Sweat (ODS)



Dimensional Diagram: Outside Diameter Sweat (ODS) Flanges

Port Size		Connection (ODS)	Bolt Pattern	A	B	C	D	Male			Female		
mm	inch							E	F	G	H	I	J
13	½	½"	2	2.00"	1.50"	0.505"	0.380"	0.13"	1.00"	1.24"	1.26"	0.99"	0.12"
		⅝"				0.630"	0.500"						
25	1	⅞"	2	3.05"	2.08"	0.880"	0.500"	0.16"	1.66"	2.09"	2.13"	1.62"	0.12"
		1⅛"				1.130"							
		1⅜"				1.380"							
32	1¼	1⅝"	4	2.38"	2.08"	1.631"	0.620"	0.16"	1.85"	2.27"	2.32"	1.80"	0.12"
50	2	2⅛"	4	3.06"	2.20"	2.137"	0.620"	0.16"	2.51"	3.24"	3.29"	2.46"	0.12"
		2⅝"				2.631"							
65	2½	2⅝"	4	4.07"	2.61"	2.637"	0.620"	0.16"	3.00"	3.74"	3.79"	2.96"	0.12"
		3⅛"				3.129"							
75	3	3⅛"	4	4.07"	2.61"	3.129"	0.620"	0.16"	3.63"	4.37"	4.41"	3.59"	0.12"
		3⅝"				3.629"							
100	4	4⅛"	4	5.00"	2.89"	4.129"	0.875"	0.16"	4.76"	5.49"	5.54"	4.71"	0.12"

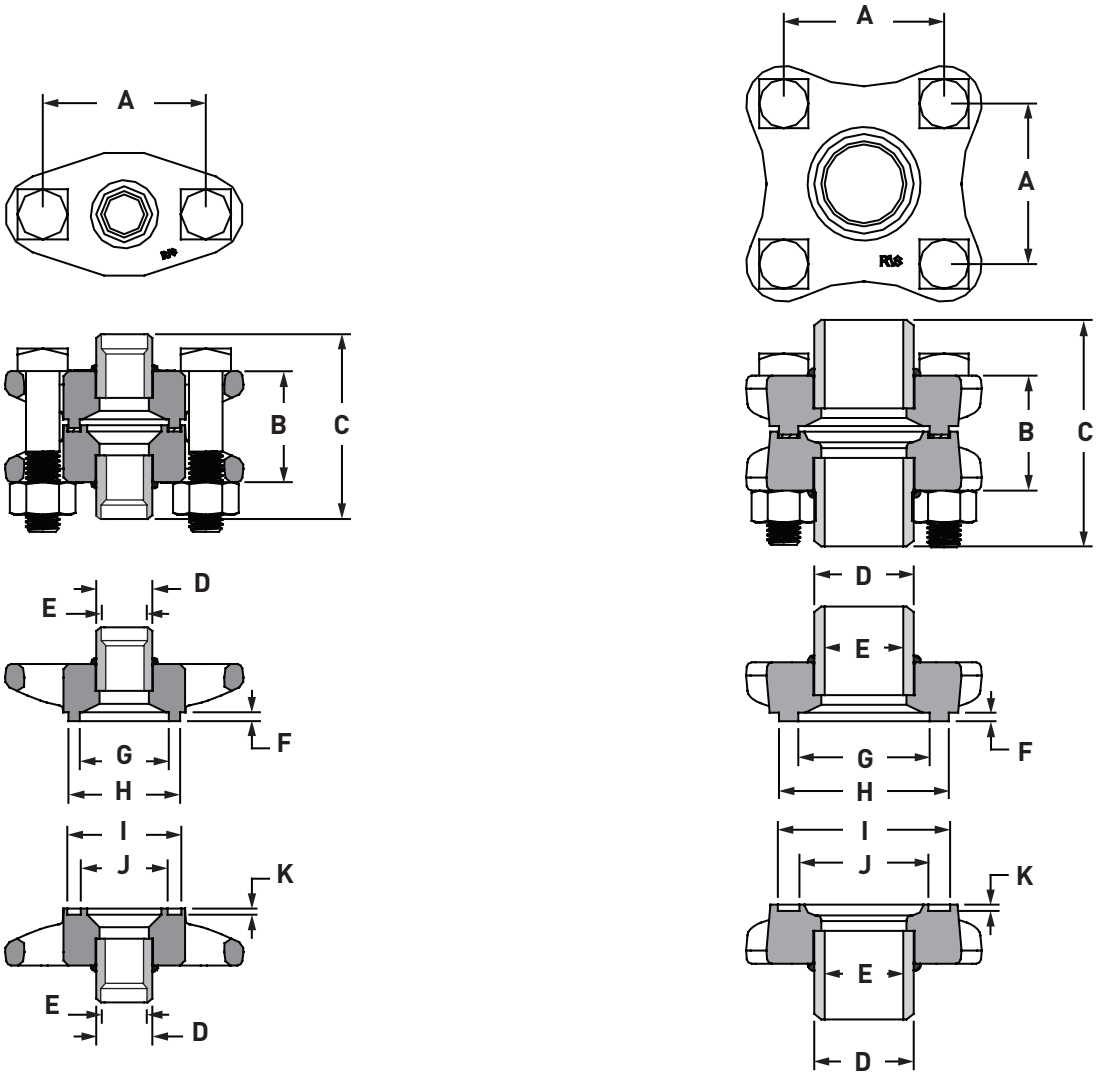
Industrial Valve Flanges - Weld Neck (WN)



Dimensional Diagram: Weld Neck (WN) Flanges

Port Size		Connection (IPS)	Bolt Pattern	A	B	C	D	E	Male			Female		
mm	inch								F	G	H	I	J	K
13	½	¼"	2	2.00"	1.50"	2.27"	0.540"	0.302"	0.13"	1.00"	1.24"	1.26"	0.99"	0.12"
		⅜"					0.675"	0.423"						
		½"					0.840"	0.546"						
		¾"					1.050"	0.742"						
25	1	¾"	2	3.05"	2.08"	3.46"	1.050"	0.742"	0.16"	1.66"	2.09"	2.13"	1.62"	0.12"
		1"				3.83"	1.315"	0.957"						
		1¼"					1.660"	1.278"						
32	1¼	1¼"	4	2.38"	2.08"	4.83"	1.660"	1.278"	0.16"	1.85"	2.27"	2.32"	1.80"	0.12"
		1½"				4.33"	1.900"	1.500"						
50	2	1½"	4	3.06"	2.20"	4.45"	1.900"	1.500"	0.16"	2.51"	3.24"	3.29"	2.46"	0.12"
		2"				4.95"	2.375"	2.067"						
65	2½	2½"	4	4.07"	2.61"	5.36"	2.875"	2.469"	0.16"	3.00"	3.74"	3.79"	2.96"	0.12"
		3"				6.11"	3.500"	3.068"						
75	3	3"	4	4.07"	2.61"	6.11"	3.500"	3.068"	0.16"	3.63"	4.37"	4.41"	3.59"	0.12"
100	4	4"	4	5.00"	2.89"	7.64"	4.500"	4.026"	0.16"	4.76"	5.49"	5.54"	4.71"	0.12"

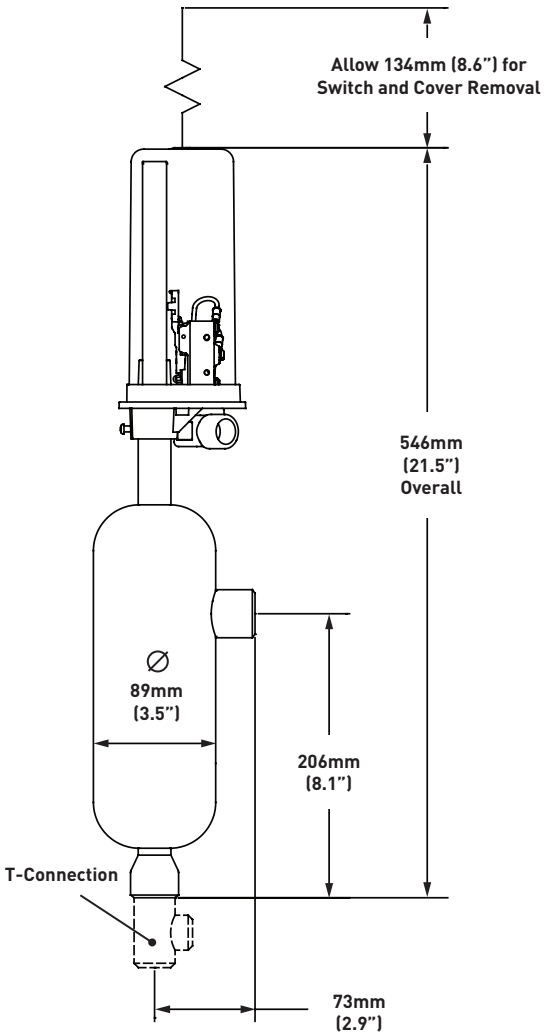
Industrial Valve Flanges - Metric (DIN) Weld Neck



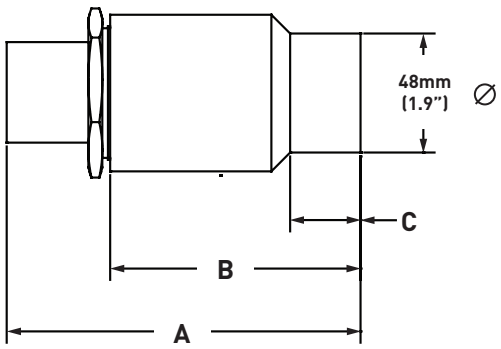
Dimensional Diagram: Metric (DIN) Weld Neck Flanges

Port Size		Connection (IPS)	Bolt Pattern	A	B	C	D	E	Male			Female		
mm	inch								F	G	H	I	J	K
13	½	13mm	2	2.00"	1.50"	2.27"	0.840"	0.681"	0.13"	1.00"	1.24"	1.26"	0.99"	0.12"
		20mm					1.060"	0.878"						
25	1	20mm	2	3.05"	2.08"	3.58"	1.050"	0.878"	0.16"	1.66"	2.09"	2.13"	1.62"	0.12"
		25mm				3.83"	1.327"	1.122"						
		32mm					1.660"	1.465"						
32	1¼	32mm	4	2.38"	2.08"	3.96"	1.660"	1.465"	0.16"	1.85"	2.27"	2.32"	1.80"	0.12"
		38mm				4.33"	1.900"	1.697"						
50	2	38mm	4	3.06"	2.20"	4.45"	1.900"	1.697"	0.16"	2.51"	3.24"	3.29"	2.46"	0.12"
		50mm				4.70"	2.374"	2.146"						
65	2½	65mm	4	4.07"	2.61"	5.36"	3.000"	2.760"	0.16"	3.00"	3.74"	3.79"	2.96"	0.12"
75	3	75mm	4	4.07"	2.61"	6.11"	3.500"	3.248"	0.16"	3.63"	4.37"	4.41"	3.59"	0.12"
100	4	100mm	4	5.00"	2.89"	7.64"	4.500"	4.217"	0.16"	4.76"	5.49"	5.54"	4.71"	0.12"

