CONTROL VALVES / PRESSURE COMPENSATED VALVES

PRESSURE INDEPENDENT BALANCING AND CONTROL VALVE – EQM

High-performing and compact, these pressure-independent control valves for variable flow heating and cooling systems are particularly effective in situations requiring high temperatures and/or pressure drop. Also suitable for use on the secondary side in district heating and comfort cooling systems. Rust protection is assured thanks to the electrophoretically painted ductile iron body, while the parabolic plug delivers EQM characteristics.

INLINE DESIGN
Allows big pressure drop without noise.

ADJUSTABLE FLOW
Ensures the design flow.

ADAPTERS
Most available actuators can be used.

TECHNICAL DESCRIPTION

Application:
District heating and cooling systems with variable flow.

Functions:
Differential pressure control over the built-in control valve and flow control.
Modified equal percentage characteristics.

Dimensions:
DN 15-125

Pressure class:
PN 25 and PN 16

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

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

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

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

Material:
Valve body: Ductile iron EN-GJS-400
Diaphragms and gaskets: EPDM
Valve plug: EPDM/Stainless steel

Surface treatment:
Electrophoretic painting.

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

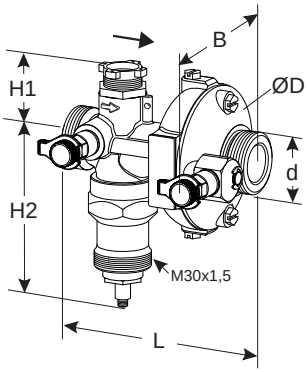
Flanges:
DN 15-50: According to EN-1092-2:1997, type 16.
DN 65-125: According to EN-1092-2:1997, type 21.

Actuators:
KTM 512 can be equipped with adapters for the most common actuators.
The max. lift of the actuator must be checked.

Max. lift of the control valve:
DN 15-50: 10 mm
DN 65-125: 20 mm

DN 15-50

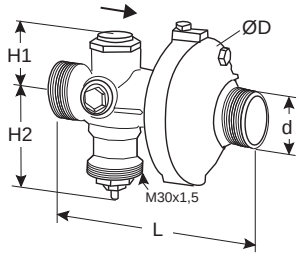
With measuring points



PN 25

TA No	DN	d	D	L	H1	H2	B	Kvd	q_{max} [m³/h]	Kg
Fc = 12 kPa										
52 796-220	15/20	R1	78	110	45	98	73	4,1	0,9	1,5
52 796-225	25/32	R1 1/4	97	150	53	94	80	16	3,4	2,0
52 796-240	40/50	R2	125	190	66	94	97	35	7	4,5
Fc = 20 kPa										
52 796-020	15/20	R1	78	110	45	98	73	4,1	1,1	1,5
52 796-025	25/32	R1 1/4	97	150	53	94	80	16	4,2	2,0
52 796-040	40/50	R2	125	190	66	94	97	35	10	4,5
Fc = 40 kPa										
52 796-420	15/20	R1	78	110	45	98	73	4,1	1,5	1,5
52 796-425	25/32	R1 1/4	97	150	53	94	80	16	5,3	2,0
52 796-440	40/50	R2	125	190	66	94	97	35	13	4,5

Without measuring point



PN 25

TA No	DN	d	D	L	H1	H2		Kvd	q_{max} [m³/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

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

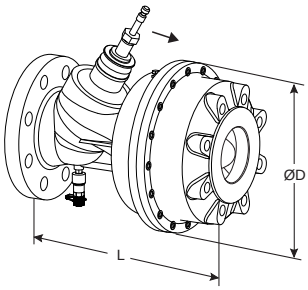
KTM 512

CONTROL

DN 65-125

DN 65-125 are flanged and do not need any separate connections.

With measuring points



PN 25 (DN 65-80 also fit PN 16 flanges)

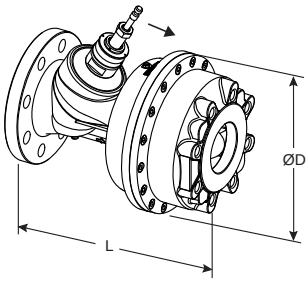
TA No	DN	D	L	H1	H2	Kvd	q_{max} [m³/h]	Kg
Fc = 12 kPa								
52 796-265	65	220	290	110	145	70	15	22
52 796-280	80	220	310	110	145	70	18	24
52 796-290	100	320	350	160	185	150	32	54
52 796-291	125	320	400	135	210	150	38	58
Fc = 20 kPa								
52 796-065	65	220	290	110	145	70	20	22
52 796-080	80	220	310	110	145	70	24	24
52 796-090	100	320	350	160	185	150	40	54
52 796-091	125	320	400	135	210	150	50	58
Fc = 40 kPa								
52 796-465	65	220	290	110	145	70	30	22
52 796-480	80	220	310	110	145	70	34	24
52 796-490	100	320	350	160	185	150	55	54
52 796-491	125	320	400	135	210	150	70	58

