KT 512, KTH 512, KTM 512, KTMI 512 6-10-25 XX

Flow and temperature controller **2007.06**

KT 512
DN 15-20

KTH, KTM, KTMI 512
DN 25-50

KTM, KTMI 512
DN 65-100

Technical description

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

Function:
Differential pressure control over the built-in control valve and flow control.
Closes at increasing flow or temperature.
KT 512: Linear characteristics for less demanding installations
KTH 512: Linear characteristics
KTM 512: Equal percentage characteristics
KTMI 512: Equal percentage characteristics, inverse function.

Pressure class:
PN 25

Max. differential pressure:
KT 512: 500 kPa = 5 bar
KTH/KTM/KTMI 512: 1600 kPa = 16 bar

Pressure drop on the throttle (Fc):
12 kPa, 20 kPa or 40 kPa.

Temperature:
Max. working temperature: 140°C
Min. working temperature: -10°C

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

Material:
Valve body: Ductile iron EN-GJS-400-18LT
Diaphragms and gaskets: EPDM
Valve plug:
KT 512: EPDM, flat
KTH 512: Stainless steel and EPDM, flat.
KTM/KTMI 512: Stainless steel and EPDM, conical.

Surface treatment:
Electrophoretic painting.

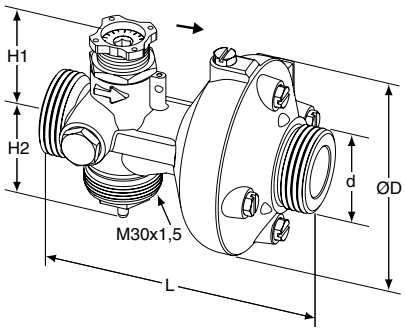
Marking:
TA, DN, PN, Fc, Kvs, GGG-40.3 and flow direction arrow.

Flanges:
DN 15-50 (optional): According to EN-1092-2:1997, type 16.
DN 65-125: According to EN-1092-2:1997, type 21.

Actuators:
The valves can be equipped with adapters for the most common actuators - see accessories page.
The max. lift of the actuator must be checked.

Max. lift of the control valve:
KT 512: 3 mm
KTH/KTM 512, DN 15-50: 10 mm
KTM/KTMI 512, DN 65-100: 20 mm
KTMI 512, DN 15-50: 6 mm

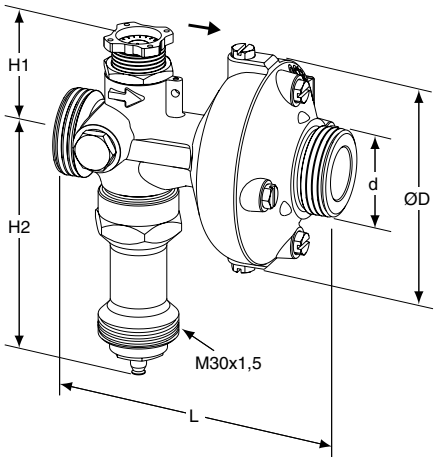
KT 512



TA No	DN	d	D	L	H1	H2	Kvs	q_{max} (m^3/h)	Kg
Fc = 12 kPa									
52 754-120	15/20	R1	78	110	45	40	4,1	0,9	1,0
Fc = 20 kPa									
52 754-020	15/20	R1	78	110	45	40	4,1	1,1	1,0
Fc = 40 kPa									
52 754-220	15/20	R1	78	110	45	40	4,1	1,5	1,0

