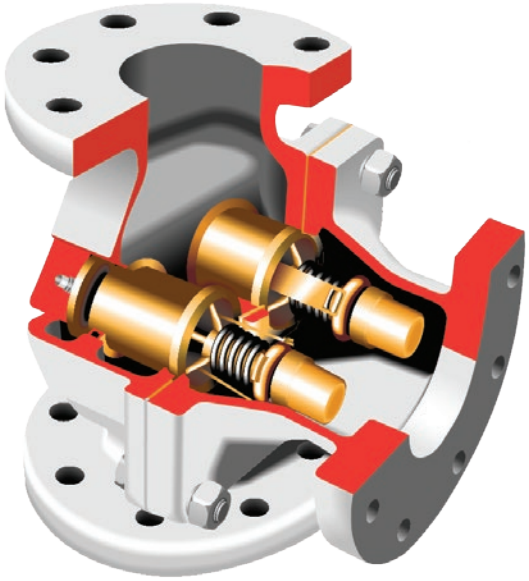
How efficient is your temperature control?

Prime movers need reliable temperature control to enable fast warm up, accurate control and efficient operation, minimising emissions and maximising output

Thermostatic Valve Solutions
Overview

amot



The AMOT Temperature Control Solution

AMOT Thermostatic Valves offer many advanced features:

- No external power source required - simple, low cost installation
- Rugged, robust construction
- No user setting needed - 'fit and forget' solution
- Very low friction characteristics
- Easy installation - operates in any mounting position
- Tamperproof temperature settings

Positive Acting Temperature Control

AMOT Thermostatic Valves provide reliable control of fluid temperatures in cooling systems, heat recovery and many other temperature control applications. They are also suitable for process control and industrial applications where fluids must be mixed or diverted depending upon temperatures.

All AMOT internally sensed valves have positive 3-way action. This ensures that on process start up all of the flow is through the bypass line, giving the fastest possible warm-up time.

Operation and flow control is established by the temperature element, which constantly monitors and regulates the medium to the exact specified temperature setting.

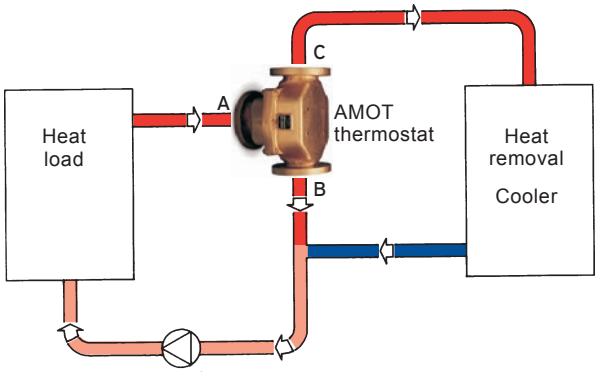
When required the valve will positively shut off the by-pass line to give full cooling.

The 3-way valve ensures constant volume flow in the system and gives no restriction during the warm-up cycle, ensuring maximum performance.

Typical Applications

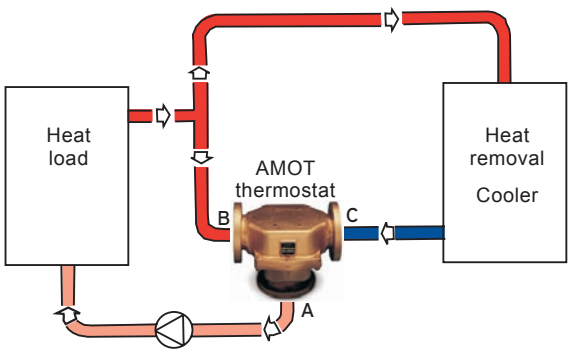
Diverting Applications

When valves are used for diverting service, the inlet is Port A (temperature sensing port), with Port C being connected to the cooler, and Port B connected to the cooler by-pass line.



Mixing Applications

When valves are used for mixing service, Port C is the cold fluid inlet port from the cooler, Port B is the hot by-pass fluid inlet, and Port A the common outlet. Port A is the temperature sensing port and will mix the hot and cold fluids in the correct proportion so as to produce the desired outlet temperature leaving Port A.



Marine

Engines - lube oil, high temperature (HT), low temperature (LT) water
Compressors and Gearboxes - lube oil
Heat Recovery and Water Makers - water circuits


DN40 to DN200
1½" to 8" - Type B


DN15 to DN40
½" to 1½" - Type C


DN40
1½" - Type E

Power Generation

Engines and Turbines - lube oil, high temperature (HT), low temperature (LT) water
Heat Recovery - water circuits


DN40 to DN200
1½" to 8" - Type B


DN15 to DN40
½" to 1½" - Type C


DN40
1½" - Type E

Offshore

Oil and Water Circuits - steel and stainless steel valve configurations
NACE or NORSOK certified


DN40 to DN200
1½" to 8" - Type B


DN40
1½" - Type E

Nuclear

Emergency Diesel Generators (EDG) Cooling Circuits - lube oil, high temperature (HT), low temperature (LT)


DN40 to DN200
1½" to 8" - Type B


DN100 to DN150
4" to 6" - Type H

Renewable Energy

Wind Turbines - lubricating and hydraulic oil temperature control
Solar Panels
Tidal / Wave Energy - lubricating oil temperature control


DN20
¾"- Type J


DN15 to DN40
½" to 1½" - Type C


DN40
1½" - Type E

Refrigeration

High pressure steel valves - flanged or welded connections for refrigerant contaminated lube oil circuits


DN40 to DN200
1½" to 8" - Type B


DN40
1½" - Type E


DN20 to DN80
¾" to 3" - Type R

Custom Engineered Valves

AMOT designs and manufactures thermostatic valves to meet specific engine and application requirements. Contact us for more information.

Selecting the right Thermostatic Control Valve

Selecting the right thermostatic control valve requires specific information about the application and engine:

- Application
- Fluid and flow rate
- Control temperature
- Body material and connection
- Maximum working pressure (MWP)

Model	Sizes and Connections	Flow Rate	Body Material	Control Temperature	Maximum Working Pressure (MWP)
B	DN40 to DN50 (1½" to 2") threaded DN40 to 200 (1½" to 8") flanged	15 to 400 m^3/hr (68 to 1750 US gpm)	Cast iron, ductile iron, aluminium, steel, stainless steel	13 to 116°C 55 to 240°F	Up to 45 bar (655 psi)
C	DN15 to DN40 (½" to 1½") threaded DN 40 (1½") flanged	1.4 to 12 m^3/hr (6 to 54 US gpm)	Cast iron, bronze, aluminium, steel or stainless steel	18 to 113°C 65 to 230°F	Up to 72 bar (1050 psi)
E	DN40 (1½") threaded or flanged	8 to 18.3 m^3/hr (35 to 79 US gpm)	Cast iron, bronze, steel or stainless steel housings	29 to 114°C 85 to 237°F	Up to 69 bar (1000 psi)
H	DN100 to DN150 (4"to 6") flanged	75 to 280 m^3/hr (330 to 1232 US gpm)	Steel or stainless steel housings	13 to 116°C 55 to 240°F	Up to 45 bar (655 psi)
J	DN20 (¾") threaded	2 to 8 m^3/hr (9 to 35 US gpm)	Aluminium or bronze housings	18 to 113°C 65 to 230°F	Up to 24 bar (350 psi)
R	DN20 to DN80 (¾" to 3") weld	3 to 60 m^3/hr (13 to 264 US gpm)	Steel	35 to 82°C 95 to 180°F	Up to 35 bar (500 psi)

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Thermostatic Control Valves

Model B

Typical applications

- Lubricating oil temperature control
- Jacket water high temperature (HT)
- Secondary water low temperature (LT)
- Heat recovery
- Water saving applications
- Boiler inlet temperature control
- Co-generation, cooling towers
- Temperature mixing or diverting
- Engine and compressor cooling system

B Valve

Key benefits

- No external power source required - simple, low cost installation
- No user setting needed - 'fit and forget' solution
- Small number of parts - simple maintenance and low cost of ownership
- Robust design capable of high vibration and shock applications
- Easy installation, operates in any mounting position
- Automatic self-sensing control with positive proportional valve action

Key features

- Flow rates of 15 - 400 m^3/hr (68 - 1750 US gpm)
- Combinations available: Housings in cast iron, ductile iron, aluminum, bronze, carbon steel, stainless steel
- DN40 - D200 ($1^1/_2$" to 8") pipe sizes
- Threaded and flanged connections
- Tamper-proof temperature settings from 13°C to 116°C (55°F to 240°F)
- Pressure ratings up to 45 bar (655 psi)

Accreditations available

- PED — Suitable for Group 1 & 2 liquids (Ensure materials are compatible)
- ATEX — Ex II 2G TX X
- CE — Complies with all relevant EU directives

Contents

Thermostatic Control Valves - Model B

Overview

AMOT model B thermostatic valves are available in a wide selection of sizes and settings to fill a multitude of fluid temperature control requirements. These valves may be mounted in any position and use the proven expanding wax principle to actuate the 3-way temperature element assemblies. The model B valves may be used for diverting or mixing service. They make very economical temperature limiting valves for engine and lubricating oil cooling, and to prevent scalding in home, motel or hotel hot water supply systems. Radiant heating systems can use these valves in limiting water temperature to prevent surface cracking and over-heating of plastic piping. Other applications include electronic and battery cooling circuits, pump temperature relief valves etc.

Available housing materials

- Cast iron
- Aluminum
- Steel
- Ductile iron
- Bronze
- Stainless steel

Seal materials

- Buna-N/Nitrile
- Viton
- Neoprene

Element materials

- A combination of bronze, brass and stainless steel (standard)
- A combination of nickel plated and stainless steel

Leakholes

In some applications, it is necessary to have leak holes drilled in the element to ensure a small flow between ports A and C. Leak holes are available in sizes ranging from 1.6 mm to 12.7 mm ($^{1}/_{16}$" to $^{1}/_{2}$"). Please refer to the Temperature Control Valve Selection Guide to determine the hole size required for specific applications.

