



**Applications:**



AVTB-RA is a reverse acting thermostatic temperature controller used to regulate the water temperature where cooling is required. As the water temperature rises the thermostatic controller opens.

Typical applications could involve:

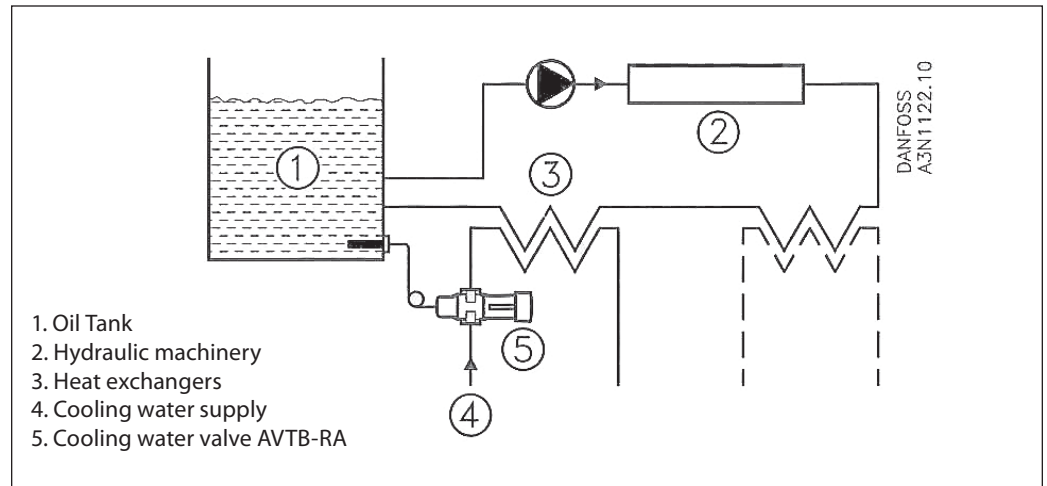
- Injection molding machines
- Compressors
- Vacuum pumps
- Dry cleaning machines

The thermostatic controller is a three part assembly consisting of the valve body, the thermostatic element and an adjustment assembly.

**Features:**

- For water
- Self-acting
- Opens on rising temperature
- Can be fitted in the supply or return
- Pressure range PN 16 (232 psi/16 bar)

**Typical Application:**



**Ordering Information:**

Code No.	Model	Connection (FNPT)	Capillary Tube Length	Max. Sensor Temperature °F (°C)	C <sub>v</sub>	Temperature Range °F (°C)
003N6032RA	AVTB-RA 15	1/2"	6' 6" (2.0 m)	130 (55)	2.2	32-85 (0-30)
003N6252RA				190 (90)		77-150 (20-60)
003N6272RA				255 (125)		125-190 (50-90)
003N7032RA	AVTB-RA 20	3/4"		130 (55)	4.0	32-86 (0-30)
003N7252RA				190 (90)		70-150 (20-60)
003N7272RA				255 (125)		125-190 (50-90)
003N8032RA	AVTB-RA 25	1"		130 (55)	6.4	32-86 (0-30)
003N8252RA				190 (90)		70-150 (20-60)
003N8272RA				255 (125)		125-190 (50-90)

**Ordering Information (Cont.):**

*Accessories*

Code No.	Components
<b>003N0056</b>	Capillary tube gland, 3/4" NPT
<b>003N0418</b>	Gasket for capillary tube gland
<b>AVTBWELL</b>	Sensor pocket, 3/4" NPT, brass
<b>003N0053</b>	Sensor pocket, 3/4" NPT, stainless steel

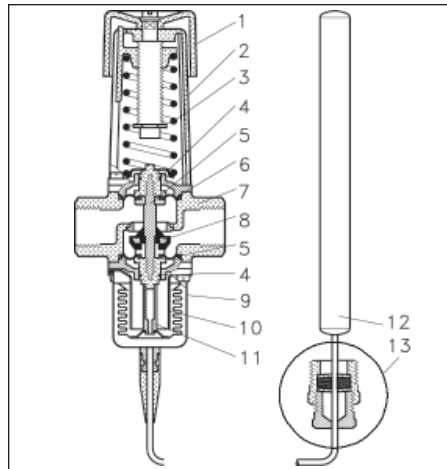
<sup>1</sup>Include gasket for capillary tube gland

