KT 50

Flow and temperature controller

TA

Pressurisation & Water Quality › Balancing & Control › Thermostatic Control

ENGINEERING ADVANTAGE

The KT 50 is a rust resistant and highly effective flow and temperature controller that makes balancing and commissioning straightforward. Suitable for use in variable flow heating and cooling systems, the KT 50 is especially effective in industrial cooling systems as well as those where high pressure drop is required. It's also suitable for secondary side usage in district heating and comfort cooling systems. An actuator connection means it functions as a fully integrated control valve.

› Special internal geometry
Allows big pressure drop without noise.

› Adjustable flow
Ensures the design flow.

› Adapters
For use with most available actuators.

› Technical description

Application:
Central heating, cooling systems and in district heating substations, primary side.

Function:
Flow and temperature control.
Closes at increasing flow or according to actuator position.

Dimensions:
DN 65-200

Pressure class:
PN 16 or PN 25

Max. differential pressure (ΔpV):
1600 kPa = 16 bar

Pressure drop in the throttle (Fc):
15 kPa or 45 kPa

Temperature:
Max. working temperature: 150°C
Min. working temperature: -10°C

Media:
Water or neutral fluids, water-glycol mixtures.

Material:
Valve body: Ductile iron EN-GJS-400-18LT
Actuator body: Ductile iron EN-GJS-400-18LT
Diaphragms and gaskets: EPDM
Valve plug: Stainless steel with EPDM insert.
Valve seat: Stainless steel.

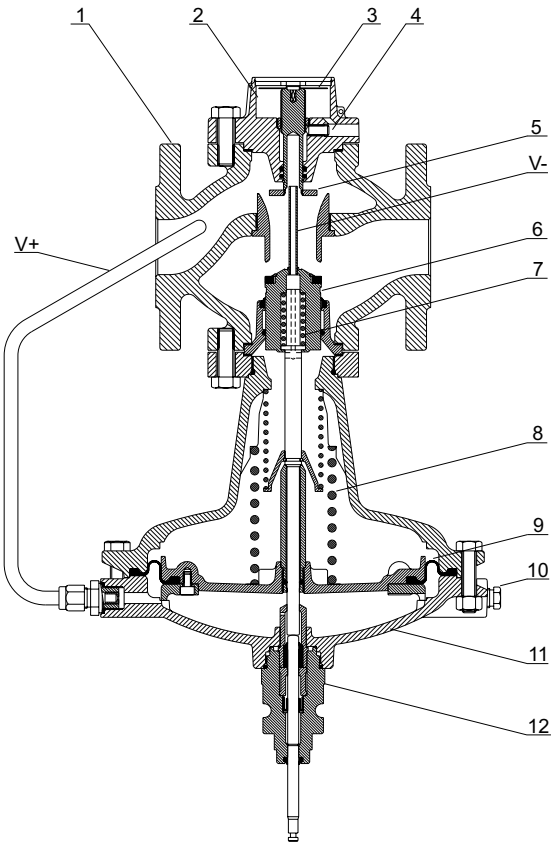
Surface treatment:
Duasolid painting.

Marking:
TA, DN, PN, Fc and flow direction arrow.

Flanges:
According to EN-1092-2:1997, type 21.

Actuators:
Min. lift: 20 mm
Min. force: 400 N

Operating function



The controller consists of a valve (1), a diaphragm actuator (11) and an adapter (12) for the connection of an electromotor actuator for temperature control.
The diaphragm actuator and electromotor actuator act parallely to the valve, totally independent one from the other.
The valve has a built-in throttle (5) with a flow adjustment scale (3). The valve's plug is protected against overload with a safety spring (7).
The pressure upstream the throttle acts as plus pressure (V+) to the bottom and the pressure downstream the throttle acts as minus pressure (V-) to the top side of the diaphragm.
The pressure difference on diaphragm (9) acts against the force of the working spring (8). The spring attempts to open, and the pressure difference attempts to close the valve.
There is only one value of the flow for one throttle position when the forces, that act to the diaphragm, are in balance. Therefore the flow, maintained by the controller, depends only on the throttle position and not on the pressures in front of and behind the valve.
As the valve is pressure relieved, no additional differential pressure controller is needed. Many electromotor actuators are applicable. Check the table of available adapters.
Adapters for other actuators are made on request.

Sizing

Select the size according to maximum flow. Control the pressure drop in the valve by using the formula:

$$\Delta p_{min} = Fc + \left(0.01 \frac{q}{Kvd}\right)^2 \qquad [l/h, kPa]$$

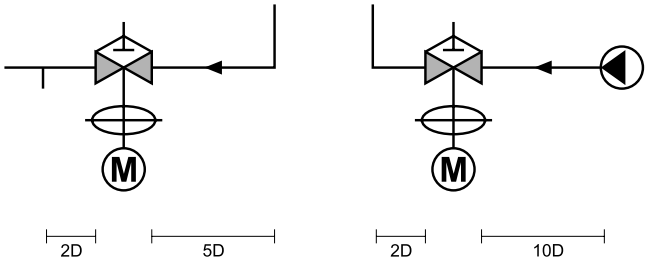
Fc is the constant pressure drop in the throttle (15 kPa or 45 kPa).