Temperature settings

A wide selection of element materials, seals, and temperatures are available. Follow the equipment manufacturers' guidelines for heating/cooling systems.

Temperature settings are available from 13°C to 116°C (55°F to 240°F). Refer to the Temperature & Element Characteristics table on page 6 for specific temperature settings. In general, the temperature quoted is the nominal operating temperature in diverting mode on water systems. For long life, AMOT valves should not be operated continuously at temperatures in excess of 14°C (25°F) of their maximum continuous rating. If this condition is anticipated then consult AMOT for suitable alternatives.

For mixing and oil circuits the temperature may be one to two degrees higher due to flow, viscosity and other system parameters. Elements and seals are available in a variety of materials. These materials are suitable for most applications. Please refer to the Temperature Control Valve Selection Guide for material compability information.

Manual override (BR & BM)

BR type valves are fitted with a manual override which allows a progressive opening of port A to C. Manual override is often a requirement for marine applications.

For BM type valves, in automatic mode the valve will control the temperature automatically, but actuating the manual override mechanism on top of the valve will cause the element to move towards its hot (extended) position, regardless of temperature. Each element assembly has its own Manual Override.

Manual Override should only be used in case of an emergency or element failure.

Thermostatic Control Valves - Model B

Applications

Diverting Applications

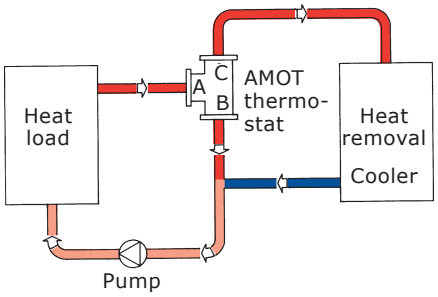
When valves are used for diverting service, the inlet is Port A (temperature sensing port), with Port C being connected to the cooler, and Port B connected to the cooler by-pass line.

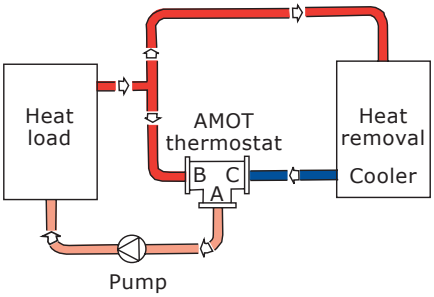
Mixing Applications

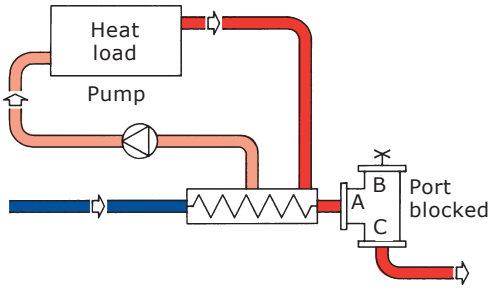
When valves are used for mixing service, Port C is the cold fluid inlet port from the cooler, Port B is the hot by-pass fluid inlet, and Port A the common outlet. Port A is the temperature sensing port and will mix the hot and cold fluids in the correct proportion so as to produce the desired outlet temperature leaving Port A.

2-way Water Saving Applications

Valve as shown maintains minimum flow through cooler to conserve water. Requires internal leak hole to permit small flow for sensing.







Valve characteristics

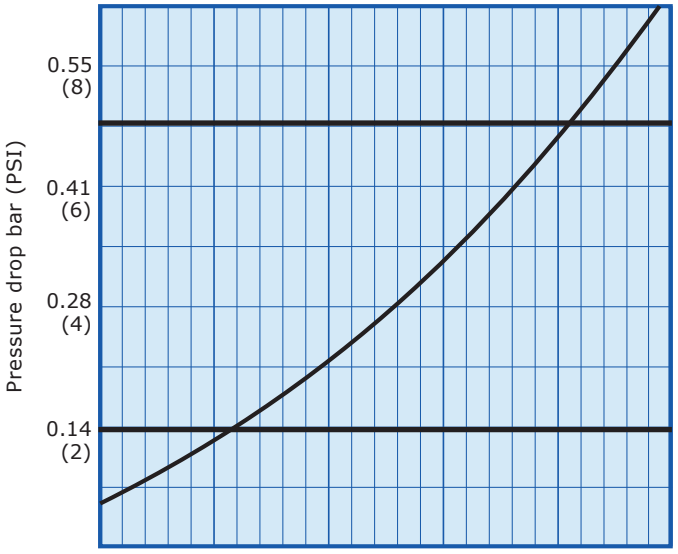
Pressure drop (Metric units)

AMOT thermostatic valves are designed to produce minimal pressure drop. The normal recommendation in sizing the valves is to select a pressure drop between 0.14 to 0.5 Bar (2 and 7 PSI).

Water

AMOT thermostatic valves operate in any position and may be oriented at the convenience of the system designer. In the smaller sizes, the valve may be supported by the connecting pipe but should not be subjected to excessive bending. Line up the piping before tightening the connecting bolts. Larger sizes should not be used to support long and heavy lengths of pipe, nor used to draw up lengths of pipe which have been fabricated too short.

If the valve is mounted at the high point of the system, the system should be properly vented to prevent trapping air at the temperature element assemblies.



Size						
1 1/2	8 (40)	12 (55)	16 (70)	20 (85)	24 (100)	30 (115)
2	10 (40)	15 (60)	20 (80)	25 (100)	30 (120)	35 (140)
2 1/2	19 (75)	28 (110)	37 (145)	46 (180)	55 (215)	64 (250)
3	20 (80)	30 (120)	40 (160)	50 (200)	60 (240)	70 (280)
33	28 (123)	41 (180)	55 (242)	69 (304)	84 (370)	97 (427)
4	40 (160)	60 (264)	80 (320)	100 (400)	120 (480)	140 (560)
5	60 (240)	90 (396)	120 (480)	150 (600)	180 (720)	210 (840)
6	90 (360)	135 (594)	180 (720)	225 (900)	270 (1080)	315 (1260)
8	135 (590)	195 (770)	260 (1030)	320 (1270)	390 (1540)	450 (1840)

Flowrate m³/hr (US gpm) - Water

Valve characteristics

Flow coefficient

AMOT valve flow coefficient (calculated)		
Size	**Kv**	**Cv**
1¹/₂B	36	42
2B	44	51
2¹/₂B	79	91
3B	87	101
33B	121	140
4B	176	203
5B	263	304
6B	394	456
8B	571	660

Kv is the flow coefficient in metric units. It is defined as the flow rate in cubic meters per hour (m^3/h) of water at a temperature of 16º celsius with a pressure drop across the valve of 1 bar. Cv is the imperial coefficient. It is defined as the flow rate in US Gallons per minute [gpm] of water at a temperature of 60º fahrenheit with a pressure drop across the valve of 1 psi. (Kv = 0.865 Cv / Cv = 1.156 Kv)

The basic formula to determine the Kv of a valve is:

$$Kv = Q\sqrt{\frac{SG}{Dp}}$$

Q = Flow (m^3/h)
Dp = Pressure drop (bar)
SG = Specific gravity of fluid
Kv = Valve flow coefficient

There are two other ways that this formula can be used to find the flow in m^3/h or pressure drop of a valve in bar:

$$Q = Kv\sqrt{\frac{Dp}{SG}} \qquad Dp = \left[\frac{Q}{Kv}\right]^2 SG$$

The basic formula to determine the Cv of a valve is:

$$Cv = Q\sqrt{\frac{SG}{Dp}}$$

Q = Flow (US gallons/min)
Dp = Pressure drop (psi)
SG = Specific gravity of fluid
Cv = Valve flow coefficient

There are two other ways that this formula can be used to find the flow in US gallons/minute or pressure drop of a valve in PSI:

$$Q = Cv\sqrt{\frac{Dp}{SG}} \qquad Dp = \left[\frac{Q}{Cv}\right]^2 SG$$

Thermostatic Control Valves - Model B

Valve body specification

Material	Nominal bore size inches	Flange standard & class												
		A - Flanged PN6	B - Flanged PN10	C - Flanged PN16	D - Flanged BS:10	E - Flanged BS:10	F - Flanged ANSI 125 lb	J - Flanged ANSI 150 lb	H - Flanged ANSI 300 lb	L - Flanged JIS 10k	P - Flanged JIS 5k	T - Threaded NPT	U - Threaded BSP (PL)	K - Flanged (600 lb)
B- Bronze C- Cast iron D- Ductile iron	1 1/2 (DN40)													
	2 (DN50)											2BO and 2BH only		
	2 1/2 (DN65)													
	3 (DN80)													
	33 (DN80)	Cast iron or Aluminum					Cast iron or Aluminum			Cast iron or Aluminum				
	4 (DN100)													
	5 (DN125)													
	6 (DN150)													
	8 (DN200)													
S- Steel and R- Stainless Steel	1 1/2 (DN40)													
	2 (DN50)													
	2 1/2 (DN65)													
	3 (DN80)													
	33 (DN80)													
	4 (DN100)													
	5 (DN125)													
	6 (DN150)													
	8 (DN200)													
A- Aluminum	1 1/2 (DN40)													
	2 (DN50)													
	2 1/2 (DN65)													
	3 (DN80)													
	33 (DN80)													
	4 (DN100)													
	5 (DN125)													
	6 (DN150)													
	8 (DN200)													

Non standard - please contact AMOT for details

Maximum working pressures

Measurements in bar (PSI)