→ = Flow direction

KTH 512

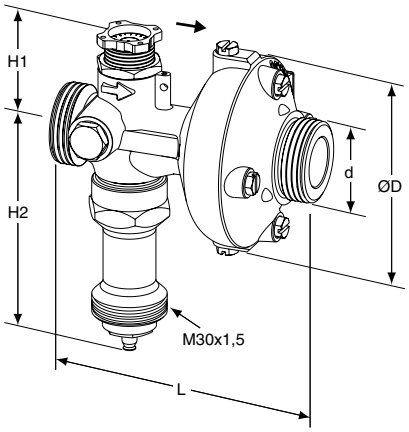


TA No	DN	d	D	L	H1	H2	Kvs	q_{max} (m^3/h)	Kg
Fc = 12 kPa									
52 755-120	15/20	R1	78	110	45	98	4,1	0,9	1,5
52 755-125	25/32	R1 1/4	97	150	53	94	16	3,8	2,0
52 755-140	40/50	R2	125	190	66	94	35	7	4,5
Fc = 20 kPa									
52 755-020	15/20	R1	78	110	45	98	4,1	1,1	1,5
52 755-025	25/32	R1 1/4	97	150	53	94	16	4,4	2,0
52 755-040	40/50	R2	125	190	66	94	35	10	4,5
Fc = 40 kPa									
52 755-220	15/20	R1	78	110	45	98	4,1	1,5	1,5
52 755-225	25/32	R1 1/4	97	150	53	94	16	6,2	2,0
52 755-240	40/50	R2	125	190	66	94	35	13	4,5

→ = Flow direction

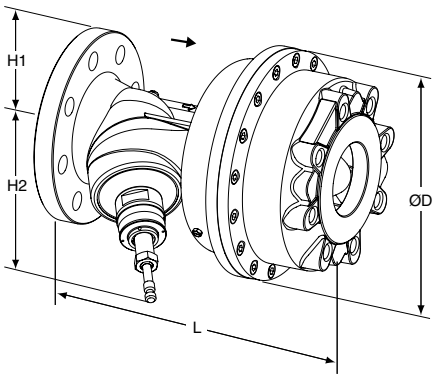
KTM 512

DN 15-50



TA No	DN	d	D	L	H1	H2	Kvs	q_{max} (m^3/h)	Kg
Fc = 12 kPa									
52 756-220	15/20	R1	78	110	45	98	4,1	0,9	1,5
52 756-225	25/32	R1 1/4	97	150	53	94	16	3,4	2,0
52 756-240	40/50	R2	125	190	66	94	35	7	4,5
Fc = 20 kPa									
52 756-020	15/20	R1	78	110	45	98	4,1	1,1	1,5
52 756-025	25/32	R1 1/4	97	150	53	94	16	4,2	2,0
52 756-040	40/50	R2	125	190	66	94	35	10	4,5
Fc = 40 kPa									
52 756-420	15/20	R1	78	110	45	98	4,1	1,5	1,5
52 756-425	25/32	R1 1/4	97	150	53	94	16	5,3	2,0
52 756-440	40/50	R2	125	190	66	94	35	13	4,5

DN 65-100

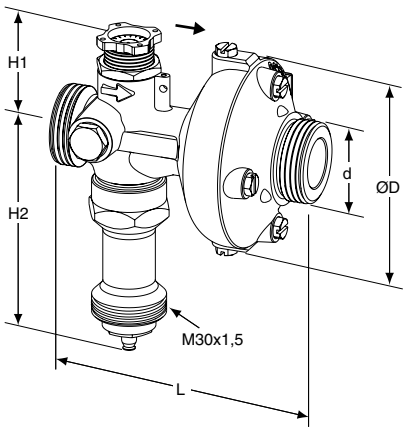


→ = Flow direction

TA No	DN	D	L	H1	H2	Kvs	q_{max} (m^3/h)	Kg
Fc = 12 kPa (PN 25)								
52 756-265	65	220	290	110	145	70	15	22
52 756-280	80	220	310	110	145	70	18	24
52 756-290	100	320	350	160	185	150	32	54
Fc = 20 kPa (PN 25)								
52 756-065	65	220	290	110	145	70	20	22
52 756-080	80	220	310	110	145	70	24	24
52 756-090	100	320	350	160	185	150	40	54
Fc = 40 kPa (PN 25)								
52 756-465	65	220	290	110	145	70	30	22
52 756-480	80	220	310	110	145	70	34	24
52 756-490	100	320	350	160	185	150	55	54
Fc = 12 kPa (PN 16)								
52 786-290	100	320	350	160	185	150	32	54
Fc = 20 kPa (PN 16)								
52 786-090	100	320	350	160	185	150	40	54
Fc = 40 kPa (PN 16)								
52 786-490	100	320	350	160	185	150	55	54

