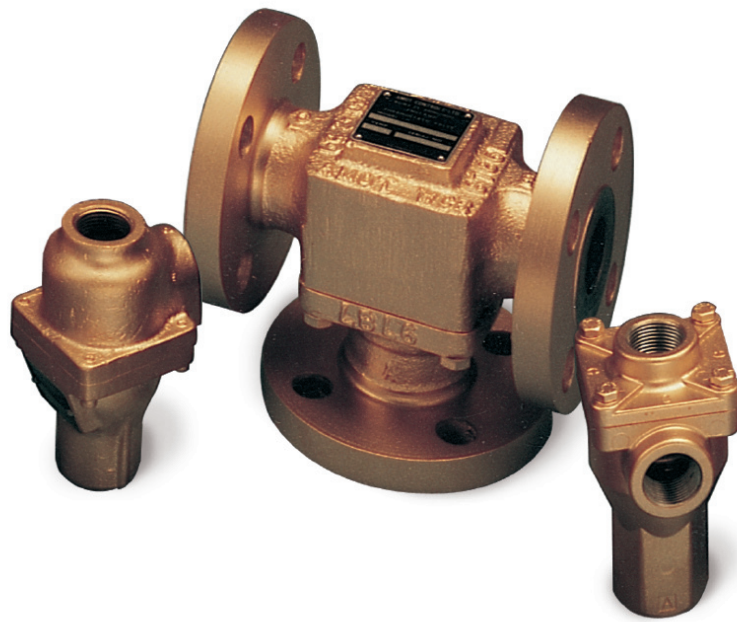


03V

12/09

Thermostatic Control Valve

C Valve



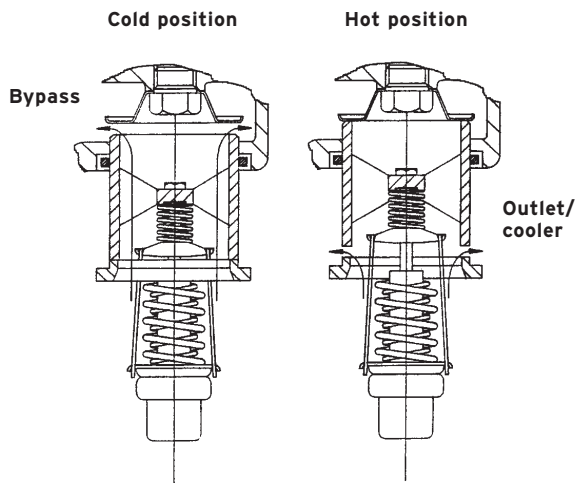
Typical applications

- 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

Key benefits

- No external power source required - simple low cost installation
- No user settings 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

Operation



Note: Typical for sliding valve type elements

The temperature control power is created by the expansion of a wax/copper mixture which is highly sensitive to temperature changes.

Large forces are created by the warming/expansion of the mixture which in turn acts upon the sliding valve, thus regulating the flow.

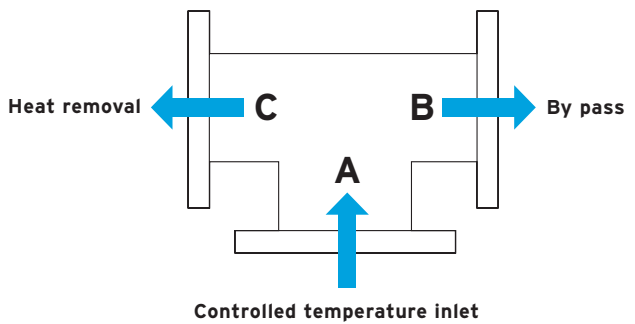
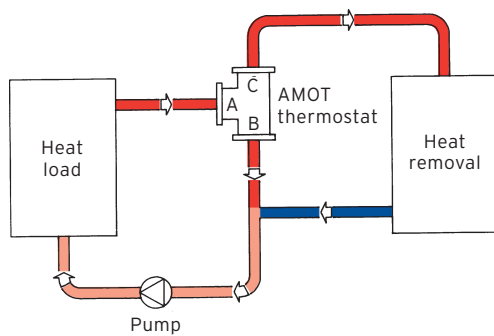
The diagram opposite shows the valve actuation in diverting mode at start and cooling positions.