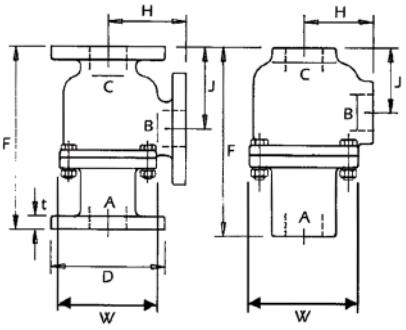
Material	1¹/₂ B	2B	2BH	2¹/₂B	3B	33B	4B	5B	6B	8B
Bronze	10 (150)	10 (150)	–	10 (150)	10 (150)	–	10 (150)	10 (150)	10 (150)	10 (150)
Cast iron	10 (150)	10 (150)	22 (320)	10 (150)	10 (150)	6 (87)	10 (150)	10 (150)	10 (150)	10 (150)
Ductile iron	n/a	16 (230)	–	16 (230)	16 (230)	–	16 (230)	10 (150)	10 (150)	10 (150)
Stainless steel	n/a	45 655)	–	45 (655)	45 (655)	–	20 (290)	–	–	n/a
Steel	n/a	45 (655)	–	45 (655)	45 (655)	–	20 (290)	–	–	n/a
Aluminum	n/a	10 (150)	–	10 (150)	10 (150)	10 (150)	10 (150)	10 (150)	10 (150)	n/a

Specification

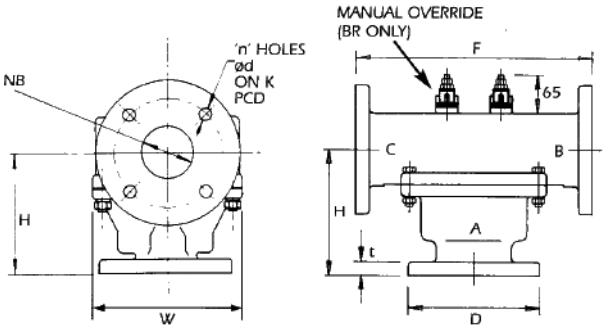
Flow rate	15 – 400m³/hr	68 - 1750 US gpm
Body materials	Aluminum (BS: 1490 LM25TF)	For light weight
	Bronze	For seawater, shock resistance and low magnetic permeability
	Cast iron	For fresh water and lubricating oils
	Ductile iron	High performance iron
	Steel	For high strength/pressure ratings
	Stainless steel	Corrosive and special applications
Seal materials	BUNA N, Viton and Neoprene	
Mounting position	Any orientation	
Ports	Below nominal temperature	Ports A and B connected
	Above nominal temperature	Ports A and C connected
Port connections	Screwed	40 and 50 mm (1¹/₂" and 2") BSP.PL or NPT
	Flanged	50 to 200 mm (2" to 8") to most DIN, ANSI, JIS and other standards
Valve sizes (nominal bore)	40, 50, 65, 80, 100, 125, 150 and 200 mm	(1¹/₂", 2", 2¹/₂", 3", 4", 5", 6" and 8")
Control temperatures	See element characteristics table on page 9	
Accreditations available	PED	40 to 150 mm (1¹/₂" to 6") inclusive suitable for Group 1 & Group 2 liquids. 200 mm (8") suitable for Group 2 liquids only. (Ensure materials are compatible).
	ATEX	Ex II 2G TX X
	CE	Complies with all relevant EU directives

Valve dimensions

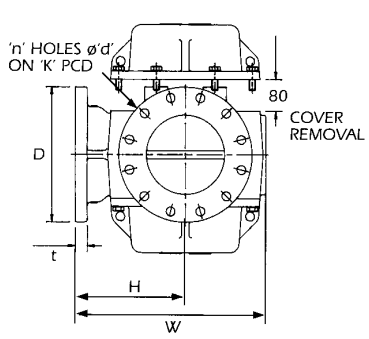
1¹/₂ and 2BO/BH/BG 2BF

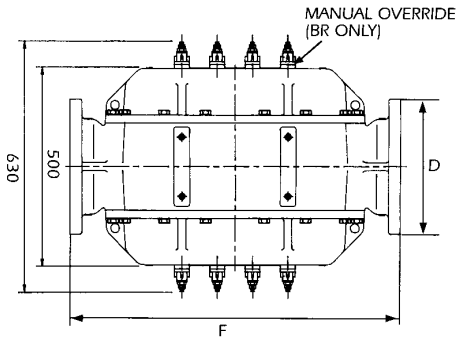


2BC, 2BM and 2¹/₂ – 6BO/BR



8BO, BR





Dimension/ Connection mm (inches)		1¹/₂ BO	1¹/₂ BH	2BO/ BH/BG	2BF	2BC/BR	2¹/2BO/ BR	3BO/BR	33BO/ BR	4BO/BR	5BO/BR	6BO/BR	8BO/BR
Conn. Code	**Nom. Bore**	40 (1¹/2)	40 (1¹/2)	50 (2)	50 (2)	50 (2)	65 (2¹/2)	80 (3)	80 (3)	100 (4)	125 (5)	150 (6)	200 (8)
F		246 (9.685)		246 (9.685)	270 (10.630)	225 (8.858)	254 (10.000)	267 (10.512)	267 (10.512)	403 (15.866)	489 (19.252)	489 (19.252)	840 (33.071)
H		91 (3.583)		91 (3.583)	113 (4.449)	149 (5.866)	165 (6.496)	171 (6.732)	171 (6.732)	217 (8.543)	241 (9.488)	254 (10.000)	280 (11.024)
J		97 (3.819)		97 (3.819)	121 (4.764)	–	–	–	–	–	–	–	–
D		–		–	165 (6.496)	165 (6.496)	185 (7.283)	200 (7.874)	200 (7.874)	224 (8.819)	254 (10.000)	285 (11.220)	340 (13.386)
W		140 (5.512)		139 (5.472)	139 (5.472)	140 (5.5120)	210 (8.268)	210 (8.268)	245 (9.646)	308 (12.126)	349 (13.740)	483 (19.016)	485 (19.094)
t		–		–	20 (0.787)	20 (0.787)	20 (0.787)	22 (0.866)	22 (0.866)	24 (0.945)	26 (1.024)	26 (1.024)	30 (1.181)
K	PN10/ 16	–		–	125 (4.921)	125 (4.921)	145 (5.709)	160 (6.299)	160 (6.299)	180 (7.087)	210 (8.268)	240 (9.449)	295 (11.614)
	125/ 150LB	–		–	120.6 (4.748)	120.6 (4.748)	139.7 (5.500)	154.6 (6.008)	152.6 (6.008)	190.5 (7.5)	216 (8.504)	240 (9.449)	299 (11.772)
d	PN10/ 16	–		–	18 (0.709)	18 (0.709)	18 (0.709)	18 (0.709)	18 (0.709)	18 (0.709)	18 (0.709)	23 (0.906)	22 (0.866)
	125/ 150LB	–		–	19 (0.748)	19 (0.748)	19 (0.748)	19 (0.748)	19 (0.748)	19 (0.748)	22.2 (0.874)	23 (0.906)	22 (0.866)
n	PN10/ 16	–		–	4	4	4	8	8	8	8	8	8 or 12*
	125/ 150LB	–		–	4	4	4	4	4	8	8	8	8

* 8 holes on ND10 flange, 12 holes on ND16 flange

Weights

Weights in kg (lbs)

Material	1 1/2 BO	1 1/2 BM	2BO, BH,BG	2BF	2BC, BM, BR	2 1/2BO, BR	3BO,BR	33BO, BR	4BO,BR	5BO,BR	6BO,BR	8BO,BR
Bronze	13 (29)	12 (25)	13 (29)	22 (49)	26 (57)	29 (64)	36 (79)	-	68 (150)	109 (240)	136 (300)	315 (694)
Cast/ductile iron	11 (24)	-	11 (24)	18 (40)	18 (40)	24 (53)	27 (60)	35 (77) cast iron only	61 (134)	91 (201)	123 (271)	285 (628)
Stainless steel/steel	–	-	–	–	20 (44)	34 (75)	36 (79)	–	–	–	–	–
Aluminum	–	-	–	7 (15)	–	10 (22)	11 (24)	14 (31)	24 (53)	35 (77)	48 (106)	–

Element characteristics

Control temperature

Code	Control temp.		Rated range				Max temp continuous	
			Crack open		Full open			
	°C	°F	°C	°F	°C	°F	°C	°F
55	13	55	8	47	20	68	35	95
57	14	57	10	50	18	65	30	86
75	24	75	20	68	30	86	38	100
90	32	90	27	81	35	95	43	110
95	35	95	29	85	41	105	49	120
100	38	100	34	93	42	108	50	122
105	41	105	35	95	45	113	55	131
110	43	110	38	100	47	117	56	133
115	46	115	40	104	50	122	61	142
120	49	120	43	110	54	130	66	150
130	54	130	51	124	60	140	68	155
135	57	135	54	129	63	145	71	160
140	60	140	57	135	66	151	74	165
145	63	145	60	140	69	156	79	174
150	66	150	63	145	72	161	82	180
155	68	155	66	150	74	165	85	185
160	71	160	68	155	78	173	88	190
165	74	165	71	160	80	175	88	190
170	77	170	74	165	83	181	93	200
175	79	175	77	170	85	185	102	215
180	82	180	79	175	88	191	104	220
185	85	185	82	180	91	196	106	223
195	91	195	87	188	98	209	107	225
205	96	205	93	200	102	215	108	226
215	102	215	98	209	107	225	115	239
225	107	225	102	216	113	236	118	244
230	110	230	104	219	115	239	118	244
240	116	240	108	227	122	252	123	253.5

Element and valve seal material

Code	Element and valve seal material
01	1096X standard with Nitrile seals
02	1096P plated with Viton seals
03	1096X with Viton seals
05	6836S saltwater with Nitrile seals
07	2433X manual override with Nitrile seals
09	69385 saltwater manual override with Nitrile seals
11	5566X reduced stroke with Nitrile seals
12	5566P reduced stroke plated with Viton seals
20	5566X reduce stroke with Viton seals
44	1096X with Neoprene seals
45	1096P with Neoprene seals
53	2433X with Viton seals

Thermostatic Control Valves - Model B

How to order

Use the tables below to select the unique specification of your B Valve.