Liquid Level Controls



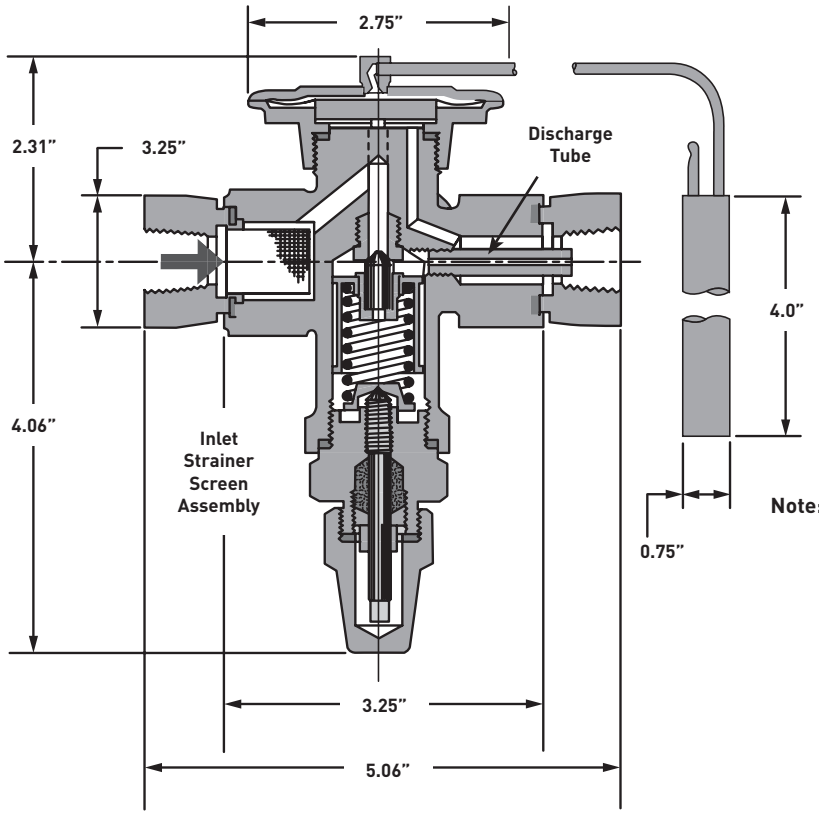
Dimensional Diagram: Refrigerant Float Switch (LLSS)



Dimensional Diagram: Liquid Level Sight Glass (SG1)

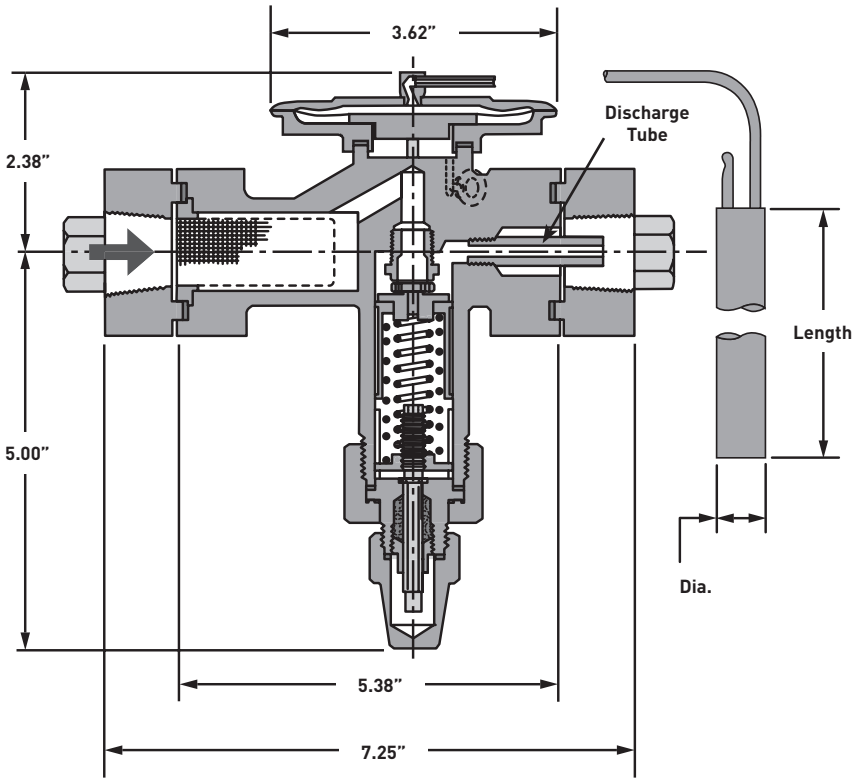
Length	A		B		C	
inch	mm	inch	mm	inch	mm	inch
2	103	4.1	51	2.0	29	1.1
4	144	5.7	102	4.0	29	1.1
4 x 2 3/8	144	5.7	102	4.0	60	2.4

Thermostatic Expansion Valves



Note: The dimension bulb length and diameter for type D thermostatic expansion valves is the same for all charges.

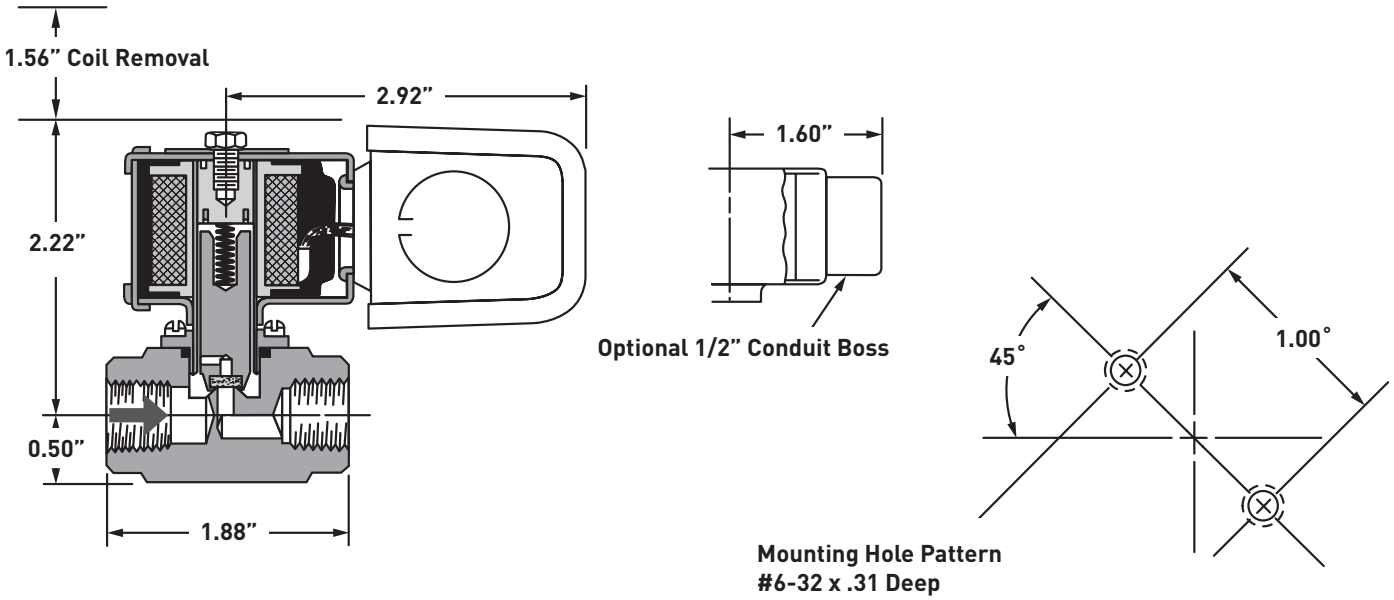
Dimensional Diagram: Type D Thermostatic Expansion Valves



Type A Thermostatic Expansion Valves Bulb Size		
Charge	**Length (in)**	**Diameter (in)**
L	6.0	0.875
Y1182	4.0	0.75
Y830	4.0	0.75
Y832	4.0	0.75
Y1199	4.0	0.75

Dimensional Diagram: Type A Thermostatic Expansion Valves

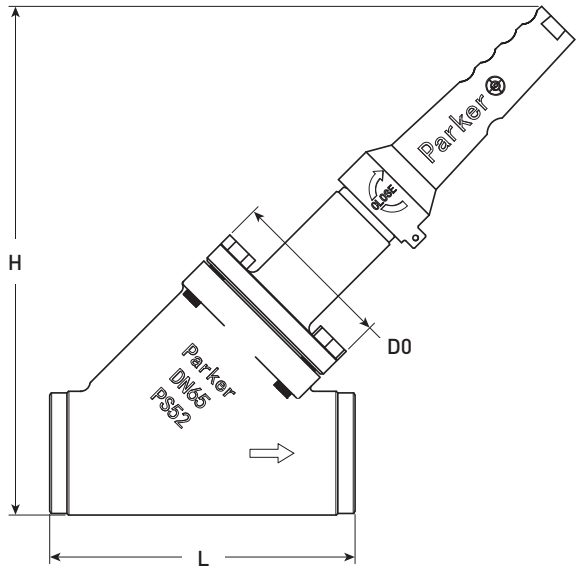
HJH and XOF Solenoid Valves

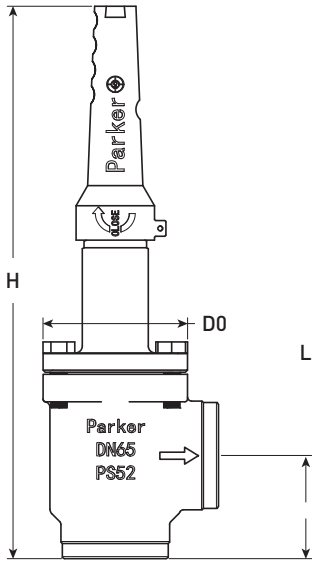


Parker Global Hand Valve Platform

Shut-off Valve and Shut-off / Expansion Valve

DN	Inch	ΦD0		BW Angle				BW Globe				SW Angle				SW Globe			
				L		H		L		H		L		H		L		H	
		mm	Inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
15	1/2	65	2.56	40	1.57	194	7.64	106	4.17	143	5.63	40	1.57	194	7.64	110	4.33	148	5.83
20	3/4	65	2.56	40	1.57	194	7.64	106	4.17	143	5.63	41	1.61	195	7.68	117	4.61	148	5.83
25	1	75	2.95	51	2.01	245	9.65	128	5.04	186	7.32	51	2.01	245	9.65	135	5.31	191	7.52
32	1¼	75	2.95	51	2.01	245	9.65	128	5.04	186	7.32	51	2.01	245	9.65	138	5.43	191	7.52
40	1½	95	3.74	60	2.36	293	11.54	164	6.46	233	9.17	60	2.36	293	11.54	168	6.61	238	9.37
50	2	95	3.74	60	2.36	293	11.54	164	6.46	233	9.17	63	2.48	296	11.65	172	6.77	238	9.37
65	2½	105	4.13	75	2.95	405	15.94	195	7.68	328	12.91	82/79	3.23/ 3.11	409	16.10	202	7.95	333	13.11
80	3	115	4.53	80	3.15	429	16.89	212	8.35	352	13.86	—	—	—	—	—	—	—	—
100	4	155	6.10	106	4.17	421	16.57	264	10.39	353	13.90	—	—	—	—	—	—	—	—





