

Pressure Sensing Valve

Model 1672E

Typical applications

- Compressor suction or discharge
- Lubricating oil
- Cooling water
- Combustion air
- Control air
- Fuel oil
- Fuel gas
- Starting air



Model 1672E

Key benefits

- Easy field adjustment
- Compatible in hydraulic or gas systems
- Factory set
- Works in conjunction with other AMOT devices

Key features

- Gulfproofed finish
- Buna N/Nitrile and Viton seals
- Pneumatic lockout available
- Diaphragm sensor for pressure ranges from 0.3 - 21.7 bar (5 - 315 psi)
- Piston sensor for pressure ranges from 1 - 248 bar (15 - 3000 psi)

Pressure Sensing Valve - Model 1672E

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Pressure Sensing Valve - Model 1672E

Overview

AMOT Model 1672E Pressure Sensing Valves are 2-Way normally open sensors (closed under satisfied operation conditions) which are opened by the sensed pressure decreasing or increasing past the trip point.

Dual purpose construction (trip on rising or falling pressure) provides a wide range of applications and permits easy field adjustment or changeover from trip on falling pressure to trip on rising pressure. The valve is snap-acting and suitable for hydraulic or gas control systems which up to 5.5 bar (80 psi) maximum control pressure.

Operation

The operation of the 1672E Pressure Sensing Valve is simple and straightforward. Pressure ranges 1, 2 and 3 use a diaphragm sensor, and pressure ranges 4, 5, 6 and 7 use a piston sensor. The sensed pressure moves the diaphragm or piston operator against the larger adjusting spring. The motion is transmitted to the valve through a lever and fulcrum pin which operates the valve pushrod. Location of the pin in one of two holes in the case determines the rising or falling pressure trip function. See cutaway view on page 8 and figure 1 below.

Pneumatic lock out is an optional feature which can eliminate the need for a separate blocking valve. For a tripping pressure of 1.1 bar (16 psi) falling, a 6.9 bar (100 psi) lockout pressure is required. For a tripping pressure of 2.1 bar (30 psi) falling, a 13.8 bar (200 psi) lockout pressure is required. The maximum lockout pressure is 17.2 bar (250 psi). This feature is only available on models in pressure range 1. See figure 2 below.

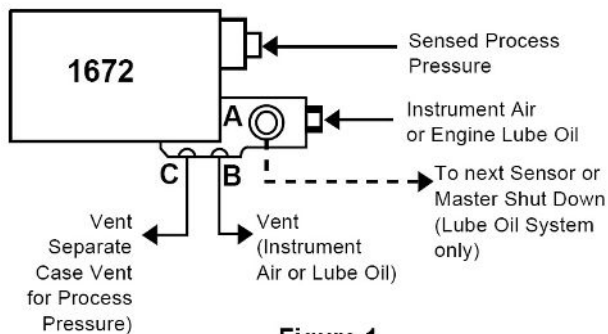


Figure 1

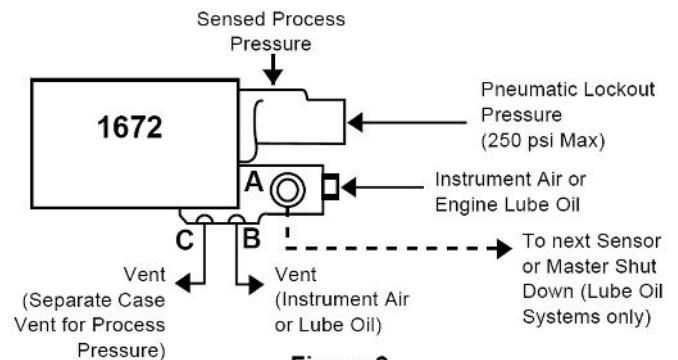


Figure 2

Adjustment *(refer to diagrams on page 8)*

The small screw 25 which operates the valve pushrod is for factory adjustment and is not to be used to change the trip-point setting. It may, however, require minor adjustment when the trip action is changed from rising to falling if the valve leaks slightly with full pressure at the sensing port.

The trip-point setting is changed by turning adjustment nut 24 clockwise to raise the trip pressure on either a rising or falling pressure setting.