Example: **A B C D E F - G H - I**

Model **3 BO C F 145 01 - D 0 - AA**

A	Valve Size (1 1/2 - 8)	
	Nominal Bore Size	Number of Elements
1 1/2	1 1/2 in (DN40)	1
2	2 in (DN50)	1
2 1/2	2 1/2 in (DN65)	2
3	3 in (DN80)	2
33	3 in (DN80)	3
4	4 in (DN100)	4
5	5 in (DN125)	6
6	6 in (DN150)	9
8	8 in (DN200)	16

B	Model & Revision Level
BO	1 1/2 in and 2 in, screwed connections
BO	2 1/2 in and 8 in, flanged
BC	1 1/2 in and 2 in, flanged “T” configu-ration
BF	2 in only, flanged “F” configuration
BH	1 1/2 in and 2 in, screwed high pres-sure
BM	manual override (avail from USA only)
BR	2 in to 8 in, manual override

C	Body Material
A	Aluminum (Table A = 33, 4 and 5 inch only)
C	Cast Iron*
S	Steel (Table A = 2, 2 1/2, 3 and 4 inch only)
B	Bronze (Table A ≠ 33)
D	Ductile Iron (Table A ≠ 33)
R	Stainless Steel (Table A = 2, 2 1/2, 3 and 4 inch only)

*AMOT reserves the right to substitute a ductile iron product in place of cast iron to meet customer delivery requirements.

D	Port Connection
A	Flanged PN6
B	Flanged PN10
C	Flanged PN16
D	Flanged BS:10 Table D
E	Flanged BS:10 Table E
F	Flanged ANSI 125 lb (cast iron, bronze and ductile only)
J	Flanged ANSI 150 lb (steel and stainless steel only)
H	Flanged ANSI 300 lb (steel and stainless steel only)
L	Flanged JIS 10k
P	Flanged JIS 5k
T	Threaded NPT (1 1/2 in and 2 BO and 2BH only, cast iron, bronze and ductile only)
U	Threaded BSP (PL) (1 1/2, 2BO and 2BH only, cast iron, bronze and ductile only)

E	Control Temperature							
Code	Control temp.		Rated range				Max temp continuous	
			Crack open		Full open			
	°C	°F	°C	°F	°C	°F	°C	°F
55	13	55	8	47	20	68	35	95
57	14	57	10	50	18	65	30	86
75	24	75	20	68	30	86	38	100
90	32	90	27	81	35	95	43	110
95	35	95	29	85	41	105	49	120
100	38	100	34	93	42	108	50	122
105	41	105	35	95	45	113	55	131
110	43	110	38	100	47	117	56	133
115	46	115	40	104	50	122	61	142
120	49	120	43	110	54	130	66	150
130	54	130	51	124	60	140	68	155
135	57	135	54	129	63	145	71	160
140	60	140	57	135	66	151	74	165
145	63	145	60	140	69	156	79	174
150	66	150	63	145	72	161	82	180
155	68	155	66	150	74	165	85	185
160	71	160	68	155	78	173	88	190
165	74	165	71	160	80	175	88	190
170	77	170	74	165	83	181	93	200
175	79	175	77	170	85	185	102	215
180	82	180	79	175	88	191	104	220
185	85	185	82	180	91	196	106	223
195	91	195	87	188	98	209	107	225
205	96	205	93	200	102	215	108	226
215	102	215	98	209	107	225	115	239
225	107	225	102	216	113	236	118	244
230	110	230	104	219	115	239	118	244
240	116	240	108	227	122	252	123	253.5

F	Element and valve seal material
01	1096X standard with Nitrile seals
02	1096P plated with Viton seals
03	1096X with Viton seals
05	6836S saltwater with Nitrile seals
07	2433X manual override with Nitrile seals
09	69385 saltwater manual override with Nitrile seals
11	5566X reduced stroke with Nitrile seals
12	5566P reduced stroke plated with Viton seals
20	5566X reduce stroke with Viton seals
44	1096X with Neoprene seals
45	1096P with Neoprene seals
53	2433X with Viton seals

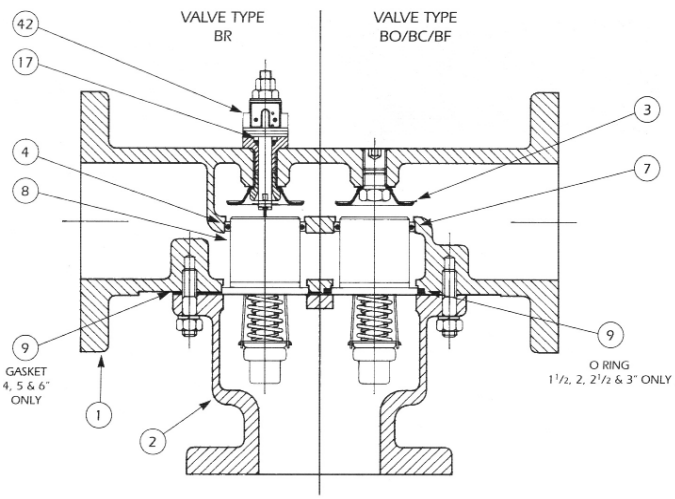
How to order Continued

G	Leakhole size - inches (mm)
0	None
A	1/2 in (13 mm)
B	1/4 in (6.5 mm)
C	3/8 in (9.5 mm)
D	1/8 in (3.2 mm)
E	1/16 in (1.6 mm)
F	3/32 in (2.4 mm)
G	3/16 in (5 mm)
H	5/16 in (8 mm)

H	Leakhole Quantity	
	1 1/2 in to 6 in	8 in
0	None	None
1	One	Two
2	Two	Four
3	Three	Six
4	Four	Eight
5	Five	Ten
6	Six	Twelve
7	Seven	Fourteen
8	Eight	Sixteen
9	Nine	None

I	Customer Special Requirements
-AA	Standard product
-***	Customer special code assigned

Recommended Spares



Service Kits

Spare kits are available; these include all seals and gaskets required to service the unit. Kits only include item numbers 7, 9 and 17.

How to order

Example	46342X	15	3	Code description
Valve		15		1 1/2"
		20		2"
		25		2 1/2"
		30		3"
		33		3" 3 element
		40		4" all body materials except steel & stainless steel
		41		4" steel & stainless steel bodies only
		50		5"
		60		6"
		80		8"
Valve Type/Seal Material			1	BO/Nitrile
			2	BO/Viton
			3	BO/Neoprene
			4	BR/Nitrile
			5	BR/Viton
			6	BR/Neoprene

Sample code for 1¹/₂BOCT10001-00-AA

46342X 15 1

- Valve type/Seal material
- Valve size
- Basic part number

Number of Elements in different units

Size code	Valve nominal bore		Number of elements
	Inches	mm	
1 1/2	1.5	40	1
2	2	50	1
2 1/2	2.5	65	2
3	3	80	2
33	3	80	3
4	4	100	4
5	5	125	6
6	6	150	9
8	8	200	16

User Maintanence Parts

Part number	Description	Quantity
1096X (temp °F)	Element assembly	See 'Number of elements' table
6836S (temp °F)	Element assembly, 'saltwater' plated	See 'Number of elements' table
2433X (temp °F)	Element assembly with manual override	See 'Number of elements' table
6838S (temp °F)	Element assembly, 'saltwater' plated, with manual override	See 'Number of elements' table

3-Way Temperature Control Valve

Model G, Versions GEF, GPD and Accessories

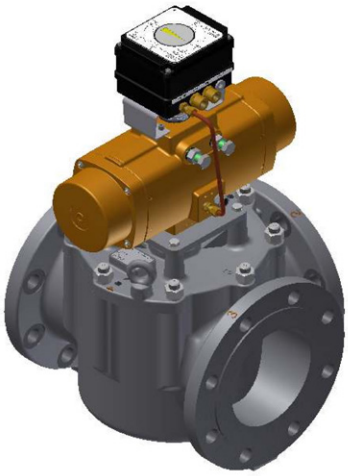
Typical applications

For engines, turbines, gearboxes and heat exchangers:

- Charge air cooling
- Secondary cooling systems
- Fuel and lube oil preheating
- Co-generation
- Engine jacket water

For refineries, chemical plants and oil reproduction:

- Waste heat boilers
- Product coolers
- Product heaters
- Product condensers



Pneumatic GPD Valve

Electric GEF Valve

Key benefits

- Ease of integration - valve size matches pipe size, resulting in reduced installation time and installation costs
- Flexible design - ports can be configured to suit installation
- Low pressure drop - compared to other valve types
- Small physical size
- Hand wheel allows manual adjustment of valve (optional on pneumatic valve) - simplified set up and maintenance

Contents

3-Way Temperature Control Valve - Models GEF and GPD

Overview

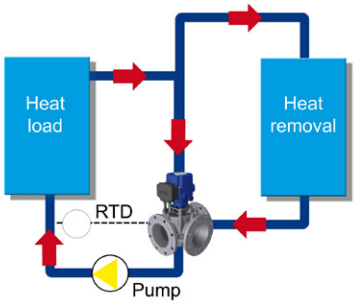
AMOT G valves are 3-way control valves consisting of a heavy duty rotary valve and either a quarter turn electric or pneumatic actuator. The valves provide a high degree of accuracy and repeatability for accurate temperature control and are equally accurate in mixing or diverting service over a wide flow range.

The heavy duty rotor design provides tight temperature control without high maintenance requirements. The system is available in three standard control configurations: electric; pneumatic; and electro-pneumatic, offering flexibility for most requirements. Designed for high vibration service, the AMOT G valves are qualified to Lloyd's Marine Requirements for shipboard service. Valves can be directly mounted to reciprocating machinery, such as diesel engines, without vibration isolation. The heavy duty actuators are specially reinforced to provide vibration resistance.

The standard valves are suitable for a variety of fluids such as water, water/glycol, sea water, lubricating and hydraulic oils. Optional body materials are available for services involving synthetic or fire resistant oils, deionized water and ammonia or freon in oil.

