

# Thermostatic Control Valves

## Model J

### 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



**J 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 2 - 8m<sup>3</sup>/hr (8 - 35 US gpm)
- Aluminum or bronze housing
- 3/4" pipe size (DN 20)
- Threaded and flanged connections
- Tamper-proof temperature settings from 18°C to 113°C (65°F to 235°F)
- Pressure ratings up to 24 bar (350 psi)

### Accreditations available

- PED Suitable for Group 1 & 2 liquids (Ensure materials are compatible)
- ATEX  11 2 G X
- CE Complies with all relevant EU directives

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# Thermostatic Control Valves - Model J

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# Thermostatic Control Valves - Model J

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## Overview

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AMOT model J 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 JO, JR and JE valves are suitable for oil temperature control in equipment such as engines, transmissions and

compressors. The JW is a special 2-way unit used for temperature control of cooling water supplies in 'water saver' applications.

All model J valves use a fully enclosed temperature element that is factory set and provides tamperproof operation.

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### Available housing material

- Aluminum
- Bronze

### Element materials

- Bronze, brass and stainless steel
- Nickel plated/Stainless steel
- Stainless steel

### Seal materials

- Buna-N/Nitrile
- Viton
- Neoprene

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### 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 0.8mm to 6.3mm ( $1/32''$  to  $1/4''$ ). Please refer to the Temperature Control Valve

Selection Guide (Datasheet\_Temp\_Control\_Valve\_Guide) to determine the hole size required for specific applications.

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### 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 18°C to 113°C (65°F to 235°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.

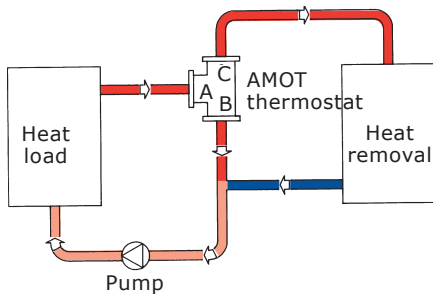
Elements and seals are available in a variety of materials. These materials are suitable for most applications. Please refer to the Temperature Control Valve Selection Guide (Datasheet\_Temp\_Control\_Valve\_Guide) for material compatibility information.

# Thermostatic Control Valves - Model J

## Applications

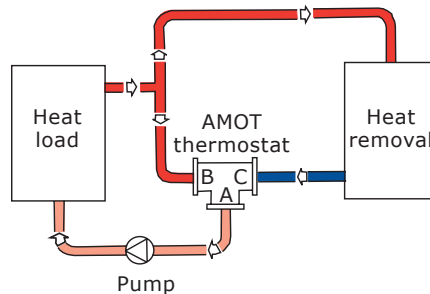
### Diverting Applications

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.



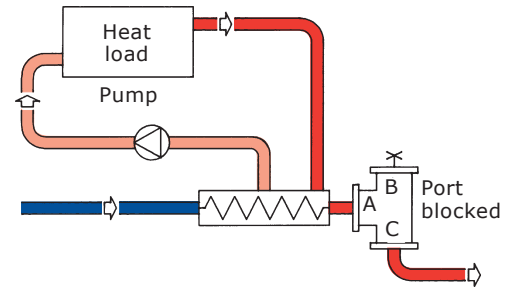
### Mixing Applications

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.



AMOT model J thermostatic valve is available in various versions to fit different applications:

**Model JO** - The most commonly selected version because it is a 3-way low cost unit and fits most applications. Standard versions come in 3/4" size and use an aluminum body with stainless steel and bronze internals. Standard seals are Buna N.

**Model JR** - The JR model is a special version of the Model JO for diverting service. It has a pressure relieving feature which will relieve from Port A to Port B at differential pressures above 50 psi. For use in diverting systems when the valve attempts to divert full flow to the cooler but the cold oil in the cooler creates excessive pressure loss. The relief is activated allowing oil flow to bypass the cooler maintaining the oil pressure to the equipment. The model JR is not recommended for mixing service.

