

# 3-Way Temperature Control Valve

## Model G, Version G 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

### 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



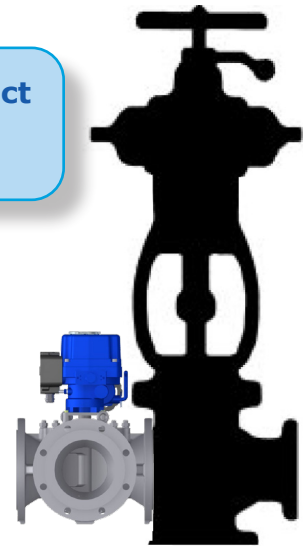
**Electric  
GG Valve**



**Pneumatic  
GG Valve**

#### Even more compact

GG Valve vs typical equivalent competitor's specification.



**amot**

[www.amot.com](http://www.amot.com)

# 3-Way Temperature Control Valve - Model G, Version G

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## Contents

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<b>Overview</b> .....	<b>3</b>
<b>Applications</b> .....	<b>3</b>
<b>System Types (Electric)</b> .....	<b>4</b>
<b>System Types (Pneumatic)</b> .....	<b>5</b>
<b>Overview of the Valve Body</b> .....	<b>6</b>
<b>Valve Dimensions</b> .....	<b>7</b>
G Valve Body .....	8
<b>Modes of Operation</b> .....	<b>8</b>
<b>Valve Sizing</b> .....	<b>9</b>
Valve Flowrate Selection: Flowrate m <sup>3</sup> /hr (USg/m) .....	9
<b>Viscosity Correction</b> .....	<b>10</b>
Viscosity Correction Curve .....	10
SAE Oil Viscosities .....	10
<b>Valve Sizing Calculations</b> .....	<b>11</b>
Valve Flowrate .....	11
Pressure Drop .....	11
Valve Bypass Flowrates .....	11
<b>Overview of Electric Actuation</b> .....	<b>12</b>
<b>Overview of Pneumatic Actuation</b> .....	<b>13</b>
<b>Actuator Dimensions</b> .....	<b>14</b>
EB Actuator.....	14
EA Actuator.....	15
EC Actuator .....	16
EC050 .....	16
EC100 .....	17
EH Actuator .....	18
Pneumatic Actuator .....	19
<b>How to Order</b> .....	<b>20</b>
<b>Accessories</b> .....	<b>21</b>
PID Valve Controllers .....	22
3-Wire PT100 Temperature Sensor – 8060 .....	22
Solid State Relay Module – 8070C .....	23
Electro-Pneumatic Converter – 8064A .....	23
Electro-Pneumatic Converter – 8064C .....	24
Pneumatic Indicator Controller – SG80 .....	24

# 3-Way Temperature Control Valve - Model G, Version G

## 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.

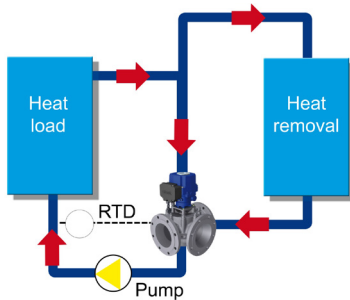
The heavy-duty rotor design provides tight temperature control without high maintenance requirements. The system is available in three standard control configurations: electric; pneumatic; and electro-pneumatic, offering flexibility for most requirements.

Some actuator options are designed and reinforced for vibration service and are qualified to Lloyd's Marine Requirements for shipboard service. Certain G Valve and actuator combinations can be directly mounted to reciprocating machinery such as diesel engines, without vibration isolation.

Standard G 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.

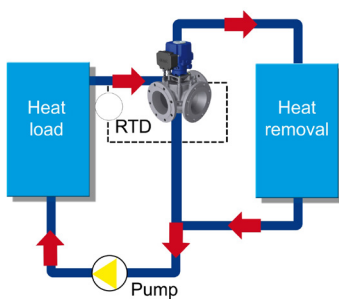
## Applications

### 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.

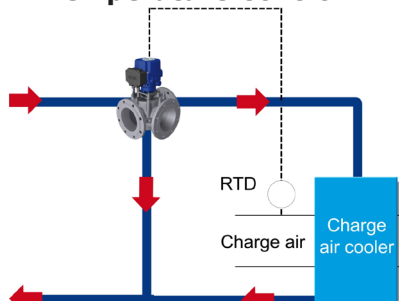
### Diverting Applications



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

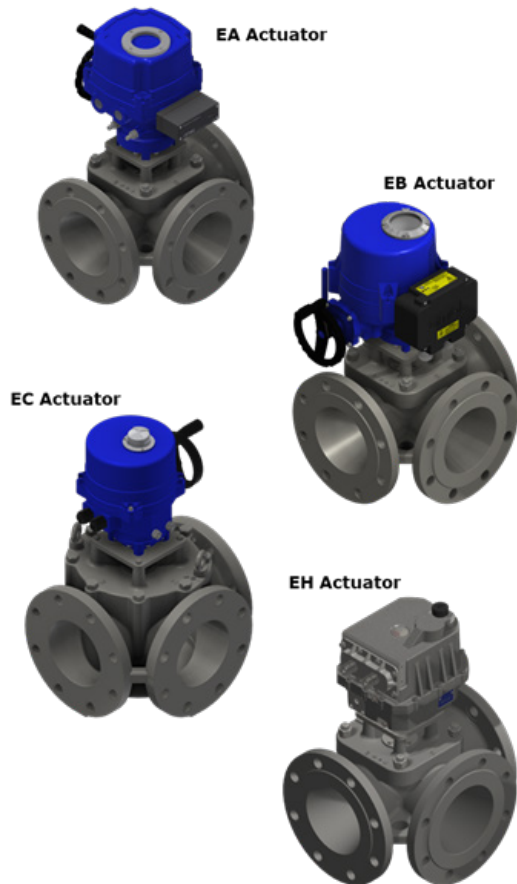


The intercooler is used to cool high temperature turbo charger air.

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.

# 3-Way Temperature Control Valve - Model G, Version G

## System Types (Electric)



For the electrically operated valves, a number of actuator options are available, which use an electric motor that 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 hall sensor is available on some actuators, providing position indication to the control system.

Most actuators are powered by an electric motor driving a worm-type gearbox. The worm gearbox prevents reverse drive due to the forces generated by fluid flow.

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.

See page 12 for more information on the electric actuator options.

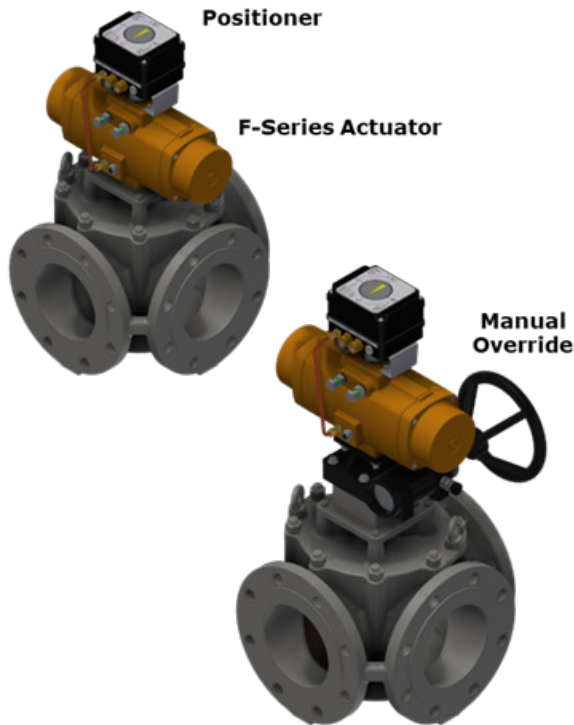


A typical electric valve system incorporates an electrically actuated three-way control valve with an electronic controller and temperature probe. The 8071D PID Controller can be either panel or wall mounted (see page 21 for more information). The system is completed with a temperature sensor type 8060 (see page 21 for details).