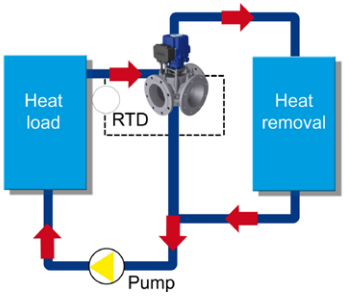
Applications

Mixing Applications



Lubricating oil temperature control is normally configured in a mixing application controlling the return temperature to the heat load. The temperature is normally measured as close as possible to the sump return.

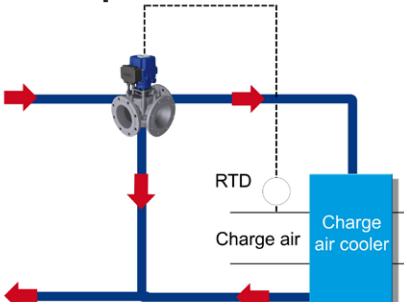
Diverting Applications



Jacket water cooling in diverting applications regulates the outlet coolant water temperature from a diesel or gas engine. The valve either sends water to a cooler or bypass loop, accurately maintaining the temperature.

The temperature is normally measured at the outlet from the heat source.

Charge Air Temperature Control



The intercooler is used to cool high temperature turbo charger air.

In this application the G Valve regulates the flow of cooling water through an intercooler, increasing efficiency, enhancing performance and helping to meet today's environmental requirements.

System Types

Electric Valve

Electric GEF Valve

For the electric valve, the actuator of the G valve assembly uses an electric motor which rotates in either direction in response to the ON-OFF signals received. The motor drives a gearbox connected to the rotor shaft and turns the valve rotor clockwise or counter-clockwise, a maximum of 90 degrees. At the end of travel, limit switches are incorporated to isolate the electrical supply to the motor when the valve rotor has reached either end of the rotation. A feedback potentiometer is standard and provides position indication to the control system.

The electric actuator is a rugged, compact and lightweight quarter turn actuator having enclosure protection to IP65.

The actuator is powered by an electric motor driving a worm-type gearbox. The worm gearbox prevents reverse drive due to fluid forces. It is fitted with manual override as standard, enabling valve operation without power.

A thermal cutout is fitted preventing overheating. Limit switches at each end of stroke disconnect motor power when end stroke is reached. These can also be used for remote indication.

Electric System

Temperature Probe 8060

PID Controller 8071/2D, IP67 enclosure

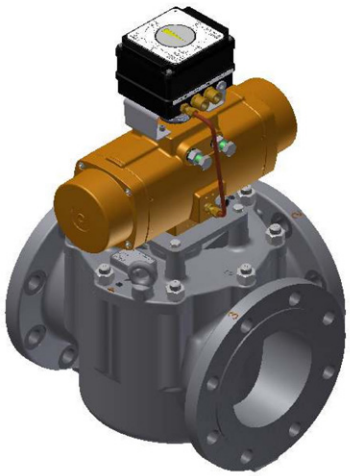
GEF Valve

The electric valve system incorporates the use of an electrically actuated three-way control valve with an electronic controller. The 8071D PID Controller can be either panel or wall mounted (see page 16 for more information). The system is completed with a temperature sensor type 8060 (see page 16 for details).

The electric G Valve system is simple to install with standard four core cable, and provides more accurate measurement and control than typical pneumatically operated systems.

System Types continued

Pneumatic Valve



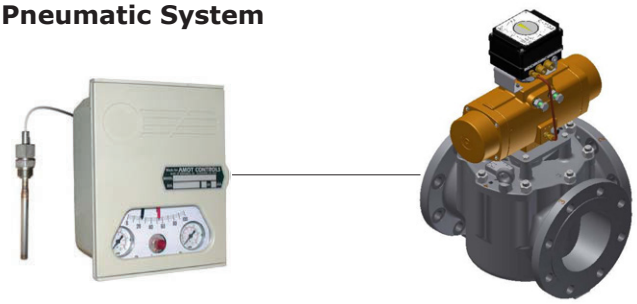
Pneumatic GPD Valve

The pneumatic valve uses a spring return pneumatic actuator and positioner to control the rotation of the valve in response to an input signal from a pneumatic or electro-pneumatic control system. The pneumatic control system sends a pneumatic signal ranging from 3 to 15 psi to the actuator to correctly position the valve at the desired temperature setting. The pneumatic control system usually consists of a P+I pneumatic controller, sensor and the necessary air supply conditioning equipment (regulators, filters and water traps).

The pneumatic actuator is a rugged, quarter turn, double piston actuator operating on a scotch yoke principle.

The actuator is fitted with spring return as standard allowing fail-safe configuration if necessary. It is also fitted with a valve positioner enabling accurate and repeatable movement.

Pneumatic System

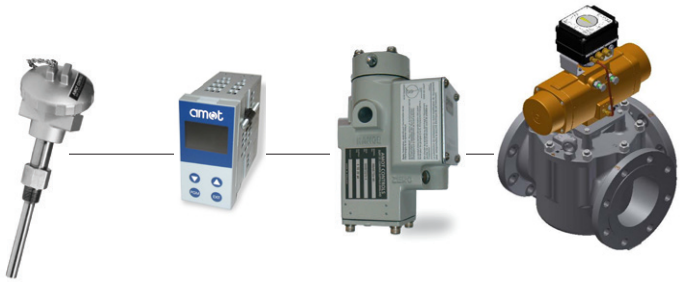


SG80 Temperature Controller and Sensor

GPD Valve

The pneumatic valve system incorporates a pneumatically actuated three-way control valve with controller and integral temperature sensor, the SG80, which can be panel or wall mounted. For more information on the SG80, see page 18. The pneumatic G valve system is ideal when there is a lack of electricity or when a fail-safe system is needed.

Electro-Pneumatic System



Temperature Probe 8060

Temperature Controller 8071D

Electro-Pneumatic Converter 8064A

GPD Valve

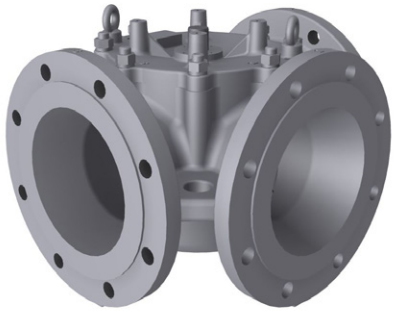
The electro-pneumatic valve system combines both electric and pneumatic technology, consisting of a pneumatically actuated three-way control valve with an electro-pneumatic converter, type 8064A. See page 17 for more details.

The probe sends a resistance signal to the electronic controller, which in turn sends a 4 to 20mA signal to an I/P converter that converts this to a pneumatic signal.

The electro-pneumatic system combines the features and functionality of the AMOT electronic control system with the fail-safe action benefits of a pneumatically actuated valve.

3-Way Temperature Control Valve - Models GEF and GPD

Overview of Valve Body



Valve Body

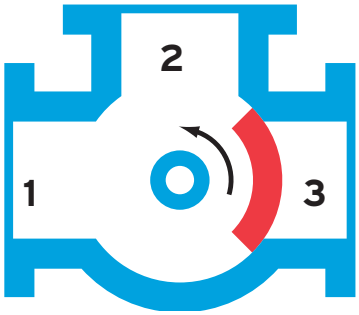
Key features and benefits

- Lightweight and compact
- Configurable ports - allowing flexibility on installation
- Low pressure drop - enables savings on either valve or pump size
- High accuracy providing better temperature control

Specification

Flow to:	3000m^3/hr	(13,200 us gpm)
Sizes:	50mm to 400mm	(2" to 16")
Body materials:	Cast iron (BS: 1452 250)	For fresh water, lubricating oils
	Bronze (BS: 1400 LG2)	For seawater, shock resistance, or magnetic permeability
	Steel (BS: 3100 A1)	For high strength and high pressure ratings
	Ductile iron (BS: 2789 SNG 420/12)	High performance iron
	Stainless steel (BS: 3100 316C16F)	Corrosive and special applications
Rotor material:	Bronze or stainless steel	
Rotor shaft:	Stainless steel	
Shaft seal material:	Viton rubber (GEF)	Nitrile or Viton (GPD)
Flanges:	Most DIN, ANSI and JIS standards	
Maximum internal valve pressure:	Cast iron, ductile iron or bronze	10 bar (145 psi)
	Steel and stainless steel	16 bar (232 psi)
Maximum temperature of fluid:	100^{0}C Refer to AMOT for higher temperature	(212^{0}F) requirements

Specification: modes of operation



The unique construction of the AMOT G valve provides total flexibility by allowing you to select the valve port positions most ideally suited to meet your application requirements. There are two main types of mode of operation:

1. 90 degree rotor that allows either ports 1 or 3 to be selected as the common port.

2. 180 degree rotor that requires port 2 to be the common port.