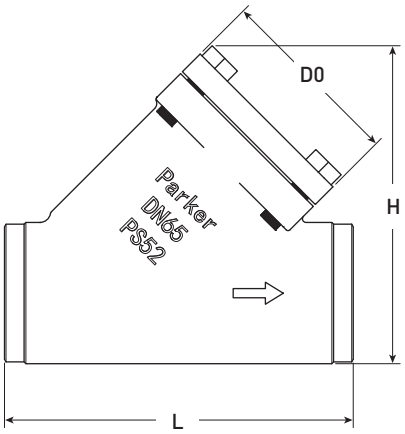
Shut-off / Check Valve

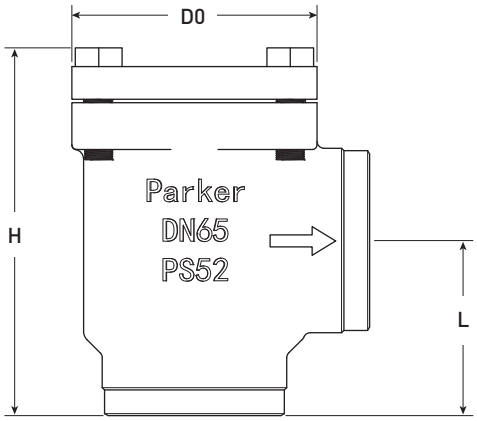
DN	Inch	ΦD0		BW Angle				BW Globe				SW Angle				SW Globe			
				L		H		L		H		L		H		L		H	
		mm	Inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
15	1/2	65	2.56	40	1.57	215	8.46	106	4.17	158	6.22	40	1.57	215	8.46	110	4.33	163	6.42
20	3/4	65	2.56	40	1.57	215	8.46	106	4.17	158	6.22	41	1.61	216	8.50	117	4.61	163	6.42
25	1	75	2.95	51	2.01	273	10.75	128	5.04	191	7.52	51	2.01	273	10.75	135	5.31	196	7.72
32	1¼	75	2.95	51	2.01	273	10.75	128	5.04	191	7.52	51	2.01	273	10.75	138	5.43	196	7.72
40	1½	95	3.74	60	2.36	321	12.64	164	6.46	253	9.96	60	2.36	321	12.64	168	6.61	258	10.16
50	2	95	3.74	60	2.36	321	12.64	164	6.46	253	9.96	63	2.48	324	12.76	172	6.77	258	10.16
65	2½	105	4.13	75	2.95	418	16.46	195	7.68	337	13.27	82/79	3.23/ 3.11	422	16.61	202	—	342	13.46
80	3	115	4.53	80	3.15	436	17.17	212	8.35	356	14.02	—	—	—	—	—	—	—	—

Parker Global Hand Valve Platform

Check Valve / Strainer

DN	Inch			BW Angle				BW Globe				SW Angle				SW Globe			
		ΦD0		L		H		L		H		L		H		L		H	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
15	1/2	65	2.56	40	1.57	101	3.98	106	4.17	95	3.74	40	1.57	101	3.98	110	4.33	100	3.94
20	3/4	65	2.56	40	1.57	101	3.98	106	4.17	95	3.74	41	1.61	102	4.02	117	4.61	100	3.94
25	1	75	2.95	51	2.01	116	4.57	128	5.04	115	4.53	51	2.01	116	4.57	135	5.31	120	4.72
32	1¼	75	2.95	51	2.01	116	4.57	128	5.04	115	4.53	51	2.01	116	4.57	138	5.43	120	4.72
40	1½	95	3.74	60	2.36	150	5.91	164	6.46	150	5.91	60	2.36	150	5.91	168	6.61	155	6.10
50	2	95	3.74	60	2.36	150	5.91	164	6.46	150	5.91	63	2.48	153	6.02	172	6.77	155	6.10
65	2½	105	4.13	75	2.95	160	6.30	195	7.68	173	6.81	82/79	3.23/ 3.11	164	6.46	202	7.95	178	7.01
80	3	115	4.53	80	3.15	173	6.81	212	8.35	193	7.60	—	—	—	—	—	—	—	—

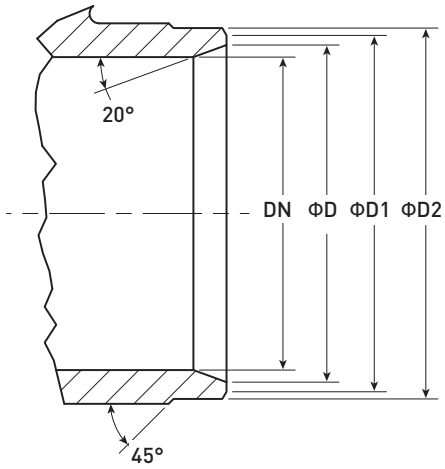




Parker Global Hand Valve Platform

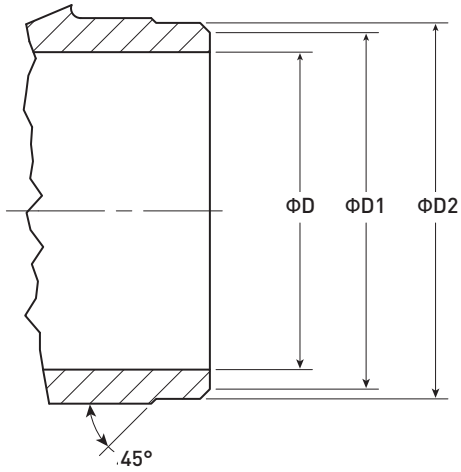
Shut-off / Check Valve

DN	Inch	ΦD0-0.3	ΦD1-0.8	ΦD2
15	1/2	17	21	22
20	3/4	22	26	28
25	1	28.5	32.5	34
32	1¼	37	41	43
40	1½	43	47	49
50	2	54.5	58.5	61
65	2½	70	74	77
80	3	82	86	90
100	4	106.5	110.5	115



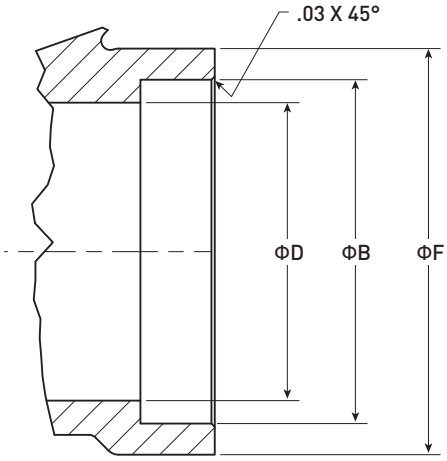
ANSI BW End Connection

DN	Inch	ΦD+0.8	ΦD1+0.8	ΦD2	Comments
15	1/2	13.9	17.1	21.3	Sch80
20	3/4	18.9	22.1	26.7	Sch80
25	1	24.3	27.5	33.4	Sch80
32	1¼	32.5	35.7	42.2	Sch80
40	1½	38.1	41.3	48.3	Sch80
50	2	52.5	55.7	60.3	Sch40
65	2½	62.7	65.9	73	Sch40
80	3	77.9	81.1	88.9	Sch40
100	4	102.3	105.5	114.3	Sch40



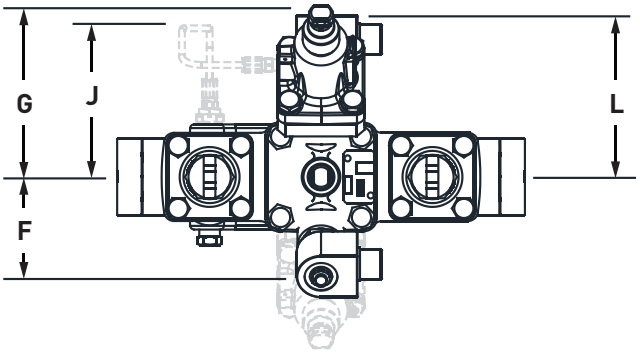
SW End Connection

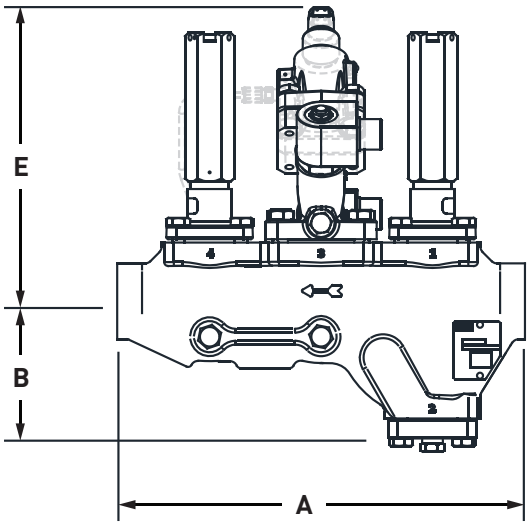
DN	Inch	ΦF	ΦB±0.13	ΦD±0.38
15	1/2	33.2	22.0	16.6
20	3/4	39	27.3	21.7
25	1	47	34.0	27.4
32	1¼	56.5	42.8	35.8
40	1½	63	48.9	41.6
50	2	73	61.4	53.3
65	2½	89.0	74.1	64.2