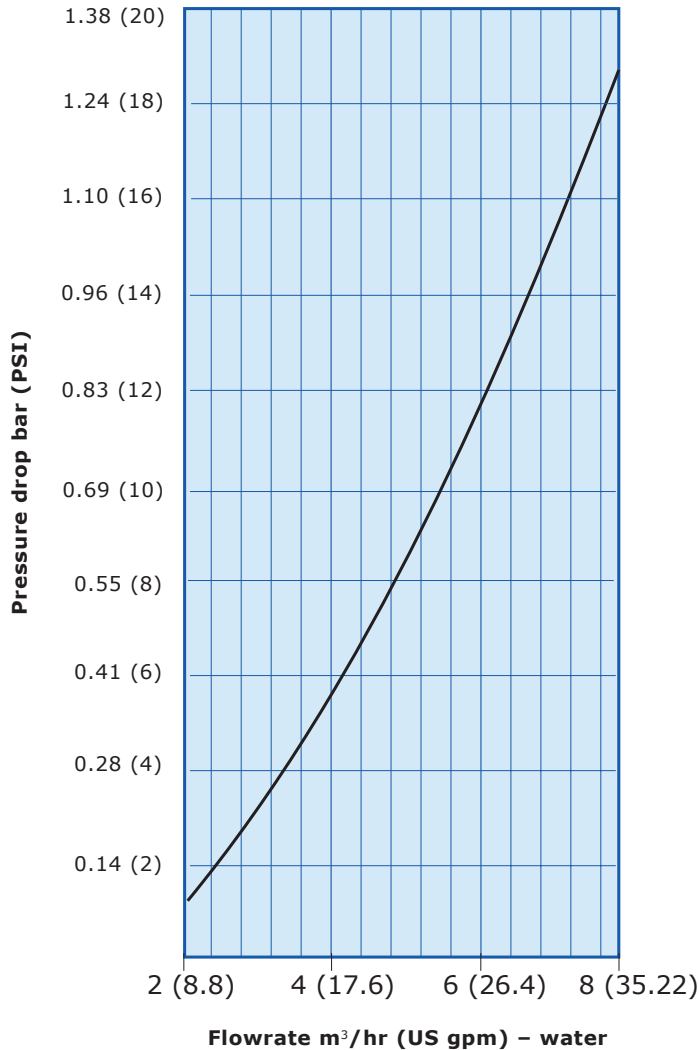
**Model JW** - The standard version is a 2-way bronze valve for open cooling systems using city, reservoir or river water as the cooling fluid. The valve provides direct temperature control while limiting the amount of water used.

**Model JE** - A special version of the JO with an external sensing probe. It is an excellent choice for sensing a process fluid temperature while controlling a separate heating or cooling line.

# Thermostatic Control Valves - Model J

## Valve characteristics

### Pressure drop Metric units (English units)



### Temperature & element characteristics

Code	Control temp.		Rated range				Max temp. cont.	
	°C	°F	Crack open		Full open		°C	°F
			°C	°F	°C	°F		
065	18	65	15	59	25	77	47	116
075	24	75	20	68	29	84	60	140
085	29	85	24	75	34	93	63	145
095	35	95	30	86	40	104	73	163
100	38	100	33	91	42	108	62	143
110	43	110	38	100	47	117	82	180
120	49	120	43	110	55	131	86	187
130	54	130	49	120	60	140	95	203
140	60	140	54	130	66	150	95	203
150	66	150	60	140	71	160	100	212
160	71	160	66	150	77	170	100	212
170	77	170	73	163	82	180	100	212
175	79	175	77	170	85	185	105	221
180	82	180	79	175	88	190	110	230
190	88	190	85	185	93	200	110	230
200	93	200	90	194	100	212	110	230
205	96	205	93	200	103	218	110	230
215	102	215	96	205	107	225	115	239
225	107	225	101	214	114	237	120	248
235	113	235	107	225	123	253	125	257

