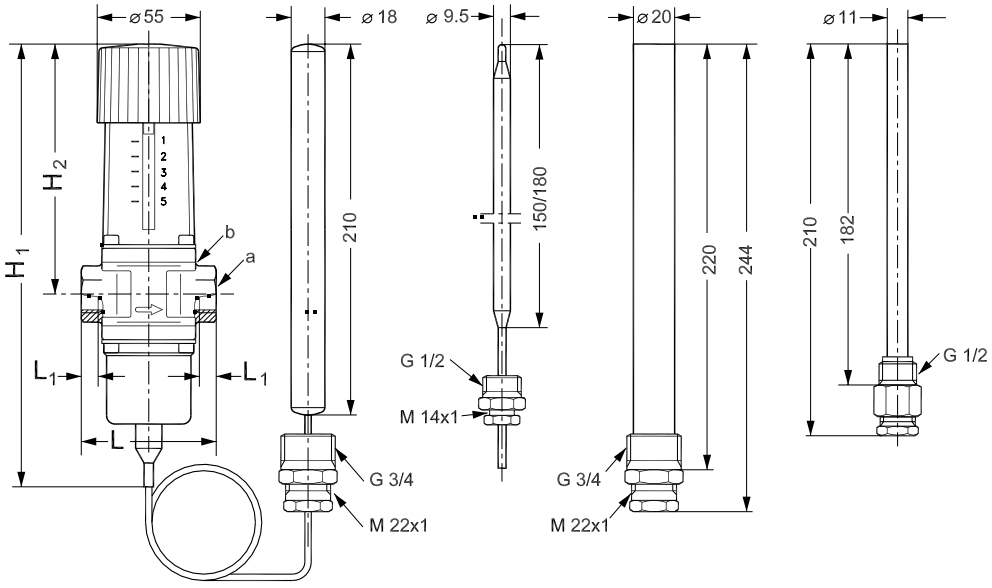
AVTA thermostatic valves for industrial cooling applications

AVTA thermostatic valves are widely used for temperature control in many different sorts of equipment and installations where cooling is required.

- Self-acting thermostatic valves for accurate cooling flow control based on sensor temperature
- Capillary sensor with adsorption charge, mass charge or universal charge, depending on application
- Open on rising temperature
- Brass or stainless steel valve body
- For extremely aggressive media, also available in titanium (please contact Danfoss)

Dimensions, weight and mounting angle:



All dimensions in millimetres

Brass Type	H_1 [mm]	H_2 [mm]	L [mm]	L_1 [mm]	a	b [mm]	Weight [kg]
AVTA 10	240	133	72	14	G ⅜	27	1.45
AVTA 15	240	133	72	14	G ½	27	1.45
AVTA 20	240	133	90	16	G ¾	32	1.50
AVTA 25	240	138	95	19	G 1	41	1.65

AVTA thermostatic valve

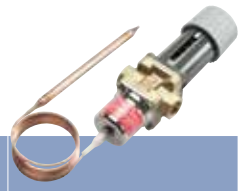
Adsorption charge. Brass valve body

Type	Connection	Temperature setting range [°C]	Max sensor temperature [°C]	K_v [m^3/h]	Sensor dimensions ø x L [mm]	Capillary tube, length [m]	Code number
AVTA 10	G ⅜	10 – 80	130	1.4	9.5 x 150	2.3	**003N1144**
AVTA 15	G ½	10 – 80	130	1.9	9.5 x 150	2.3	**003N0107**
AVTA 20	G ¾	10 – 80	130	3.4	9.5 x 150	2.3	**003N0108**
AVTA 25	G 1	10 – 80	130	5.5	9.5 x 150	2.3	**003N0109**