During operation the sliding valve constantly modulates for accurate temperature control.

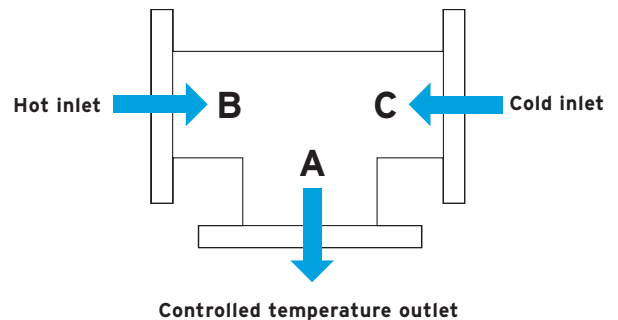
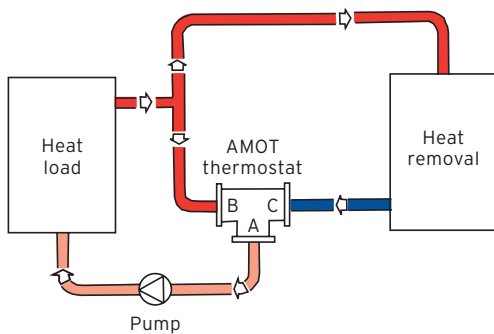
The reliable rugged construction provides a unit sensitive to temperature variations, not easily disturbed by pressure changes and sudden surges and maintains stable temperatures over a wide range of operating conditions.

Applications

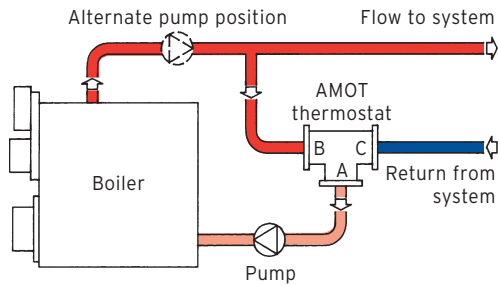
Diverting applications



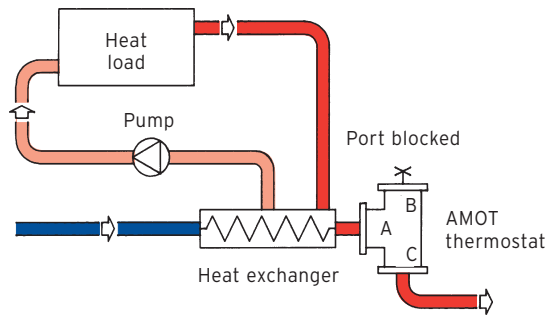
Mixing applications



Boiler return applications



Water saving applications




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

Specification

Flow rate	2 - 14m ³ /hr	
Body materials	Aluminium (BS: 1490 LM25TF)	For light weight
	Bronze (BS: 1400 LG2)	For seawater, shock resistance and low magnetic permeability
	Cast iron (BS: 1452 250)	For fresh water and lubricating oils
	Ductile iron (BS: 2789 420/12)	High performance iron
	Steel (BS: 3100 A1)	For high strength/pressure ratings
	Stainless steel (BS: 3100 316C16F)	Corrosive and special applications
Seal materials	Nitrile	
	Viton	
	Neoprene	
	Ethylene, propylene rubber	
Mounting position	Any orientation	
Ports	Below nominal temperature	Ports A and B connected
	Above nominal temperature	Ports A and C connected
Port connections	Screwed	15, 20, 25, 32 & 40mm (1/2", 3/4", 1", 1 1/4" & 1 1/2")
	Flanged	40mm (1 1/2")
Valve sizes (nominal bore)	15, 20, 25, 32 & 40mm (1/2", 3/4", 1", 1 1/4" & 1 1/2")	
Recommended pressure drop	0.14 to 0.5 bar (2 to 7 PSI)	
Control temperatures	18 - 113°C	See element characteristics table

Accreditations

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

Temperature settings

A wide selection of temperatures are available. Follow the equipment manufacturers' guidelines for oil systems and for specific operating temperatures of cooling/heating systems.

