



Model C

CM, CL, CF, CCM

Thermostatic Valve



FEATURES

- FLOW RATES OF 6 - 54 GPM
- TAMPER-PROOF TEMPERATURE SETTINGS OF 65°F TO 235°F
- COMBINATIONS AVAILABLE:
 - ~ Steel, Bronze, Cast Iron, and Aluminum Housing
 - ~ 1/2" to 1-1/2" Pipe Sizes
 - ~ Threaded & Flanged Connections
- POSITIVE 3-WAY VALVE ACTION
- COMPLETELY SELF-CONTAINED

APPLICATIONS

- ENGINE & COMPRESSOR COOLING SYSTEM
- LUBE OIL SYSTEMS
- COGENERATION HEAT RECOVERY SYSTEMS
- PROCESS CONTROL
- TEMPERATURE MIXING OR DIVERTING

AMOT Model C Thermostatic Valves are available in a wide selection of sizes and settings to fill a multitude of fluid temperature control requirements. They utilize the proven expanding wax principle to actuate the 3-way temperature element assemblies. Sturdy housings of cast iron, aluminum, bronze, or steel fit almost any applications or pressure rating. Because some fluids such as synthetic lubricants are not compatible with copper or brass, AMOT element assemblies are available with nickel plating.

The available Model CM, CL, CF and CCM valves may be used for diverting or mixing service. They are ideal for blending two streams of differing temperatures to a desired temperature. They make very economical temperature limiting valves to prevent scalding in home, motel or hotel hot water supply systems. Radiant heating systems can use these valves in limiting water temperature to prevent surface cracking and over-heating of plastic piping. Other applications include electronic and battery cooling circuits, pump temperature relief valves, etc.

When used as mixing valves or hot water temperature limiters, the differential pressure between C and B ports must not exceed 20 psi. When used in "Water Saver" applications pressure in at A must not exceed that at C or B ports by more than 75 psi.

Many special variations on standard Model C valves are available for particular requirements.

- Nickel plated element & Viton seals
 - ~ synthetic lubricants
 - ~ deionized water in electronic cooling circuits
- Electroless Nickel plated elements & Neoprene seals
 - ~ lube system of ammonia refrigeration compressors
 - ~ salt water systems
- Electroless Nickel plated elements & Buna N seals
 - ~ lube systems with Hydrogen Sulfide in oil
- Neoprene seals
 - ~ lube oil system of freon refrigeration compressors
- Leak holes
 - ~ 2-way water saver applications
 - ~ start up under cold ambient conditions
- Special threaded or flanged connections

APPLICATION

Model C is available in various versions for custom fit or application needs.

Model CM - The most commonly selected version because of the wide availability of options. They have threaded connections and are for flows of 9 to 32 GPM.

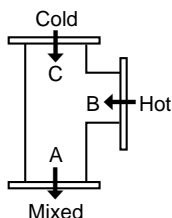
Model CL - A low flow version of the Model CM. Selected for flow of 6 to 12 GPM (for lower flows see Model J).

Model CF - Flange version available only in 1-1/2 sizes. The cast iron valve has ANSI class 125# flat face flanges. For high pressure requirements the steel valve is available in ANSI class 150#, 300#, and 600# raise face flanges.

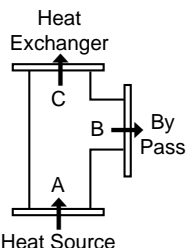
Model CCM - High flow version for 28 to 54 GPM. Only available in 1-1/4 NPT connections and cast iron body. A bronze version is special order.

PIPING DIAGRAMS

FOR MIXING APPLICATIONS



FOR DIVERTING APPLICATIONS



SELECTION / DIMENSIONS

BRONZE HOUSING - CM, CL

Basic Model	Pipe Size	U	V	W	Y	Z	Net Weight (lbs.)
1/2C	1/2	3-7/8	2-1/4	3-1/8	1-7/8	6-1/8	4-3/4
3/4C	3/4	3-7/8	2-1/4	3-1/8	1-7/8	6-1/8	4-3/4
1C	1	3-7/8	2-1/4	3-1/8	1-7/8	6-1/8	5
1-1/2C	1-1/2	4-5/8	2-7/8	3-3/8	1-1/2	6-1/4	7-3/8