Universal charge. Brass valve body

Type	Connection	Temperature setting range [°C]	Max sensor temperature [°C]	K_v [m^3/h]	Sensor dimensions ø x L [mm]	Capillary tube, length [m]	Code number
AVTA 10	G ⅜	0 – 30	57	1.4	18 x 210	2	**003N1132**
AVTA 15	G ½	0 – 30	57	1.9	18 x 210	2	**003N2132**
AVTA 20	G ¾	0 – 30	57	3.4	18 x 210	2	**003N3132**
AVTA 25	G 1	0 – 30	57	5.5	18 x 210	2	**003N4132**
AVTA 10	G ⅜	25 – 65	90	1.4	18 x 210	2	**003N1162**
AVTA 15	G ½	25 – 65	90	1.9	18 x 210	2	**003N2162**
AVTA 20	G ¾	25 – 65	90	3.4	18 x 210	2	**003N3162**
AVTA 25	G 1	25 – 65	90	5.5	18 x 210	2	**003N4162**
AVTA 10	G ⅜	50 – 90	125	1.4	18 x 210	2	**003N1182**
AVTA 15	G ½	50 – 90	125	1.9	18 x 210	2	**003N2182**
AVTA 20	G ¾	50 – 90	125	3.4	18 x 210	2	**003N3182**
AVTA 25	G 1	50 – 90	125	5.5	18 x 210	2	**003N4182**

Mass charge. Brass valve body



Type	Connection	Temperature setting range [°C]	Max sensor temperature [°C]	K_v [m^3/h]	Sensor dimensions ø x L [mm]	Capillary tube, length [m]	Code number
AVTA 15	G ½	0 – 30	57	1.9	9.5 x 180	2	**003N0042**
AVTA 20	G ¾	0 – 30	57	3.4	9.5 x 180	2	**003N0043**
AVTA 15	G ½	25 – 65	90	1.9	9.5 x 180	2	**003N0045**
AVTA 20	G ¾	25 – 65	90	3.4	9.5 x 180	2	**003N0046**
AVTA 25	G 1	25 – 65	90	5.5	9.5 x 180	2	**003N0047**

Adsorption charge. Stainless steel valve body

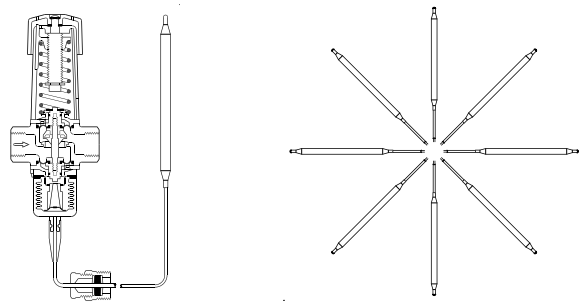
Type	Connection	Temperature setting range [°C]	Max sensor temperature [°C]	K_v [m^3/h]	Sensor dimensions ø x L [mm]	Capillary tube, length [m]	Code number
AVTA 15	G ½	10 – 80	130	1.9	9.5 x 150	2.3	**003N2150**
AVTA 20	G ¾	10 – 80	130	3.4	9.5 x 150	2.3	**003N3150**
AVTA 25	G 1	10 – 80	130	5.5	9.5 x 150	2.3	**003N4150**

For all types: Media temperature range: -25 – 130 °C.
For higher Kv values (larger capacities) and other requirements please contact Danfoss.
Ask Danfoss or your local wholesaler if larger size than G1 is needed

Charges

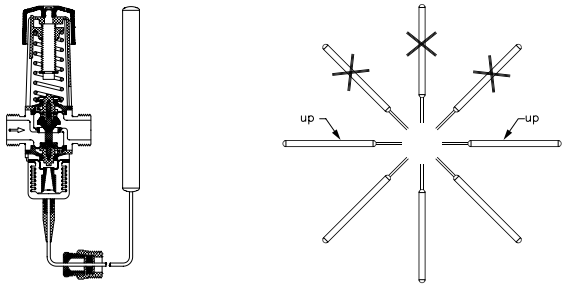
Adsorption charge

The charge consists of active carbon and CO_2 which is adsorbed on falling sensor temperature and thereby produce pressure changes in the element.
The sensor can be installed in any position as far as orientation and temperature are concerned.