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 their maximum continuous rating. If this condition is anticipated then consult AMOT for suitable alternatives.

For mixing and oil circuits the temperature may be 1 to 2°C higher due to flow, viscosity and other system parameters.

Leakholes

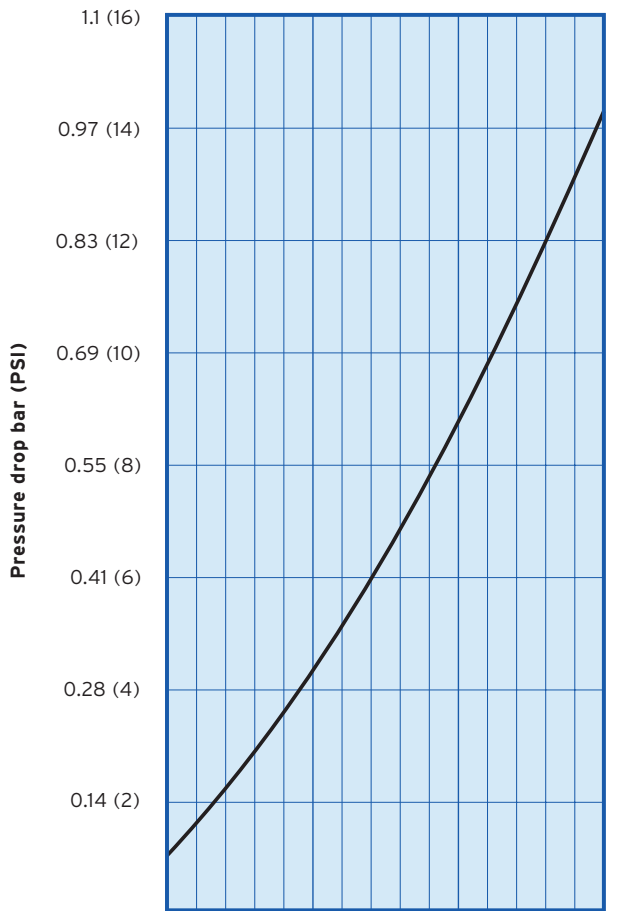
Leakholes can be drilled to allow fluid between ports A and C:

1. To allow small flows to cooler during start up which slows down warm up cycle.
2. To allow small flows to maintain some flow through cooler in order to prevent condensation or, in extreme cases, freezing. In applications where additives are not or cannot be used.

In applications where a valve is used as 2-way, with port 'B' blocked and when the circuit is cold and the valve closed, a leakhole is necessary to ensure small flow in order to detect a temperature change in the system.

Valve characteristics

Pressure drop



AMOT thermostatic valves are designed to produce minimal pressure drop.

The normal recommendation in sizing AMOT thermostatic valves is to select a pressure drop between 0.14 to 0.5 bar (2 and 7 PSI).

Size	♦	♦	♦	♦
1/2 CM	1.5	3	4.5	6
3/4 CM	2	4	6	8
1 CM	2.2	4.4	6.6	8.8
1 1/4 CM	2.5	5	7.5	10
1 1/2 CM	2.5	5	7.5	10
1 1/4 CCM	4.4	9	13.3	17.7
1 1/2 CF	2.5	5	7.5	10

Flowrate m³/hr - water

Flow coefficient

AMOT valve flow coefficient (calculated)		
Size	Kv	Cv
1/2 CM	6.1	7
3/4 CM	8.2	9.5
1 CM	9	10.4
1 1/4 CM	9.5	11
1 1/2 CM	9.5	11
1 1/4 CCM	17.7	20.5
1 1/2 CF	9.5	11

A Cv is the valve's flow coefficient (Kv is the metric coefficient). It is defined as the number of US gallons per minute of room temperature water which will flow through the valve with a pressure drop of 1 PSI across the valve (see table).