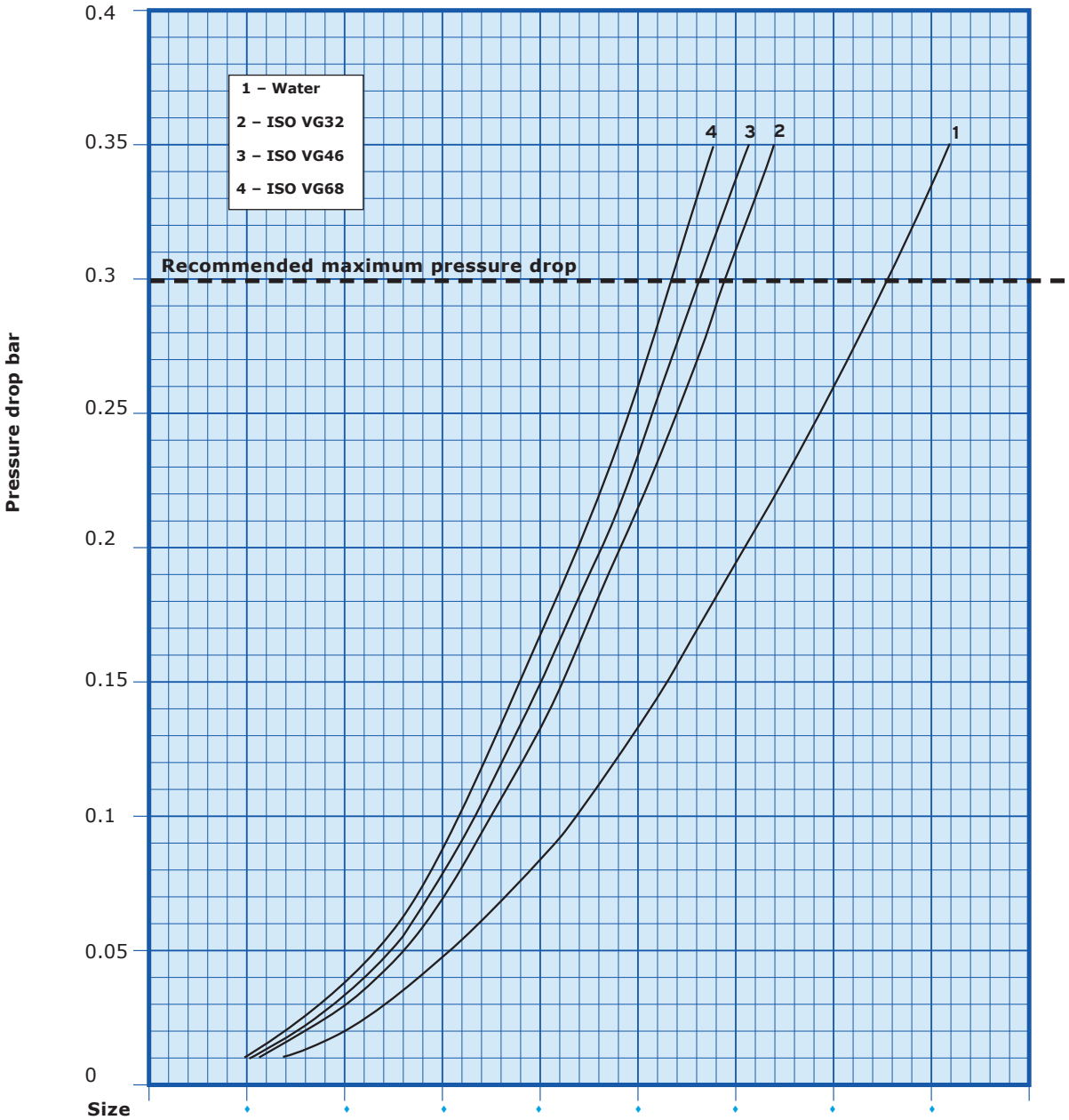
Arrow indicates valve movement with increasing temperature or mA, as viewed from above (see diagram).

	Electric actuator (basic actuator codes A & B)		**Pneumatic actuator direct acting**			**Pneumatic actuator reverse acting**		
	Cold position	Hot position	3 PSI (cold)	15 PSI (hot)	No signal	15 PSI (cold)	3 PSI (hot)	No signal
Mode 32								
Mode 21								
Mode 12								
Mode 23								
Mode 13								
Mode 31								

Note: Modes 13 and 31 are not available for models 12” (DN300), 14” (DN350) & 16” (DN400)

Valve Sizing (Metric units)

Valve selection curves for valves with 90° rotor. For valves with 180° rotor multiply pressure drops by 2.

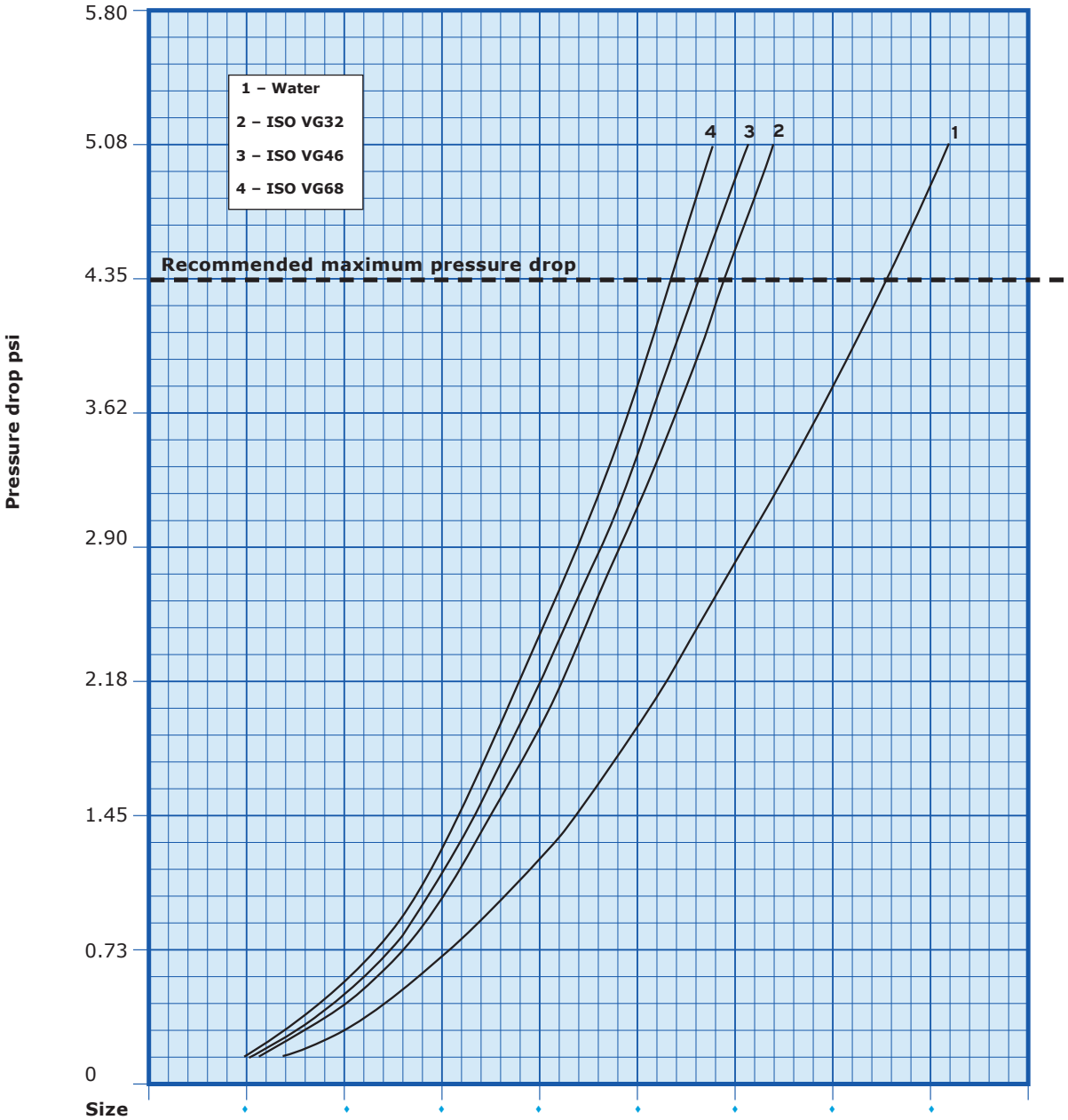


Size								
2G (50)	7	14	20	26	33	39	46	52
3G (80)	19	35	51	67	83	99	115	131
4G (100)	29	54	79	104	129	154	179	204
6G (150)	66	122	178	235	291	347	403	459
8G (200)	118	218	318	418	517	617	717	817
10G (250)	184	340	496	652	808	964	1120	1276
12G (300)	266	491	715	940	1164	1389	1613	1838
14G (350)	361	667	973	1279	1585	1890	2196	2502
16G (400)	472	871	1270	1670	2069	2468	2868	3267

Flowrate m^3/hr

Valve Sizing (English units)

Valve selection curves for valves with 90° rotor. For valves with 180° rotor multiply pressure drops by 2.



Flowrate US gallons/min								
Size								
2G (50)	31	62	88	114	145	172	203	229
3G (80)	84	154	225	295	365	436	506	577
4G (100)	128	238	348	458	568	678	788	898
6G (150)	291	537	784	1035	1281	1528	1774	2021
8G (200)	520	960	1400	1840	2276	2717	3157	3597
10G (250)	810	1497	2184	2871	3558	4244	4931	5618
12G (300)	1171	2162	3148	4139	5125	6116	7102	8092
14G (350)	1589	2937	4284	5631	6979	8321	9669	11016
16G (400)	2077	3832	5588	7348	9104	10859	12619	14375

Valve Sizing

Viscosity Correction

Example:

From the graph below:

100 cSt = correction factor of 0.68

0.68 x flow coefficient = corrected flow coefficient (Kv or Cv)

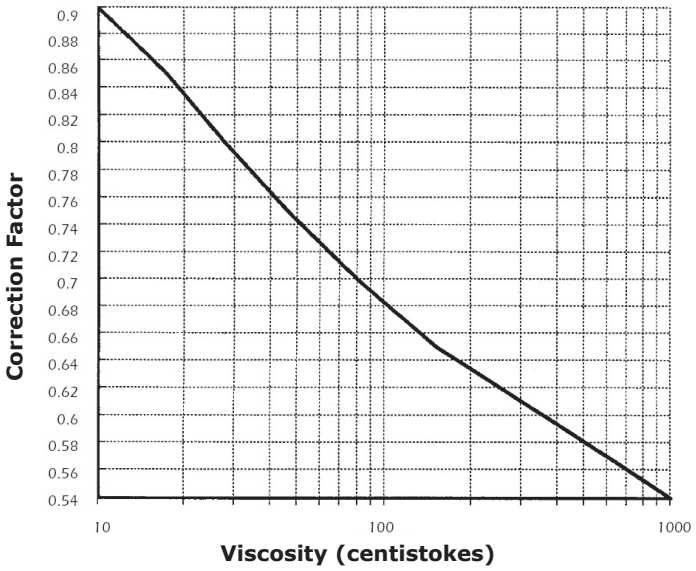
Some approximate viscosities (cSt) of SAE oils at 40°C (110°F) are shown below, based on leading oil manufacturers published data.