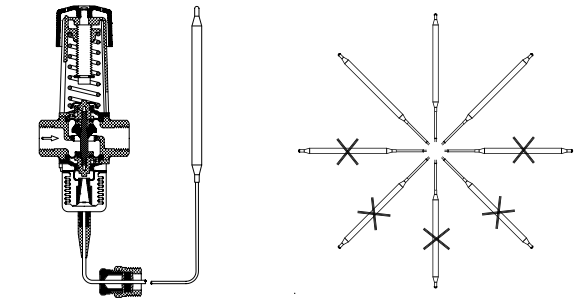
Universal charge

The charge is a mix of liquid and gas where the liquid surface (sensing point) is alway inside the sensor.
The sensor can be installed colder or warmer than the valve, and oriented as shown.



Mass charge

The charge is a mix of liquid and gas.
Due to the volumetric conditions the sensor must be installed warmer than the valve, since the liquid surface (sensing point) must be in the sensor. Orientation as shown.



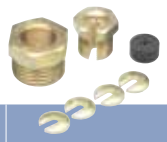
Spare parts and accessories for AVTA

Service sensor elements

Sensor size ø x L [mm]	Cap. tube, length [m]	Charge			Temperature range [°C]	Code number
		Adsorption	Universal	Mass		
18 x 210	2		✓		0 – 30	**003N0075**
18 x 210	2		✓		25 – 65	**003N0078**
18 x 210	2		✓		50 – 90	**003N0062**
9.5 x 180	2			✓	25 – 65	**003N0091**
9.5 x 150	2.3	✓			10 – 80	**003N0278**

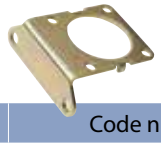
Sensor pockets

Sensor size ø x L [mm]	Connection standard	Connection size [inch]	Sensor pocket insertion [mm]	Pocket material		Code number
				Brass	Stainless steel	
9.5x180 / 9.5x150	ISO 228-1	G ½	182	✓		**017-436766**
9.5x180 / 9.5x150	ISO 7-1	G ½	182		✓	**003N0196**
18x210	ISO 228-1	G ¾	220	✓		**003N0050**
18x210	ISO 7-1	G ¾	220		✓	**003N0192**



Capillary tube glands

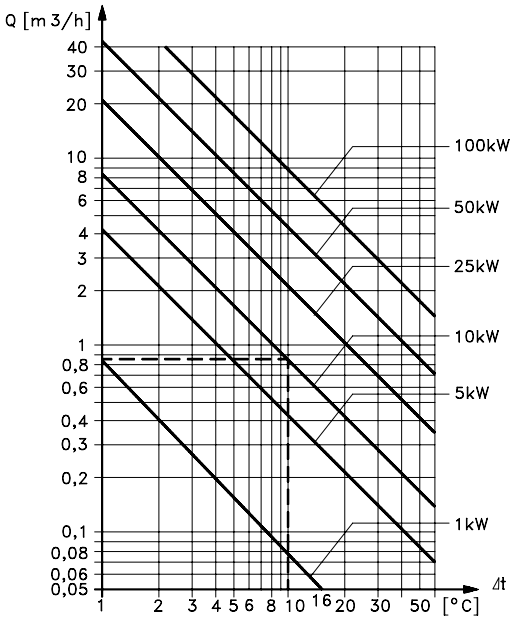
Sensor size ø x L [mm]	Connection standard	Connection size [inch]	Material	Charge		Code number
				Adsorption / Mass	Universal	
9.5x180 / 9.5x150	ISO 228-1	G ½	Brass	✓		**017-422066**
18x210	ISO 228-1	G ¾	Brass		✓	**003N0155**