PN 16

TA No	DN	D	L	H1	H2	Kvd	q_{max} [m³/h]	Kg
Fc = 12 kPa								
52 796-390	100	320	350	160	185	150	32	54
52 796-391	125	320	400	135	210	150	38	58
Fc = 20 kPa								
52 796-190	100	320	350	160	185	150	40	54
52 796-191	125	320	400	135	210	150	50	58
Fc = 40 kPa								
52 796-590	100	320	350	160	185	150	55	54
52 796-591	125	320	400	135	210	150	70	58

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

Without measuring point



PN 25 (DN 65-80 also fit PN 16 flanges)

TA No	DN	D	L	H1	H2	Kvd	$q_{max[m^3/h]}$	Kg
Fc = 12 kPa								
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
52 756-291	125	320	400	135	210	150	38	58
Fc = 20 kPa								
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
52 756-091	125	320	400	135	210	150	50	58
Fc = 40 kPa								
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
52 756-491	125	320	400	135	210	150	70	58

PN 16

TA No	DN	D	L	H1	H2	Kvd	$q_{max[m^3/h]}$	Kg
Fc = 12 kPa								
52 786-290	100	320	350	160	185	150	32	54
52 786-291	125	320	400	135	210	150	38	58
Fc = 20 kPa								
52 786-090	100	320	350	160	185	150	40	54
52 786-091	125	320	400	135	210	150	50	58
Fc = 40 kPa								
52 786-490	100	320	350	160	185	150	55	54
52 786-491	125	320	400	135	210	150	70	58

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

ADAPTERS FOR ACTUATORS

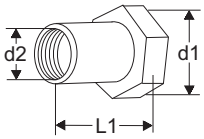
For DN 15-50

TA No	For actuator
52 757-001	Siemens SQS
52 757-002	Johnson Control V7420
52 757-003	Sauter AVM, AVF, SR25, L4
52 757-004	TAC Forta
52 757-005	Hora 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

For valves DN 65-125 type of actuator has to be specified when ordering.

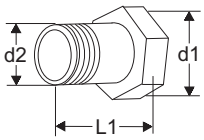
CONNECTIONS

With female thread



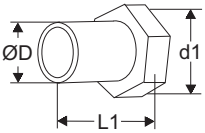
TA No	d1	d2	L1*
52 759-015	G1	G1/2	26
52 759-020	G1	G3/4	32
52 759-025	G1 1/4	G1	47
52 759-032	G1 1/4	G1 1/4	52
52 759-040	G2	G1 1/2	52
52 759-050	G2	G2	64,5

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

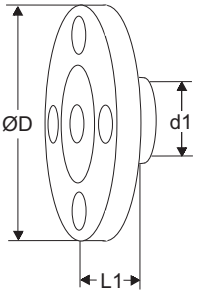
For welding



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

Flange according to EN-1092-2:1997, type 16.



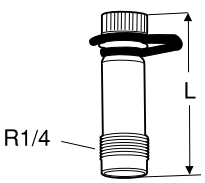
TA No	d1	D	L1*
52 759-515	G1	95	10
52 759-520	G1	105	20
52 759-525	G1 1/4	115	5
52 759-532	G1 1/4	140	15
52 759-540	G2	150	5
52 759-550	G2	165	20

*) Over all length

ACCESSORIES

Measuring point

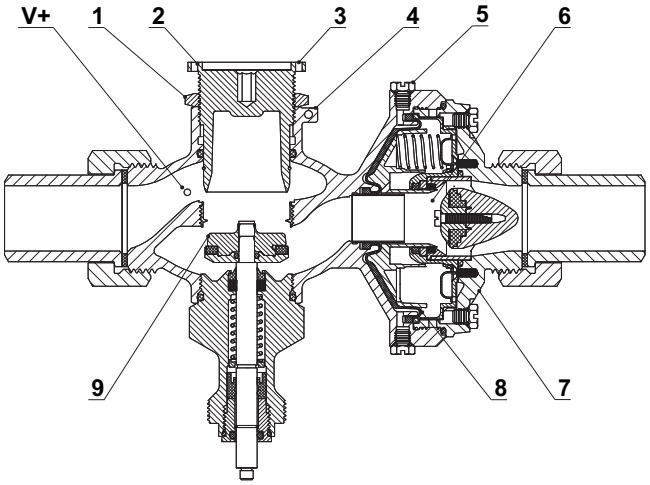
Max 120°C (Intermittent 150°C)