For the selection of valves for more viscous fluids than water, the following must be calculated:

Viscosity: Find the viscosity of the fluid in which the valve is to operate. The viscosity is normally expressed in centistokes. Where ISO oil is used, the grade number is also the viscosity eg ISO VG46 is 46 centistokes at 40°C (104°F).

Viscosity correction: By using the correction graph below, the flow coefficient correction factor can be established. The correction figure obtained from the graph should then be multiplied by the original flow coefficient which can then be used in the standard valve sizing formulae.

Viscosity Correction Curve (Fv)



Some approximate viscosities (cSt) of SAE oils at 40°C (104°F) are shown below, based on leading oil manufacturers' published data.

SAE Oil Viscosities

Engine oils	
Oil	**cSt**
SAE 5W	6.8
SAE 10W	32
SAE 20	46
SAE 20W	68
SAE 30	100
SAE 40	150
SAE 50	220

Gear oils	
Oil	**cSt**
SAE 75W	22
SAE 80W	46
SAE 85W	100
SAE 90	150
SAE 140	460

Valve Sizing

Valve Sizing Calculations

Valve Flowrate

See the table below for examples of Kv and Cv:

Valve Type and size (DN)	2G 50	3G 80	4G 100	6G 150	8G 200	10G 250	12G 300	14G 350	16G 400
Kv	82	207	323	729	1296	2025	2918	3972	5187
Cv	96	242	378	851	1513	2364	3405	4635	6053

Pressure Drop

The G valve is designed to produce minimal pressure drop. The normal recommendation when determining the size of an AMOT G valve is a pressure drop between 0.01 and 0.3 bar (0.15 and 4.5 psi). **Note**: Kv and Cv values are applicable to 90° rotor versions only.

Kv is the flow coefficient in metric units. It is defined as the flow rate in cubic meters per hour (m^3/h) of water at a temperature of 16º celsius with a pressure drop across the valve of 1 bar. Cv is the imperial coefficient. It is defined as the flow rate in US Gallons per minute [gpm] of water at a temperature of 60º fahrenheit with a pressure drop across the valve of 1 psi. (Kv = 0.865 Cv / Cv = 1.156 Kv)

The basic formula to determine the Kv of a valve is:

$$Kv = Q\sqrt{\frac{SG}{Dp}}$$

Q = Flow (m^3/h)
Dp = Pressure drop (bar)
SG = Specific gravity of fluid
Kv = Valve flow coefficient

There are two other ways that this formula can be used to find the flow in m^3/h or pressure drop of a valve in bar:

$$Q = Kv\sqrt{\frac{Dp}{SG}} \qquad Dp = \left[\frac{Q}{Kv}\right]^2 SG$$

The basic formula to determine the Cv of a valve is:

$$Cv = Q\sqrt{\frac{SG}{Dp}}$$

Q = Flow (US gallons/min)
Dp = Pressure drop (psi)
SG = Specific gravity of fluid
Cv = Valve flow coefficient

There are two other ways that this formula can be used to find the flow in US gallons/minute or pressure drop of a valve in PSI:

$$Q = Cv\sqrt{\frac{Dp}{SG}} \qquad Dp = \left[\frac{Q}{Cv}\right]^2 SG$$

Valve Bypass Flowrates

The AMOT G Valve is not a tight shutoff valve. When used in a reasonably balanced pressure system there will be some small amounts of leakage between ports. The actual amount of leakage will vary with the pressure difference between these ports. Consult AMOT for further information if the application is sensitive to leakage rates or if high pressure differences are likely to occur.

Vibration

Exceeds the requirements of Lloyd's Register Type Approval System, Test Specification Number 1, 2002, Vibration Test 2.

For both electric and pneumatic:

Frequency range	Displacement	Acceleration	Lloyd's
5 - 25 Hz	+/- 1.6mm		+/- 1.6mm
25 - 100 Hz		+/-5.0g (49 m/s^2)	+/- 4.0g (39 m/s^2)
100 - 300 Hz		+/- 1.0G (9.81 m/s^2) 90 minute	No requirement

Weight

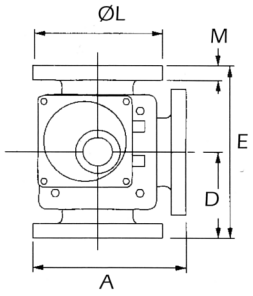
Approximate weight of pneumatic valve Kg (lbs)

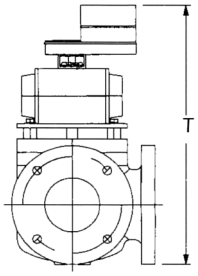
Material	2GPD	3GPD	4GPD	6GPD	8GPD	10GPD	12GPD	14GPD	16GPD
Cast Iron	19 (43)	29 (65)	34 (75)	82 (184)	142 (319)	183 (411)	289 (649)	429 (964)	583 (1310)
Bronze	21 (47)	32 (72)	41 (90)	96 (216)	160 (360)	205 (460)	313 (703)	479 (1076)	679 (1525)

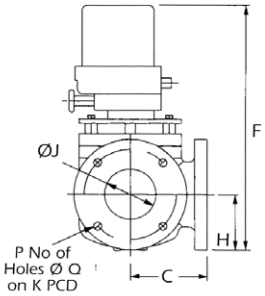
Approximate weight of electric valve Kg (lbs)

Material	2GEF	3GEF	4GEF	6GEF	8GEF	10GEF	12GEF	14GEF	16GEF
Cast Iron	22 (49)	32 (72)	47 (103)	86 (193)	146 (328)	187 (420)	295 (663)	435 (977)	575 (1292)
Bronze	24 (54)	35 (79)	54 (119)	100 (225)	164 (368)	209 (470)	319 (717)	485 (1089)	671 (1507)

Valve dimensions







Valve size nominal bore mm (inches)

Dimension/Connection		2G	3G	4G	6G	8G	10G	12G	14G	16G
A		197.5 (7.776)	240 (9.449)	260 (10.236)	327 (12.874)	395 (15.551)	469 (18.465)	574 (22.598)	624 (24.567)	706 (27.795)
C		115 (4.528)	140 (5.512)	150 (5.906)	185 (7.284)	225 (8.858)	260 (10.236)	300 (11.811)	340 (13.386)	385 (15.158)
D		115 (4.528)	140 (5.512)	150 (5.906)	185 (7.284)	225 (8.858)	260 (10.236)	300 (11.811)	340 (13.386)	385 (15.158)
E		230 (9.055)	280 (11.024)	300 (11.811)	370 (14.567)	450 (17.717)	520 (20.472)	600 (23.622)	680 (26.772)	770 (30.315)
F		386 (15.2)	421 (16.57)	477 (18.78)	567 (22.32)	676 (26.61)	783 (30.82)	902 (35.51)	1017 (40.04)	1093 (43.03)
H		82.5 (3.248)	100 (3.937)	126 (4.961)	142 (5.590)	170 (6.692)	252 (9.921)	297 (11.693)	339 (13.347)	378 (14.882)
ØJ		50 (1.969)	80 (3.150)	100 (3.937)	150 (5.906)	200 (7.874)	250 (9.843)	300 (11.811)	350 (13.780)	400 (15.748)
K	PN 6	110 (4.3)	150 (5.9)	170 (6.7)	225 (8.8)	280 (11)	335 (13)	395 (15.5)	445 (17.5)	495 (19.4)
	PN 10	125 (4.912)	160 (6.299)	180 (7.087)	240 (9.449)	295 (11.614)	350 (13.714)	400 (15.748)	460 (18.110)	515 (20.276)
	PN 16	125 (4.921)	160 (6.299)	180 (7.087)	240 (9.449)	295 (11.614)	355 (13.967)	410 (16.142)	470 (18.504)	525 (20.670)
	ASA 125 Ib	120.6 (4.748)	152.4 (6.000)	190.5 (7.500)	241.3 (9.500)	298.5 (11.750)	361.95 (14.250)	431.8 (17.00)	467.3 (18.750)	539.75 (21.250)
	JIS 5K	—	—	165 (6.5)	230 (9)	280 (11)	—	390 (15.3)	—	—
	JIS 10K	—	—	175 (6.9)	240 (9.4)	290 (11.4)	—	—	—	—
ØL		165 (6.496)	200 (7.878)	220 (8.661)	285 (11.220)	340 (13.386)	405 (15.945)	460 (18.110)	520 (20.472)	580 (22.835)
M		20 (0.787)	22 (0.866)	24 (0.945)	27 (1.062)	28 (1.102)	28 (1.102)	28 (1.102)	30 (1.181)	32 (1.260)
P	PN 6	4	4	4	8	8	12	12	12	16
	PN 10	4	8	8	8	8	12	12	16	16
	PN 16	4	8	8	8	12	12	12	16	16
	ASA 125 Ib	4	4	8	8	8	12	12	12	16
	JIS 5K	—	—	8	8	8	—	12	—	—
	JIS 10K	—	—	8	8	8	—	—	—	—
Q	PN 6	14 (0.5)	19 (0.7)	19 (0.7)	19 (0.7)	19 (0.7)	18 (0.7)	22 (0.9)	22 (0.9)	22 (0.9)
	PN 10	18 (0.709)	18 (0.709)	18 (0.709)	23 (0.905)	23 (0.905)	22 (0.866)	22 (0.866)	22 (0.866)	26 (1.024)
	PN 16	18 (0.709)	18 (0.709)	18 (0.709)	23 (0.905)	23 (0.905)	26 (1.024)	26 (1.024)	26 (1.024)	30 (1.181)
	ASA 125 Ib	19 (0.748)	19 (0.748)	19 (0.748)	23 (0.905)	23 (0.905)	25.4 (1.000)	25.4 (1.000)	28.6 (1.125)	28.6 (1.125)
	JIS 5K	—	—	19 (0.7)	19 (0.7)	23 (0.9)	—	23 (0.9)	—	—
	JIS 10K	—	—	19 (0.7)	23 (0.9)	23 (0.9)	—	—	—	—
T		410 (16.4)	445 (17.5)	501 (19.7)	627 (24.7)	696 (27.4)	803 (31.6)	945 (37.2)	1060 (41.7)	1138 (44.80)

How to Order (Electric actuated valve)

Use the tables below to select the unique specification of your GEF Valve.