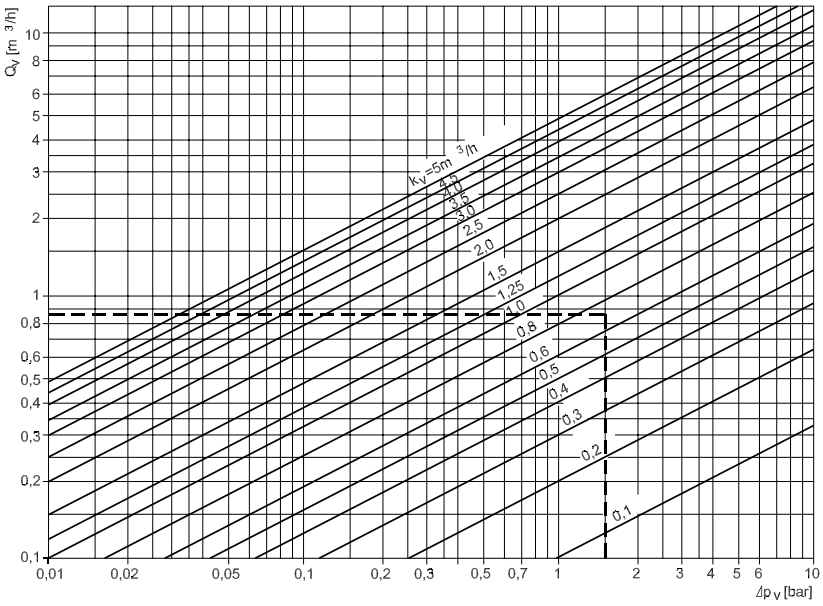
Bracket

Type	Material		Code number
Bracket	Zinc plated steel		**003N0388**

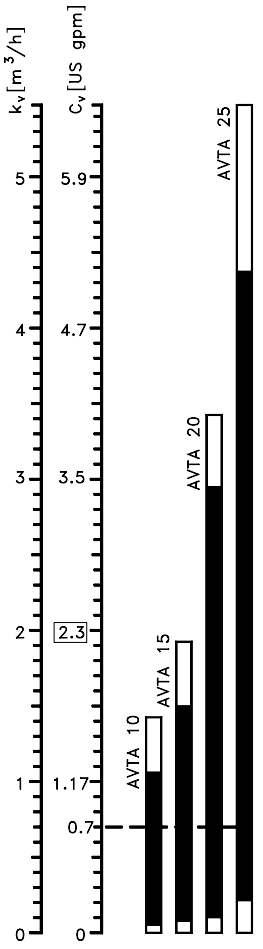
AVTA thermostatic valve - sizing

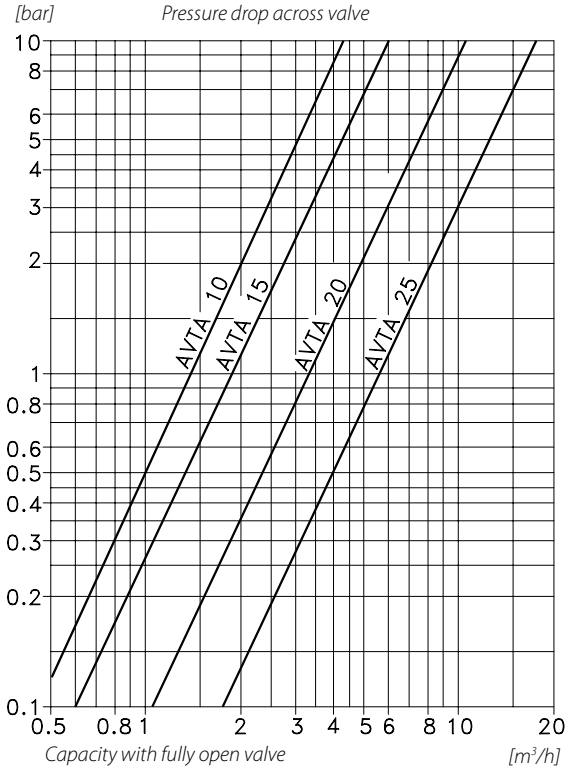


Heating or cooling with water.
Example: Necessary cooling output 10 kW with Δt = 10 °C.
Required flow 0.85 m³/h.



Relation between water quantity and pressure drop across valve.
Example: Flow 0.85 m³/h with a pressure drop of 1.5 bar.
The k_v value becomes 0.7 m³/h.



Nomogram showing the valve k_v range.
k_v values are always given for water flow in [m³/h] with a pressure drop Δp of 1 bar.
The valve should be selected so that the necessary k_v value lies in the middle of the regulation range.
Example: AVTA 10 and 15 are the most suitable for a k_v value of 0.7

Valve flow quantity in fully open position, as a function of pressure drop Δp.
With fully open valve the differential pressure should be around 50% of the total pressure drop across the cooling system.