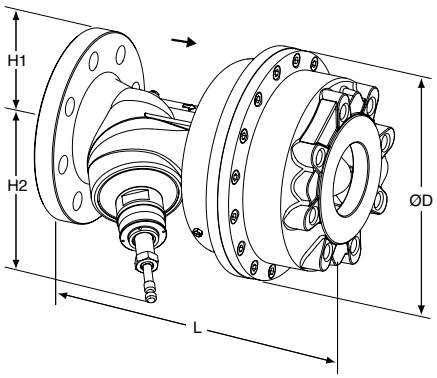
KTMI 512

DN 15-50



TA No	DN	d	D	L	H1	H2	Kvs	q_{max} (m^3/h)	Kg
Fc = 12 kPa									
52 756-320	15/20	R1	78	110	45	98	4,1	0,9	1,5
52 756-325	25/32	R1 1/4	97	150	53	94	16	3,4	2,0
52 756-340	40/50	R2	125	190	66	94	35	7	4,5
Fc = 20 kPa									
52 756-120	15/20	R1	78	110	45	98	4,1	1,1	1,5
52 756-125	25/32	R1 1/4	97	150	53	94	16	4,2	2,0
52 756-140	40/50	R2	125	190	66	94	35	10	4,5
Fc = 40 kPa									
52 756-520	15/20	R1	78	110	45	98	4,1	1,5	1,5
52 756-525	25/32	R1 1/4	97	150	53	94	16	5,3	2,0
52 756-540	40/50	R2	125	190	66	94	35	13	4,5

DN 65-100

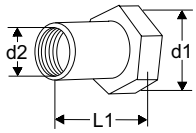


→ = Flow direction

TA No	DN	D	L	H1	H2	Kvs	q_{max} (m^3/h)	Kg
Fc = 12 kPa (PN 25)								
52 756-365	65	220	290	110	145	70	15	22
52 756-380	80	220	310	110	145	70	18	24
52 756-390	100	320	350	160	185	150	32	54
Fc = 20 kPa (PN 25)								
52 756-165	65	220	290	110	145	70	20	22
52 756-180	80	220	310	110	145	70	24	24
52 756-190	100	320	350	160	185	150	40	54
Fc = 40 kPa (PN 25)								
52 756-565	65	220	290	110	145	70	30	22
52 756-580	80	220	310	110	145	70	34	24
52 756-590	100	320	350	160	185	150	55	54
Fc = 12 kPa (PN 16)								
52 786-390	100	320	350	160	185	150	32	54
Fc = 20 kPa (PN 16)								
52 786-190	100	320	350	160	185	150	40	54
Fc = 40 kPa (PN 16)								
52 786-590	100	320	350	160	185	150	55	54

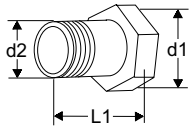
Connections for DN 15-50

With female thread



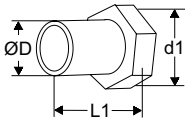
TA No	d1	d2	L1
52 759-015	G1	G1/2	26
52 759-020	G1	G3/4	32
52 759-025	G1 1/4	G1	47
52 759-032	G1 1/4	G1 1/4	52
52 759-040	G2	G1 1/2	52
52 759-050	G2	G2	64,5

