



Model J

Thermostatic Valves



FEATURES

- **LOW COST**
- **MATERIAL: BRONZE & ALUMINUM**
- **POSITIVE 2-WAY & 3-WAY VALVE ACTION**
- **ACCOMMODATES 150 psi SUPPLY PRESSURE DIFFERENTIAL**
- **COMPLETELY SELF-CONTAINED**
- **COMPACT**
- **OPTIONAL FEATURES:**
 - ~ Pressure Relieving (JR)
 - ~ External Sensor (JE)

APPLICATIONS

- **WATER SAVER**
- **TEMPERATURE MIXING OR DIVERTING**
- **MACHINE COOLING**
- **COGENERATION**
- **HEAT RECOVERY SYSTEMS**
- **LUBE OIL SYSTEMS**

Model J Thermostatic Valves are available in various versions for a wide range of temperature control requirements. They utilize the proven expanding wax principle to actuate the control valves. 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. It is field replaceable and is available with temperature settings from 65°F to 235°F.

The standard seal material for all models is Buna N and is compatible with petroleum based oils and water. Special versions are available for other applications:

- Nickel plated element & Viton seals
 - ~ synthetic lubricants
- Electroless Nickel plated element & Neoprene seals
 - ~ lube system of ammonia refrigeration compressors
- Electroless Nickel plated element & Buna N seals
 - ~ lube systems with Hydrogen Sulfide in oil
- Neoprene seals
 - ~ lube oil systems of freon refrigeration compressors
- Leak holes
 - ~ 2-way water saver applications
 - ~ start up under cold ambient conditions

SPECIFICATIONS

Housing and Plug	
JO, JR, JE	Aluminum
JW	Bronze
Internal Trim Materials	Stainless Steel & Bronze
Standard Seal Material	Buna N
Valve Pressure Rating	350 psi (2410 kPa)
Net Weight	1.3 lbs (0.6 kg)

OPERATION

The valve is supplied with the temperature element factory set to the nominal temperature setting. Temperature is sensed at Port A which remains open to Port B (bypass) until the fluid temperature reaches a point 5-10°F (3-6°C) below the nominal setting. As the temperature continues to rise, the sliding valve moves to close off Port B and open Port C (connected to the cooler or heat exchanger). Port B is fully closed 10°F (6°C) above the nominal setting. The valve continually modulates the fluid flow to maintain the nominal temperature. For optimum control, the system should be sized so that about 2/3 the total fluid flow is passing through the cooler at full load.

Due to the metal-to-metal seal on the sliding valve, some leakage (about 5%) is to be expected between ports B & C. This precludes the need for a leak hole in the valve, but it is available if required.

For long life, AMOT Model J Valves should not be exposed to continuous temperatures exceeding 65°F (36°C) above their nominal temperature setting. For occasional short periods such as 1/2 hour, they can be exposed to temperatures of 90°F (50°C) above their nominal temperature setting, but should never exceed 250°F (121°C).

APPLICATION

The Model J 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 - This 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. A typical application ("Water Saver") is shown in "Selection: JW". The standard valve includes a 1/16" leak hole.

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.

INSTALLATION (Fig. 1 and 2)

AMOT Thermostatic Valves operate in any position and may be located at the convenience of the system designer. The valve may be supported by the connecting pipe but should not be subjected to excessive bending. Line up the piping before tightening the pipe threads.

SELECTION: JW

Leak hole size should be calculated per Chart 1 to provide optimum response time with minimum water usage. Leak holes should be sized so the largest expected particle of foreign matter in the water will pass through without blocking the leak hole. Care should be used in selecting leak hole size to minimize water waste during periods of low water demand. 1/16" is the standard leak hole.

Chart No. 1
Flow in USGPM per Leak Hole

Pressure at Inlet Port	Leak Hole Size			
	1/32"	1/16"	3/32"	1/8"
10 psi	.292	.327	.835	1.48
20 psi	.413	.525	1.18	2.09
30 psi	.506	.643	1.44	2.56
40 psi	.584	.745	1.67	2.96
50 psi	.653	.831	1.87	3.30
60 psi	.716	.910	2.04	3.62
80 psi	.827	1.05	2.36	4.19
100 psi	.924	1.18	2.64	4.68
120 psi	1.01	1.29	2.89	5.13