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

# 3-Way Temperature Control Valve - Model G, Version G

## System Types (Pneumatic)

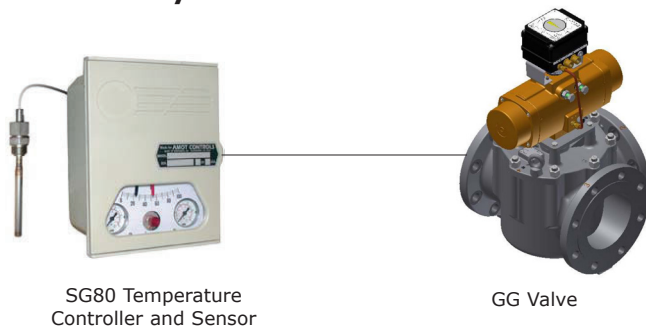


The pneumatic valve uses a spring return pneumatic actuator and positioner to control the rotation of the valve in response to an input signal for a pneumatic or electro-pneumatic control system. The pneumatic control system sends a pneumatic signal ranging from 0.21 to 1.03 bar (3 to 15 psi) to the actuator to correctly position the valve rotor to achieve the correct system temperature. 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.

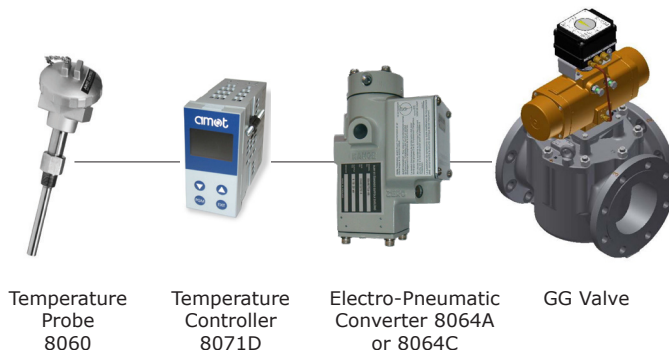
The actuator is fitted with spring return as standard allowing fail-safe configuration if necessary. It is also fitted with a valve positioner enabling accurate and repeatable movement. See page 13 for more information on the pneumatic actuator.

### Pneumatic System



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 23. 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



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 (where available) or type 8064C. See pages 22 and 23 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 - Model G, Version G

## Overview of Valve Body Assembly



### 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

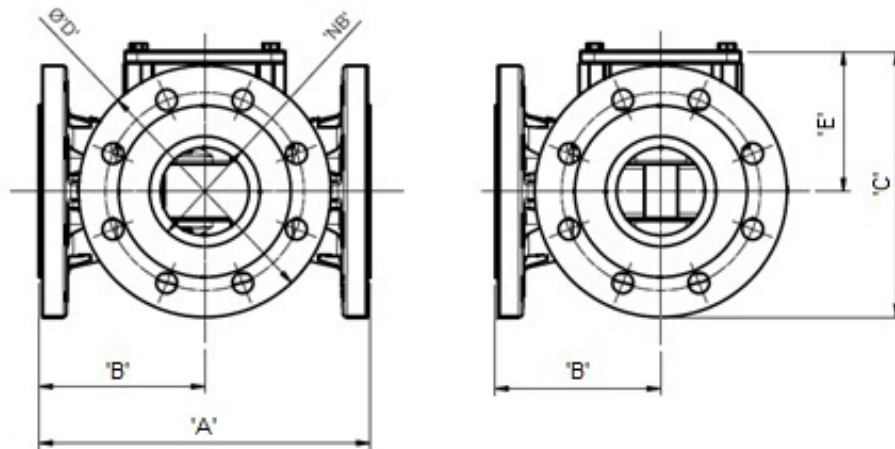
<b>Flow To</b>		720m <sup>3</sup> /hr (3,170 US gpm)			
<b>Sizes</b>		Standard Flow		High Flow	
		65mm-250mm (2.5"-10")		15mm-200mm (0.5"-8")	
Comments		For DN250 (10") High Flow and above, see Datasheet GEF_GPD_Temp_Control_Valve			
<b>Body Materials</b>		Ductile iron	Bronze & Aluminium Bronze	Steel	Stainless Steel
Temp. Range	Min Fluid Temp	-10°C (14°F)	-40°C (-40°F)	-10°C (14°F)	-40°C (-40°F)
	Max Fluid Temp	+100°C (212°F)*			
Comments		*For higher temperature variants, contact AMOT			
<b>Seal Materials</b>		Fluorocarbon (Viton/FKM)	Nitrile (NBR)	AFLAS (TFE/P)	EPDM
Compatibility	Water (≤80°C/176°F)	✓	✓	✓	✓
	Hot Water (>80°C/176°F)	X	X	✓	✓
	Ethylene/Propylene Glycol	✓	✓	✓	✓
	Oils (Synthetic Based)	✓	X	X	X
	Oils (Petroleum Based)	✓	✓	X	X
Temp. Range	Min Fluid Temp	-15°C (23°F)	-30°C (-22°F)	+10°C (50°F)	-45°C (-49°F)
	Max Fluid Temp	+180°C (356°F)	+80°C (176°F)	+180°C (356°F)	+100°C (212°F)
Comments		Seal material compatibility is based on standardised seal manufacturer recommendations, and is provided for guidance only			
<b>Maximum Internal Valve Pressure</b>		Ductile Iron, Bronze & Al. Bronze		10 Bar (145 psi)	
		0.5"-4" Steel & Stainless Steel		16 Bar (232 psi)	
		6" and above Steel & Stainless Steel		15 Bar (218 psi)	
Comments		Maximum internal valve pressure may be less depending on the flange connection option chosen. Contact AMOT for confirmation of pressure rating.			
<b>Maximum System Differential Pressure</b>		Standard Valves		Class II Valves	
		5 bar (73 psi)		1 bar (15 psi)*	
Comments		*For higher differential pressure options, contact AMOT			
<b>Pressure Equipment Compliance</b>		Pressure Accessory - Sound Engineering Practice (SEP)			
Comments		<p>'In its design as a temperature control valve, the G Valve is defined as a Pressure Accessory under the terms of the EU Pressure Equipment Directive (PED) and the GB Pressure Equipment (Safety) Regulation (PE(S)R).</p> <p>When used within the temperature and pressure limitations given in this table, the G Valve range is designed for use in applications using non-hazardous liquids defined as Group 2 in the Directive/Regulation (such as water, water/glycol and lubricating oil). In these applications, the valves fall into the Sound Engineering Practice (SEP) category.</p> <p>Contact AMOT to discuss solutions if the application and/or specifications are outside of the above limitations, or if it is to use hazardous liquids (Group 1) or contain non-hazardous (Group 2) or hazardous (Group 1) gases.</p>			



# 3-Way Temperature Control Valve - Model G, Version G

## Valve Dimensions

### G Valve Body



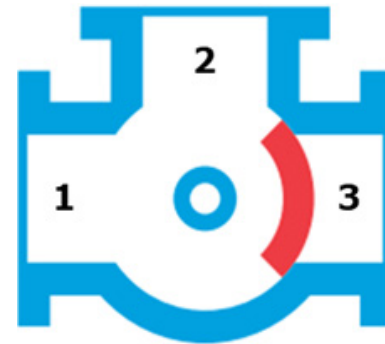
Valve Type	Valve Body (Dimensions in mm)					
	NB	A	B	C	D	E
0.5GGH	15	178	89	133	95	86
0.75GGH	20			138	105	
01GGH	25			148	125	
02GGH	50	230	115	173	165	91
2.5GGS	65			184	185	
03GGS	80	280	140	191	200	117
03GGH				217	200	
04GGS	100	300	150	232	229	
04GGH				271	224	
05GGS	125	340	170	286	254	159
06GGS	150	370	185	302	285	181
06GGH				336	285	
08GGS	200	450	225	361	343	
08GGH				408	340	
10GGS	250	520	260	445	406	225

Valve Type	Valve Body (Dimensions in Inches)					
	NB	A	B	C	D	E
0.5GGH	0.5	7.01	3.50	5.24	3.74	3.39
0.75GGH	0.75			5.43	4.13	
01GGH	1			5.83	4.92	
02GGH	2	9.06	4.53	6.81	6.50	3.58
2.5GGS	2.5			7.24	7.28	
03GGS	3	11.02	5.51	7.52	7.87	4.61
03GGH				8.54	7.87	
04GGS	4	11.81	5.91	9.13	9.02	
04GGH				10.67	8.82	
05GGS	5	13.39	6.69	11.26	10.00	6.26
06GGS	6	14.57	7.28	11.89	11.22	7.13
06GGH				13.23	11.22	
08GGS	8	17.72	8.86	14.21	13.50	
08GGH				16.06	13.39	
10GGS	10	20.47	10.24	17.52	15.98	8.86

# 3-Way Temperature Control Valve - Model G, Version G

## Modes of Operation

		Rotor Position	
		Start	End
Mode 32			
Mode 12			
Mode 13			



Port Number Diagram

The unique construction of the AMOT G Valve provides total flexibility by allowing valve port position selections to most ideally suit application requirements. There are two main types of mode of operation: 90° rotor that allows either ports 1 or 3 to be selected as the common port; and 180° rotor that requires port 2 to be the common port.