Maximum working pressures

Measurements in bar (PSI)

Material	Pressure
Cast iron, ductile iron and bronze body	10 bar (150 PSI)
Aluminium body	24 bar (350 PSI)
Steel/stainless steel body	48 bar (700 PSI)

Flanged versions

Material	Pressure
Cast iron and bronze body	10 bar (150 PSI)
Steel/stainless steel body (150 ANSI flanges)	16 bar (230 PSI)
Steel/stainless steel body (300 ANSI flanges)	45 bar (655 PSI)

Weight

Weights in KG

Material	1 1/2 CM, 3/4 CM, 1 CM	3/4 CMA, 1 CMA	3/4 CMS, 1 CMS	1 1/4 & 1 1/2	1 1/4 CCM	1 1/2 CF*F	1 1/2 CF*J	1 1/2 CF*H
Bronze	2	-	-	3	-	11	-	-
Cast iron	2	-	-	3	4.3	11	-	-
Ductile iron	2	-	-	3	-	-	-	-
Stainless steel	-	-	-	-	-	-	9	13.5
Steel	-	-	3.6	-	-	-	9	13.5
Aluminium	-	1.2	-	-	-	-	-	-

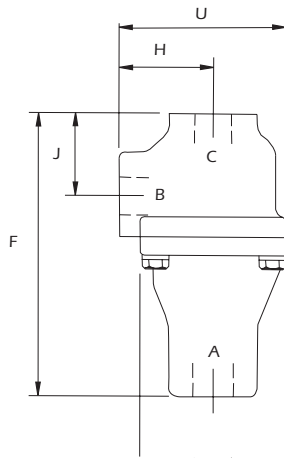
Element characteristics

All temperatures in °C (°F)

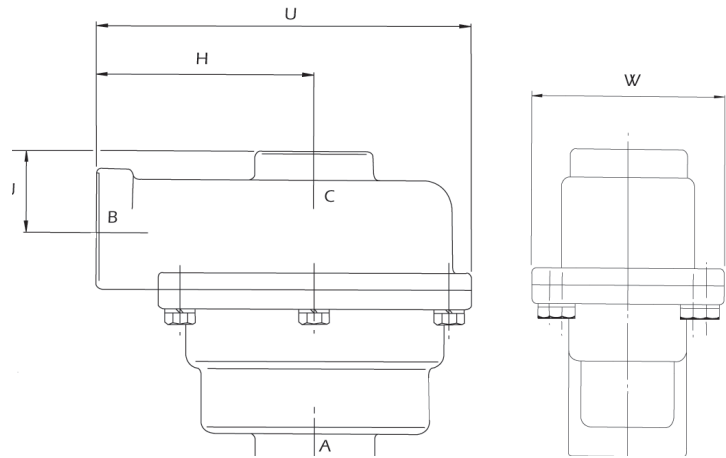
Control temperature	Rated range	Max temperature continuous	Code
18 (65)	15-25 (59-77)	47 (116)	065
23 (75)	20-29 (68-85)	60 (140)	075
30 (85)	24-34 (75-93)	63 (145)	085
35 (95)	30-40 (86-104)	73 (163)	095
38 (100)	33-42 (91-108)	61 (143)	100
43 (110)	38-47 (100-117)	82 (180)	110
49 (120)	43-55 (110-131)	86 (187)	120
54 (130)	49-60 (120-140)	95 (203)	130
60 (140)	54-65 (130-150)	95 (203)	140
65 (150)	60-71 (140-160)	100 (212)	150
71 (160)	65-76 (150-170)	100 (212)	160
76 (170)	72-82 (163-180)	100 (212)	170
80 (175)	76-85 (170-185)	105 (221)	175
82 (180)	79-88 (175-190)	110 (230)	180
87 (190)	85-93 (185-200)	110 (230)	190
93 (200)	90-100 (194-212)	110 (230)	200
96 (205)	93-103 (200-218)	110 (230)	205
101 (215)	96-107 (205-225)	115 (239)	215
107 (225)	101-114 (214-237)	120 (248)	225
113 (235)	107-122 (225-253)	124 (257)	235