□ = Non-Standard

Typical "Water Saver" Application

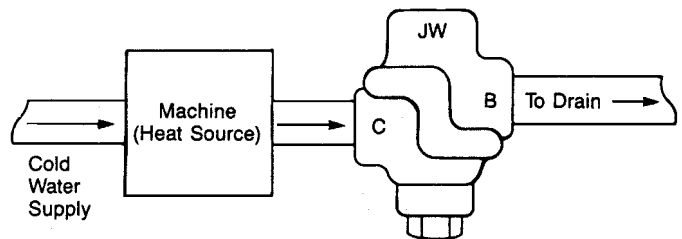
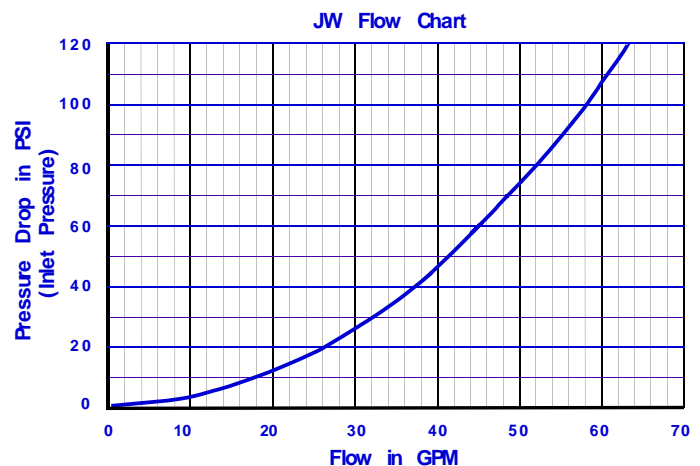
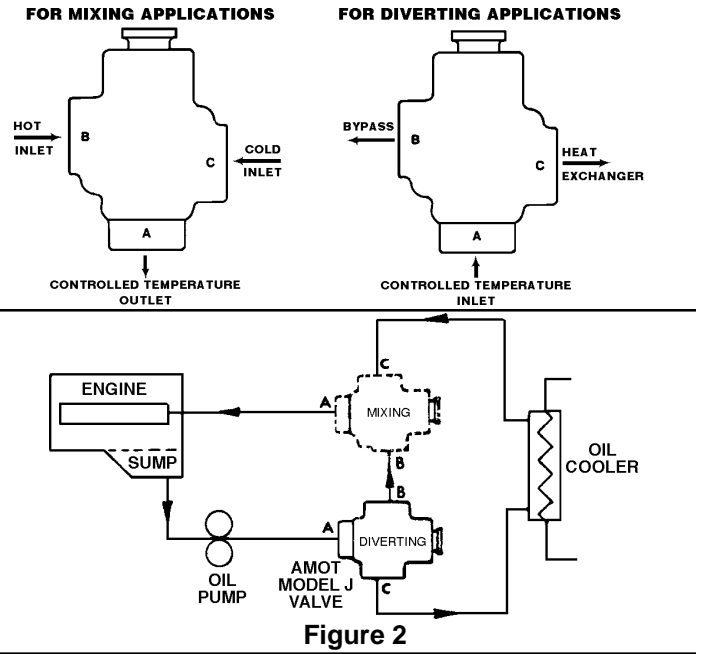
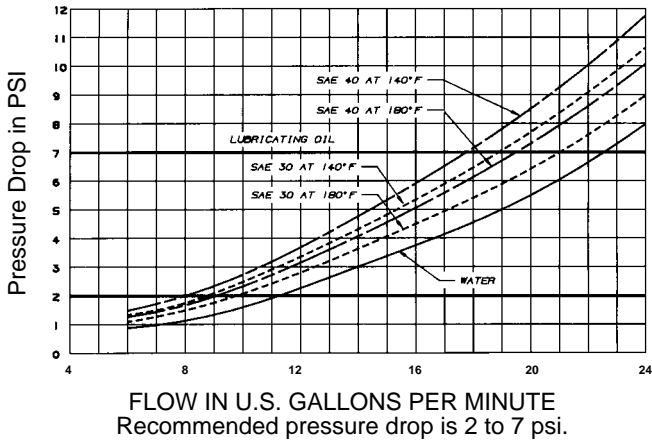


Figure 1



SELECTION: JO, JR, JE

AMOT Thermostatic Valves are selected by the anticipated flow rate through the valve. Refer to Fig. 3. Pressure drop across the valve is usually limited to approximately 2 psi to 7 psi (14-48 kPa) to maintain good temperature regulation.



