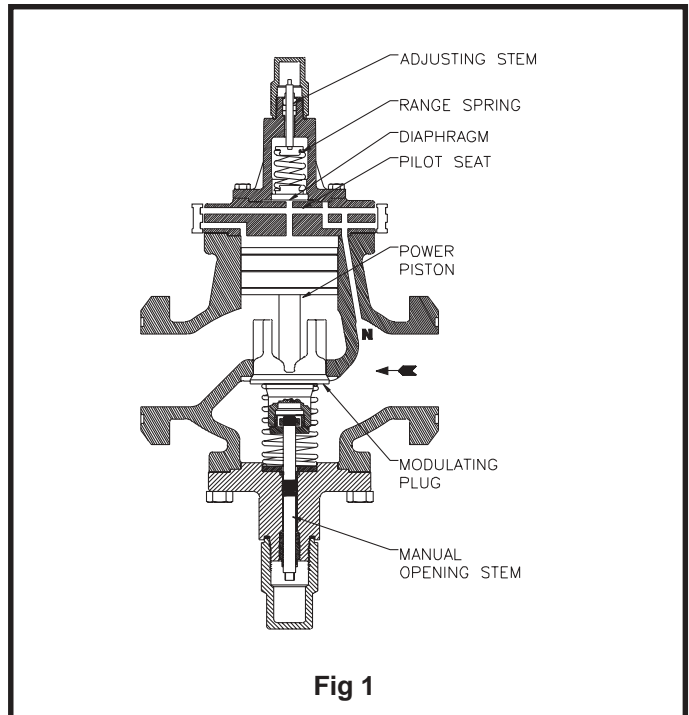


ADAPTOMODE® INLET PRESSURE REGULATORS

Types: A4AS, A4AB, A4AD, A4AZ
PORT SIZE 20 - 100 mm (3/4" - 4")



Inlet Pressure Regulators

Purpose:

Modulate flow of refrigerant gas or liquid to maintain constant upstream (or inlet) pressure as set-for despite load fluctuations. The A4A Inlet Pressure Regulator therefore opens on a rise in the inlet pressure above its set point and closes on a drop in inlet pressure below its set point. The inlet pressure set point is not appreciably affected by variations in the outlet pressure.

The A4AZ regulator is a complete factory assembled and bench tested valve and, in itself, may be used as a basic inlet pressure regulator. In addition, this valve can easily be modified in the field to perform the function of the A4AS, A4AB or A4AD valve variations.

Principles of Operation (See Fig. 1)

The inlet pressure enters the space under the diaphragm through passage N. When the force created by the pressure exceeds the force of the range spring, the diaphragm is lifted off the pilot seat allowing pressure to enter on top of the power piston. This causes the power piston to move downward forcing the modulating plug to open and modulate to maintain constant inlet pressure. An increase in inlet pressure lifts the diaphragm further, allowing more pressure on top of the power piston and opening the valve wider. A decrease in inlet pressure causes the diaphragm to move closer to the pilot seat reducing the pressure on the top of the power piston and causing the closing spring to reduce the valve opening. The pressure on top of the power piston is controlled by the flow through the pilot seat and the bleed off through

the bleed hole in the power piston and through the clearance between the piston and cylinder. A minimum of 0.14 bar (2 psig) pressure drop across the valve is required to open it fully.

The operation of the A4AS is the same as that described in the first paragraph, except the inlet pressure from passage N must pass through the S6A Pilot Solenoid Valve before it can reach the diaphragm. Thus the S6A Pilot Solenoid must be energized before the A4AS can begin to regulate regardless of inlet pressure.

The operation of the A4AB is the same as that described in the first paragraph when operating as a regulator (Pilot Solenoid de-energized). When the solenoid is energized the upstream pressure from passage N bypasses the underside of the diaphragm and is fed directly to the top of the piston where, provided a 0.14 bar (2 psi) pressure difference exists across the main valve, the Modulating Plug will be held wide open.

The operation of the A4AD is similar to that described in the first paragraph. When the Pilot Solenoid is energized, upstream pressure from passage N is made available to both diaphragms. Since the path of least resistance will be through the Pressure Pilot with the lower setpoint (lower range spring force) that pilot will control.

When the Pilot Solenoid is deenergized, upstream pressure from passage N can flow only to the high pressure pilot, which will then control the regulator.

Installation

Refer also to Safety Installation Bulletin RSBCV

All regulators are packed for maximum protection. Unpack carefully. Check the carton to make sure all flanges and other items are unpacked. Save the enclosed instructions for the installer and eventual user.

Do not remove the protective coverings from the inlet and outlet of the regulator until the regulator is ready to be installed. Protect the inside of the regulator from moisture, dirt and chips before and during installation. When welded or brazed flange connections are used, all slag, scale and loose particles should be removed from the flange interior before the regulator is installed between the flanges. It is advisable to install a close-coupled companion strainer (RSF) at the inlet of the regulator to help protect it from any foreign material in the system.

The A4A Series of Regulators will give optimum performance if mounted in a horizontal line in a vertical position with the manual opening stem on bottom. Where other positions are desired, the factory should be consulted; please give application and piping details. The regulator must be installed with the arrow on the valve

body pointing in the direction of the fluid flow for the regulator to function properly. Backward flow through the regulator is un-controlled and will vary with the valve model and the reverse pressure drop encountered. The regulator is not a check valve.

Tighten the flange bolts and nuts evenly to provide proper seating of the flange gasket and to avoid damage to gaskets or flanges. (See Flange Bolt Torque Table) Avoid using the regulator flange bolts to stretch or align pipe. Even the heavy-duty iron alloy body of an A4A can be distorted, causing the precision parts to bind.