For electrically actuated valves, the 'Start' and 'End' positions indicate valve movement with a change in input signal, as viewed from above (see diagram). On loss of signal the actuator is set up by default to stop in its current position.

For pneumatically actuated valves, the 'Start' and 'End' positions indicate valve movement with a change in input signal, as viewed from above (see diagram). On loss of signal the actuator is set up by default to return to its 'Start' position.

For 'Start' & 'End' input conditions, see table below.

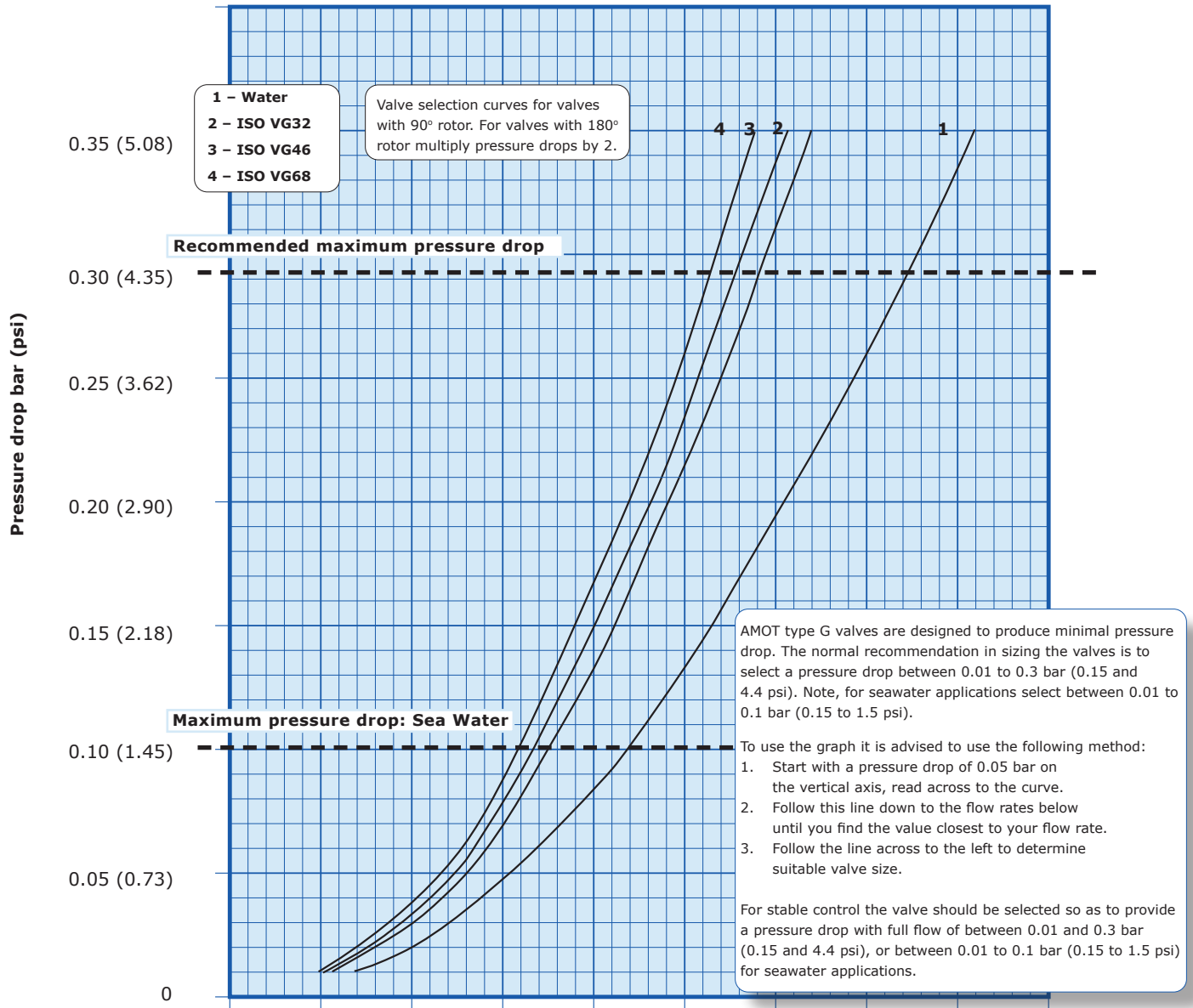
Rotor Position		Electric		Pneumatic		
		Start	End	Start	End	No Signal
Input	Direct	Low Signal	High Signal	Low Signal	High Signal	Start
	Reverse	High Signal	Low Signal	High Signal	Low Signal	End



# 3-Way Temperature Control Valve - Model G, Version G

## Valve Sizing

### Valve Flowrate Selection: Flowrate m<sup>3</sup>/hr (USg/m)



Size DN (Inches)	Flowrate: m <sup>3</sup> /hr (USg/m)		Flowrate: m <sup>3</sup> /hr (USg/m)							
	N/A	15, 20 & 25 (1/2, 3/4 & 1)	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
65 & 80 (2.5 & 3)	50 (2)		7 (31)	14 (62)	20 (88)	26 (114)	33 (145)	39 (172)	46 (203)	52 (229)
100 (4)	80 (3)		19 (84)	35 (154)	51 (225)	67 (295)	83 (365)	99 (436)	115 (506)	131 (577)
125 & 150 (5 & 6)	100 (4)		29 (128)	54 (238)	79 (348)	104 (458)	129 (568)	154 (678)	179 (788)	204 (898)
200 (8)	150 (6)		66 (291)	122 (537)	178 (784)	235 (1035)	291 (1281)	347 (1528)	403 (1774)	459 (2021)
250 (10)	200 (8)		118 (520)	218 (960)	318 (1400)	418 (1840)	517 (2276)	617 (2717)	717 (3157)	817 (3597)
300 (12)	250 (10)									
350 (14)	300 (12)									
400 (16)	350 (14)									
450 (18)	400 (16)									
Standard Flow	High Flow									

Currently only available in GEF/GPD versions.  
See Datasheet GEF\_GPD\_Temp\_Control\_Valve for data

# 3-Way Temperature Control Valve - Model G, Version G

## Viscosity Correction

**Example:**

From the graph below:

100 cSt = correction factor of 0.68

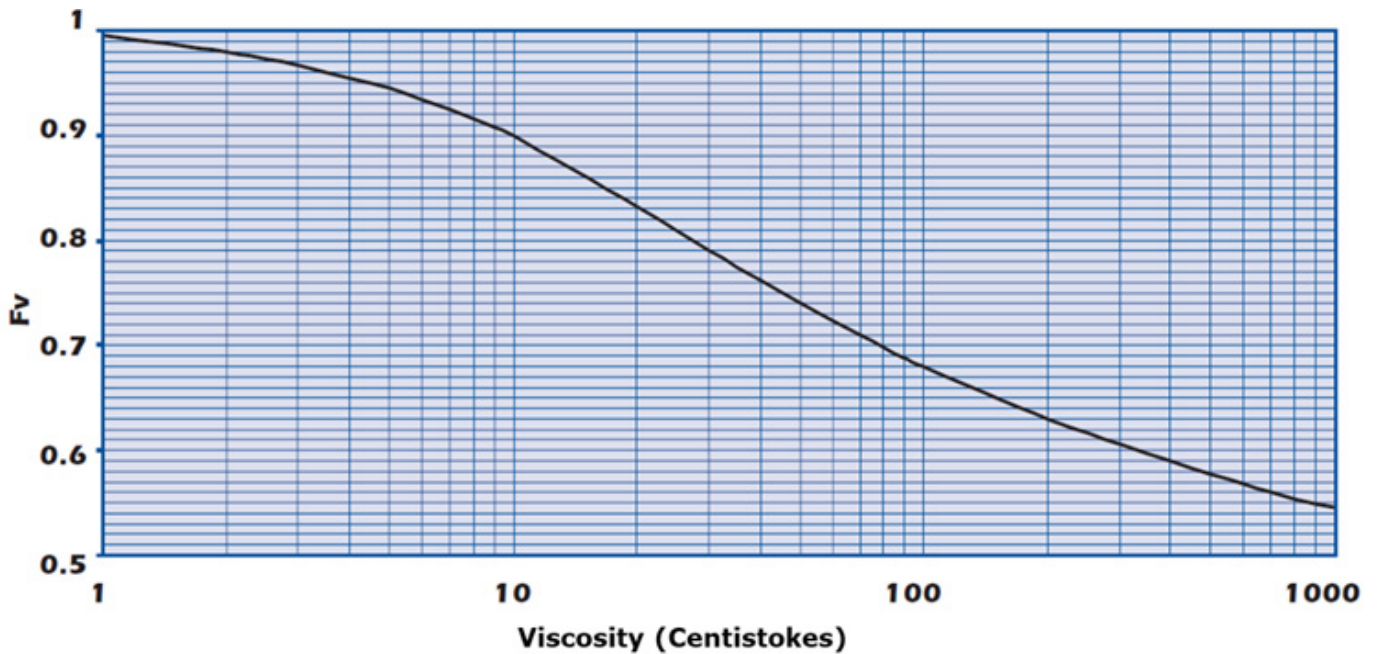
$0.68 \times \text{flow coefficient} = \text{corrected flow coefficient (Kv or Cv)}$

