ENKAIR

THERMOSTIC VALVE

General Specifications

Body materials:
- Aluminium - for light weight
- Bronze - for seawater
- Cast iron - for fresh water and lubricating oils
- Ductile iron - high performance iron
- Steel - for high strength/pressure ratings
- Stainless steel - corrosive applications

Seal materials:
- NBR
- Viton
- Neoprene

Connections:
- Thread - NPT, SAE, BSPT,BSPP
- Flange - American standard, metric standard
- Welding - socket welding, butt welding hose fitting

Thermostats:
- Standard thermostats are of bronze and stailess steel
- Nickel plated thermostats

Valve sizes: 15-150 mm

Temperature range: 13°-132°C

Flow rate: 0~450 m^3/h

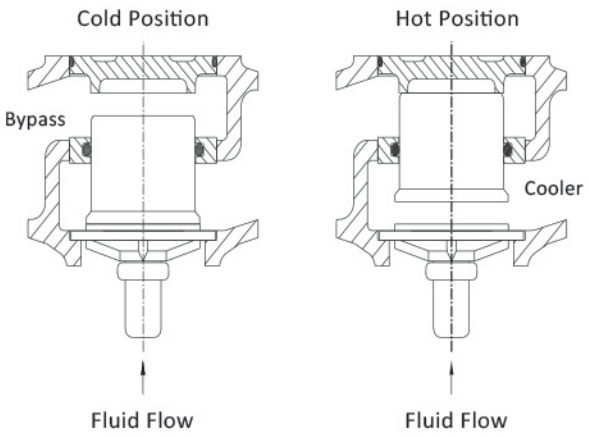
Pressure ratings: 0~50 bar

Operation

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.

Reliable rugged construction gives a unit sensitive to temperature variations,not easily disturbed by pressure changes and sudden surges which allows stable temperatures to be maintained over a wide range of operating conditions.

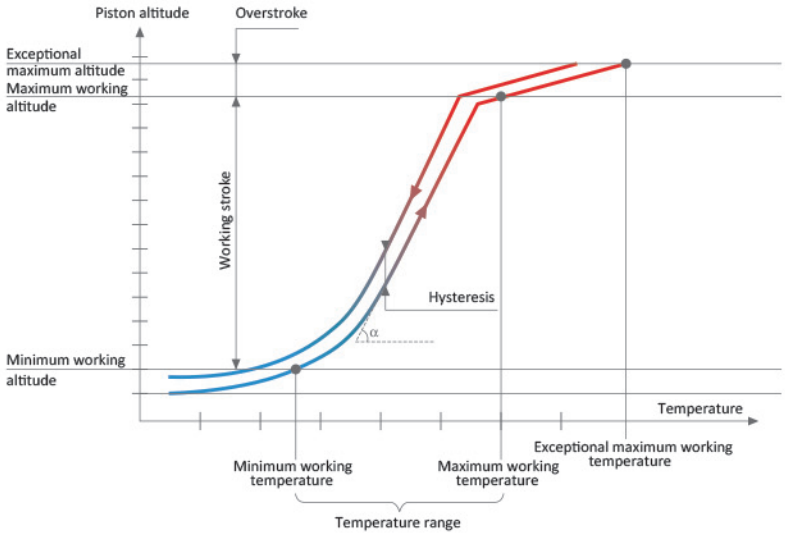


Curve

The curve shows the precise piston position over the operating temperature range of the thermostat.

The curve is plotted in two sections; one with the temperature increasing and the wax expanding, the second with the temperature decreasing and the wax contracting. The dfference between the two curves is called the hysteresis; it is caused by the compression and friction of the internal components and thermal inertia.

The shape of the curve and its gradient a (mm/℃ or inch /F) depend on the composition of the wax.



Valve Coding

50 A P S1 120 – M

Nominal diameter:
15=15 mm
20=20 mm
25=25 mm
40=40 mm
50=50 mm
65=65 mm
80=80 mm
100=100 mm
125=125 mm
150=150 mm

Body materials:
A=Aluminum
B=Bronze
C=Cast Iron
D=Ductile Iron
S=Steel
R=Stainless Steel

Valve Series:
P series valve
T series valve
X series valve
Y series valve

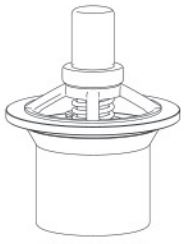
Special requirements:
M=Maual override
W=Leek holes
P=Nickel plating
T=Pressure test