Please select one characteristic from each section. Each characteristic is associated with a code that you will need to state when ordering.

Valve size	Code	✔
2 inch (DN50)	2	
3 inch (DN80)	3	
4 inch (DN100)	4	
6 inch (DN150)	6	
8 inch (DN200)	8	
10 inch (DN250)	10	
12 inch (DN300)	12	
14 inch (DN350)	14	
16 inch (DN400)	16	

Type	Code	✔
Electric actuation	GEF	✔

Body and seal material	Code	✔
Cast iron and Viton	C*	
Bronze and Viton	B	
Ductile iron and Viton	D	
Steel – not 12” (DN300), 14” (DN350) and 16” (DN400) and Viton	S	
Stainless steel – not 12” (DN300), 14” (DN350), and 16” (DN400) and Viton	R	

Connections	Code	✔
Flanged PN6	A	
Flanged PN10	B	
Flanged PN16	C	
Flanged ANSI 125lb	F	
Flanged ANSI 150lb	J	
JIS 10k	L	
JIS 5k	M	

* AMOT reserves the right to subsitute a ductile iron product in place of cast iron to meet customer delivery requirements.

Basic actuator	Code	✔
200/240V ac electric – GEF only	A	
110/120V ac electric – GEF only	B	

Actuator options	Code	✔
Standard – For detailed information see separate datasheet 05VA	0	
5K OHM potentiometer	1	
4-20mA electronic positioner with position retransmit	A	
4-20mA electronic positioner with input retransmit	B	
4-20mA electronic positioner with position error output (4mA ref) (GEF)	C	
4-20mA electronic positioner with position error output (12mA ref) (GEF)	D	
As ‘A’ but reverse acting	E	
As ‘B’ but reverse acting	F	
As ‘C’ but reverse acting	G	
As ‘D’ but reverse acting	H	
Switched live control with position retransmit (4mA at ACW)	J	
As ‘J’ but reverse acting (4mA at CW)	K	

Mode of operation (movement with rising temperature, see page 7)	Rotor type	Code	✔
Anti clockwise port 3 to port 2	Standard 90^0	32	
Anti clockwise port 2 to port 1	Standard 90^0	21	
Clockwise port 1 to port 2	Standard 90^0	12	
Clockwise port 2 to port 3	Standard 90^0	23	
Anti clockwise port 1 to port 3	180^0 (2”, 3”, 4”, 6”, 8” & 10” only)	13	
Clockwise port 3 to port 1	180^0 (2”, 3”, 4”, 6”, 8” & 10” only)	31	

How to Order (Pneumatic actuated valve)

Use the tables below to select the unique specification of your GPD Valve.

Please select one characteristic from each section. Each characteristic is associated with a code that you will need to state when ordering.

Valve size	Code	✔
2 inch (DN50)	2	
3 inch (DN80)	3	
4 inch (DN100)	4	
6 inch (DN150)	6	
8 inch (DN200)	8	
10 inch (DN250)	10	
12 inch (DN300)	12	
14 inch (DN350)	14	
16 inch (DN400)	16	

Type	Code	✔
Pneumatic actuation	GPD	✔

Body / seal material	Code	✔
Bronze and Nitrile	B	
Cast iron and Nitrile	C*	
Ductile iron and Nitrile	D	
Cast steel and Nitrile	S	
Stainless steel and Nitrile	R	
Bronze and Viton	E	
Cast iron and Viton	F*	
Ductile iron and Viton	G	
Cast steel and Viton	H	
Stainless steel and Viton	J	

Flange drilling	Code	✔
Flanged PN6	A	
Flanged PN10	B	
Flanged PN16	C	
Flanged ANSI 125lb	F	
Flanged ANSI 150lb	J	
JIS 10k	L	
JIS 5k	M	

* AMOT reserves the right to subsitute a ductile iron product in place of cast iron to meet customer delivery requirements.

Actuator type	Actuator port threading	Code	✔
0.21 to 1.03 Bar (3 to 15 psi) Command signal	BSP	B	
	NPT	F	
0.21 to 1.03 Bar (3 to 15 psi) Command signal with manual override	BSP	C	
	NPT	G	
Pneumatic 4 to 20mA Command signal with manual override	Contact AMOT for details.		
Pneumatic 4 to 20mA Command signal			

Type	Code	✔
Pneumatic actuation	0	✔

Valve action with rising temperature	Required control system action	Code	✔
Anticlockwise Port 3 to Port 2 Standard 90°	Direct	E	
	Reverse	N	
Anticlockwise Port 2 to Port 1 Standard 90°	Direct	F	
	Reverse	P	
Clockwise Port 1 to Port 2 Standard 90°	Direct	G	
	Reverse	R	
Clockwise Port 2 to Port 3 Standard 90°	Direct	H	
	Reverse	S	
Anticlockwise Port 1 to Port 3 180° (2”, 3”, 4”, 6”, 8” & 10” only)	Direct	L	
	Reverse	M	
Clockwise Port 3 to Port 1 180° (2”, 3”, 4”, 6”, 8” & 10” only)	Direct	J	
	Reverse	K	

Accessories

PID Valve Controllers 8071/8072D and Solid State Relays 47581L001

PID Controller 8072D

Solid State Relay 47581L001

PID Controller 8071D

Key features and benefits

- Fully programmable PID-based control - allows easy system configuration
- Universal inputs; RTD's, thermocouple, or standard 4-20mA signal gives maximum system design flexibility
- Can be operated in manual mode - easy maintenance and set up

For further information and how to order these products see Datasheet_8071_2_D_47851.pdf

3-Wire PT100 Temperature Sensor - 8060

Temperature Sensor 8060

Key features and benefits

- 3 wire RTDs - accurate temperature measurement
- Excellent long term stability
- Good linearity
- Can use standard 3-core cable

For further information and how to order this product see Datasheet_8060_temp_sensor.pdf

Accessories

Solid State Relay Module - 8073C

Relay Module

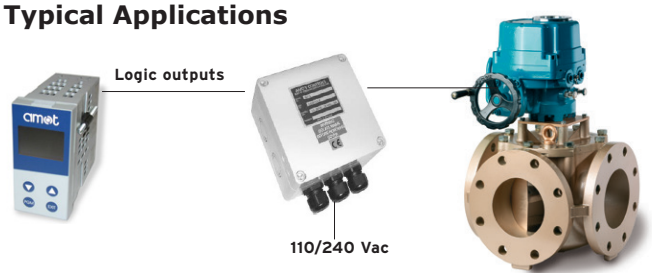
8073C

Key features and benefits

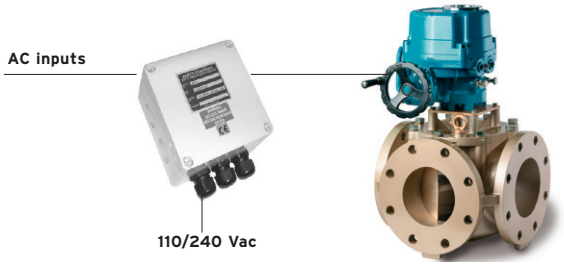
- IP67 enclosure
- Alternative to using two SSRs type 47581L001
- Good linearity
- Can use standard 3-core cable

The 8073C relay module incorporates two solid state relays with terminations in an IP67 enclosure. The 8073C is designed to be used with the 8071D controller logic outputs to drive voltages for the electrically actuated G valve. Features include: zero-crossing switching, relay and logic level inputs and IP67 enclosure.

Typical Applications



Interface with 8071D controller



Interface with AC input signals

For further information and how to order this product see Datasheet_8073C_SSR.pdf

Electro-Pneumatic Converter - 8064A

Typical Application

Electro-Pneumatic Converter - 8064A

Temperature Probe 8060 | Temperature Controller 8071D | Electro-Pneumatic Converter 8064A | G Valve

Key features and benefits

- High vibration resistance - Lloyds 4G
- Suitable for longer pipe runs
- Fully adjustable for optimised system operation
- ATEX hazardous area certification

For further information and how to order this product see Datasheet_8064A_C_elect_pneu_converter.pdf

Accessories

Electro-Pneumatic Converter - 8064C

Typical Application

Electro-Pneumatic Converter - 8064C

Key benefits - 8064C

- Accepts high supply pressure - avoids use of additional regulator
- Factory set for ease of installation
- Low cost alternative to 8064A
- ATEX hazardous area certification

Electro-pneumatic system

Temperature probe 8060 | Temperature controller 8071D | Electro-pneumatic converter 8064C | G valve

For further information and how to order this product see Datasheet_8064A_C_elect_pneu_converter.pdf

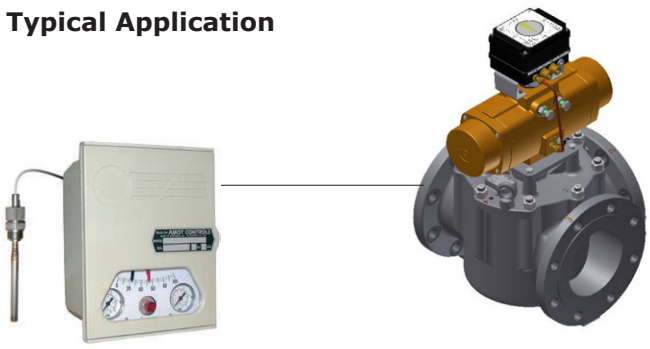
Pneumatic Indicator Controller - SG80

Pneumatic Indicator Controller SG80

Key features and benefits

- Complete stand alone controller, no other control components required - reduced system cost
- Easily removable components - low maintenance
- Good dynamic response - gives optimum engine performance
- Compatible with every type of pneumatic valve - flexible

Typical Application



SG80 Temperature Controller and Sensor | G Valve

For further information and how to order this product see Datasheet_SG80_Pneu_Ind_Controller.pdf