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 Curve



## 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

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

# 3-Way Temperature Control Valve - Model G, Version G

## Valve Sizing Calculations

### Valve Flowrate

See the table below for examples of Kv and Cv:

Size DN (in)	Standard Flow	N/A	N/A	N/A	65 (2.5)	80 (3)	100 (4)	125 & 150 (5 & 6)	200 (8)	250 (10)	300 (12)	350 (14)	400 (16)	450 (18)
	High Flow	15 (1/2)	20 (3/4)	25 (1)	N/A	50 (2)	80 (3)	100 (4)	150 (6)	200 (8)	250 (10)	300 (12)	350 (14)	400 (16)
<b>Kv</b>		7	14	27	112	82	207	323	729	1296	Currently only available in GEF/GPD versions. See Datasheet GEF_GPD_Temp_Control_Valve for data			
<b>Cv</b>		8	16	31	129	96	242	378	851	1513				

### 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 4.4 psi).

**Note:** For sea water, the valve should be sized for a pressure drop between 0.01 and 0.1 bar (0.15 and 4.4 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<sup>3</sup>/h) of water at a temperature of 16° 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 60° 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<sup>3</sup>/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<sup>3</sup>/h or pressure drop of a valve in bar:

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

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:

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

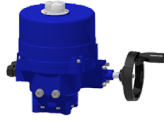



### Valve Bypass Flowrates

The AMOT G Valve is not a tight shutoff valve. When the standard rotor type is 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.

When reduced leakage is required, the Class II rotor type should be selected, allowing for a maximum leakage of 0.5% of maximum rated flow. Consult AMOT for further information if the application is sensitive to leakage rates or if high pressure differences are likely to occur.

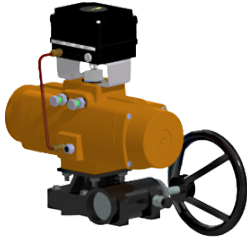
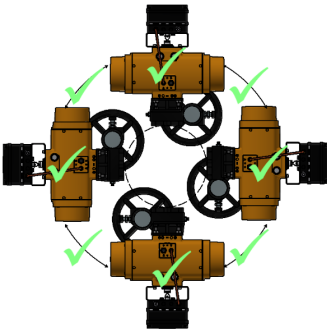
# 3-Way Temperature Control Valve - Model G, Version G

## Overview of Electric Actuation

Electric Actuator Specification Table									
	EC		EA		EB		EH		
<b>Actuator</b>									
<b>Key Features &amp; Benefits</b>	<ul style="list-style-type: none"> <li>Lightweight &amp; economical valve actuator</li> <li>Manual override fitted as standard - valve can be operated in event of power failure EC050 with tool.</li> <li>EC100/EC300 with handwheel</li> <li>Optional Positioner available on all sizes</li> </ul>		<ul style="list-style-type: none"> <li>Self-locking with minimal backlash in the transmission - prevents valve movement due to flow</li> <li>Auxiliary limit switches for user connection</li> <li>Manual override fitted as standard - valve can be operated in event of power failure</li> <li>Two torque switches - provide protection in event of actuator overloading</li> </ul>		<ul style="list-style-type: none"> <li>High vibration resistance</li> <li>Self-locking with minimal backlash in transmission - prevents valve movement due to flow</li> <li>Auxiliary limit switches for user connection</li> <li>Manual override fitted as standard - valve can be operated in event of power failure</li> <li>Two torque switches - provide protection in event of actuator overloading</li> <li>Improved Duty Cycle</li> </ul>		<ul style="list-style-type: none"> <li>High vibration and shock resistance</li> <li>Increased operating temperature range</li> <li>Hazardous location options available                             <ul style="list-style-type: none"> <li>Manual override fitted to non-hazardous area version - valve can be operated in event of power failure</li> </ul> </li> <li>Software is configurable for varying applications                             <ul style="list-style-type: none"> <li>CAN bus communication</li> <li>Improved Duty Cycle</li> </ul> </li> </ul>		
<b>Power</b>	115V ± 10% 230V ± 10%	50/60Hz Single Phase	115V ± 10% 230V ± 10%	50/60Hz Single Phase	115V ± 10% 230V ± 10%	50/60Hz Single Phase	24 VDC		
	24VAC/DC ± 10%								
	380VAC	3 Phase							
<b>Size Compatibility</b>	EC050: 0.5GGH-06GGS EC0100: 06GGH-10GGS		EA100: 0.5GGH-10GGS		EB100: 0.5GGH-10GGS		EH125: 0.5-10GGS		
<b>Duty Cycle @ 20°C</b>	50%		65%		100%		100%		
<b>Duty Cycle @ Max. Temp.</b>	230V: 35% 24V: 100%		27%		115V: 45% 230V: 48%		100%		
<b>Stroke Time</b>	EC050: Fixed @ 15s EC0100: Fixed @ 19s		50Hz: Fixed @ 25s 60Hz: Fixed @ 21s		50Hz: Fixed @ 26s 60Hz: Fixed @ 22s		Adjustable ≥ 6s		
<b>Max Current</b>	EC050	115V : 0.54A 230V : 0.32A 24VAC/DC : 1.35A	220V : 0.88A 110V : 1.7A		220V : 0.88A 110V : 1.7A		5A		
	EC100	115V : 1.4A 230V : 0.69A 24VAC/DC : 4.8A 380VAC : 0.45A							
<b>Limit Indication</b>	Two open/close SPDT	250V AC, 5A	Two open/close SPDT	250V AC, 10A	Two open/close SPDT	250V AC, 10A	5V/10V Digital Outputs, 10mA		
<b>Vibration Resistance</b>	N/A		5-100Hz	4g*	5-100Hz	4g*	5-100Hz	4g*	
Sinusoidal (*Lloyds Test 2)			100-300Hz	1g* (90 mins)	100-300Hz	1g* (90mins)	100-300Hz	1g* (90 mins)	
Random	N/A		N/A		N/A		14.1 GRMS,10-1000H 10 hours/axis		
<b>Mechanical Shock</b>	N/A		N/A		N/A		MIL-STD-810G 40g		
<b>Motor Thermal Protection</b>	Fitted as standard		Fitted as standard		Fitted as standard		Fitted as standard		
<b>Ambient Temperature</b>	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
	-25°C	+70°C	-20°C	+70°C	-20°C	+70°C	-40°C	+125°C	
<b>Weatherproof Enclosure</b>	IP67	NEMA 4 & 6	IP67	NEMA 4 & 6	IP67	NEMA 4 & 6	IP67	IP69K	
<b>Materials</b>	Steel, Aluminum alloy, Aluminum bronze, Polycarbonate		Steel, Aluminum alloy, Aluminum bronze, Polycarbonate		Steel, Aluminum alloy, Aluminum bronze, Polycarbonate		Steel, Aluminum alloy, Aluminum bronze, Polycarbonate		
<b>Angular Rotation</b>	100° max.	1/4 Turn	100° max.	1/4 Turn	100° max.	1/4 Turn	90° Standard		
<b>Position Sensor</b>	Potentiometer		Potentiometer		Contactless hall effect		Contactless hall effect		
<b>Cable Entry</b>	EC050 : PG13.5 EC0100 : PG16		2x M25 x 1.5		2x M25 x 1.5		Control Type	Size	
							Analogue	2x M25 x 1.5	
							Digital	2x M20 x 1.5	
<b>Mechanical Stop</b>	EC050 : N/A EC0100 : Two adjustable screws		Two adjustable screws		Two adjustable screws		Internal, non-adjustable		
<b>Manual Override</b>	Fitted as standard		Fitted as standard		Fitted as standard		Fitted as standard		
<b>External Coating</b>	Dry powder polyester		Dry powder polyester		Dry powder polyester		Cast anodised aluminum		
<b>Anti-Condensation Heater</b>	7-10W		7-10W		7-10W		10W		
<b>Acceptable Orientation</b>	Vertically upright to 90° from vertical only  Not suitable for mounting further than 90° from vertical		Any		Any		Any		