With male thread



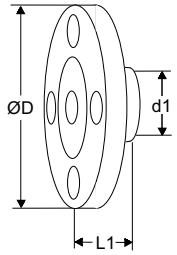
TA No	d1	d2	L1
52 759-115	G1	G1/2	34
52 759-120	G1	G3/4	40
52 759-125	G1 1/4	G1	40
52 759-132	G1 1/4	G1 1/4	45
52 759-140	G2	G1 1/2	45
52 759-150	G2	G2	50

For welding



TA No	d1	D	L1
52 759-315	G1	20,8	37
52 759-320	G1	26,3	42
52 759-325	G1 1/4	33,2	47
52 759-332	G1 1/4	40,9	47
52 759-340	G2	48,0	47
52 759-350	G2	60,0	52

With flange



TA No	d1	D	L1
52 759-515	G1	95	10
52 759-520	G1	105	20
52 759-525	G1 1/4	115	5
52 759-532	G1 1/4	140	15
52 759-540	G2	150	5
52 759-550	G2	165	20

Adapters for actuators

TA No	
52 757-001	Siemens SQS
52 757-002	Johnson Control V7420
52 757-003	Sauter AVM, AVF, SR 25, 52, 759, 702, L4
52 757-004	TAC Forta
52 757-005	TA Mc55
52 757-006	Heimeier EMO-3
52 757-007	Lineg
52 757-008	Danfoss AMV
52 757-009	Belimo NRDVX
52 757-010	Honeywell ML
52 757-011	Samson 5825
52 757-012	Siemens SQX
52 757-013	Belimo NV

Operating function

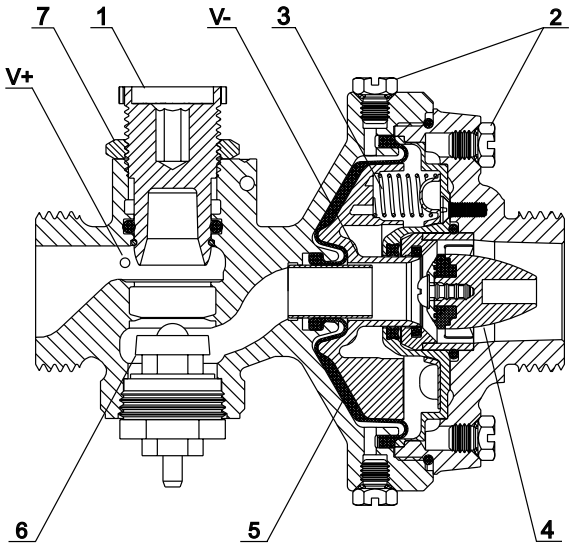
The throttle for flow adjustment (1), valve for temperature regulation (6) and inline flow regulating valve (4) are built one after another in one common housing.
Pressure upstream the throttle acts through an internal impulse pipe (V+) to the inlet side of the diaphragm (5) in the control valve and attempts to close it.
Pressure downstream the throttle acts through another internal impulse pipe (V-) to the outlet side of the diaphragm and together with the spring force (3) attempts to open the valve.
The accuracy of flow regulation is independent on the pressures in front of and behind the controller.
As the temperature control valve is pressure relieved, no additional differential pressure controller is needed and it is possible to use low force actuators.

KT 512
For automatic control of flow and temperature, mainly in central heating and air-conditioning. Usually Fc = 12 kPa is enough. Maximal pressure drop in valve is 5 bar.