### Available versions

Aluminum	Bronze
JO	JW
JR	
JE	

# Thermostatic Control Valves - Model J

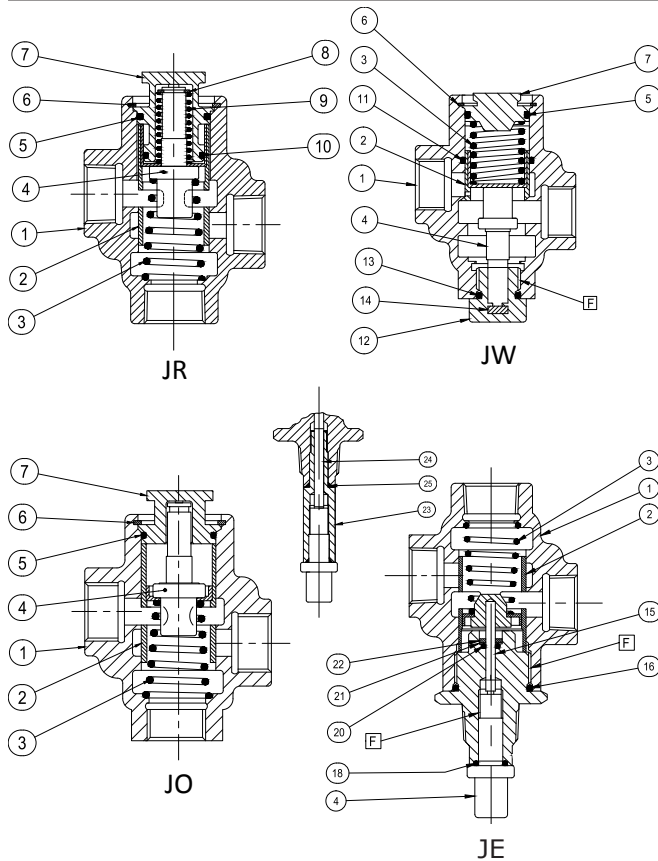
## How to order

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

Example code	3/4	JO	A	T	140	01	N	0	-AA	Code Description
<b>Valve size</b>										
Valve size	3/4									3/4 inch
<b>Valve model</b>										
Valve model	JO									Standard version
	JR									Pressure relieving 50 psi
	JE									Externally sensing (3-way)
	JW									Water saver - 2 way (Must have leakhole)
<b>Body material</b>										
Body material	A									Aluminum (JO, JR, JE)
	B									Bronze (JW only)
<b>Port connection</b>										
Port connection	T									Threaded NPT to USAS B2.1
	U									Threaded BSP (PL) to BS2.1
	V									Threaded BSP (TR) Japanese (JIS)
	W									Threaded to SAE J5 14H (straight thread, O-ring seal)
	K									Threaded to M26 x 1.5
<b>Control temperature °F (°C)</b>										
Control temperature				120						For temperatures available see Element Characteristics table on page 8. Model code temperature denoted in °F only
<b>Element type and seal material</b>										
Element type and seal material	01									Standard - Buna N
	02									Nickel plated - Viton
	03									Standard - Viton
	04									Electroless Nickel - Neoprene
	05									Standard - Neoprene
	06									Nickel plated - Neoprene
<b>Leakhole size inches (mm)</b>										
Leakhole sizes inches (mm)	N									None (Model JW must have a leakhole)
	A									1/16" (2mm) (standard)
	B									3/32" (3mm)
	C									1/8" (4mm)
	D									1/32" (1mm)
<b>Extension (model JE) only - Installed Depth (mm)</b>										
Extension (Model JE only)	0									No extension 1 7/8" (47.6)
	4									3 15/16" (100)
	5									4 7/16" (113)
	6									4 15/16" (125)
	7									5 7/16" (138)
<b>Customer special option codes</b>										
Customer special requirements									-AA	Standard product
									-***	Customer special code assigned

# Thermostatic Control Valves - Model J

## Recommended spares



When properly applied and installed, AMOT thermostatic valves should operate for years with minimal maintenance. An inspection at two or three year intervals is adequate to detect and make provision for normal wear. The frequency of element replacement will depend on the operating conditions and the type of fluid being controlled. Because of the diaphragm and plug construction of the wax actuated element, calibration will be maintained over thousands of cycles.

Whenever elements are replaced, the O-ring seals should also be replaced. For convenience, elements and O-ring seals may be ordered together in the service kits listed below. The parts may also be ordered individually by their part number.

Ref no.	Part no.	Description	Qty
4	9902X (Temp)	JO, JR, JW element standard	1
4	9902P (Temp)	JO, JR, JW element, Nickel plated	1
4	9902K (Temp)	JO, JR, JW element electroless nickel plated	1
4	9654X (Temp)	JE element, standard	1
5	11197L025	O-ring, Buna N (Std)	1
5	11198L025	O-ring, Viton	1
5	11199L025	O-ring, Neoprene	1
10	308	O-ring, Buna N, (Std)	1
10	308L001	O-ring, Viton	1