# 3-Way Temperature Control Valve - Model G, Version G

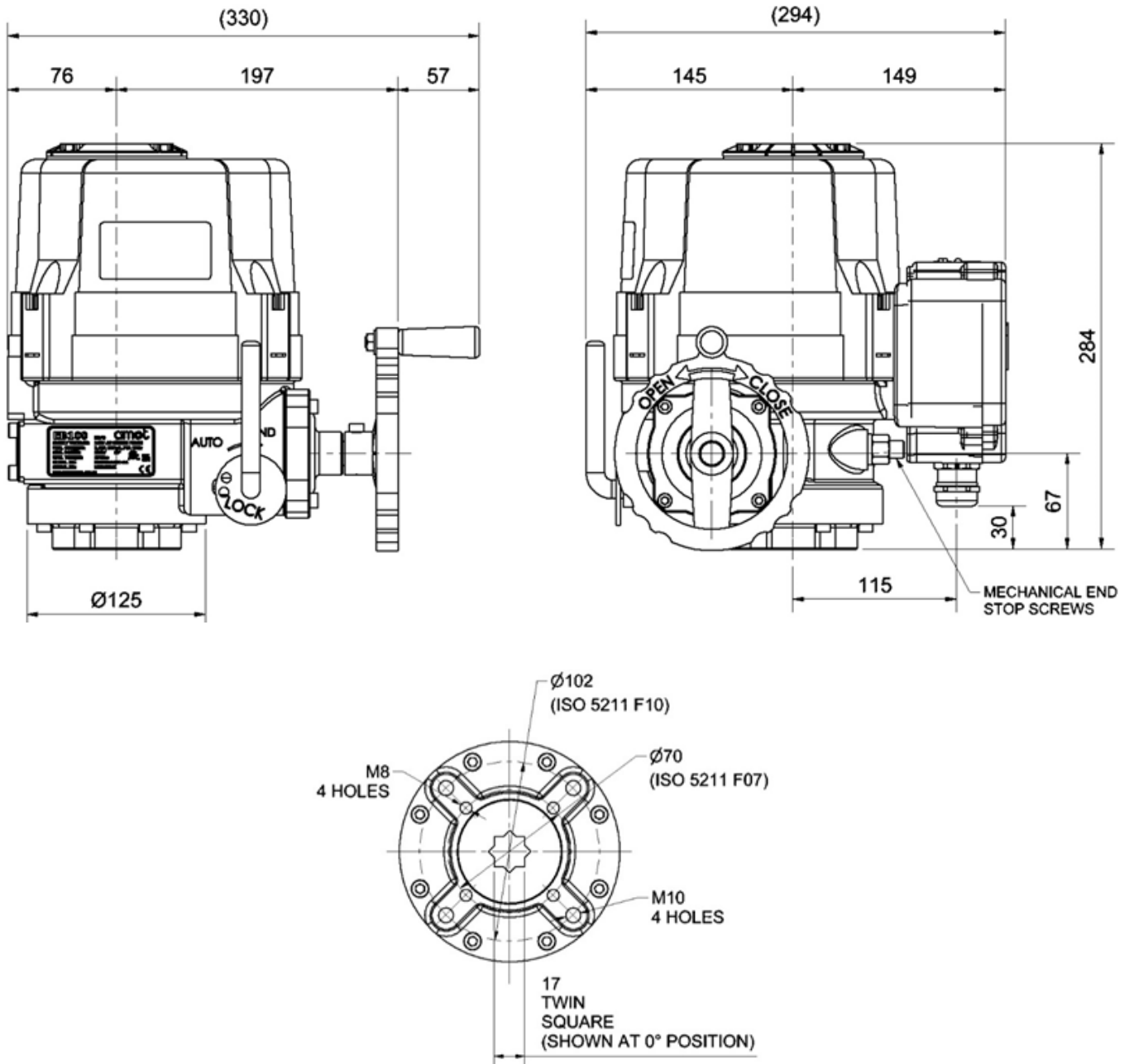
## Overview of Pneumatic Actuation

Pneumatic Actuator Specification Table		
Actuator	F-Series	
		
Key Features & Benefits	<ul style="list-style-type: none"> <li>• A rugged quarter turn, double piston, rack and pinion pneumatic actuator with spring return and valve positioner as standard.</li> <li>• Can be configured fail-safe</li> <li>• Low temperature version available</li> </ul>	
Supply Pressure	6 to 8 Bar	90 to 115 psi
Signal Pressure	0.21 to 1.03 Bar	3 to 15 psi
Pressure Connections	G1/4 or 1/4 NPT	
Ambient Temperature	Min.	Max.
	-20°C	+80°C
Manual Override	Optional	
Mounting Orientation	Any	
		