Installation Factors

For easy mounting two 3/8 - 16 NC tapped holes run through the back of the valve's case. Bolts can be threaded into the case from the back or 1/4" bolts can be installed from the valve's inside and threaded into a mounting plate behind the valve.

Normally, the unit is installed with the vent connection (port C) on the bottom however, it will operate in any position. Care should be taken to prevent dirt from entering ports B and C when they are not pointed downward. The valve should not be supported by piping unless it is secured against vibration.

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Connections

All valve connections are made with 1/4" pipe thread fittings. Apply a quality thread sealant such as Loctite™ Pipe Sealant to pipe thread connections. This sealant must NOT enter the valve passages. Teflon thread sealing tape may be used but must be applied such that shreds of the tape do not enter the valve. The minimum tubing size recommendation for air or gas is 1/4" OD, and the minimum for short lengths of lube oil (especially in cold weather) operation is 5/16" OD. Be sure that all scale, dirt, tubing chips etc. are removed from fittings and tubing before they are connected to the valve.

Important: The 1672 pressure sensing valve has an auxiliary inlet (port A) cast into the housing. The connection must be used on lube oil pressured systems. Do not connect the inlet port to the end of a branch run or tubing off a main header, as the falling pressure signal will not be properly transmitted to the master safety control. When using the valve on a gas pressured system, the valve outlet (port B) should be connected to an outside vent line of large capacity, in such an application, the valve outlet (port B) should be run to a vent line separate from the case vent (port C) to prevent mixing potentially volatile fluids.

When sensing diesel fuel or other fluids that transmit medium to high frequency pulsations to the 1672 diaphragm, an AMOT 2185L001 or equal orifice should be ordered and installed at the diaphragm bonnet.

When checking an oil pressured system, be sure all trapped air is bled from the connection tubing. To do this, start at the first connection after the restriction orifice, and bleed each one until all air is purged. The most critical point is at the master safety control.

Valve Characteristics

Sensed pressure ranges

Range	bar	psi	Trip
Range 1	0.56-2.27	8-33	Rising
	0.35-2.06	5-30	Falling
Range 1 with pneumatic lockout	0.56-2.27	8-33	Rising
	0.35-2.06	5-30	Falling
Range 2	1.73-11.03	25-160	Rising
	1.38-10.34	20-150	Falling
Range 3	4.14-21.71	60-315	Rising
	3.45-20.68	50-300	Falling
Range 4	2.42-17.23	35-250	Rising
	1.04-15.85	15-230	Falling
Range 5	6.21-44.18	90-650	Rising
	3.45-38.61	50-560	Falling
Range 6	14.48-96.52	210-1400	Rising
	12.07-86.18	175-1250	Falling
Range 7	24.14-248.21	350-3600	Rising
	17.24-227.52	250-3300	Falling

Differential

Differential is the change in sensed pressure above or below the trip point that is required to open the valve and cause an AMOT Pneumatic Indicating Relay to change from red to green with a 3.4 bar (50 psi) air pressure supply. The lower differential pressures shown are at the low end of the ranges and the higher pressures are for the higher end of the ranges.

Sensed pressure ranges	Differential		Proof	
	bar	psi	bar	psi
Range 1	0.2-0.3	3-5	24	350
Range 2	0.3-0.7	5-10	24	350
Range 3	0.7-1.0	10-15	24	350
Range 4	0.7-1.8	10-27	69	1000
Range 5	0.6-2.7	8-40	69	1000
Range 6	2.1-4.1	30-60	276	4000
Range 7	2.1-9.7	30-140	276	4000

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How to Order

When ordering please use the table below and specify the following:

- 1) Basic model number
- 2) Tripping pressure
- 3) Tripping action:
 - a) To trip on rising pressure
 - b) To trip on falling pressure
- 4) Pressure range from section B of the model code table below. If this number is not specified, a unit in which the specified pressure falls nearest the middle of the range will be furnished.
- 5) Thread, finish and seal code from section C of the model code table.
- 6) Process sensing seal code from section D of the model code table.
- 7) Any of the following special features (if required):
 - a) Pneumatic lockout (available on Range 1 ONLY)
 - b) BSP parallel port threads (instead of NPT)

The unit may be ordered using the full description as shown to the left or by constructing a model number using the table below. The complete model number for a unit with Range 1, gulfproofed, NPT threads, Buna N seals and a 20 psi falling pressure setting is "1672E1F1 **set at 20 psi falling**".