MODEL CODE SYSTEM

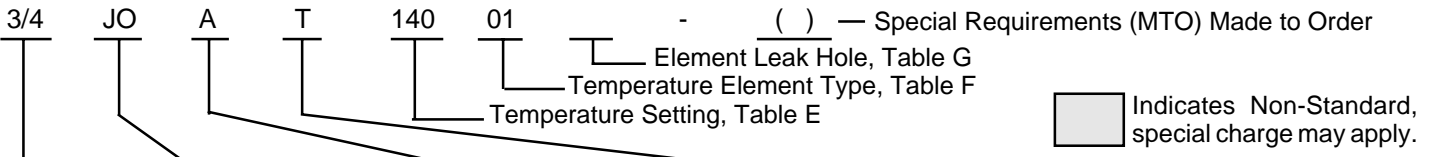


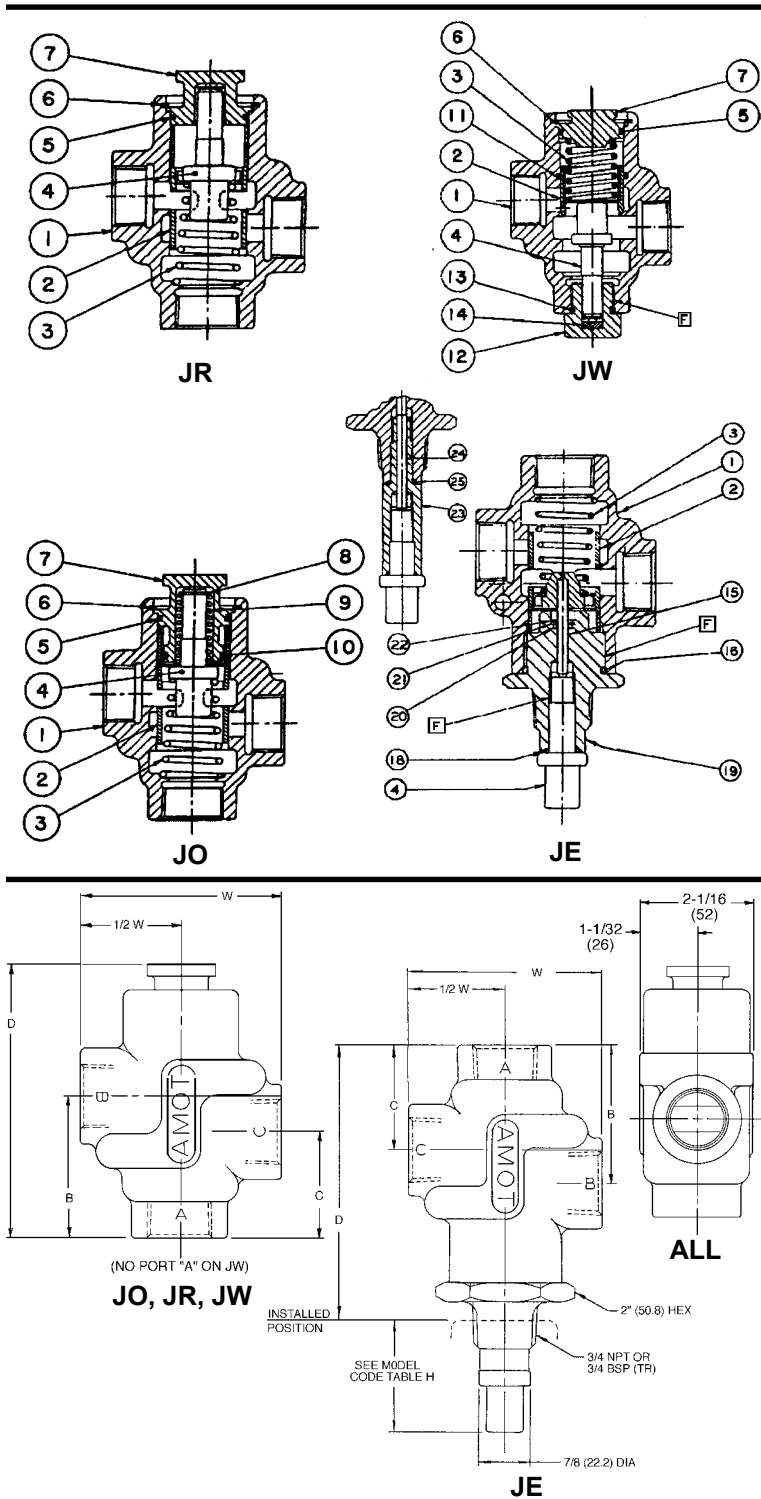
TABLE A Valve Size	TABLE B Valve Type	TABLE C Body Material	TABLE D Connections
Inches	Code No.	Code No. Material	Code No. Type
3/4	JO standard	A Aluminum (JO, JR, JE)	T NPT (standard)
	JR pressure relieving, 50 psi	B Bronze (JW Only)	W SAE O-ring seal
	JW 2-way water saver		U BSP (PL)
	JE external sensing		V BSP (Tr) and J1S