Valve dimensions

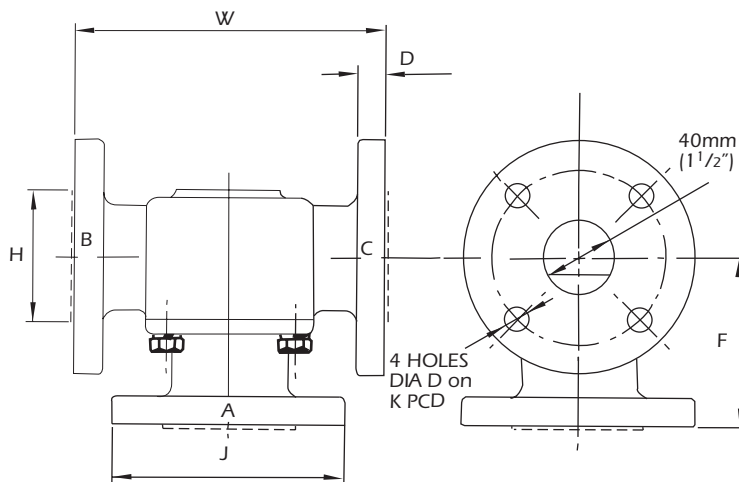
Model CM



Model 1/4 CCM



Model 1/2 CF



Dimension (mm)	1/2CM, 3/4CM, 1CM	3/4CMA, 1CMA	3/4CMS, 1CMS	1/4 & 1/2 CM	1/4 CCM	1/2 CF*F	1/2 CF*J	1/2 CF*H
H	50.8	54	53.9	73	111	73	73	73
J	44.5	54	54	38.1	39.7	150	127	155.6
F	152.4	160.3	160.3	158.8	155.6	100.8	100.8	120.6
U	90.5	95.3	96.8	115.9	190.5	18	18	20.5
W	79.4	82.6	85.7	85.7	98.4	177.8	177.8	203.2

Flange sizing (mm)

Flange	D	K
ANSI 125 lb	16	98.43
ANSI 150 lb	16	98.43
ANSI 300 lb	22	114.3

Specification check list

Use the tables below to select the unique specification of your C 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 mm (inches)	Code	✓
15 (1/2")	1/2	
20 (3/4")	3/4	
25 (1")	1	
32 (1 1/4")	1 1/4	
40 (1 1/2")	1 1/2	

Type	Code	✓
Single element	CM	
Dual element (1 1/4" size cast iron only)	CCM	
Flanged (1 1/2" only)	CF	

Housing material	Code	✓
Bronze (CM and CF)	B	
Cast iron (CM, CCM and CF)	C	
Ductile iron (CM only)	D	
Aluminium (CM, 3/4" and 1" only)	A	
Steel (3/4" and 1" CM, 1 1/2" CF only)	S	
Stainless steel (3/4" and 1" CM, 1 1/2" CF only)	R	

Port connection	Code	✓
Flanged ANSI 125lb	F	
Flanged ANSI 150lb (steel and stainless steel only)	J	
Flanged ANSI 300lb (steel and stainless steel only)	H	
Threaded NPT to USAS B2.1	T	
Threaded BSP (PL) to BS 21	U	
Threaded BSP (TR) Japanese (JIS)	V	
Threaded to SAE J514H (straight thread, O-ring seal)	W	
Threaded BSP (PL), boss faced DIN 3852 form X (bronze, cast iron and ductile iron only)	R	

Control temperature	Code
See element characteristic table (page vi). Model code located in last column	

Element	Plating	Seals	Code	✓
1125X	-	Nitrile	01	
1125P	Nickel	Viton	02	
3362E	Nickel	EPR	04	
1125X	-	Viton	06	
9778C High over-temperature	Electroless nickel	Neoprene	82	
44844X Saltwater	-	Viton	86	
3362U	-	Neoprene	99	

Leakhole sizes mm (inches)	Code	✓
None	0	
0.8 (1/32")	B	
1.6 (1/16")	C	
2.4 (3/32")	D	
3.2 (1/8")	F	
6.3 (1/4")	G	
5 (3/16")	H	

Leakhole quantity (no. of elements with leak hole, maximum 1 per element)	Code	✓
None	0	
1 (all except CCM)	1	
2 (CCM only)	2	

Special requirements	Code	✓
Standard	AA	
Please contact us with any special requirements		
Notes		

Once you have made your selection, or if you need advice, please call us on:

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