Pressure settings are not part of this model code. The desired setting and whether it is trip on rising or falling pressure must be specified separately and will appear on the nameplate.

Note: Letters or numbers in the Special requirements code (E) section other than nothing, A1 or AA, indicate that the unit is built to special requirements and some of the other code numbers may not be valid. Contact the AMOT facility for full specification of such models.

Example	1672E	1	F	1	-AA	Code description	Sensed pressure ranges (page 4)
						Valve model (A)	
Valve model (A)	1672E					Basic valve model	
						Spring code (B)	
Spring code (B)		1					Range 1 and 1 with pneumatic lockout
		2					Range 2,4,6
		3					Range 3,5,7
						Thread, finish and seal code (C)	
Thread, finish and seal code (C)			C			Gulfproof Finish NPT	Range 6,7
			E			Gulfproof Finish NPT	Range 4,5
			F			Gulfproof Finish NPT	Range 1,2,3
			H			Gulfproof Finish NPT	Range 1 with pneumatic lockout
			M			Gulfproof Finish BSP (PL)*	Range 1,2,3
			S			Gulfproof Finish BSP (PL)*	Range 1 with pneumatic lockout
						Process sensing seal code (D)	
Process sensing seal code (D)				1		Buna N/Nitrile	Range 1,2,3
				3		Viton	Range 4,5,6,7
				4		Viton	Range 1,2,3
				7		Buna N/Nitrile	Range 1 with pneumatic lockout
				8		Viton	Range 1 with pneumatic lockout
						Customer special requirements (E)	
Customer special requirements (E)					-AA	Standard	May be omitted
					-***	Customer special code	

*Available in UK only

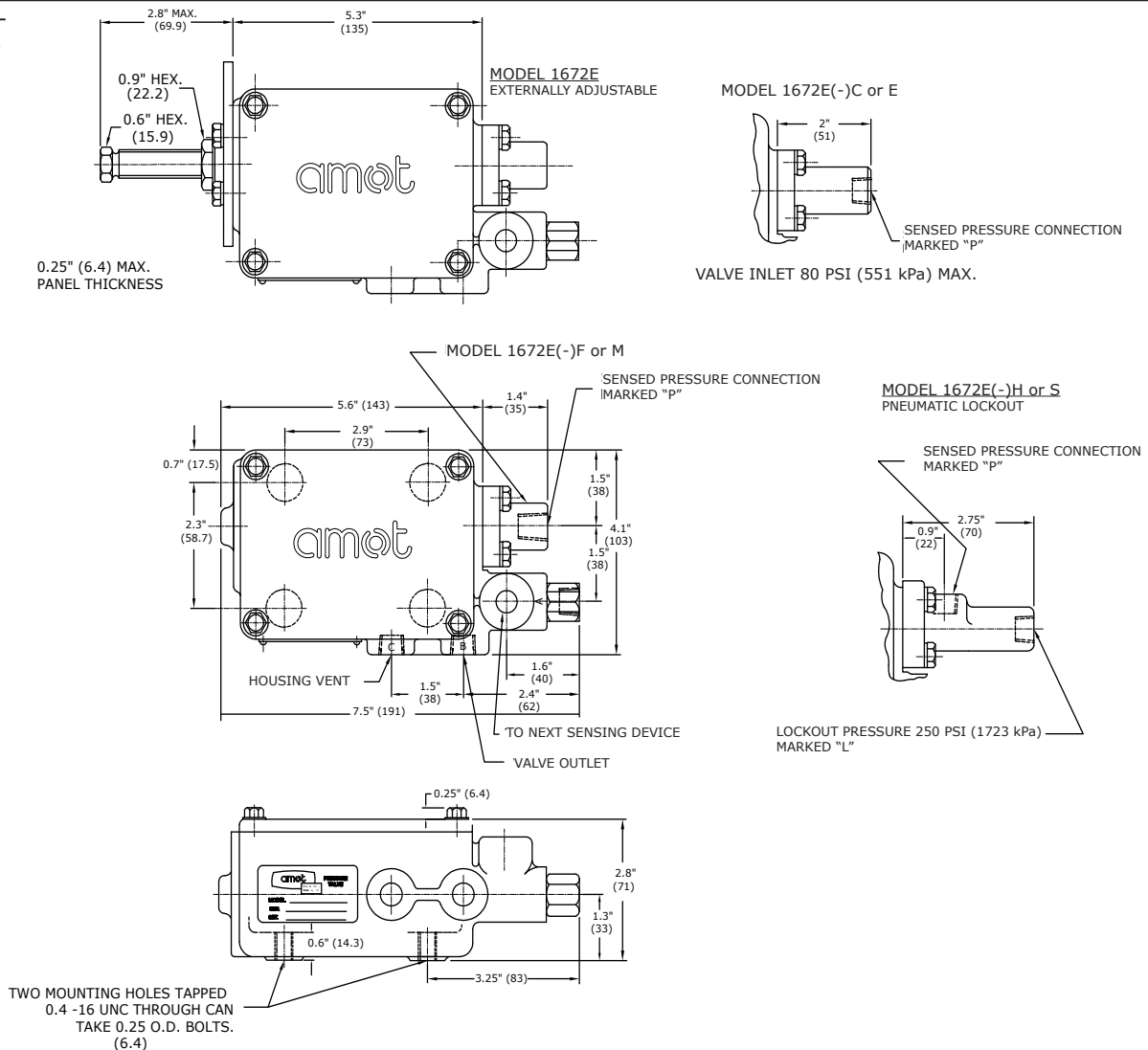
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Specification