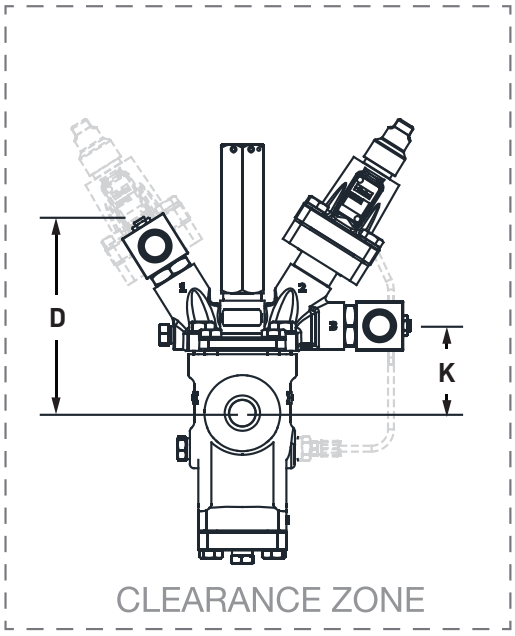


Valve Station

Four Position Valve







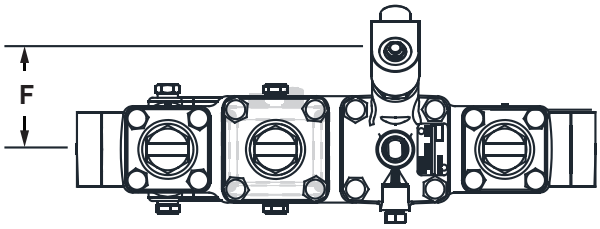
Port Size		A		B		D		F		L		K		J	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20, 25	¾, 1	335	13.2	112	4.4	157	6.2	85	3.4	138	5.4	71	2.8	124	4.9
32, 40	1¼, 1½	404	15.9	161	6.3	175	6.9	83	3.3	138	5.4	81	3.2	165	6.5
50	2	476	18.8	164	6.4	182	7.2	89	3.5	148	5.8	94	3.7	137	5.4
65, 80	2½, 3	572	20.1	202	8.0	183	7.2	99	3.9	152	6.0	92	3.6	132	5.2

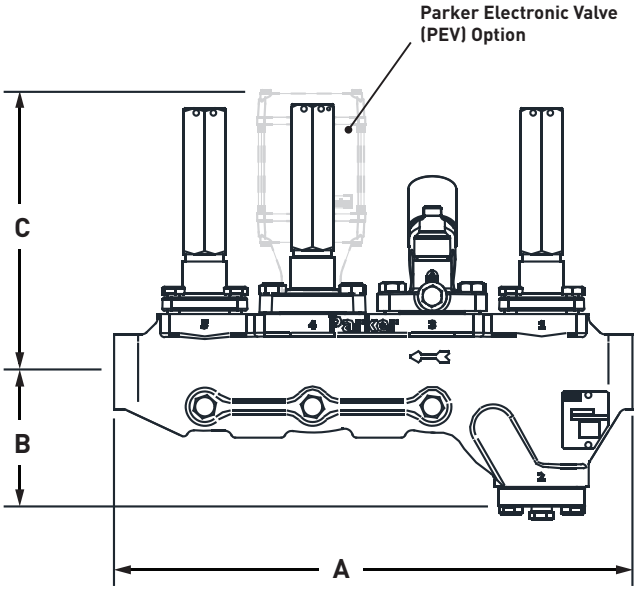
Port Size		E						G					
		Inlet Regulators				Outlet Regulators		Inlet Regulators				Outlet Regulators	
		Range A, D		Range E		Range V, D		Range A, D		Range E		Range V, D	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20, 25	¾, 1	242	9.5	273	10.8	264	10.4	142	5.6	160	6.1	160	6.3
32, 40	1¼, 1½	245	9.7	277	10.9	267	10.5	137	5.4	162	6.4	156	6.1
50	2	267	10.5	299	11.8	290	11.4	143	5.6	162	6.4	157	6.2
65, 80	2½, 3	268	10.5	300	11.8	292	11.5	151	6.0	171	6.7	166	6.6

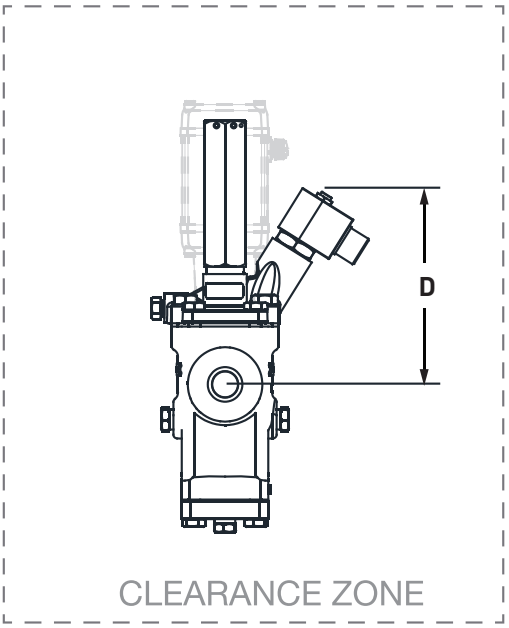
Clearance Zone:
1. The top of the PVS requires a clearance of 152 mm (6") for the removal the PEV actuator and hand valve seal caps.
2. The bottom of the PVS requires a clearance of 102 mm (4") for the removal of the strainer basket.
3. Both the left and right side of the PVS, widest valve setup as shown above, requires a minimum of 76 mm (3") on each side.

Valve Station

Five Position Valve





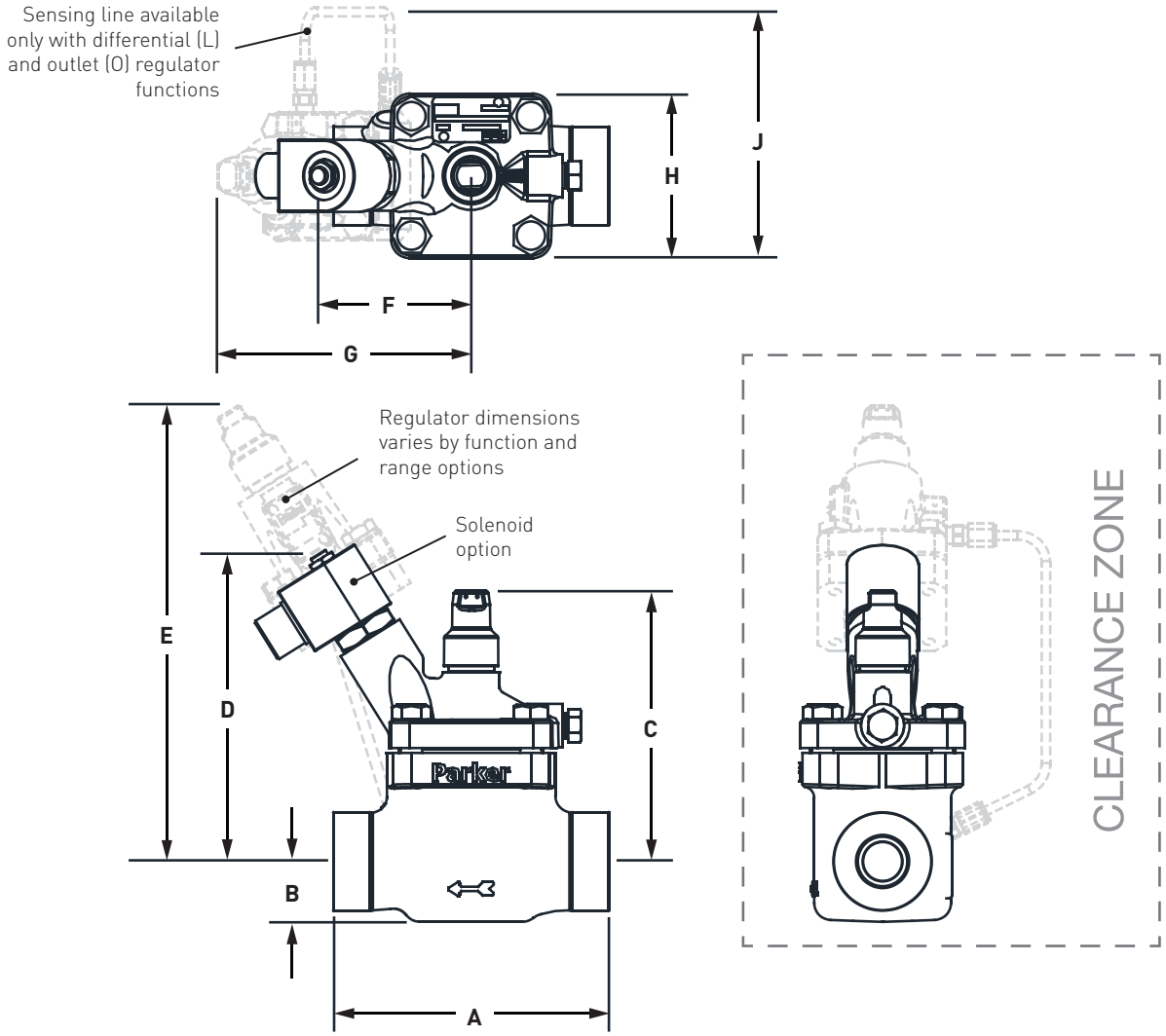


Port Size		A		B		C (PEV)		D		F	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20, 25	¾, 1	434	17.1	112	4.4	234	9.2	157	6.2	85	3.4
32, 40	1¼, 1½	535	21.1	161	6.3	252	9.9	175	6.9	83	3.3

Clearance Zone:
1. The top of the PVS requires a clearance of 152 mm (6") for the removal the PEV actuator and hand valve seal caps.
2. The bottom of the PVS requires a clearance of 102 mm (4") for the removal of the strainer basket.
3. Both the left and right side of the PVS, widest valve setup as shown above, requires a minimum of 76 mm (3") on each side.