TA No	L
52 179-009	39
52 179-609	103

OPERATING FUNCTION

The throttle (2) for flow adjustment, valve for temperature regulation (9) and flow controller (6) are built in series in one valve body (7). Pressure upstreams of the throttle acts through an internal capillary pipe (V+) to one side of the diaphragm (8) in the flow regulator.
Pressure downstream of the temperature control valve (9) acts to the other side of the diaphragm together with a spring force. Pressure drop in the temperature control valve does not exceed 12, 20 or 40 kPa. The accuracy of flow regulation is practically independent on the pressures upstream and downstream of the controller. As the temperature control valve is pressure relieved, no additional differential pressure controller is needed and it is possible to use actuators with low force.



1. Fixing nut
2. Throttle
3. Holes for plombing (throttle)
4. Holes for plombing (valve body)
5. Venting screws
6. Flow controller
7. Valve body
8. Diaphragm
9. Control valve

SIZING

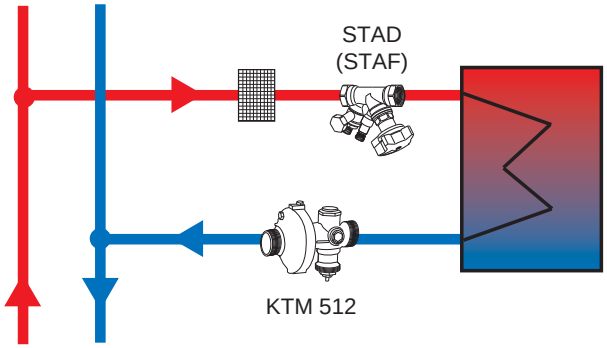
1. Select the smallest size for the flow you need according to q_{max} in the product tables.
2. Check that the available Δp is bigger than the sum of the pressure drops calculated with the formula:

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

INSTALLATION

Flow direction is shown by the arrow on the valve body. Install the valve so that venting is possible and the flow adjustment scale is visible. Check allowed positions of the actuator. Installation of a strainer upstream of the valve is recommended.
When filling, vent the body by using the venting screws.
Instead of the plug R1/4 you can install drain valve or measurement nipple for pressure or temperature measurement.

Application example:



SETTING

Presetting of the maximum flow

Release the fixing nut (1). Turn the throttle (2) clockwise down to the start position of 0,0 turns. Adjust the corresponding number of scale turns according to flow chart and the pointer (4) on the valve body. Tighten the fixing nut. You can plomb the flow setting using holes (3a and 3b) on the throttle and the valve body.

a Measure the flow on the balancing valve STAD using the balancing instrument TA-CBI or measuring instrument TA-CMI.
b Adjust the throttle until you measure the required flow on the TA-CBI or TA-CMI.
c Lock the fixing nut. When you lock the nut please hold the throttle in place with an allen key.

Alternative:
a Take the presetting value from the table which is packed with the valve.
b Open the throttle anti-clockwise. The preset value (e.g. 3,4) means that you open the valve three complete turns. After that turn until the figure 4 fits the red mark on the valve body.
c Lock the fixing nut. When you lock the nut hold the throttle in place with an allen key.

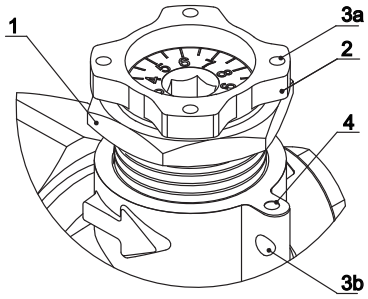


Table - Example:

	Position - Presetting				
	0,0	1,0	2,0	3,0	4,0
,0	57	198	435	656	804
,1	71	222	457	671	815
,2	85	245	479	686	825
,3	99	269	501	700	836
,4	113	293	523	715	846
,5	128	317	546	730	857
,6	142	340	568	745	867
,7	156	364	590	760	878
,8	170	388	612	774	888
,9	184	411	634	789	899
	Flow (l/h)				

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