	Metric units	English units
Housing material	Cast aluminum	
Coating	Gulfproofed	
Internal parts materials	Aluminum and plated steel	
Control valve materials	Aluminum and stainless steel	
Standard valve seat and seal material	Viton	
Diaphragm material (Ranges 1 - 3)	Buna N/Nitrile	
Piston and cylinder material (Ranges 4 - 7)	Stainless steel	
Piston seal material (Ranges 4 - 7)	Teflon	
Flow coefficient	Kv = 0.26	Cv = 0.3
Maximum valve operating pressure	5.5 bar	80 psi
Net weight	Ranges 1 - 3	2.0 kg / 4.5 lbs
	Ranges 1 with lockout	2.5 kg / 5.5 lbs
	Ranges 4 - 7	2.3 kg / 5.0 lbs

Dimensions

Dimensions - inches (mm)



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Maintenance and Service Parts

Over time, exposure to foreign chemicals, particulate matter and prolonged operation at extreme conditions may reduce the effectiveness of the valve. At such time, AMOT Pressure Sensing Valves can be restored to original performance by installing an AMOT pressure sensing valve service kit. Service kits include all new diaphragm, valve seat, gasket and seal components required for normal maintenance. The diaphragm, seals and seal components should be checked for wear, damage and hardness and be replaced as necessary. Other internal parts should be inspected for excessive wear or damage and should be replaced as necessary.

AMOT recommends an inspection of the unit every 12 months to adequately detect and make provisions for normal wear. AMOT recommends checking the valves functionality every 30 days, by simulating an unsafe condition.

How to order service kits

Service kits are available with parts required to service the valve. Order service kits by service kit model number which is identified by the thread, finish and seal code, and process sensing seal code found in the AMOT valve part number.

Service kit model number structure

- 1) Identify the AMOT valve part number located on the valve nameplate.
- 2) Identify the thread, finish and seal code and the process sensing seal code, located in the Thread, finish and seal (C) and Process sensing seal code (D) sections of the AMOT valve part number, respectively.
- 3) Identify those codes in the service kit identification table below to identify the proper service kit model number.

Use caution on assembly of the seal(s) for valves 1672E2E3, 1672E3E3, 1672E2C3 and 1672E3C3, so that the edge is not damaged. Cycle the valve about 12 times before making the final trip setting.

AMOT designs and tests all its products to ensure that high quality standards are met. For good product life, carefully follow the installation and maintenance instructions; failure to do so could result in damage to the equipment being protected or controlled.

Refer to the AMOT valve part number printed on the valve nameplate and the AMOT valve part number structure on page 5.

Service kit identification				
		Thread, finish and seal code (C) ¹	Process sensing seal code (D) ²	Service kit model no.
		F,M	1	9118X
			4	9118X001
		H,S	7	9118X002
			8	9118X003
		E	3	9112X001
		C		9119X001
Examples				
Valve part number				Service kit model no.
1672E	1	F	1	9118X
1672E	1	H	8	9118X003
1672E	2	C	3	9118X001

NOTES:

¹ If your thread, finish and seal code does not correspond with the given values, please contact the facility to confirm your thread, finish and seal code.