P-Series Solenoids and Pressure Regulators

Single Port Plate



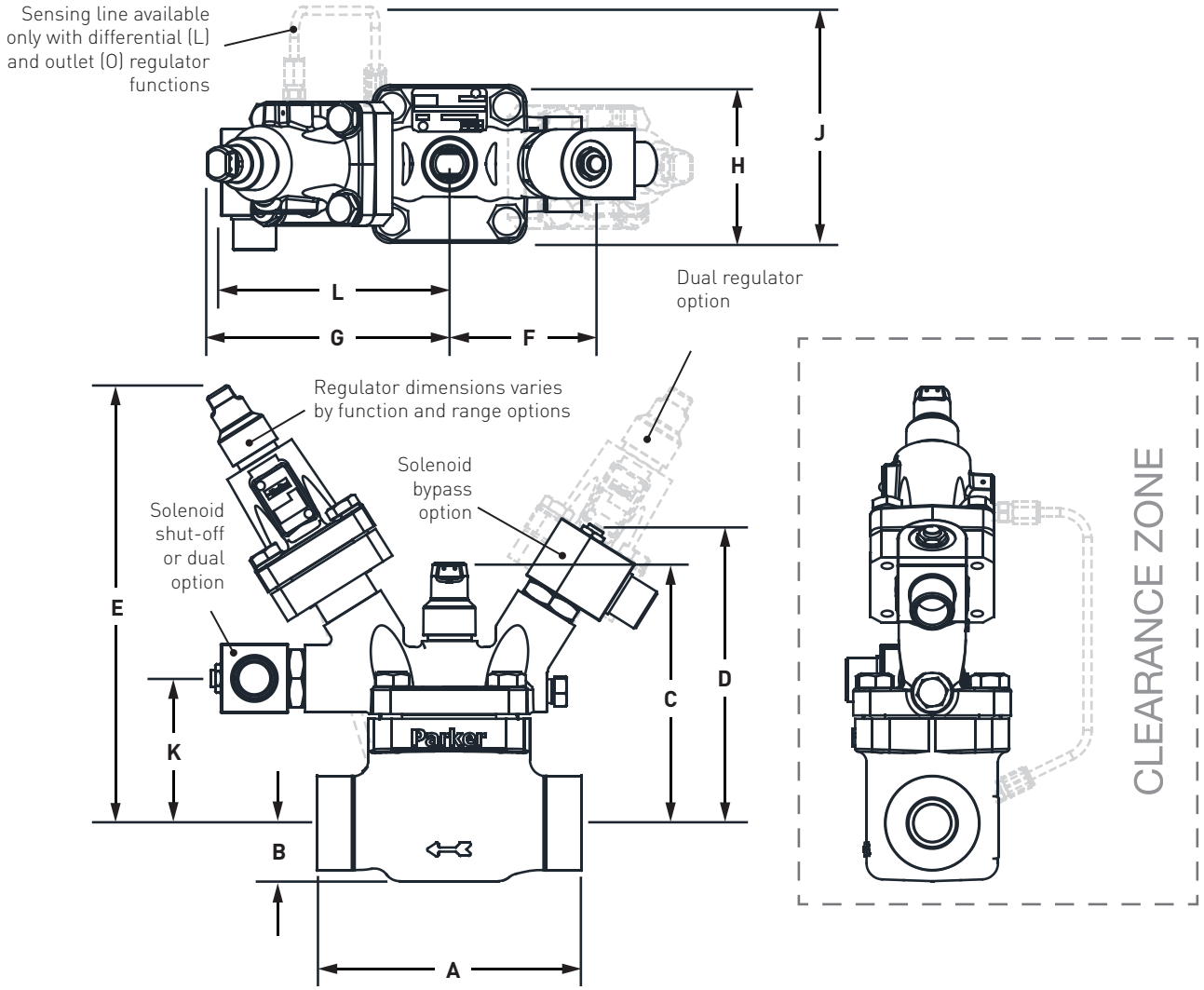
Port Size		A		B		C		D		F		H		J	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20, 25	¾, 1	153	6.0	34	1.3	150	5.9	171	6.7	85	3.4	91	3.6	94	3.7
32, 40	1¼, 1½	188	7.4	48	1.9	187	7.4	191	7.6	83	3.3	121	4.8	139	5.5
50	2	227	8.9	75	2.9	187	7.4	187	7.4	89	3.5	170	6.7	183	7.2
65, 80	2½, 3	254	10.0	89	3.5	300	11.8	210	8.3	99	3.9	189	7.5	195	7.7

Port Size		E						G					
		Inlet Regulators				Outlet Regulators		Inlet Regulators				Outlet Regulators	
		Range A, D		Range E		Range V, D		Range A, D		Range E		Range V, D	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20, 25	¾, 1	254	10.0	281	11.1	276	10.8	142	5.6	156	6.1	160	6.3
32, 40	1¼, 1½	274	10.8	306	12.0	297	11.7	137	5.4	162	6.4	156	6.1
50	2	268	10.5	300	11.8	291	11.5	136	5.3	154	6.0	149	5.9
65, 80	2½, 3	294	11.6	326	12.8	319	12.5	151	6.0	170	6.7	167	6.6

Clearance Zone:
1. The top of the P-series valves requires a clearance of 50 mm (2") for the removal the solenoid or regulator.
2. The bottom of the P-series valves requires a clearance of 13 mm (1/2").
3. Both the left and right side of the P-series, widest valve setup as shown above, requires a minimum of 25 mm (1") on each side.
If the valve has a sensing line add 25 mm (1") to the overall width.

P-Series Solenoids and Pressure Regulators

Multi Port Plate



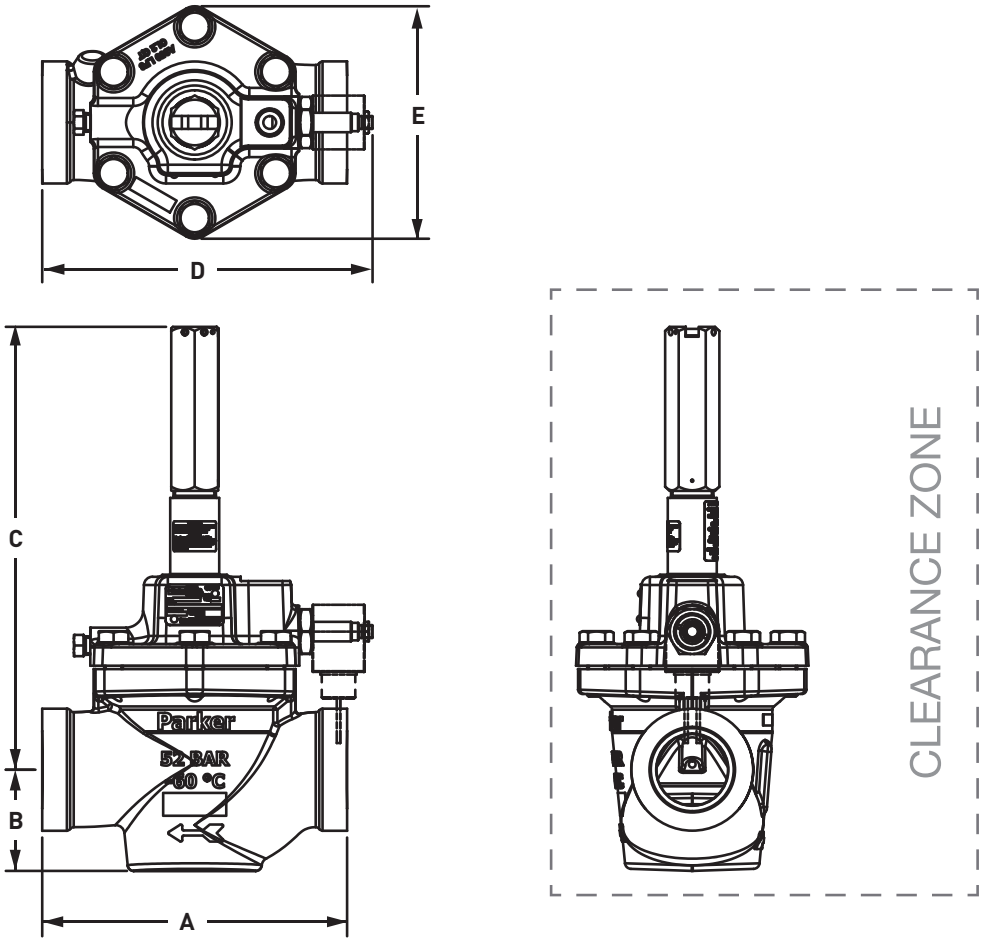
Port Size		A		B		C		D		F		H		J		K		L	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20, 25	¾, 1	153	6.0	34	1.3	150	5.9	171	6.7	85	3.4	91	3.6	94	3.7	84	3.3	138	5.4
32, 40	1¼, 1½	188	7.4	48	1.9	187	7.4	191	7.6	83	3.3	121	4.8	139	5.5	101	4.0	138	5.4
50	2	227	8.9	75	2.9	187	7.4	187	7.4	89	3.5	170	6.7	183	7.2	99	3.9	148	5.8
65, 80	2½, 3	254	10.0	89	3.5	300	11.8	210	8.3	99	3.9	189	7.5	195	7.7	119	4.7	151	6.0

Port Size		E						G					
		Inlet Regulators				Outlet Regulators		Inlet Regulators				Outlet Regulators	
		Range A, D		Range E		Range V, D		Range A, D		Range E		Range V, D	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
20, 25	¾, 1	254	10.0	281	11.1	276	10.8	142	5.6	156	6.1	160	6.3
32, 40	1¼, 1½	274	10.8	306	12.0	297	11.7	137	5.4	162	6.4	156	6.1
50	2	268	10.5	300	11.8	291	11.5	136	5.3	154	6.0	149	5.9
65, 80	2½, 3	294	11.6	326	12.8	319	12.5	151	6.0	170	6.7	167	6.6

Clearance Zone:
1. The top of the P-series valves requires a clearance of 50 mm (2") for the removal the solenoid or regulator.
2. The bottom of the P-series valves requires a clearance of 13 mm (1/2").
3. Both the left and right side of the P-series, widest valve setup as shown above, requires a minimum of 25 mm (1") on each side.
If the valve has a sensing line add 25 mm (1") to the overall width.

P-Series Solenoids and Pressure Regulators

Suction Stop Module



Port Size		A		B		C		D		E	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
50	2	227	8.9	75	2.9	330	13.0	246	9.7	173	6.8

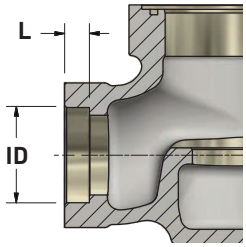
Clearance Zone:
1. The top of the P-series valves requires a clearance of 200 mm (8") for the removal the regulator.
2. The bottom of the P-series valves requires a clearance of 13 mm (1/2").
3. Both the left and right side of the P-series, widest valve setup as shown above, requires a minimum of 25 mm (1") on each side.