TABLE E Temp. Setting			TABLE F Element Type & Seal Material			TABLE G Element Leak Hole		TABLE H Extension (Model JE Only) Code No.			
Code No.	Nominal Temp. °F	(°C)	Code No.	Element Type	Seal Material	Code No.	Leak Hole Diameter	Code No. (JE Only)		Installed Depth	
			01	Standard	Buna N			0	No Extension (Standard)	1-7/8"	(47.6)
065	65	(18)	02	Nickel Plated	Viton	For JO, JR		4		3-15/16"	(100)
075	75	(24)				Blank	None (std)	5		4-7/16"	(113)
085	85	(29)				A	1/16"	6		4-15/16"	(125)
095	95	(35)				B	3/32"	7		5-7/16"	(138)
100	100	(38)				C	1/8"				
110	110	(43)				D	1/32"				
120	120	(49)				For JW					
130	130	(54)				A	1/16" (std)				
140	140	(60)				B	3/32"				
150	150	(66)				C	1/8"				
160	160	(71)	D	1/32"							
170	170	(77)	For JE								
175	175	(80)	N	None							
180	180	(82)	A	1/16"							
190	190	(88)	B	3/32"							
200	200	(93)	C	1/8"							
205	205	(96)	D	1/32"							
215	215	(102)									
225	225	(107)									
235	235	(113)									

MAINTENANCE

Properly applied and installed, AMOT Thermostatic Valves require practically no maintenance.

If necessary, the seals or temperature element may be easily replaced without removing the valve from the piping. Remove Snap Ring (6) and Plug (7). Remove and replace Temperature Element (4). Replace O-rings as necessary. Reassemble.



SERVICE PARTS

Ref. No.	Part No.	Qty.	Description
4	9902X (Temp)	1	JO, JR, JW Element, Standard
4	9902P (Temp)	1	JO, JR, JW Element, Nickel Plated
4	9902K (Temp)	1	JO, JR, JW Element, Electroless Nickel Plated
4	9654X (Temp)	1	JE Element, Standard
5	11197L025	1	O-ring, Buna N, (Std)
5	11198L025	1	O-ring, Viton
5	11199L025	1	O-ring, Neoprene
10	308	1	O-ring, Buna N, (Std)
10	308L001	1	O-ring, Viton
10	308L002	1	O-ring, Neoprene
11	11141L001	1	O-ring, Buna N
11	11141L002	1	O-ring, Viton
11	11141L003	1	O-ring, Neoprene
13	372	1	O-ring, Buna N
13	372L001	1	O-ring, Viton
13	372L002	1	O-ring, Neoprene
16	11198L126	1	O-ring, Viton
18	1462L001	1	O-ring, Viton
20	1392L001	1	O-ring, Viton
25	1462L001	1	O-ring, Viton

This Parts List effective with Valve Serial No. B831

DIMENSIONS

Basic Model	Port Threads	Body Mat'l	B	C
JO, JR	NPT BSP JIS	AL	2-5/16 (59)	1-3/4 (45)
JO, JR	SAE	AL	2-11/16 (68)	2-1/8 (54)
JW	ALL	BRZ	2-13/16 (71)	2-1/4 (57)
JE	NPT BSP JIS	AL	2-21/64 (5.91)	1-49/64 (44.8)
JE	SAE	AL	2-5/16 (59)	1-3/4 (44)

Basic Model	Port Threads	Body Mat'l	D	W
JO, JR	NPT BSP JIS	AL	4-9/16 (116)	3-1/4 (82)
JO, JR	SAE	AL	4-15/16 (125)	4 (102)
JW	ALL	BRZ	4-5/8 (117)	4 (102)
JE	NPT BSP JIS	AL	4-11/16 (119)	3-1/4 (82)
JE	SAE	AL	4-7/8 (124)	4 (102)

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