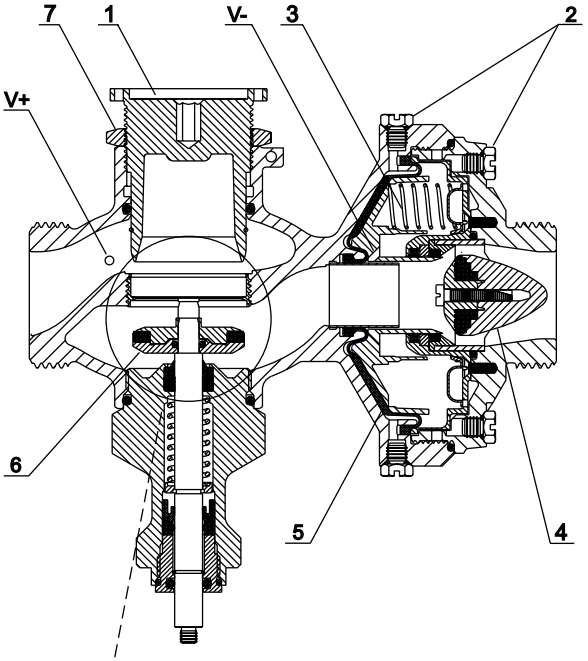
KTH 512 / KTM 512
Mainly in district heating substations, primary side, as well as in central heating and air-conditioning. Fc= 20 kPa is recommended. Maximal pressure drop in valve is 16 bar. KTH 512 has a flat valve's plug with linear characteristic. KTM 512 has a conical valve's plug with equal percentage characteristics. If safety function is needed, these valves are used with the actuators that extend the stem in case of power failure.

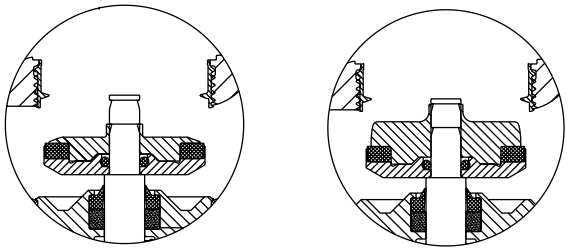
KTMI 512
KTMI is a KTM valve with inversed action. Use in district heating substations, if safety function is needed, with the actuators that retract the steam in case of power failure.

KT 512

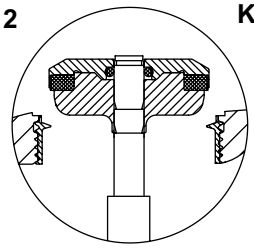


KTH/KTM/KTMI 512



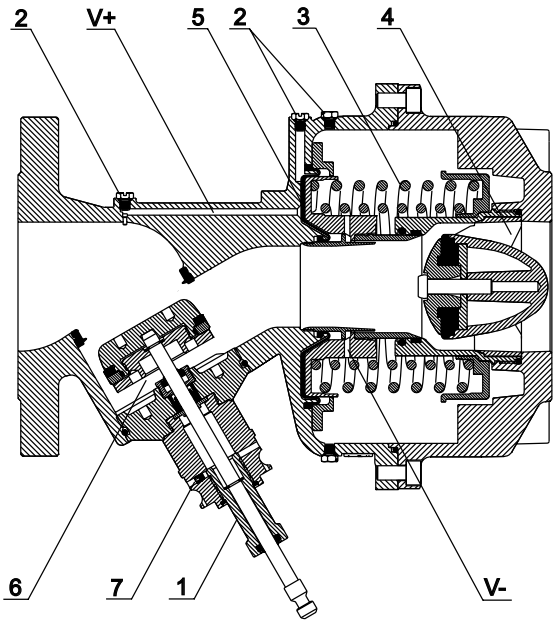


KTH 512 **KTM 512**



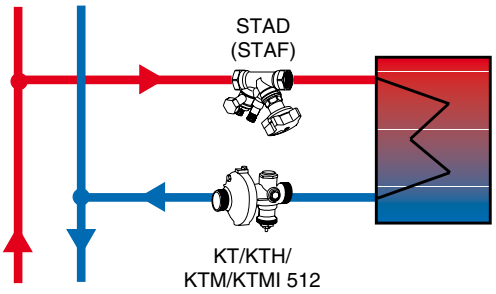
KTMI 512

KTM 512, DN 65-100



Installation

Install the controller in the return pipe (downstream the consumer) or in the inlet pipe (upstream the consumer).
It is recommended to install in the return pipe because of the lower temperature.
The flow direction is shown by the arrow (11) on the valve's body. The best position is horizontal with vent screws on top and the flow adjustment scale should be visible.