# 3-Way Temperature Control Valve - Model G, Version G

## Actuator Dimensions

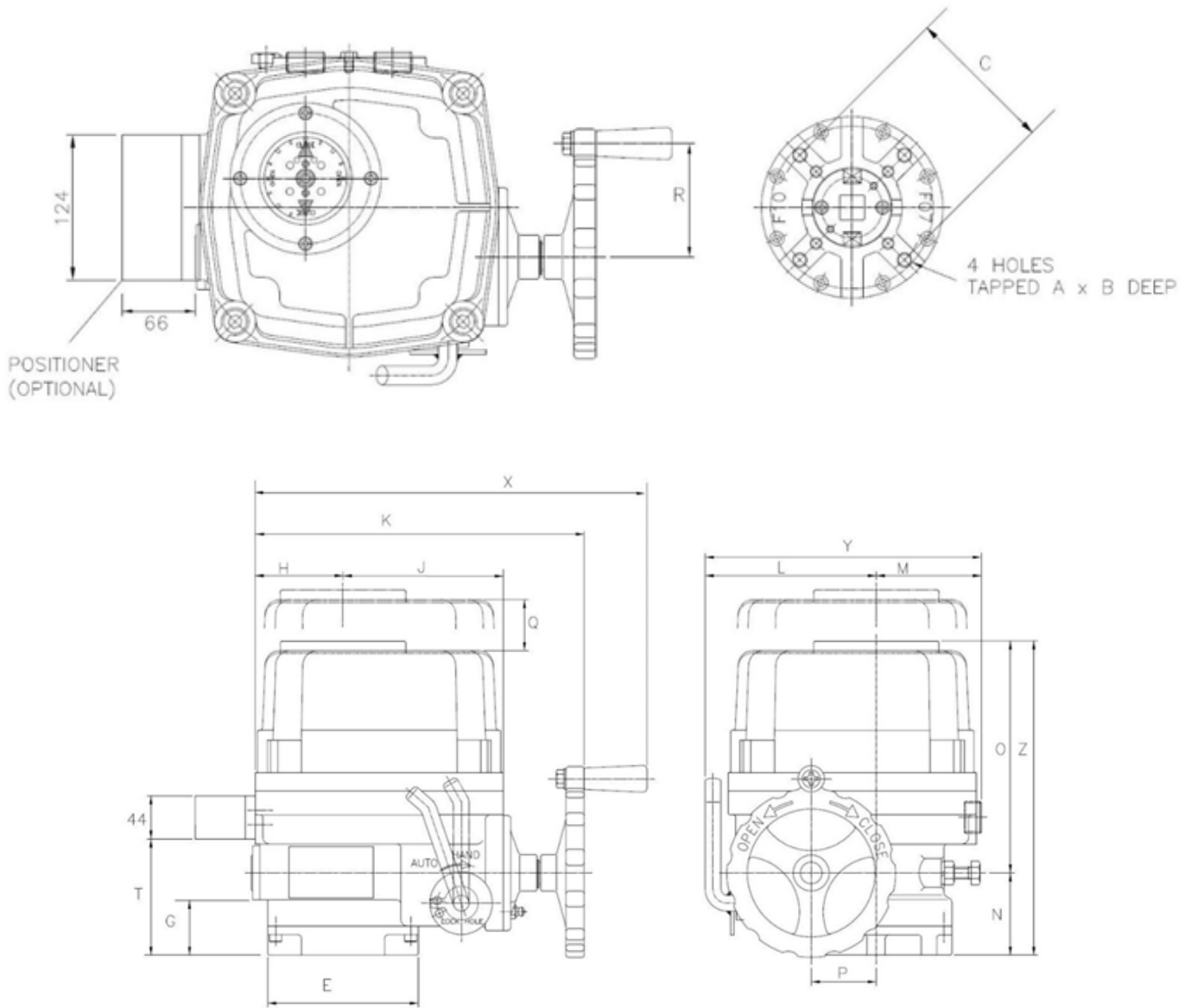
### EB Actuator





# 3-Way Temperature Control Valve - Model G, Version G

## EA Actuator



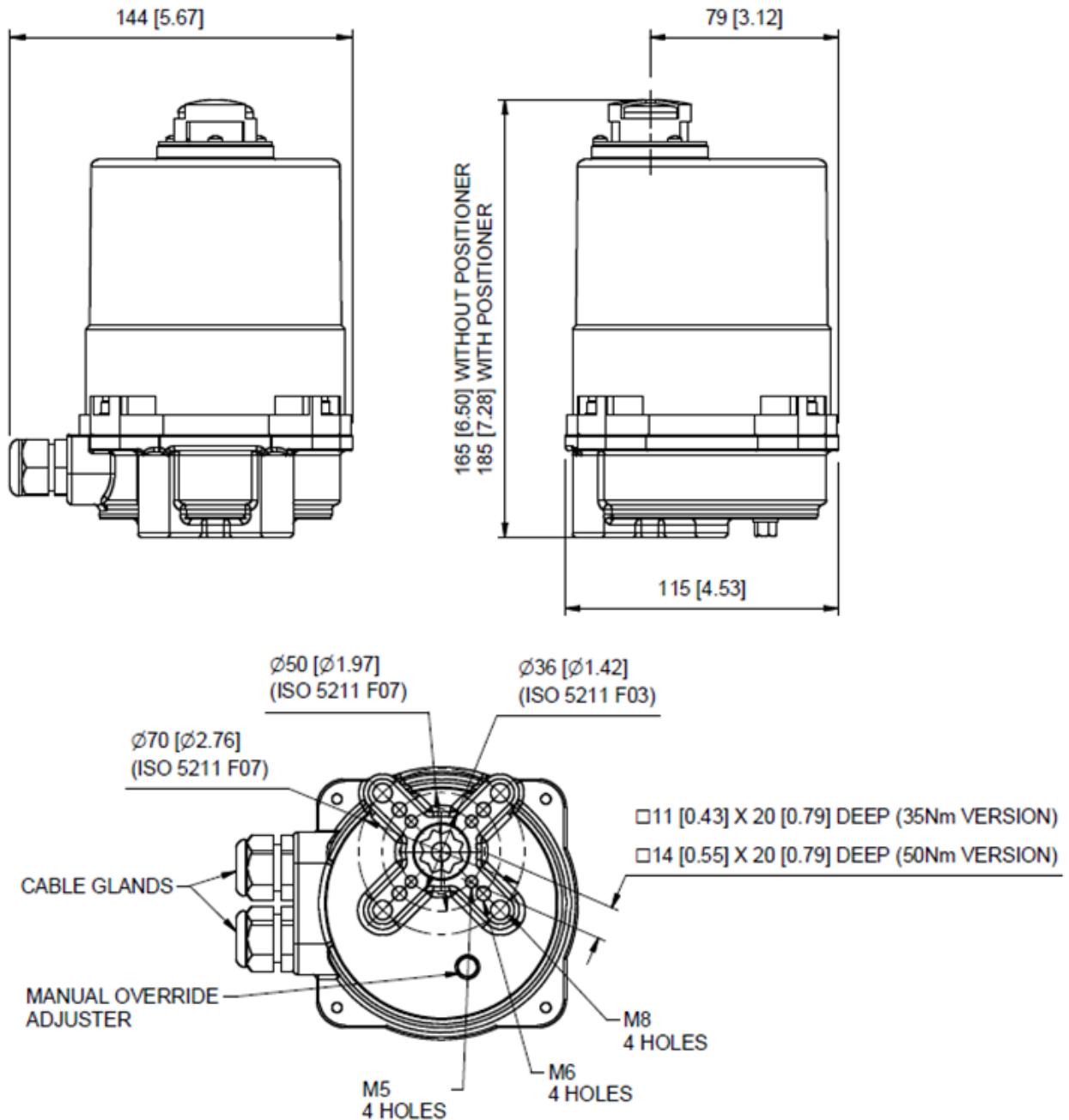
Units	Base	C	E	G	H	J	K	L	M	N	O	P	Q	R	T	X	Y	Z
mm	F10	102	125	42	73	133	273	142	87	68	192	54	160	78	86	338	229	268
Inches	F10	4.0	4.9	1.7	2.9	5.2	10.7	5.6	3.4	2.7	7.6	2.1	6.3	3.1	3.4	13.3	9.0	10.6

# 3-Way Temperature Control Valve - Model G, Version G

## EC Actuator

### EC050

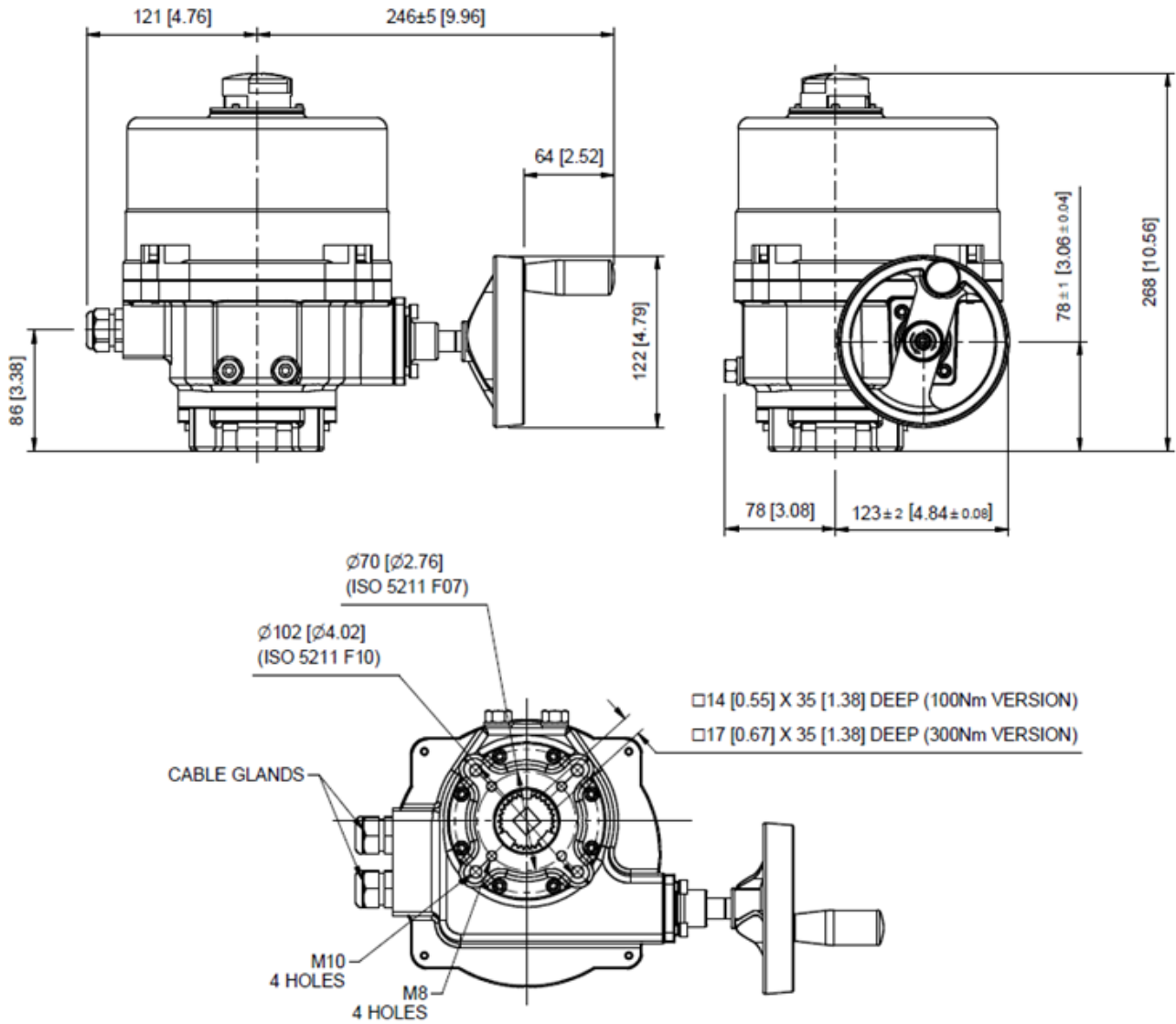
Dimensions in mm [in]