*Spare Parts*

Code No.	Components	Cap. tube length ft (m)
<b>003N0075</b>	Thermostatic element 32-85°F (0-30°C)	6'6 (2)
<b>003N0078</b>	Thermostatic element 77-150°F (20-60°C)	
<b>003N0062</b>	Thermostatic element 125-190°F (50-90°C)	
<b>003N4006</b>	For 1/2"	Repair set: Two diaphragms, two O-rings, one rubber cone, one tube of grease and eight valve cover crews
<b>003N4007</b>	For 3/4"	
<b>003N4008</b>	For 1"	
<b>003N6100</b>	1/2"	
<b>003N7100</b>	3/4"	Brass AVT body and adjustment knob, less element
<b>003N8100</b>	1"	
<b>003N0520</b>	AVT spare handle	

**Design:**

1. Handle for temperature setting
2. Spring housing
3. Setting spring
4. O-ring
5. Diaphragm
6. Spindle
7. Valve body
8. Valve cone
9. Bellows
10. Bellows stop
11. Pressure stem
12. Temperature sensor
13. Capillary tube gland



**Materials, parts in contact with water:**

- |                       |   |
|-----------------------|---|
| Valve body:           | Ms 58, hot-pressed                                |
| Other metal parts:    | Ms 58   |
| Diaphragms:           | EPDM rubber<br>(alt. NBR rubber for mineral oils) |
| Capillary tube gland: | NBR rubber  |
| Valve cone:           | NBR rubber  |
| Valve seat:           | CR Ni steel                                       |
| Sensor:               | Cu  |
| Sensor pocket:        | Ms 63   |

**Specifications:**

Supply temperature range:	-13°F to 266°F (-25°C to 130°C)
Maximum working pressure:	232 psi (16 bar)
Maximum differential pressure:	100 psi (7 bar)
Maximum test pressure:	365 psi (25 bar)