Installation

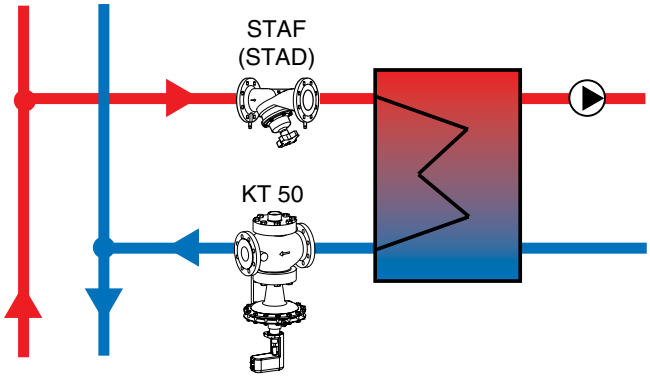
The valve can be installed in inlet or return pipe (upstream or downstream the consumer). The direction of the flow is shown by the arrow on the valve body. Check the allowed positions of the actuator.
It is recommended to install the controller in horizontal pipeline with actuator body below. Installation of a strainer upstream the controller is recommended.
It is important to ensure that working temperature and pressure do not exceed allowed values.
Before you mount the controller, check the fitting length of the controller, pitch diameter and the diameter of the holes for the screws.
When the pipeline and the controller are full of water and the pressure is stabilized, vent the controller by vent screws (10).
Mount the actuator according to the suppliers manual.
Installation of balancing valve STAD (STAF) is recommended to enable flow measurement, comissioning and trouble-shooting with balancing instrument TA-SCOPE or measuring instrument TA-CMI.

Normal pipe fittings

Try to avoid mounting taps and pumps immediately before the valve.



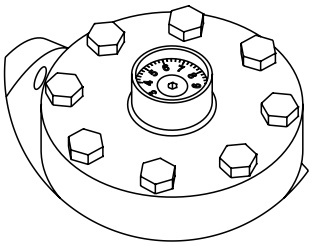
Application example



Setting

Flow adjustment

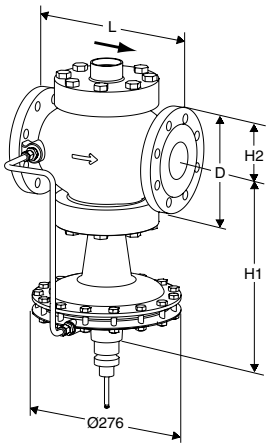
1. Release the fixing screw (4).
2. Turn the throttle (5) clockwise down to the start position (the point 0,0 on the adjustment scale (3) of the throttle and on the scale (2) of the cover should be aligned).
3. Then adjust the corresponding number of the adjustment scale turns according to flow chart and the scale of the cover.
4. At the end, tighten the fixing screw.



The water flow has been measured on each individual valve in all positions of adjustment scale. Each valve has its own identity number and individual flow chart included in the scope of supply. The copy of the chart can be provided by supplier. Provide next data: type, DN, Fc, serial number.

Accuracy of the flow adjustment: ±2%.

Articles



Fc = 15 kPa

Article No	DN	D	L	H1	H2	Kvd	q_{min} [m³/h]	q_{max} [m³/h]	Kg
PN 16									
52 753-165	65	185	290	355	135	55	1,5	21	44
52 753-190	100	235	350	455	175	120	4,0	45	77
52 753-191	125	270	400	465	190	145	5,0	60	94
52 753-192	150	300	480	490	227	230	15	200	224
52 753-193	200	360	600	535	260	360	20	230	286
PN 25 (DN 32-50 and DN 80 also fit PN 16 flanges)									
52 753-032	32	140	180	310	102	21	0,8	8,5	27
52 753-040	40	150	200	310	102	25	0,8	9,5	28
52 753-050	50	165	230	335	116	32	1,0	13	35
52 753-065	65	185	290	355	135	55	1,5	21	44
52 753-080	80	200	310	365	149	70	2,5	24	55
52 753-090	100	235	350	455	175	120	4,0	45	77
52 753-091	125	270	400	465	190	145	5,0	60	94
52 753-092	150	300	480	490	227	230	15	200	224
52 753-093	200	360	600	535	260	360	20	230	286

Fc = 45 kPa

Article No	DN	D	L	H1	H2	Kvd	q_{min} [m³/h]	q_{max} [m³/h]	Kg
PN 16									
52 753-265	65	185	290	355	135	55	2,4	34	44
52 753-290	100	235	350	455	175	120	6,4	72	77
52 753-291	125	270	400	465	190	145	8,0	96	94
52 753-292	150	300	480	490	227	230	24	320	224
52 753-293	200	360	600	535	260	360	32	368	286
PN 25 (DN 32-50 and DN 80 also fit PN 16 flanges)									
52 753-332	32	140	180	310	102	21	1,3	14	27
52 753-340	40	150	200	310	102	25	1,3	15	28
52 753-350	50	165	230	335	116	32	1,6	21	35
52 753-365	65	185	290	355	135	55	2,4	34	44
52 753-380	80	200	310	365	149	70	4,0	38	55
52 753-390	100	235	350	455	175	120	6,4	72	77
52 753-391	125	270	400	465	190	145	8,0	96	94
52 753-392	150	300	480	490	227	230	24	320	224
52 753-393	200	360	600	535	260	360	32	368	286

→ = Flow direction
Kvd = Is the Kv value of the differential pressure control component when fully open, used to calculate the minimum pressure drop necessary for the valve to operate according to the formula found under “Sizing”.

Adapters for actuators

Article No	
52 757-002	Johnson Control V7420
52 757-004	TAC Forta
52 757-005	TA Mc55
52 757-010	Honeywell ML
52 757-012	Siemens SQX
52 757-013	Belimo NV

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