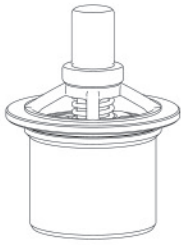
Setting temperature:
Please refer to the following temperature spreadsheet

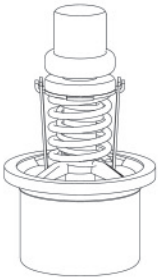
Port connections:
F1= ASME B16 125#FF
F2= ASME B16 150#RF
F3= ASME B16 300#RF
F6= EN1092 PN6
F7= EN1092 PN10
F8= EN1092 PN16
H1=Hose fitting type 1
H2=Hose fitting type 2
S1= NPT
S2= SAE
S3= BSPT
S4= BSPP
W1= Socket welding
W2= Butt welding

Setting temperature table(°F)

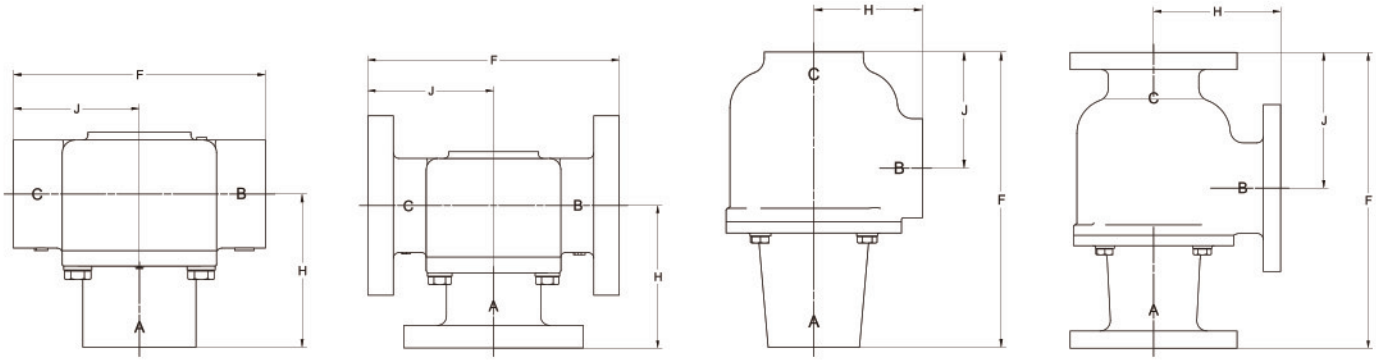
Setting temperature	1540 series		1545 series		2558 series	
	Crack temperature	Full open temperature	Crack temperature	Full open temperature	Crack temperature	Full open temperature
065	/	/	/	/	59	77
075	/	/	/	/	68	85
085	79	93	79	93	75	93
095	86	104	86	104	86	104
100	92	108	92	108	91	108
110	100	117	100	117	100	117
120	112	131	112	131	110	131
130	120	140	120	140	120	140
140	130	151	130	151	130	150
150	140	160	140	160	140	160
160	150	170	150	170	150	170
170	163	180	163	180	163	180
175	170	185	170	185	170	185
180	175	190	175	190	175	190
190	185	200	185	200	185	200
200	/	/	/	/	194	212
205	200	218	200	218	200	218


1540 series


1545 series


2558 series

Notes: ① °C=(°F-32)×5÷9
② Other thermostats and setting temperature, please consult the manufacturer



Dimensions (mm)

Code	Valve Series															
	P series								T series							
	15PS	20PS	25PS	40PS	40PF	50PS	50PF	40TS	40TF	50TS	50TF	65TF	80TF	100TF	125TF	150TF
F	152	152	152	246	270	246	270	156	178	178	219	254	267	403	489	489
H	52	52	52	91	116	91	116	95	100	152	149	168	172	218	242	254
J	45	45	45	97	124	97	124	78	89	89	110	127	133	202	245	245

Weights (kg)

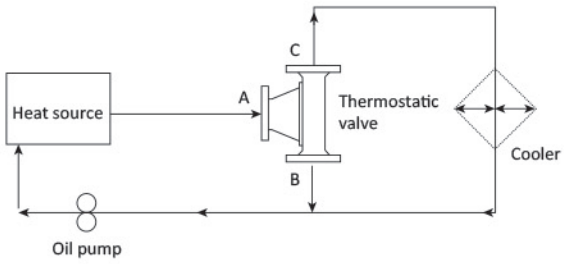
Body Material	Valve Series															
	P series								T series							
	15PS	20PS	25PS	40PS	40PF	50PS	50PF	40TS	40TF	50TS	50TF	65TF	80TF	100TF	125TF	150TF
Aluminium	1	1	1	4	6	4	6	1	3	3	5	8	9	18	22	29
Bronze	3	3	3	12	18	12	18	4	9	10	18	26	29	58	74	97
Cast iron	3	3	3	9	14	9	14	4	7	8	14	21	22	46	58	76
Stainless steel	3	3	3	11	16	11	16	4	8	9	16	23	25	51	65	85