If you use the electrical actuator, it is recommended to instal the controller with adapter on top or laterally, that prevents the water to come into contact with electricity. Installation of a strainer upstream of the valve is recommended.
It is important to ensure that the working temperature and pressure do not exceed allowed values.

Before you mount the controller, check the fitting length of the controller and distance between connections on the pipeline. Fit the connections (welding and threaded ends) to the pipeline first, then clean the remains of welding if needed. Then install the controller. If you use flanged connections, check 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 the vent screws (2).

Instead of the plug R1/4 you can install drain valve or measurement nipple for pressure or temperature measurement.

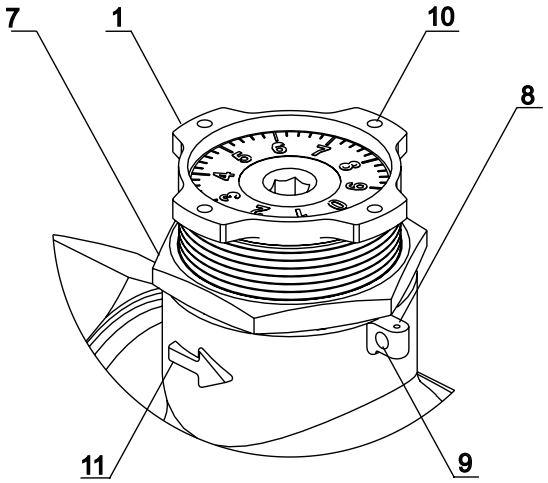
Installation of balancing valve STAD (STAF) is recommended to enable flow measurement, commissioning and troubleshooting with balancing instrument TA-CBI or measuring instrument TA-CMI.

Setting

Flow adjustment DN 15-50

1. Unscrew the fixing nut (7) on a throttle up till the end.
2. Turn the throttle (1) clockwise down to the start position (the point 0,0 on the adjustment scale and the red pointer (8) on the body should be aligned).
3. Then adjust the corresponding number of scale turns according to the flow chart.
4. When the flow is adjusted, tighten a fixing nut clockwise down untill it stops.
5. It is possible to secure the position of a throttle with the leaden seal - use holes on the body (9) and the throttle (10).

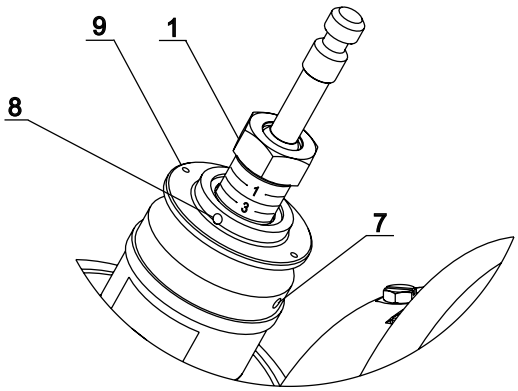
The water flow has been measured on each individual valve in all positions of adjustment scale.



Flow adjustment of DN 65-100

1. Unscrew the fixing screw (7) with an Allen key 2 mm.
2. Screw the flow adjustment screw (1) clockwise until it stops (setting 0,0 on the adjustment scale).
3. Unscrew the flow adjustment screw for the necessary full number of turns.
4. Then unscrew the flow adjustment screw further until the corresponding decimal number is aligned with the pointer (8).
5. 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 flow chart corresponds to water only. A copy of the chart can be provided by supplier.
Provide next data: type, DN, Fc, serial number.

Sizing

Select the size according to maximal flow which depends on nominal size (DN) and pressure drop in the throttle (Fc).
Total pressure drop is calulated by the formula:
$\Delta p = Fc + 100 \times q^2 / Kvs^2$ [kPa], where q is flow in m^3/h and Fc is constant pressure drop in the throttle (12, 20 or 40 kPa).