The regulator should be installed in a location where it is easily accessible for adjustment and maintenance. The location should be such that the regulator can not be easily damaged by material handling equipment. When it is necessary to insulate the regulator (and companion strainer), the insulation should be installed to provide access to the regulator (and companion strainer) for adjustment and maintenance. Proper indicating gauges should be installed to be easily visible to the operating engineer for system checking and adjusting purposes.

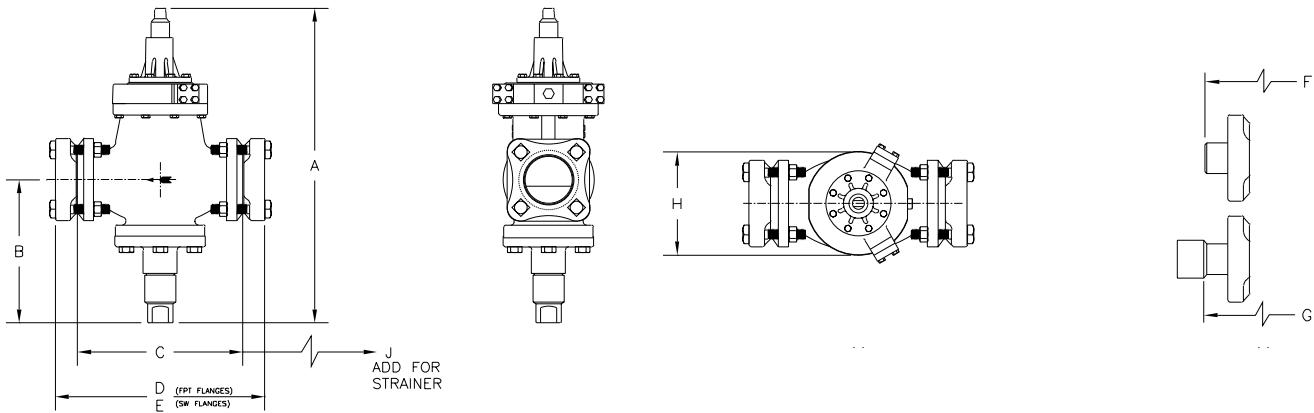


TABLE OF DIMENSIONS FOR INLET PRESSURE REGULATORS														Types A4AS, A4AB, A4AD and A4AZ				Types A4AS, A4AB & A4AZ		Type A4AD only	
Type	20mm & 25mm (3/4 & 1")		32mm (1-1/4")		40mm & 50mm (1-5/8 & 2")		65mm (2-1/2")		75mm (3")		100mm (4")		100mm (4")								
DIMENSION	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch							
A	429	16.9	447	17.6	500	19.7	513	20.2	632	24.9	685	27.0	685	27.0							
B	148	5.8	162	6.3	177	6.9	181	7.1	273	10.7	292	11.5	292	11.5							
C	164	6.2	203	8.0	251	9.9	251	9.9	311	12.2	339	14.1	339	14.1							
(D) (FPT) for PIPE SIZES SHOWN	1/2" 3/4" 1" 1-1/4"	216 216 216 216	8.5 8.5 8.5 8.5	1-1/4" 1-1/2"	256 256	10.1 10.1	1-1/2" 2"	307 307	12.1 12.1	2-1/2" 3"	331 389	13.0 15.3	4" 4"	450 450	17.7 17.7	4" 4"	450 450	17.7 17.7			
(E) (SW) FOR PIPE SIZES SHOWN	1/2" 3/4" 1" 1-1/4"	216 216 216 216	8.5 8.5 8.5 8.5	1-1/4" 1-1/2"	256 256	10.1 10.1	1-1/2" 2"	307 307	12.1 12.1	2-1/2" 3"	331 389	13.0 15.3	4" 4"	450 450	17.7 17.7	4" 4"	450 450	17.7 17.7			
(F) (WN) FOR PIPE SIZES SHOWN	3/4" 1" 1-1/4"	254 261 261	10.0 10.3 10.3	1-1/4" 1-1/2"	300 304	11.8 12.0	1-1/2" 2"	364 371	14.3 14.6	2-1/2" 3"	401 478	15.6 18.8	4" 4"	571 571	22.5 22.5	4" 4"	571 571	22.5 22.5			
(G) (ODS) FOR TUBE SIZES SHOWN	7/8" 1-1/8" 1-3/8" 1-5/8"	239 239 231 239	9.4 9.4 9.1 9.4	1-3/8" 1-5/8" 2-1/8"	269 279 305	10.6 11.0 12.0	1-5/8" 2-1/8" 2-5/8"	358 338 358	14.1 13.3 14.1	2-5/8" 3-1/8"	348 389	13.7 15.3	3-1/8" 3-5/8"	414 432	16.3 17.0	4-1/8" 4-1/8"	503 503	19.8 19.8	4-1/8" 4-1/8"	503 503	19.8 19.8
H	117	4.6	117	4.6	140	5.5	159	6.2	178	7.0	222	8.8	222	8.8							
J	98	3.9	178	7.0	251	9.9	314	12.4	314	12.4	363	14.3	363	14.3							
K	112	4.4	112	4.4	117	4.6	124	4.9	142	5.6	158	6.2	157	6.2							
L	122	4.8	122	4.8	135	5.3	133	5.2	122	4.8	152	6.0	140	5.5							
M	138	5.4	138	5.4	140	5.5	150	5.9	170	6.6	190	7.7	190	7.7							