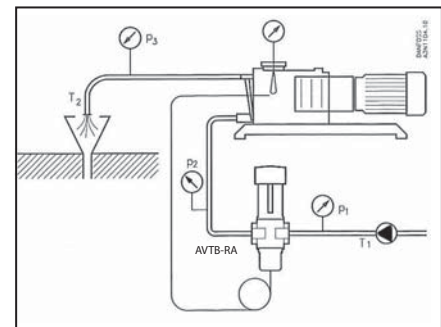
**Sizing:**

*Example*

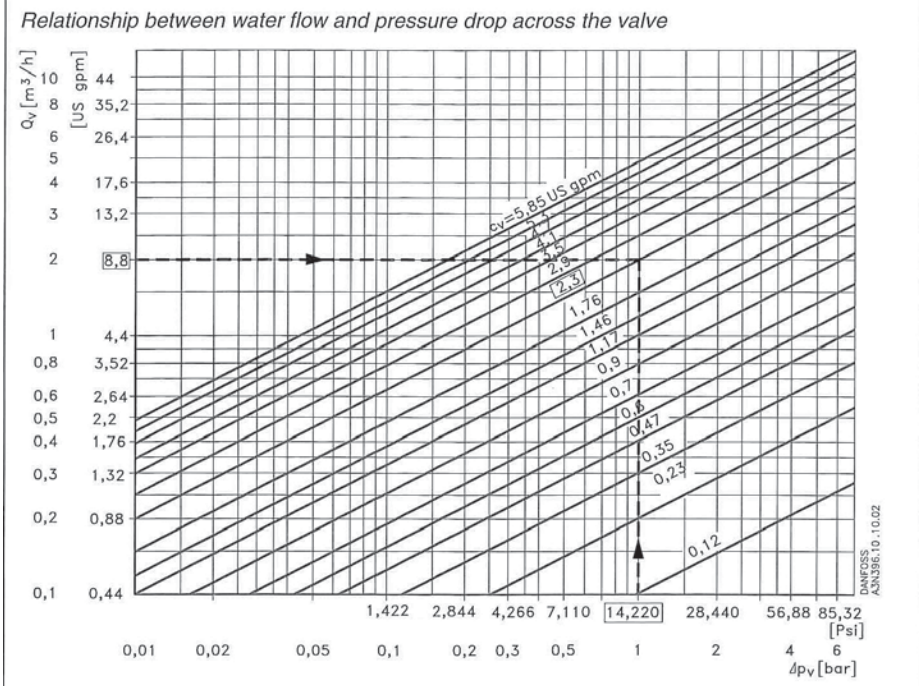
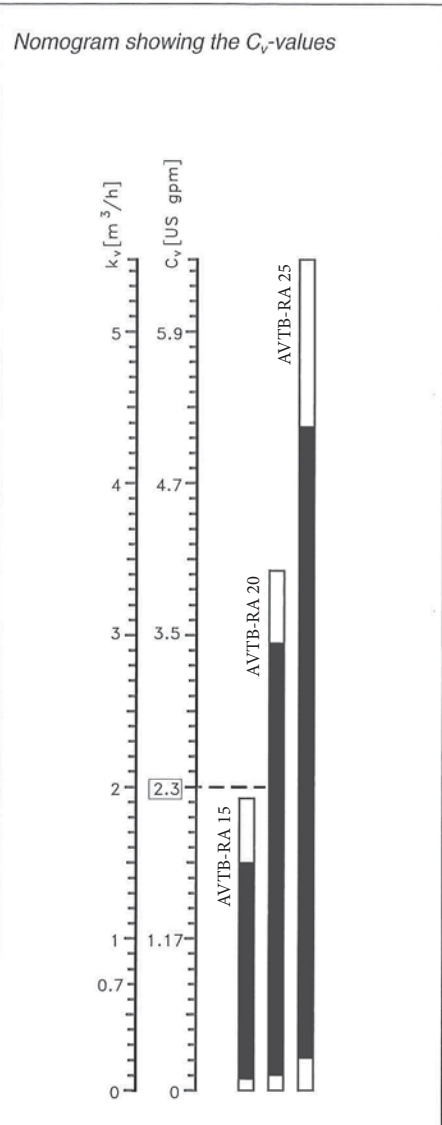
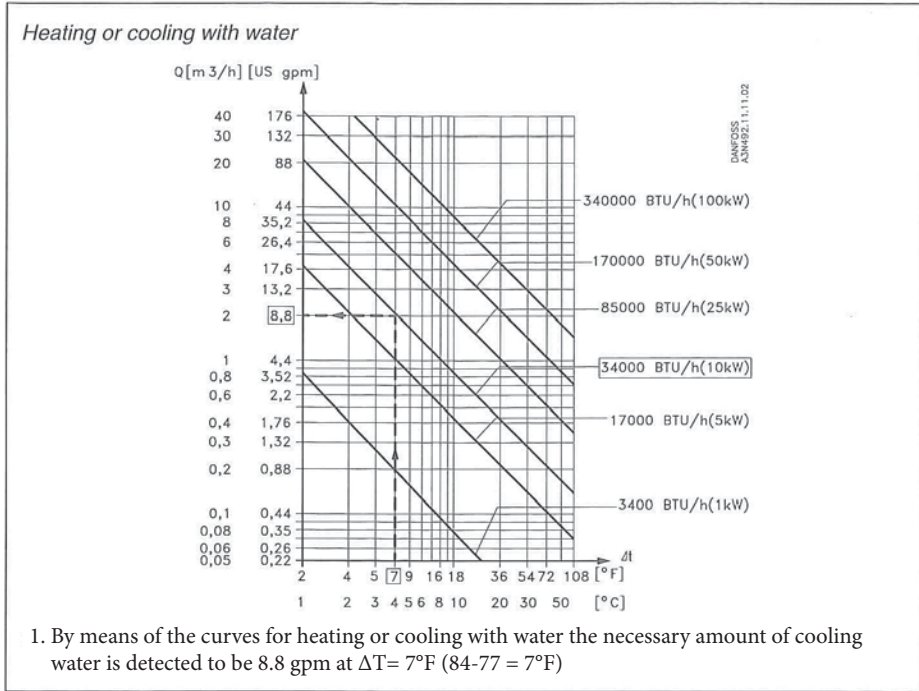
Cooling water valve for temperature regulation of a vacuum pump. Regulation of the oil temperature is required. The sensor to be placed horizontally.

*Given*

- Necessary cooling effect at full load, 34,000 BTU/h
- Required oil temperature: 113°F (45°C)
- Cooling water pressure  $P_1 = 28.5$  psi (2 bar)
- Outlet pressure  $P_3 = 0$  psi (0 bar)
- Cooling water temperature  $T_1 = 77$ °F (25°C)
- Outlet temperature  $T_2 = 84$ °F (29°C), ( $\Delta T = 7$ °F (4°C))



Sizing:



$C_v$  values = water flow in US gpm at a pressure drop  $\Delta p = 1$  psi

2. In order to obtain an effective regulation, the pressure drop across the valve should be half the entire pressure drop:  $28\text{psi} (2\text{bar}) / 2 = 14.22\text{psi} (1 \text{ bar})$ . By means of the curves for the water amount and pressure drop the necessary  $C_v$  value is detected to be 2.3 US gpm.