² If your process sensing seal code does not correspond with the given values, please contact the facility to confirm your process sensing seal code.

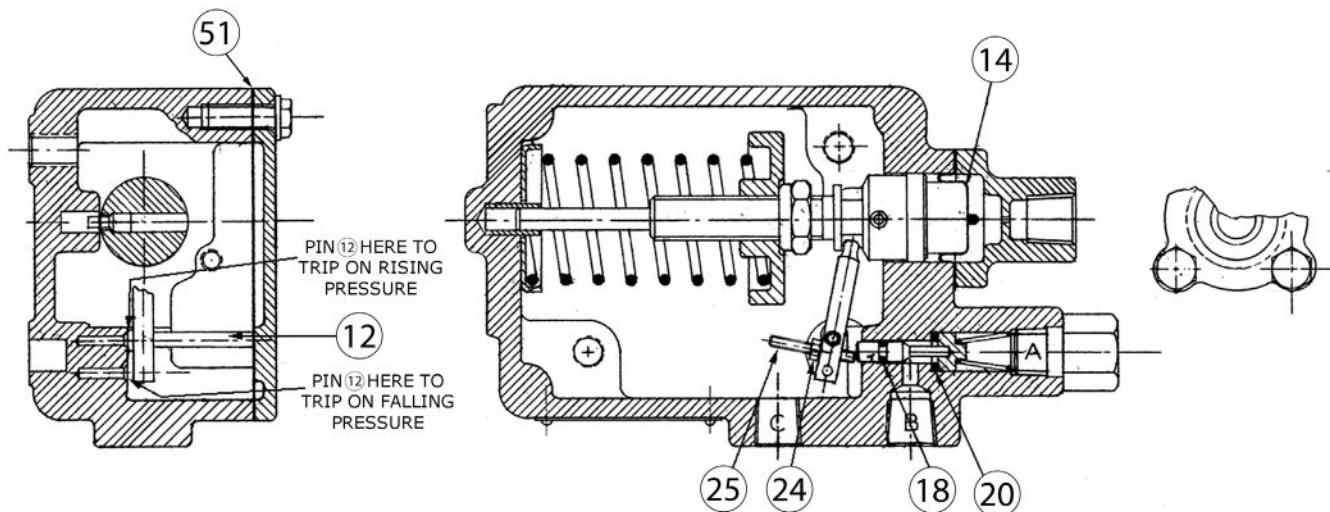
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Maintenance and Service Parts Continued

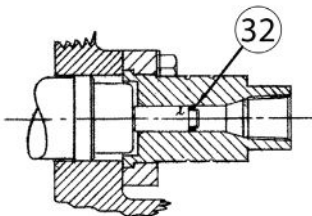
Service parts

Ref no.	Service kit parts				Description
	9118X and 9118X001	9118X002 and 9118X003	9112X001	9119X001	
14	1	1	-	-	Diaphragm
18	1	1	1	1	Pushrod seal
20	1	1	1	1	Valve seat
32	-	-	1	1	Piston seal
40	-	1	-	-	Retaining ring
45	-	2	-	-	Piston seal
51	1	1	1	1	Gasket

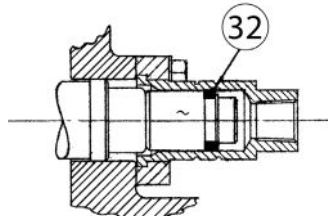
1672E(-)F,M



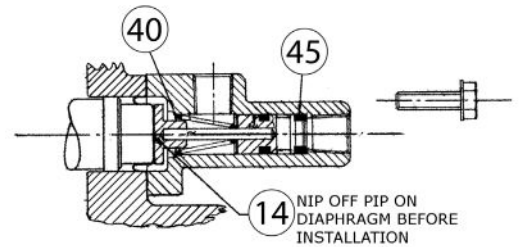
1672E(-)C



1672E(-)E



1672E(-)H,S



Pressure Sensing Valve - Model 1672E

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WARNING

This product can expose you to chemicals including Lead, which is known to the state of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.