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

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 - 8m³/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
-  Complies with all relevant EU directives

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Thermostatic Control Valves - Model J

Overview

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.

Available housing material

- Aluminum
- Bronze

Element materials

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

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 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.

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.

Seal materials

- Buna-N/Nitrile
- Viton
- Neoprene
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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.
Valve characteristics

**Pressure drop Metric units (English units)**

<table>
<thead>
<tr>
<th>Flowrate m³/hr (US gpm) – water</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 (8.8)</td>
</tr>
<tr>
<td>1.38 (20)</td>
</tr>
<tr>
<td>0.83 (12)</td>
</tr>
<tr>
<td>0.28 (4)</td>
</tr>
</tbody>
</table>

**Temperature & element characteristics**

<table>
<thead>
<tr>
<th>Code</th>
<th>Control temp.</th>
<th>Rated range</th>
<th>Max temp. cont.</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C</td>
<td>°F</td>
<td>°C</td>
<td>°F</td>
</tr>
<tr>
<td>065</td>
<td>18</td>
<td>65</td>
<td>15</td>
</tr>
<tr>
<td>075</td>
<td>24</td>
<td>75</td>
<td>20</td>
</tr>
<tr>
<td>085</td>
<td>29</td>
<td>85</td>
<td>24</td>
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<tr>
<td>095</td>
<td>35</td>
<td>86</td>
<td>30</td>
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<td>100</td>
<td>38</td>
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<td>170</td>
<td>77</td>
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<tr>
<td>180</td>
<td>82</td>
<td>180</td>
<td>79</td>
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<td>190</td>
<td>88</td>
<td>190</td>
<td>85</td>
</tr>
<tr>
<td>200</td>
<td>93</td>
<td>200</td>
<td>90</td>
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<td>205</td>
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<td>101</td>
</tr>
<tr>
<td>235</td>
<td>113</td>
<td>235</td>
<td>107</td>
</tr>
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</table>

**Available versions**

<table>
<thead>
<tr>
<th>Aluminum</th>
<th>Bronze</th>
</tr>
</thead>
<tbody>
<tr>
<td>JO</td>
<td>JW</td>
</tr>
<tr>
<td>JR</td>
<td></td>
</tr>
<tr>
<td>JE</td>
<td></td>
</tr>
</tbody>
</table>
## Thermostatic Control Valves - Model J

### How to order

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

<table>
<thead>
<tr>
<th>Example code</th>
<th>Valve size</th>
<th>Body material</th>
<th>Port connection</th>
<th>Control temperature</th>
<th>Element type and seal material</th>
<th>Leakhole sizes inches (mm)</th>
<th>Extension (Model JE only)</th>
<th>Customer special requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4 JO A T 140 01 0 -AA</td>
<td>3/4 inch</td>
<td>Aluminum (JO, JR, JE)</td>
<td>Threaded NPT to USAS B2.1</td>
<td>120°F (49°C)</td>
<td>Standard - Buna N</td>
<td>None</td>
<td>No extension 1 7/8&quot; (47.6)</td>
<td>-AA Standard product</td>
</tr>
</tbody>
</table>

### Code Description

- **Valve size**: 3/4 inch
- **Valve model**:
  - JO: Standard version
  - JR: Pressure relieving 50 psi
  - JE: Externally sensing (3-way)
  - JW: Water saver - 2 way
- **Body material**:
  - A: Aluminum (JO, JR, JE)
  - B: Bronze (JW only)
- **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
- **Control temperature**: 120°F (49°C)
- **Element type and seal material**:
  - Standard - Buna N
  - Nickel plated - Viton
  - Standard - Viton
  - Electroless Nickel - Neoprene
  - Standard - Neoprene
  - Nickel plated - Neoprene
- **Leakhole sizes inches (mm)**:
  - None
  - 1/16" (2mm) (standard)
  - 3/32" (3mm)
  - 1/8" (4mm)
  - 1/32" (1mm)
- **Extension (Model JE only)**:
  - No extension 1 7/8" (47.6)
  - 3 15/16" (100)
  - 4 7/16" (113)
  - 4 15/16" (125)
  - 5 7/16" (138)
- **Customer special option codes**:
  - -AA Standard product
  - -*** Customer special code assigned
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.

---

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

<table>
<thead>
<tr>
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<th>Part no.</th>
<th>Description</th>
<th>Qty</th>
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<tr>
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<td>308L002</td>
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<td>11141L001</td>
<td>O-ring, Buna N</td>
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<td>11</td>
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<td>O-ring, Viton</td>
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<tr>
<td>11</td>
<td>11141L003</td>
<td>O-ring, Neoprene</td>
<td>1</td>
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<tr>
<td>13</td>
<td>372</td>
<td>O-ring, Buna N</td>
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<tr>
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<td>372L001</td>
<td>O-ring, Viton</td>
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<tr>
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<td>372L002</td>
<td>O-ring, Neoprene</td>
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<td>11198L126</td>
<td>O-ring, Viton</td>
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<td>18</td>
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<td>20</td>
<td>1392L001</td>
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<td>25</td>
<td>1462L001</td>
<td>O-ring, Viton</td>
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</tr>
</tbody>
</table>
**Thermostatic Control Valves - Model J**

## Specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
</table>
| **Flow rate**          | 2 – 8m³/hr  
(8 - 35 US gpm) |
| **Recommended pressure drop** | 0.14 to 0.5 bar  
(2 to 7 PSI) |
| **Body materials**     | Aluminium BS:1490 Grade :M25TF  
For light weight  
Bronze |
| **Seal materials**     | Nitrile  
Viton  
Neoprene |
| **Mounting position**  | Any orientation |
| **Max. working pressure** | 24 bar  
(350 psi) |
| **Ports**              | Below nominal temperature  
Ports A and B connected  
Above nominal temperature  
Ports A and C connected |
| **Port connections**   | Screwed  
20 mm (1/4”) BSP, NPT, M26 x 1.5,  
JIS, SAE |
| **Valve size (nominal bore)** | 20mm  
(1/4”) |
| **Control temperatures** | 18°C – 113°C  
(65°F to 235°F) |
| **See element characteristics table** | |
| **Accreditations**     | PED  
Suitable for Group 1 & Group 2 liquids.  
Ensure materials are compatible.  
ATEX  
II 2 G X  
Complies with all relevant EU directives |
Thermostatic Control Valves - Model J

Valve dimensions

Dimensions mm (inches)

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

Weight  Weights in kg (lbs)

<table>
<thead>
<tr>
<th>Port Thread</th>
<th>NPT, BSP, JIS M26 x 1.5</th>
<th>SAE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>0.6 (1.3 lbs)</td>
<td>0.6 (1.3lbs)</td>
</tr>
</tbody>
</table>
Americas

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