# 3-Way Temperature Control Valve - Model G, Version G

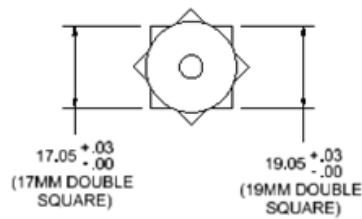
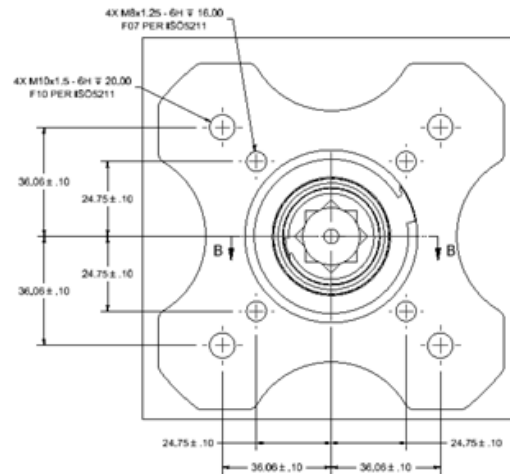
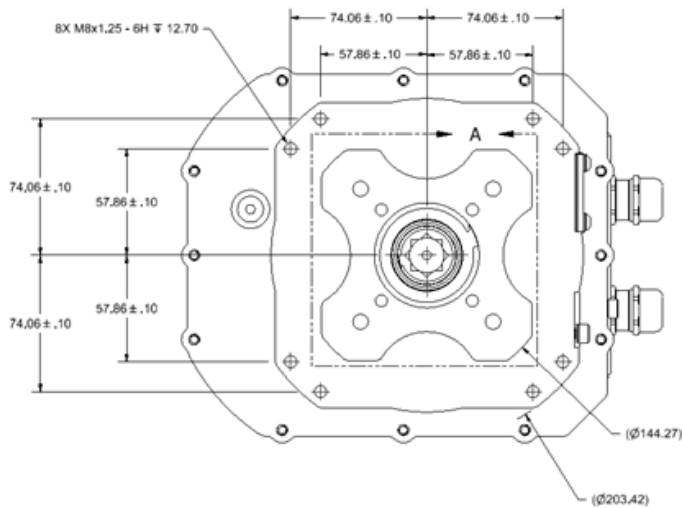
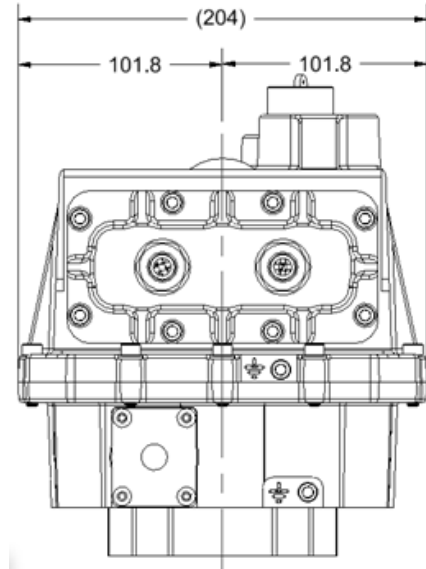
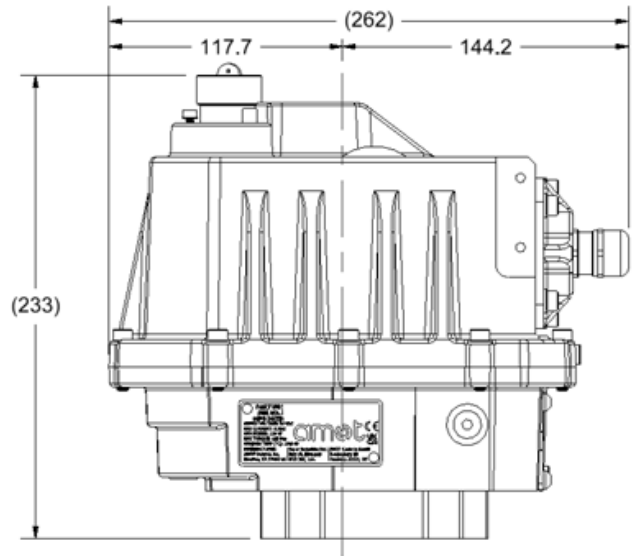
## EC100

Dimensions in mm [in]



# 3-Way Temperature Control Valve - Model G, Version G

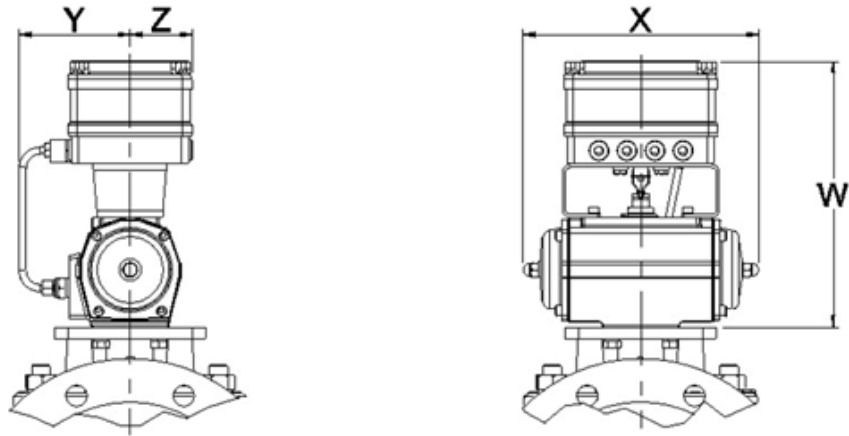
## EH Actuator



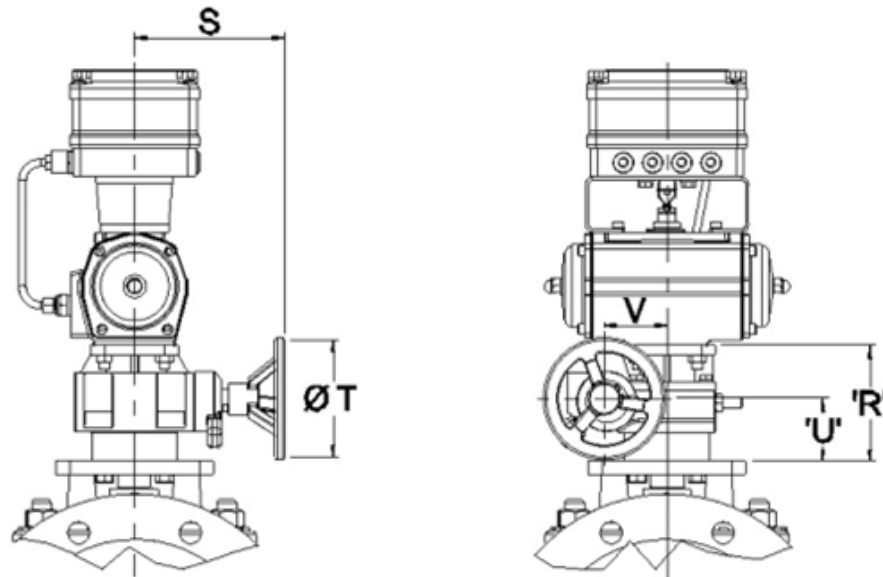
# 3-Way Temperature Control Valve - Model G, Version G

## Pneumatic Actuator

### Pneumatically Actuated



### Pneumatically Actuated with Manual Override



Dimensions in mm

Valve Type	Actuator								
	R	S	T	U	V	W	X	Y	Z
0.5GGH	103			61					
0.75GGH									
01GGH									
02GGH									
2.5GGS									
03GGS	168	100	60.5	49	245	192	95	53	
03GGH	92			49.5					
04GGS									
04GGH									
05GGS									
06GGS									
06GGH	137	230	200	86	74	288	362	115	53
08GGS	162		111						
08GGH	137		86						
10GGS	162		111						