ALUMINUM HOUSING - CM, CL

3/4C	3/4	3-3/4	2-1/8	3-1/4	2-1/8	6-5/16	2
1C	1	3-3/4	2-1/8	3-1/4	2-1/8	6-5/16	2

CAST IRON HOUSING - CM, CL, CCM

Basic Model	Pipe Size	U	V	W	Y	Z	Net Weight
1/2C	1/2	3-9/16	2	3-1/8	1-3/4	6	4-3/4
3/4C	3/4	3-5/8	2	3-1/8	1-3/4	6	4-3/4
1C	1	3-5/8	2	3-1/8	1-3/4	6	4-3/4
1-1/2C	1-1/2	4-5/8	2-7/8	3-3/8	1-1/2	6-1/4	6-1/4
1-1/4CCM	1-1/4	7-1/2	4-3/8	3-7/8	1-9/16	6-1/8	9-3/8

STEEL HOUSING - CM, CL, CF

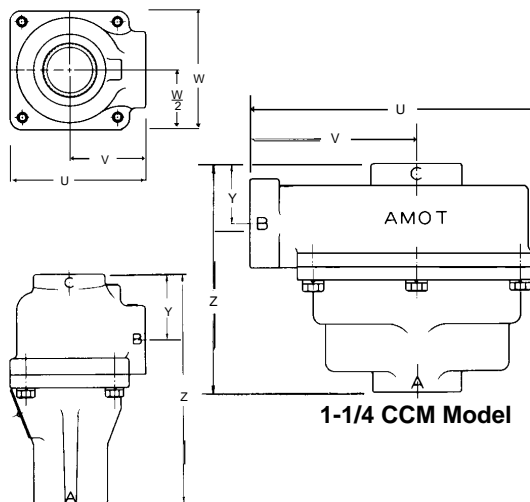
3/4C	3/4	3-13/16	2-1/8	3-5/8	2-1/8	6-5/16	7-1/2
1C	1	3-13/16	2-1/8	3-5/8	2-1/8	6-5/16	7-1/2
1-1/2CFSJ	1-1/2	—	2-7/8	7	5	3-31/32	20
1-1/2CFSH	1-1/2	—	2-7/8	8	6-1/8	4-3/4	30
1-1/2CFSK	1-1/2	—	2-7/8	8-3/4	6-1/8	5-1/8	36
1-1/2CFCF	1-1/2	—	7	5	3-31/32	25	

INSTALLATION

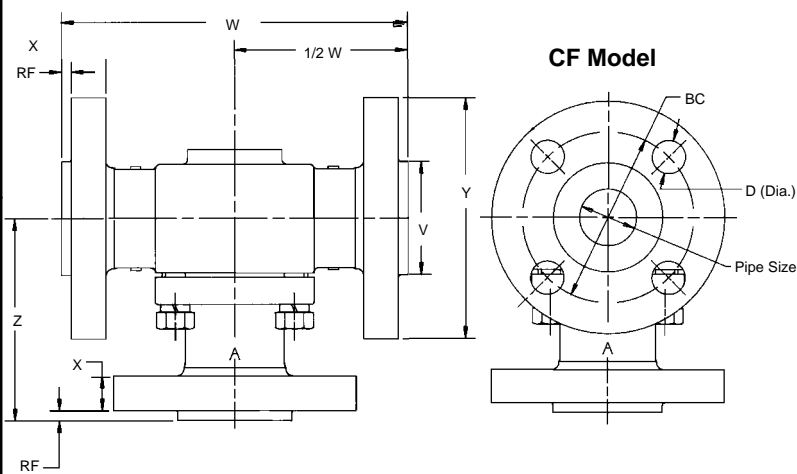
These valves may be mounted in any position. When connecting the piping, never use excessive force to stop thread leakage. Apply a quality thread sealant such as Loctite™ Pipe Sealant to the pipe threads. Do not permit sand, scale, wood chips or other objects to enter the valve as they can block the element sliding valve and prevent proper operation.

If the valve is to be installed at a high point in liquid systems, a small hole should be drilled in the top of the element (if no leak hole was ordered initially) to permit air to vent and to prevent build-up of air volume around the element.

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. 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 is the common outlet. Port A is the temperature sensing port and will mix the hot and cold fluids in the correction proportion so as to produce the desired outlet temperature leaving Port A.