DN65 and DN80 (2.5" and 3") coming soon.

P-Series Solenoids and Pressure Regulators

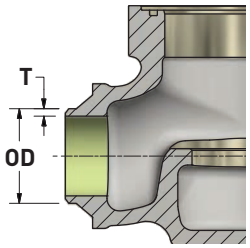
Connection

Socket Weld (SW)
ANSI



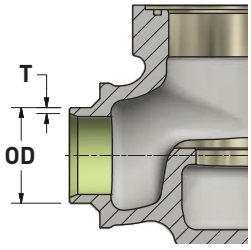
Port Size		Connection	L		ID	
mm	inch		mm	inch	mm	inch
20, 25	¾, 1	¾"	12.7	0.50	27	1.08
		1"			34	1.34
		1¼"			43	1.69
32, 40	1¼, 1½	1¼"	12.7	0.50	43	1.69
		1½"			49	1.93
		2	15.9	0.63	61	2.42
50	2	2"	15.9	0.63	61	2.42
		2½"			74	2.92
65	2½	2½"	15.9	0.63	74	2.92
80	3	2½"	15.9	0.63	74	2.92

Butt-Weld (BW)
ANSI



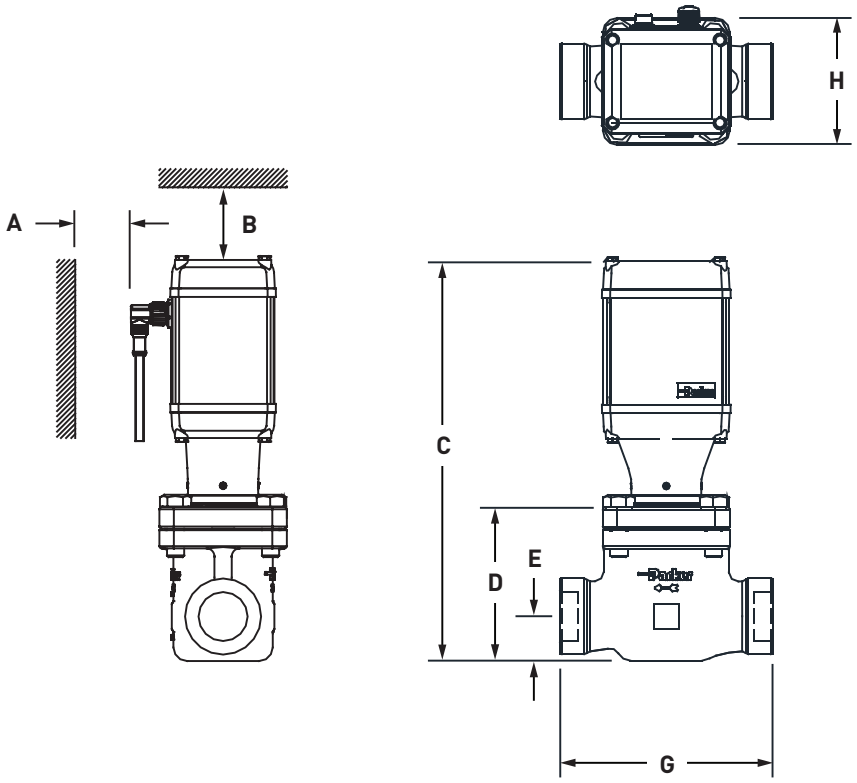
Port Size		Connection	Valve Body Material	T		OD	
mm	inch			mm	inch	mm	inch
20, 25	¾, 1	¾"	Steel (PA4W, PVS)	4.1	0.16	27	1.06
			Stainless Steel (PA4C, PEV)	3.1	0.12		
		1"	Steel (PA4W, PVS)	4.6	0.18	34	1.33
			Stainless Steel (PA4C, PEV)	3.6	0.14		
		1¼"	Steel (PA4W, PVS)	5.1	0.20	42	1.67
			Stainless Steel (PA4C, PEV)	3.8	0.15		
32, 40	1¼, 1½	1¼"	Steel (PA4W, PVS)	5.1	0.20	42	1.67
			Stainless Steel (PA4C, PEV)	3.8	0.15		
		1½"	Steel (PA4W, PVS)	5.3	0.21	49	1.91
			Stainless Steel (PA4C, PEV)	3.8	0.15		
		2	All	4.1	0.16	61	2.39
50	2	2"	All	4.1	0.16	61	2.39
		2½"		5.3	0.21	73	2.89
65	2½	2½	All	5.3	0.21	73	2.89
		3"		5.6	0.22	89	3.15
80	3	2½"	All	5.3	0.21	73	2.89
		3"		5.6	0.22	89	3.15

Butt-Weld (BW DN)
Metric



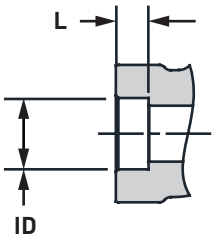
Port Size		Connection	Valve Body Material	T		OD	
mm	inch			mm	inch	mm	inch
20, 25	¾, 1	DN20	All	2.3	0.09	27	1.06
		DN25	All	2.6	0.10	34	1.33
		DN32	All	2.6	0.10	42	1.67
32, 40	1¼, 1½	DN32	All	2.6	0.10	42	1.67
		DN40	All	2.6	0.10	48	1.90
		DN50	All	2.9	0.11	60	2.37
50	2	DN50	All	2.9	0.11	60	2.37
		DN65	All	2.9	0.11	76	3.00
65	2½	DN65	All	3.5	0.14	77	3.03
		DN80	All	4.0	0.16	90	3.54
80	3	DN65	All	3.5	0.14	77	3.03
		DN80	All	4.0	0.16	90	3.54

Electronic Valve



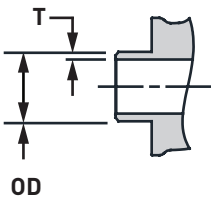
Port Size		A		B		C		D		E		G		H	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
25	1	25	1	50	2	280	11.0	108	4.2	31	1.2	149	5.9	89	3.5
40	1½	25	1	50	2	324	12.8	151	6.0	48	1.9	188	7.4	121	4.8

Socket Weld (SW)
ANSI



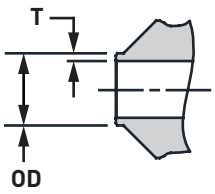
Port Size		Connection	L		ID	
mm	inch		mm	inch	mm	inch
20, 25	¾ ,1	¾"	13	0.50	28	1.09
		1"			34	1.35
		1¼"			43	1.70
32, 40	1¼ ,1½	1¼"	13	0.50	43	1.70
		1½"			49	1.94
		2	16	0.63	61	2.43

Butt-Weld (BW)
ANSI



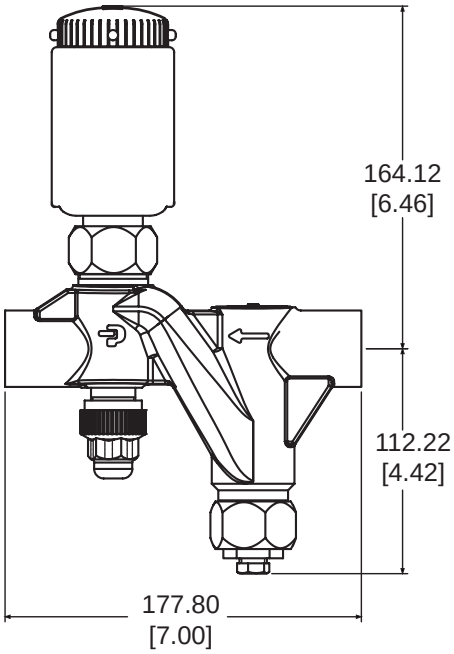
Port Size		Connection	T		OD	
mm	inch		mm	inch	mm	inch
20, 25	¾ ,1	¾"	4.0	0.16	27	1.06
		1"	4.7	0.18	34	1.33
		1¼"	5.0	0.20	42	1.67
32, 40	1¼ ,1½	1¼"	5.0	0.20	42	1.67
		1½"	5.2	0.21	49	1.91
		2	4.0	0.16	61	2.39

Butt-Weld (BW DN)
Metric

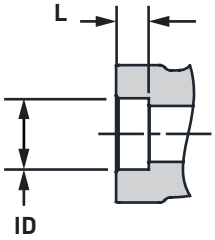


Port Size		Connection	T		OD	
mm	inch		mm	inch	mm	inch
20, 25	¾ ,1	20 mm	3.0	0.12	25	1.00
		25 mm			34	1.34
		32 mm			43	1.69
32, 40	1¼ ,1½	32 mm	3.0	0.12	43	1.69
		40 mm			49	1.93
		50 mm			61	2.40

S8 Strainer-Solenoid

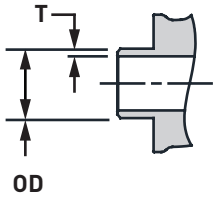


SW: Socket Weld ANSI



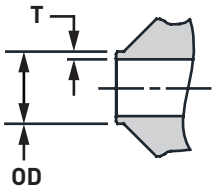
Socket Weld (SW) ANSI						
Port Size		Connection	L		ID	
mm	inch		mm	inch	mm	inch
15	½	½"	9.5	0.375	22.2	0.874
		¾"	12.7	0.500	27.6	1.087

BW: Butt-Weld ANSI



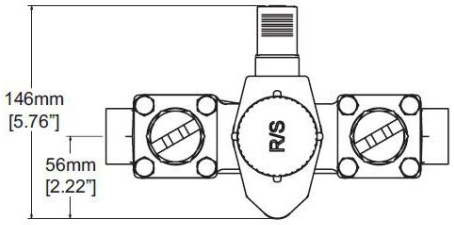
Butt-Weld (BW) ANSI						
Port Size		Connection	T		OD	
mm	inch		mm	inch	mm	inch
15	½	½"	3.9	0.152	21.6	0.850
		¾"	4.0	0.159	26.9	1.060

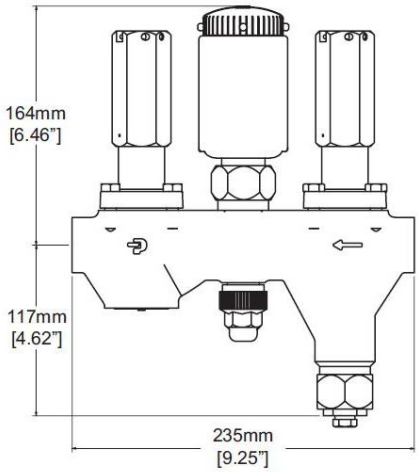
BW DN: Butt-Weld Metric



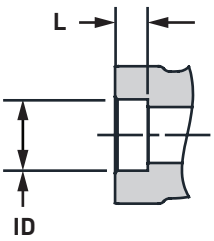
Butt Weld (BW) Metric						
Port Size		Connection	T		OD	
mm	inch		mm	inch	mm	inch
15	½	½"	2.5	0.099	22.0	0.866
		¾"	3.0	0.118	28.0	1.102