Ref no.	Part no.	Description	Qty
10	308L002	O-ring, Neoprene	1
11	11141L001	O-ring, Buna N	1
11	11141L002	O-ring, Viton	1
11	11141L003	O-ring, Neoprene	1
13	372	O-ring, Buna N	1
13	372L001	O-ring, Viton	1
13	372L002	O-ring, Neoprene	1
16	11198L126	O-ring, Viton	1
18	1462L001	O-ring, Viton	1
20	1392L001	O-ring, Viton	1
25	1462L001	O-ring, Viton	1

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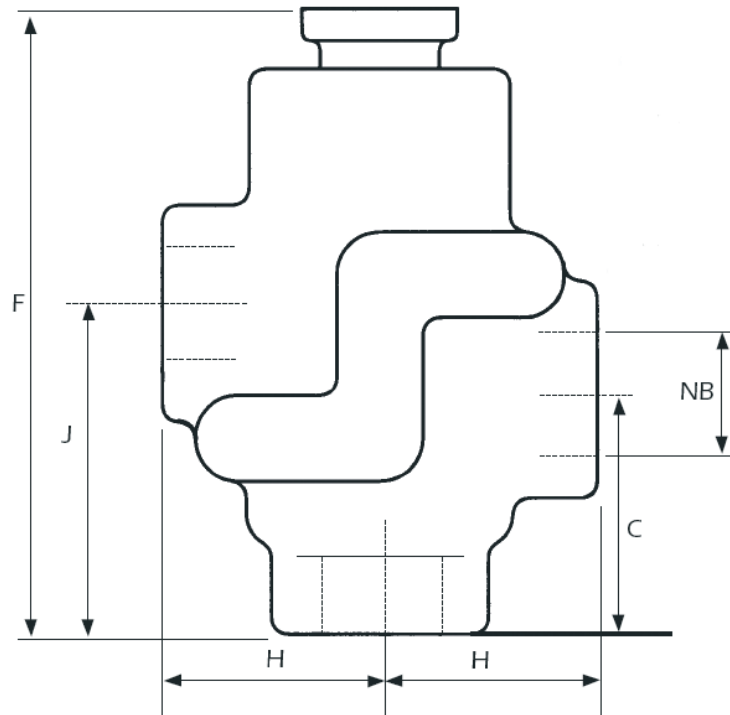
## Specification

<b>Flow rate</b>	2 – 8m <sup>3</sup> /hr	(8 - 35 US gpm)
<b>Recommended pressure drop</b>	0.14 to 0.5 bar	(2 to 7 PSI)
<b>Body materials</b>	Aluminium BS:1490 Grade :M25TF Bronze	For light weight
<b>Seal materials</b>	Nitrile Viton Neoprene	
<b>Mounting position</b>	Any orientation	
<b>Max. working pressure</b>	24 bar	(350 psi)
<b>Ports</b>	Below nominal temperature Above nominal temperature	Ports A and B connected Ports A and C connected
<b>Port connections</b>	Screwed	20 mm ( <sup>3</sup> / <sub>4</sub> " ) BSP, NPT, M26 x 1.5, JIS, SAE
<b>Valve size (nominal bore)</b>	20mm	( <sup>3</sup> / <sub>4</sub> " )
<b>Control temperatures</b>	18°C – 113°C See element characteristics table	(65°F to 235°F)
<b>Accreditations</b>	PED ATEX Complies with all relevant EU directives	Suitable for Group 1 & Group 2 liquids. Ensure materials are compatible. II 2 G X



# Thermostatic Control Valves - Model J

## Valve dimensions



### Dimensions mm (inches)

Basic model	Port thread	Material	F	H	J	NB	C
JO, JR	NPT, BSP, JIS, M26 x 1.5	Aluminum	116 (4 9/16)	41 (1 5/8)	59 (2 5/16)	20 (13/16)	44 (1 3/4)
JO, JR	SAE	Aluminum	125 (4 7/8)	51 (2)	68 (2 11/16)	20 (13/16)	54 (2 1/8)
JE	NPT, BSP, JIS, M26 x 1.5	Aluminum	119 (4 11/16)	41 (1 5/8)	5.91 ( 21/64)		44.8 (1 49/64)
JE	SAE	Aluminum	124 (4 7/8)	51 (2)	59 (2 5/16)		44 (1 3/4)
JW	All	Bronze	117 (4 5/8)	51 (2)	71 (2 13/16)		57 (2 1/4)

### Weight Weights in kg (lbs)

Port Thread	NPT, BSP, JIS M26 x 1.5	SAE
Weight	0.6 (1.3 lbs)	0.6 (1.3lbs)

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