1/2, 3/4, 1-1/4, 1-1/2 C Model



FLANGE

No. of Holes	D	B,C	X	RF
4	5/8	3-7/8	1/2	1/16
4	7/8	4-1/2	3/4	1/16
4	7/8	4-1/2	7/8	1/4
4	5/8	3-7/8	—	—

*All Dimensions in inches

SPECIFICATIONS

Internal Trim Materials Stainless Steel & Bronze
 Standard Seal Materials Buna N
 Max. Pressure Drop Across Valve 20 psi (140 kPa)
 Valve Pressure Rating:
 Cast Iron Body 150 psi (134 kPa)
 Bronze Body 150 psi (134 kPa)
 Aluminum Body 350 psi (2412 kPa)
 Steel Body, CMS, CLS 700 psi (4823 kPa)
 CFSJ 230 psi (1585 kPa)
 CFSH 655 psi (4512 kPa)
 CFSK 1050 psi (7234 kPa)
 Weight See Selection / Dimensions

For long life, standard AMOT C valves should not be exposed to continuous temperatures exceeding 65°F above the nominal temperature setting. For occasional short periods such as 1/2 hour, they can be exposed to temperature of 90°F above the nominal temperature setting, but not to exceeded 250°F. Contact factory for special requirements.

AVAILABLE VERSIONS TABLE

Cast Iron	Bronze	Alum.	Steel	Stainless Steel
Threaded	Threaded	Threaded	Threaded	Special Order Only
1/2 CM/CL	1/2 CM/CL	3/4 CM/CCL	3/4 CM/CL	
3/4 CM/CL	3/4 CM/CL	1 CM/CL	1 CM/CL	
1 CM/CL	1 CM/CL	Flanged	Flanged	
1-1/4 CCM	1-1/2 CM/CL	None	1-1/2 CFSJ	
1-1/2 CM/CL	Flanged		1-1/2 CFSH	
Flanged	None		1-1/2 CFSK	
1-1/2 CFCF				

HOW TO ORDER

Use Select Chart and Version Table to make basic selection. When ordering please specify the following:

1. Pipe Sizes connections (see Table A of Model Code System below).
2. Indicate Model CM, CCM, CL or CF (see Table B).
3. Housing Material (see Table C).
4. Type of Connection (see Table D).
5. Nominal Temperature Setting (see Table E).
6. Element Type and Seal Material (see Table F).
7. Element Leak Hole, if required (see Table G).

SELECTION TABLE

All Flow Rates in US GPM

Model No.	Flow Rate Min. Max.	Lubricating Oil (at 100°F)			
		Water or Water/Glycol		SAE 10-20 SSU 170-550	SAE 30 SSU 550-800
1/2 CL	6 10	5 9	4 8	4 8	4 8
1/2 CM	9 18	8 16	8 14	7 14	7 14
3/4 CL	7 11	6 11	6 10	5 10	5 10
3/4 CM	13 25	11 21	10 20	10 19	10 19
1 CL	7 11	6 11	6 10	5 10	5 10
1 CM	14 27	11 21	10 20	10 19	10 19
1-1/4 CCM	28 54	24 46	23 42	22 41	22 41
1-1/2 CL	8 12	7 13	7 12	6 12	6 12
1-1/2 CM	17 32	13 24	12 23	12 22	12 22
1-1/2 CF	17 32	13 24	12 23	12 22	12 22

MODEL CODE SYSTEM



TABLE A Valve Size	TABLE B Model Type	TABLE C Housing Material Code No. Material	TABLE D* Thread Type Code No. Thread Type	TABLE E Nominal Temperature Setting °F (°C)	TABLE F* Element Type & Seal Material Code No. Element Type Seal Material	TABLE G Element Leak Hole Code No. Leak Hole Diameter	
1/2"	CM CCM *CL CF	A Aluminum	T NPT (Std)	65 (18)	01 1125X (Temp) Standard Element Buna N	None (STD)	
3/4"		B Bronze	U BSP (PL)	75 (24)		B 1/32"	
1"		C Cast Iron	V BSP (TR) JIS	85 (29)	*01 10765X (Temp) CL Only Buna N	C 1/16"	
1-1/4"		S Steel	W SAE O-Ring Seal	95 (35)	06 1125X (Temp) Viton	D 3/32"	
1-1/2"		R Stainless Steel		F 125# ANSI F.F. Flange	100 (38)	*06 10765X (Temp) CL Only Viton	F 1/8"
				J 150# ANSI R.F. Flange	110 (43)	02 1125P (Temp) Nickel Plated Viton	G 1/4"
	H 300# ANSI R.F. Flange			120 (49)	82 9778C (Temp) Neoprene Electroless Nickel Plated	H 3/16"	
	K 600# ANSI R.F. Flange			130 (54)	*82 10765K (Temp) Neoprene Electroless Nickel Plated CL Only		
			M Socket Weld	140 (60)	99 3362U (Temp) Neoprene		
				150 (66)			
				160 (71)			
				170 (77)			
				175 (79)			
				180 (82)			
				190 (88)			
				200 (93)			
				205 (96)			
				215 (102)			
				225 (107)			
				235 (113)			

Indicates Non-Standard Product

* Model CL uses a unique element assembly.