S8 Valve Station



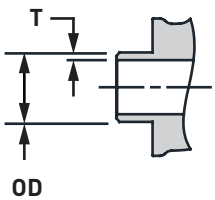


SW: Socket Weld ANSI



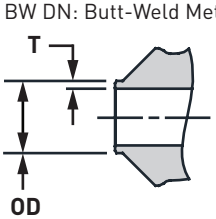
Socket Weld (SW) ANSI						
Port Size		Connection	L		ID	
mm	inch		mm	inch	mm	inch
15	½	½"	9.5	0.375	22.2	0.874
		¾"	12.7	0.500	27.6	1.087

BW: Butt-Weld ANSI



Butt-Weld (BW) ANSI						
Port Size		Connection	T		OD	
mm	inch		mm	inch	mm	inch
15	½	½"	3.9	0.152	21.6	0.850
		¾"	4.0	0.159	26.9	1.060

BW DN: Butt-Weld Metric



Butt Weld (BW) Metric						
Port Size		Connection	T		OD	
mm	inch		mm	inch	mm	inch
15	½	½"	2.5	0.099	22.0	0.866
		¾"	3.0	0.118	28.0	1.102

APPENDIX C

Valve Bolt Torque Specifications

151 **Check Valves**

151 **Pressure Regulators Valves**

152 **Solenoid Valves**

152 **Strainers**

152 **Hand Shut-Off and Hand Expansion Vavles**

Valve Bolt Torque Recommendations

Check Valves

CK-1 & CK-2 Check Valves					
Port Size		Bolt Size	Item Description	Torque	
mm	inch			mkg	ft. lb.
20 - 25	3/4 - 1	–	Valve Cover	14	100
20 - 25	3/4 - 1	–	Piston Disc Retaining Nut	2.1	15
32	1 1/4	1/4" - 20	Piston Set Screws	1.4	10
32 - 65	1 1/4 - 2 1/2	5/16" - 18	Valve Cover Screws	2.1	15
75 - 125	3 - 5	5/8" - 11	Valve Cover Screws	10	75
150	6	3/4" - 10	Valve Cover Bolts	15	105

CK-3 In-Line Check Valves				
Port Size		Item Description	Torque	
mm	inch		mkg	ft. lb.
13 - 25	1/2 - 1	Valve Seat Assembly	Contact + 1/4 turn	
13 - 25	1/2 - 1	Valve Body Cap	2.1	15

CK-5 Check Valves					
Port Size		Bolt Size	Item Description	Torque	
mm	inch			mkg	ft. lb.
32 - 150	1 1/4 - 6	5/16" - 18	Cover Screws	2.1	15
32 - 150	1 1/4 - 6	5/8" - 11	Adapter Screws	10	75
–	–	1/4" - 20	A2D/S6B/S6A Screws	1.1	8.0
125 - 150	5 - 6	3/4" - 10	Valve Seat Assembly	10	75

CK-2D & CK-6D Check Valves					
Port Size		Bolt Size	Item Description	Torque	
mm	inch			mkg	ft. lb.
40 - 65	1 5/8 - 2 1/2	3/8" - 16	Cover Screws	4.1	30
40 - 65	1 5/8 - 2 1/2	5/16" - 18	Bore Plate Screws	2.1	15
75 - 100	3 - 4	5/8" - 11	Cover/Bore Plate Screws	10	75
–	–	1/4" - 20	A2D/S6B/S6A Screws	1.1	8.0

S6A Solenoid Tube Assembly			
Type	Item Description	Torque	
		mkg	ft. lb.
S6A	Tube Assembly with Aluminum Gasket	15	110
S6A	Tube Assembly with Wolverine Gasket	8.3	60
S6B	Tube Assembly	2.1	15

A2D Pilot Regulators			
Bolt Size	Item Description	Torque	
		mkg	ft. lb.
5/16" - 18	Bonnet Screws	2.1	15
–	Pilot Seat and Seal Insert	2.8	20
1/4" - 20	A2D Screws	1.1	8.0

Pressure Regulators Valves

A2A, A2B, & A4A Pressure Regulators					
Port Size		Bolt Size	Item Description	Torque	
mm	inch			mkg	ft. lb.
20 - 100	3/4 - 4	5/16" - 18	Bonnet Screws	2.1	15
20 - 100	3/4 - 4	–	Pilot Seat and Seal Insert	2.8	20
20 - 100	3/4 - 4	1/4" - 20	A2D/S6A/Moduplate Screws	1.1	8.0
20 - 32	3/4 - 1 1/4	–	Bottom	21	150
40 - 65	1 5/8 - 2 1/2	1/2" - 13	Bottom Cover Screws	6.9	50
75 - 100	3 - 4	5/8" - 11	Bottom Cover Screws	10	75
20 - 65	3/4 - 2 1/2	5/16" - 18	Adapter Screws	2.1	15
75 - 100	3 - 4	5/8" - 11	Adapter Screws	10	75

A4W Pressure Regulators					
Port Size		Bolt Size	Item Description	Torque	
mm	inch			mkg	ft. lb.
125 - 150	5 - 8	–	Pilot Seat and Seal Insert	2.8	20
125 - 150	5 - 8	5/16" - 18	Bonnet Screws	2.1	15
125 - 150	5 - 8	1/4" - 20	A2D/S6A/Moduplate Screws	1.1	8.0
125 - 150	5 - 8	3/4" - 10	Adapter Bolts	15	105
125 - 150	5 - 8	–	Main Valve Seat Ring	14	100
125 - 150	5 - 8	5/16" - 18	Seat Retaining Screw	2.1	15

Flow Regulators				
Type	Bolt Size	Item Description	Torque	
			mkg	ft. lb.
AFR-3	5/16" - 18	Cover Screws	2.1	15
FFR-2	–	Valve Cap	12 - 14	90 - 100

S6A Solenoid Tube Assembly			
Type	Item Description	Torque	
		mkg	ft. lb.
S6A	Tube Assembly with Aluminum Gasket	15	110
S6A	Tube Assembly with Wolverine Gasket	8.3	60

Valve Bolt Torque Recommendations

Solenoid Valves

S4A & S9 Valves					
Port Size		Bolt Size	Item Description	Torque	
mm	inch			mkg	ft. lb.
20 - 100	¾ - 4	–	Same as S8F Solenoid Tube Assembly (see table below)		
20 - 100	¾ - 4	–	Seat Assembly	2.8	20
20 - 32	¾ - 1¼	–	Bottom	21	150
40 - 65	1⅝ - 2½	½" - 13	Bottom Cover Screws	6.9	50
75 - 100	3 - 4	⅝" - 11	Bottom Cover Screws	10	75
20 - 65	¾ - 2½	5/16" - 18	Adapter Screws	2.1	15
75 - 100	3 - 4	⅝" - 11	Adapter Screws	10	75

S4W & S9W Solenoid Valves					
Port Size		Bolt Size	Item Description	Torque	
mm	inch			mkg	ft. lb.
125 - 150	5 - 8	–	Pilot Seat and Seal Insert	2.8	20
125 - 150	5 - 8	–	Same as S8F Solenoid Tube Assembly (see table below)		
125 - 150	5 - 8	5/16" - 18	Bonnet Screws	2.1	15
125 - 150	5 - 8	¾" - 10	Adapter Bolts	15	105
125 - 150	5 - 8	–	Main Valve Seat Ring	14	100
125 - 150	5 - 8	5/16" - 18	Seat Retaining Screw	2.1	15

S4AD Valves					
Port Size		Bolt Size	Item Description	Torque	
mm	inch			mkg	ft. lb.
20 - 100	¾ - 4	–	Same as S6A Solenoid Tube Assembly (see table below)		
20 - 32	¾ - 1¼	–	Bottom	21	150
40 - 65	1⅝ - 2½	⅜" - 16	Cover Screws	4.1	30
40 - 65	1⅝ - 2½	5/16" - 18	Bore Plate Screws	2.1	15
75 - 100	3 - 4	⅝" - 11	Cover/Bore Plate Screws	10	75
–	–	¼" - 20	A2D/S6B/S6A Screws	1.1	8.0

Solenoid Tube Assembly			
Type	Item Description	Torque	
		mkg	ft. lb.
S6N, S6A, S8F	Tube Assembly with Aluminum Gasket	15	110
S6N, S6A, S8F	Tube Assembly with Wolverine Gasket	8.3	60
S6N, S6A	Seat Assembly	2.8	20
S7A	Tube Assembly	21	150
S5A	Tube Assembly with Aluminum Gasket	15	110
S5A	Tube Assembly with Wolverine Gasket	8.3	60

Strainers

RSF Strainers					
Port Size		Bolt Size	Item Description	Torque	
mm	inch			mkg	ft. lb.
13	½	–	Strainer Cap	8.3	60
25 - 32	1 - 1¼	5/16" - 18	Cover Screws	2.1	15
50 - 100	2 - 4	⅜" - 16	Cover Screws	4.1 Max	30 Max.
25 - 100	1 - 4	⅜" FPT	Drain Connection	Firm	Firm

RSW Strainers					
Port Size		Bolt Size	Item Description	Torque	
mm	inch			mkg	ft. lb.
125 - 200	5 - 8	¾" - 10	Cover Bolts	15	105
125 - 200	5 - 8	⅜" FPT	Drain Connection	Firm	Firm

Hand Shut-Off and Expansion Valves

Hand Shut-Off and Expansion Valves						
Port Size		Bolt Size	Torque			
			Bonnet Screws		Packing Nut	
mm	inch		mkg	ft. lb.	mkg	ft. lb.
6 - 13	¼ - ½	5/16" - 18	2.6	19	0.4	2.5
20 - 25	¾ - 1	5/16" - 18	2.6	19	0.4	2.5
32 - 40	1¼ - 1½	⅜" - 16	4.3	31	0.4	2.5
50	2	7/16" - 14	6.2	45	0.4	2.5
65	2½	½" - 13	8.3	60	0.4	2.5
75	3	½" - 13	10	75	0.4	2.5
100	4	⅝" - 11	19	140	0.9	6.7
125 - 200	5 -8	⅝" - 11	19	140	0.9	6.7

Suggested Flange Tightening Instructions for Manufacturer's Instructions

Verify that piping into which a valve or flange is to be installed is properly supported and aligned. Be certain that the mating surfaces of the gasketed joints are parallel, aligned and perpendicular to the pipe axis, in good condition and free of debris and corrosion. Use only undamaged gaskets suitable for service in an ammonia refrigerating system.
Verify that all the nuts, bolts, cap screws and washers meet Parker's requirements for the application and tighten progressively in a diametrically staggered pattern. Leak test upon completing the installation.