3. By means of the bar chart the AVTB-RA 20 is the appropriate valve size for the application.

Temperature range: 77 to 150°F. Code no. 003N7252RA will meet the requirements

Due to the mounting conditions a sensor pocket is required. The 3/4" brass sensor pocket, code no. AVTBWELL is selected.

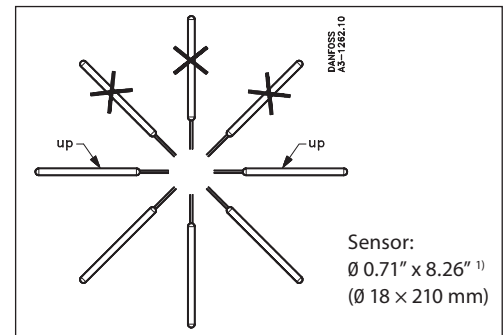
**Setting:**

Relation between scale numbers 1-5 and the closing temperature. The values given are approximate.

Scale setting	1	2	3	4	5		
Closing temperature (0 ... 30°C)		0	3	15	23	30	°C
(20 ... 60°C)	20		35	50	60	70	
(30 ... 100°C)	35		55	75	95	120	
(32...85°F)		32	39	60	73	85	°F
(77...150°F)	77		95	122	140	158	
(125...190°F)	125		150	176	194	210	

**Installation:**

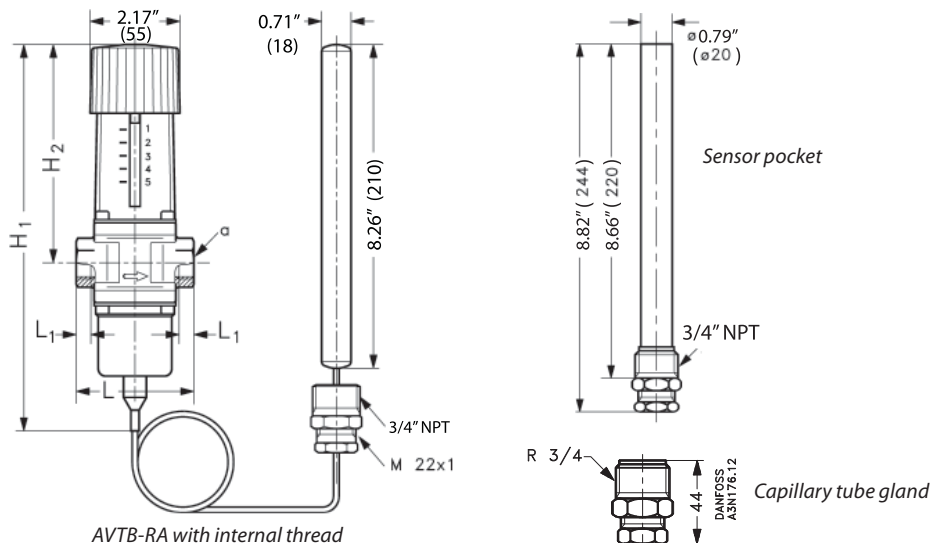
The valve can normally be fitted in the supply or return, in any position, provided the flow is always in the direction indicated by the arrow. Elements with a small sensor Ø 0.4" (9.5 mm) ("sensor warmer") must always have the valve housing fitted in the return.



<sup>1)</sup> The sensor can be mounted where the system temperature is either warmer or colder than the temperature in the valve body

**Dimensions:**

Type	H <sub>1</sub> in (mm)	H <sub>2</sub> in (mm)	L in (mm)	L <sub>1</sub> in (mm)	L <sub>2</sub> in (mm)	L <sub>3</sub> in (mm)	L <sub>4</sub> in (mm)	a (int. thread)
AVTB-RA 15	8.54 (217)	5.24 (133)	2.84 (72)	0.56 (14)	5.6 (141)	5.87 (149)	2.95 (75)	½" NPT
AVTB-RA 20	8.54 (217)	5.24 (133)	3.55 (90)	0.63 (16)	6.06 (154)	6.45 (164)	3.15 (80)	¾" NPT
AVTB-RA 25	8.54 (227)	5.43 (138)	3.74 (95)	0.75 (19)	6.61 (168)	6.57 (167)	3.27 (83)	1" NPT



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