** Former model coding omitted Table D.

Note: Letters or numbers in the MTO space, other than nothing A1 or AA indicate the unit is built to special requirements, and some of the code numbers may not be valid. Check with the factory for full specification of such models.

MAINTENANCE

When properly applied and installed, AMOT C Thermostatic Valves should operate for years with no maintenance. The only maintenance required is the replacement of the thermostatic element and seals whenever some variation in the controlled temperature is noticed. The frequency of element replacement will depend upon 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. Such accuracy is not available in the cheaper "squeeze-push" type of wax elements sometimes used by other manufacturers.

An element may be quickly checked by immersing it in an agitated bath of water (or a water-glycol mixture for temperatures above the boiling point of water). **Never use oil for checking the element.** The element part number and nominal temperature setting (the last three numbers of the part number) are stamped on the flange of the element. At 10°F to 13°F above the nominal setting, the bypass port B should be closed.

Order new elements by Part No. and Nominal Temperature Setting, which are found on the element flange. If these are not known, send the complete Model No. and Serial No. on the Valve Nameplate, requesting AMOT to furnish the correct element. O-ring Seals shown below should be replaced whenever replacing elements. Notice that 3 Seals are required on the Steel and Aluminum Models and 2 seals are required per element on the Cast Iron and Bronze Models. When reinstalling seals or installing new ones, always lubricate them with light grease to make installing of the element easier, and to prevent leakage of the housing.

For convenience, O-ring Seals and Elements may be ordered as a kit as shown below, or they may be ordered individually by their Part No.

When communicating with AMOT regarding operation of a control, always give the Model No. If ordering service parts kits, also include the description, Part No. and quantity desired. If any parts are ordered by Reference No. only, please also include the Form No. and date of this brochure.

SERVICE KITS

Seal Kit No. 9170X001 Buna N			
Ref. No.	* Qty.	Description	Part No.
4	1	O-ring	1205
5	1	O-ring	277L145
6	1	O-ring	11080L001
7	1	O-ring	11079L001

Seal Kit No. 9170X011 Viton			
Ref. No.	* Qty.	Description	Part No.
4	1	O-ring	706
5	1	O-ring	878L145
6	1	O-ring	11080L002
7	1	O-ring	11079L002

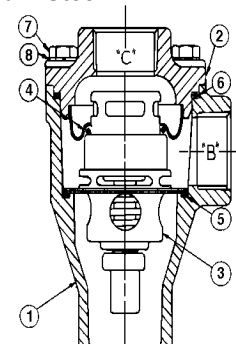
This Service Parts List effective with valve Serial No. A791.

Service Kit No. 9167X (Temp.) Standard Element, Buna N			
Ref. No.	* Qty.	Description	Part No.
3	1	Element	1125X(Temp.)
4	1	O-ring	1205
5	1	O-ring	277L145
6	1	O-ring	11080L001
7	1	O-ring	11079L001

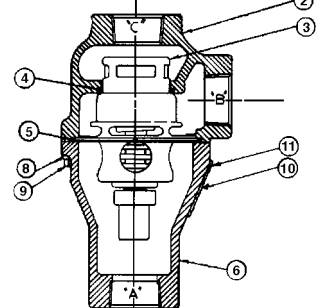
Service Kit No. 9166X (Temp.) Standard Element, Viton			
Ref. No.	* Qty.	Description	Part No.
3	1	Element	1125X(Temp.)
4	1	O-ring	706
5	1	O-ring	878L145
6	1	O-ring	11080L002
7	1	O-ring	11079L002

*Two Kits required for Model 1-1/4 CCM.

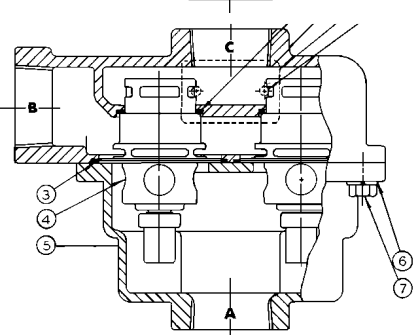
Aluminum/Steel



Cast Iron/Bronze



CCM



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