APPENDIX D

Valve Classification: Pressure Equipment Directive (PED)

Valve Classification: Pressure Equipment Directive

Valve Classifications According to Pressure Equipment Directive 92014/68/EU

PED compliant product can be ordered with standard flanges made from ASTM A105 forged steel.

Products in FLUID GROUP I, Category I, II, IV will carry CE mark and notified body number. Products in FLUID GROUP II, Category I, will carry CE mark.

* Sound Engineering Practice

Fluid Group I (Ammonia)

Valve Type	Port Size	Categories				
		SEP*	I	II	III	IV
Regulators						
A2A	N/A	✓				
A2B	N/A	✓				
A2CK	N/A					✓
A4A Adaptomode	DN 20 - 25	✓				
	DN 32		✓			
	DN 40 - 100			✓		
A4W	DN 125			✓		
Solenoids						
SV2	DN 13 - 25	✓				
S6N	DN 13	✓				
S8F, S8VS, S8ST	DN 13	✓				
S7A	DN 20 - 25	✓				
S4A	DN 20 - 25	✓				
	DN 32		✓			
	DN 40 - 100			✓		
S5A	DN 32		✓			
	DN 40 - 75			✓		
S9W	DN 125			✓		
Strainers						
RSF	DN 13 - 25	✓				
	DN 32		✓			
	DN 40 - 100			✓		
RSW	DN 125			✓		
Check Valves						
CK-4A Inline	DN 13	✓				
	DN 20 - 100			✓		
CK-1 Piston-type	DN 32		✓			
	DN 40 - 100			✓		
CK-2 Gas Powered	DN 32		✓			
	DN 40 - 100			✓		
CK-5 Gas Powered	DN 32		✓			
	DN 40 - 100			✓		
CK-3 Inline	DN 13 - 25	✓				
Hand Valve						
PGHV	DN 15 - 25	✓				
	DN 32 - 100			✓		
Gauges	ALL	✓				
Flow Regulators						
AFR/FFR	DN 20	✓				
V300 Purger						
Low Temp/High Temp	Assembly		✓			
Level Controls						
LLSS	Assembly					✓
Liquid Drain Ball Valves	DN 13 - 25	✓				
P-Series						
PVS, PEV, PA4, PS4	DN 32			✓		

APPENDIX E

Safety Information

156 **Safety Guide**

158 **Safety Information**

Safety Guide

Selecting and Using Parker Industrial Refrigeration Products and Related Accessories Safety Bulletin

1. General Instructions

1.1. Scope: This safety guide is designed to cover general guidelines on the installation, use, and maintenance of Parker Industrial Refrigerating Products (Herl, Herl-Resale, R/S, PGHV... Products).

1.2. Fail-Safe: Parker Industrial Refrigerating Products can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of these products and related accessories will not endanger persons or property.

1.3. Distribution: Provide a copy of this safety guide to each person that is responsible for selection, installation, or use of Parker Industrial Refrigerating Products. Do not select or use these products without thoroughly reading and understanding this safety guide as well as the specific publications for the products considered or selected.

1.4. User Responsibility: Due to the wide variety of operating conditions and applications for Parker Industrial Refrigerating Products, Parker and its distributors do not represent or warrant that any particular of these products is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:

- Making the final selection of the appropriate Parker Industrial Refrigerating Products.
- Assuring that all user's performance, endurance, maintenance, safety, and warning requirements are met and that the application presents no health or safety hazards.
- Complying with all existing warning labels and / or providing all appropriate health and safety warnings on the equipment on which the Parker Industrial Refrigerating Products are used; and,
- Assuring compliance with all applicable government and industry standards.

1.5. Safety Devices: Safety devices should not be removed or defeated.

1.6. Warning Labels: Warning labels should not be removed, painted over or otherwise obscured.

1.7. Additional Questions and Information: If you have any additional questions or require further information call 1-708-681-6300 or go to www.parker.com/refspec. Additional Safety Bulletins and Operating Instructions can also be obtained there.

2. Product Selection Instructions

2.1. Pressure rating: Never exceed the maximum rated pressure sometimes referred to as the design pressure of a refrigeration system. Consult product labeling, Parker Industrial Refrigerating Product catalogs, datasheets or the instruction sheets supplied with the products for maximum rated pressure. You can download the operating instructions and datasheets under www.parker.com/refspec.

2.2. Temperature rating: Never operate outside the rated temperature limits of an Parker Industrial Refrigerating Products. Operating the Parker Industrial Refrigerating Products outside the rated temperature limits can result in product failure. Consult the product labeling, catalogs, datasheets or the instruction sheets supplied with the products for maximum and minimum fluid temperature limits

2.3. Flow Rate: The flow rate requirements are a primary consideration when designing a refrigeration system. System components need to be able to reliably provide minimum and maximum flow requirements for the desired application. Flow ratings are provided in the Parker Industrial Refrigerating Product catalog.

2.4. Environment: Many environmental conditions can affect the integrity and suitability of a product for a given application. Our Products are designed for use in general purpose industrial applications. Typical refrigerants used with these products are explosive, corrosive, caustic, or greenhouse gases. Compliance with government, industry or environmental standards is required.

2.5. Fluid Compatibility: Compatibility references can be found in the catalogs or calling 1-708-681-6300 or going to www.parker.com/refspec for any additional questions or information.

3. Product Assembly and Installation Instructions

3.1. Component Inspection: Prior to assembly or installation a careful examination of these products must be performed. All Parker Industrial Refrigerating Products must be checked for correct style, size, and catalog number. DO NOT use any Parker Industrial Refrigerating Product that displays any signs of nonconformance.

3.2. Hydrostatic Expansion: Hydrostatic expansion (thermal expansion due to heating of liquids in a confined space) of liquid refrigerant trapped between refrigeration components can create dangerously high pressures and rupture components. See our product bulletins and installation and operating instructions for more detail on precautions to take to avoid damage or injury.

3.3. Installation Instructions: R/S published installation instructions must be followed for installation of our products. These instructions are provided with every of our product sold, or by calling 1-800-627-4593. You can download the operating instructions and datasheets under www.parker.com/refspec.

Support Center

Selecting and Using Parker Industrial Refrigeration Products and Related Accessories Safety Bulletin

4. Valve and Accessory Maintenance and Replacement Instructions

4.1. Maintenance: Parker Industrial Refrigerating Product service life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a component failure, and experience with any known failures in the application or in similar applications should determine the frequency of inspections and the servicing or replacement of our products so that they are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.6.

4.2. Installation and Service Instructions: Before attempting to service or replace any worn or damaged parts consult the appropriate Service Bulletin or Operating Instruction for our product in question. You can download the operating instructions and datasheets under www.parker.com/refspec.

4.3. System Isolation Hazards: Care must be taken when isolating system components for service or replacement. As a guide see the appropriate bulletins published by the International Institute of Ammonia Refrigeration available at www.iiar.org. Also see R/S Safety Bulletins RSBCV and RSBHV available at www.parker.com/refspec for guidelines to avoid potentially dangerous conditions.

4.4. Visual Inspection: Any of the following conditions requires immediate system shut down, replacement of worn or damaged components, or correction of any system malfunction. These conditions can mask potentially hazardous situations and should be corrected.

- Leakage to the atmosphere: Look and listen to see if there are any signs of damage to any of the components in the system.
- Damaged or degraded components: Look to see if there are any visible signs of wear, component degradation or excessive corrosion.
- Any observed improper system or component function.
- Excessive dirt and/or ice build-up.

4.5. Service or Replacement Intervals: It is the user's responsibility to establish appropriate service and/or replacement intervals. Parker Industrial Refrigerating Products do wear and can deteriorate over time. Environmental conditions can significantly accelerate this process. Our products need to be serviced or replaced on routine intervals. Service intervals need to be established based on:

- Previous performance experiences.
- Government and/or industrial standards.
- When failures could result in unacceptable down time, equipment damage or personal injury risk.

4.6. Servicing or replacing any worn or damaged parts: To avoid unpredictable system behavior that can cause death, personal injury and property damage:

- Follow all government, state and local safety and servicing practices prior to service including but not limited to all OSHA Lockout Tagout procedures (OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – Lockout / Tagout).
- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Components installed in pressurized refrigerant piping must be isolated from the refrigeration system and the refrigerant safely purged from the component. See 4.3 above.
- Installation, servicing, and / or conversion of these products must be performed by knowledgeable and qualified personnel.
- After installation or servicing electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If leakage is present or if the product does not operate properly, do not put the product or system into use.
- Warnings and specifications on the product should not be covered or painted over. If masking is not possible, contact your local representative for replacement labels.
- Putting Serviced System Back into Operation: Follow the guidelines above and all relevant installation and maintenance instructions to insure proper function of the system. You can download the operating instructions and datasheets under www.parker.com/refspec.

WARNING: FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF PARKER PRODUCTS, ASSEMBLIES OR RELATED ITEMS ("PRODUCTS") CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:

- Injuries or damage resulting from inhalation or exposure to conveyed fluids
- Injuries from lifting or supporting a heavy item
- Electric shock from contact with live electrically energized components
- Explosion

Before selecting or using any of these Products, it is important that you read and follow the operating instructions.

⚠ Safety Information

Failure to follow installation instructions, improper selection or improper use of Parker Industrial Refrigeration valves and related accessories ("products") can cause death, personal injury and property damage. Possible consequences of failure, improper selection or improper use of these products include but are not limited to:

- Injuries or damage resulting from inhalation or exposure to conveyed fluids
- Injuries from lifting or supporting a heavy item
- Electric shock from contact with live electrically energized components
- Explosion

Before selecting or using any of these products, it is important that you read and follow the installation instructions.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise. The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors. To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems. For safety information see the Safety Guide at www.parker.com/safety or call +1 800 2727537.

DOWNLOAD THE OPERATING INSTRUCTIONS HERE

↓

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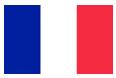

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