Working Pressure (bar)

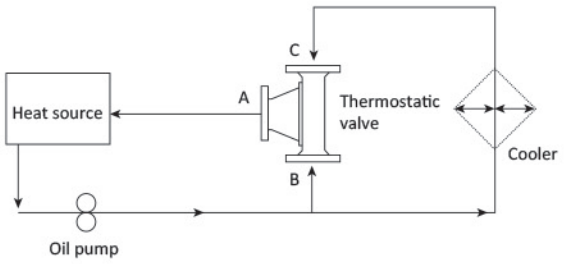
Body Materials	Valve Series															
	P series								T series							
	15PS	20PS	25PS	40PS	40PF	50PS	50PF	40TS	40TF	50TS	50TF	65TF	80TF	100TF	125TF	150TF
Aluminium	10	10	10	10	12	10	12	10	12	10	12	12	12	12	12	12
Bronze	12	12	12	12	13	12	13	12	13	12	13	13	13	13	13	13
Ductile iron	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
Steel	46	46	46	46	17	46	17	46	17	46	17	17	17	17	17	17
Stainless steel	41	41	41	41	16	41	16	41	16	41	16	16	16	16	16	16

Notes: ① Aluminum, bronze, cast iron & ductile iron refer to ASME B16.1 125#FF
② Steel & stainless steel refer to ASME B16.5 150#RF

Installation



Diverting System



Mixing System

Valve Selection

Selection Principle

Our thermostatic valves are designed to produce minimal pressure drop. The normal recommended pressure drop is between 0.14 to 0.5 bar.

Flow Coefficient

A Cv is the valve's flow coefficient (Cv), 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.

The basic formula to find a valve's Cv is shown below.

$$Cv = Q * \sqrt{\frac{SG}{Dp}}$$

Q =Flow in US gallons per minute
Dp =Pressure drop (PSI)
SG =Specific gravity of fluid (Water=1.0)
Cv =Valve flow coefficient

$$\longrightarrow \quad Dp = \left(\frac{Q}{Cv}\right)^2 * SG$$

Q =Flow in US gallons per minute
Dp =Pressure Drop (PSI)
SG =Specific gravity of fluid (Water=1.0)
Cv =Valve flow coefficient

Cv data table																
Valve series	15PS	20PS	25PS	40PS	40PF	50PS	50PF	40TS	40TF	50TS	50TF	65TF	80TF	100TF	125TF	150TF
Cv Data	10	14	19	29	29	45	45	29	29	50	50	94	101	200	353	459

Leak holes

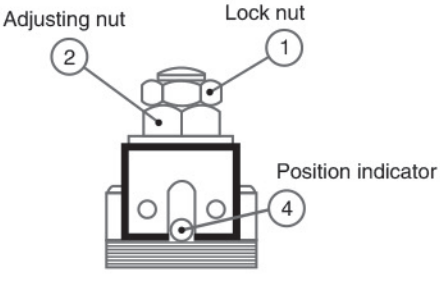
Leakholes are drilled to allow a small flow of fluid between ports B and C for the following reasons:

- To allow small flows to cooler during start up which slows down warm up cycle.
- 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 can not be used.
- In applications where valve is used as 2 way. With port 'B' blocked, when circuit is cold and valve closed leakhole is necessary to ensure small flow in order for the element to see temperature change. Allowing the unit to function.

Manual override

T series valves are fitted with a variable manual override which allows a progressive opening of port A to C. Manual override is often a requirement for marine applications. In automatic mode the valve will control the temperature automatically but turning the adjusting nut on top of the operator clockwise will cause the element to move toward its cold (extended) position, regardless of temperature. There is a position indicator on each manual override which shows the element position during manual operation. Each thermostatt assembly has its own manual override.

Manual override should only be used in case of an emergency or thermostat failure.



Manal override

CHANGZHOU ENKIAR VALVES CO.,LTD.

Add: Block 9-2# XGY Industrial Park, Changzhou City, 21300, China
Tel: + 0086 139 6118 2763
Email: sales@enkair.com
www.enkair.com

Version: EK202109EN04