Dimensions in Inches

Valve Type	Actuator								
	R	S	T	U	V	W	X	Y	Z
0.5GGH	4.06			2.40					
0.75GGH									
01GGH									
02GGH									
2.5GGS									
03GGS	6.61	3.94	2.38	1.93	9.65	7.56	3.74	2.09	
03GGH	3.62			1.95					
04GGS									
04GGH									
05GGS									
06GGS									
06GGH	5.39	9.06	7.87	3.39	2.91	11.34	14.25	4.53	2.09
08GGS	6.38			4.37					
08GGH	5.39			3.39					
10GGS	6.38			4.37					

# 3-Way Temperature Control Valve - Model G, Version G

## How to Order

Example code	06	GG	S	D	B	S	32	E	B	B	C	A	-AA	Code Description				
Valve Size	0.5													Nominal Bore Size	1/2 inch (DN15)	High flow only		
	0.75													3/4 inch (DN20)	High flow only			
	01													1 inch (DN25)	High flow only			
	02													2 inch (DN50)	High flow only			
	2.5													2.5 inch (DN65)	Standard flow only			
	03													3 inch (DN80)				
	04													4 inch (DN100)				
	05													5 inch (DN125)	Standard flow only			
	06													6 inch (DN150)				
	08													8 inch (DN200)				
10													10 inch (DN250)	Standard flow only				
Valve Model	GG													Model Type	Model G Valve			
Valve Flow Type														Valve Flow Type	Standard Flow			
														Valve Flow Type	High Flow			
														Valve Flow Type	Standard Flow			
Valve Body/Seal Material														Body Material	Seal Material			
														Bronze	Viton (FKM)			
														Bronze	Nitrile (NBR)			
														Ductile Iron	Viton (FKM)			
														Ductile Iron	Nitrile (NBR)			
														Ductile Iron	Aflas (TFE/P)			
														Steel	Viton (FKM)			
														Steel	Nitrile (NBR)			
														Stainless Steel	Viton (FKM)			
														Stainless Steel	Nitrile (NBR)			
Valve Flange Connection, Standard and Class														Flange Class	Flange Standard	Flange Facing	Comments	
														PN6	EN 1092	Raised		
														PN6	EN 1092	Flat		
														PN10	EN 1092	Raised		
														PN10	EN 1092	Flat		
														PN16	EN 1092	Raised		
														PN16	EN 1092	Flat		
														150	ASME	Raised	Ductile Iron, Steel & St. Steel only	
														150	ASME	Flat		
														10K	JIS	Raised	Ductile Iron, Steel & St. Steel only	
Rotor Type														10K	JIS	Flat		
														5K	JIS	Raised	Ductile Iron, Steel & St. Steel only	
														5K	JIS	Flat		
														150	MIL-PRF-20042E	Flat	Bronze, Aluminium Bronze only	
														Rotor Type	Comments			
														Standard Rotor				
														ANSI Class II (0.5%)	Ductile Iron only			
														Rotor Start Position	Rotor End Position			
														Port 1	Port 2			
														Port 2	Port 3			
Valve Mode of Operation														Port 3	Port 1			
														Port 2	Port 1			
														Port 3	Port 2			
														Port 1	Port 3			
														Port 1	Port 3			
														Port 1	Port 3			
Valve Actuation Type														Actuator Type				
														EB Type Electric Actuator				
														EA Type Electric Actuator				
														EC Type Electric Actuator				
														EH Type Electric Actuator				
														Low Temp Pneumatic Actuator				
														F-series Pneumatic Actuator				
Actuator Power Supply														Actuator Supply Type	Comments			
														100 - 120 Vac 50/60Hz				
														200 - 240 Vac 50/60Hz				
														380 Vac, 3 Phase, 50/60Hz	EC Actuator only			
														24VDC	EC & EH Actuator only			
														G1/4 (1/4") BSP Connections				
														1/4" NPT Connections				
													G1/4 (1/4") BSP Connections + Manual O/R					
													1/4" NPT Connections + Manual O/R					
Actuator Control Input Signal														Input Signal	Type	Comments		
														Start	End	Direction		
														A	N/A		Relays, Switched Live Supply	
														B	4mA	20mA	(Direct Acting)	
														C	20mA	4mA	(Reverse Acting)	
														K	0V	10V	(Direct Acting)	EC & EH Actuator only
														L	10V	0V	(Reverse Acting)	EC & EH Actuator only
														M	0	1000	(Direct Acting)	CAN bus J1939
														N	0%	100%	(Direct Acting)	Pulse-Width Modulation
														1	3psi	15psi	(Direct Acting)	Pneumatic Actuators
Actuator Feedback Signal														2	15psi	3psi	(Reverse Acting)	Pneumatic Actuators
														Feedback Signal	Type	Comments		
														Start	End	Direction		
														A	None		Electric Actuators	
														C	4mA	20mA	(Direct Acting)	Electric Actuators
														E	20mA	4mA	(Reverse Acting)	Electric Actuators
														K	0V	10V	(Direct Acting)	EC & EH Actuator only
														L	10V	0V	(Reverse Acting)	EC & EH Actuator only
														M	0	1000	(Direct Acting)	CAN bus J1939
														N	0%	100%	(Direct Acting)	Pulse-Width Modulation
Other Options														O	None		Pneumatic Actuators	
														Other Options	Comments			
														A	None			
Customer Special Options														O	None			
														Options				
														-AA	Standard product			
													-***	Customer special code assigned				



# 3-Way Temperature Control Valve - Model G, Version G

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## Accessories

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### 8071D/8072E and Solid State Relays 47581L001/47581L002



**PID Controller  
8072E**



**Solid State  
Relay**



**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\\_8071/2E\\_47581\\_Valve Controller\\_SSR](#)

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### 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\\_8060A\\_Temp\\_Sensor](#)

# 3-Way Temperature Control Valve - Model G, Version G

## Accessories

### Solid State Relay Module - 8073C



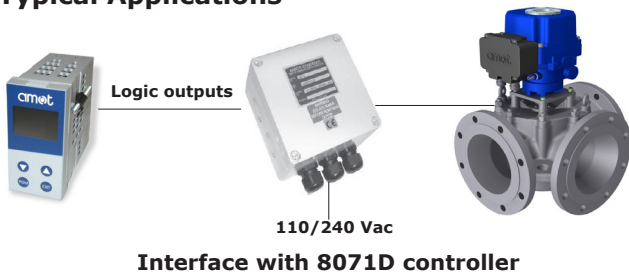
Relay Module  
8073C

#### Key features and benefits

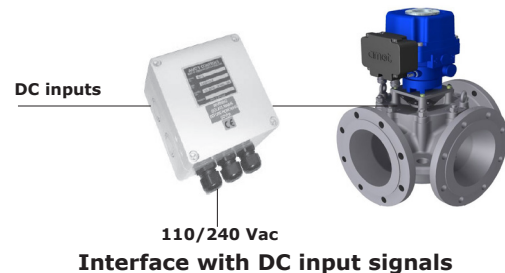
- IP67 enclosure
- Alternative to using two individual SSRs type 47581L001/47581L002
- Good linearity
- Can use standard 3-core cable

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 DC input signals

For further information and how to order this product see [Datasheet\\_8073C\\_SSR.pdf](#)

### Electro-Pneumatic Converter - 8064A



Electro-Pneumatic  
Converter - 8064A  
(where available)

#### Typical Application



#### Key features and benefits

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

For further information and how to order this product see [Datasheet\\_8064A\\_8064C\\_electro/pneumatic\\_converter](#)

# 3-Way Temperature Control Valve - Model G, Version G

## Accessories

### Electro-Pneumatic Converter - 8064C

#### Typical Application



**Electro-Pneumatic Converter - 8064C**

#### Key features and benefits

- 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



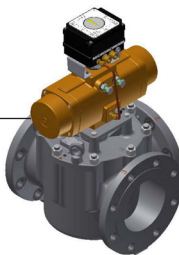
Temperature probe 8060



Temperature controller 8071D



Electro-pneumatic converter 8064C



G valve

For further information and how to order this product see [Datasheet\\_8064A\\_8064C\\_electro/pneumatic\\_converter](#)

### Pneumatic Indicator Controller - SG80



**Pneumatic Indicator Controller SG80**

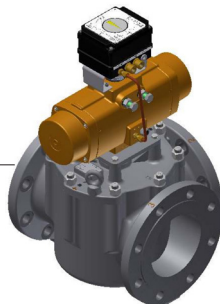
#### Key features and benefits

- 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](#)

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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](http://www.P65Warnings.ca.gov).