

KTM 512

– NPT threads/ANSI flanges



Combined control & balancing valves

Pressure independent balancing and control valve –
DN 15-125

KTM 512

– NPT threads/ANSI flanges

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 drops. They are also suitable for use on the secondary side in district heating and comfort cooling systems. Rust protection is assured due to the electrophoretically painted ductile iron body, while the plug delivers valve characteristic, suitable for modulating control.



Key features

- > **Inline design**
Inline flow allows high pressure drops without noise.
- > **Adapters**
For use with most available actuators.
- > **Adjustable flow**
Ensures the design flow.

Technical description

Application:

Heating and cooling systems.

Functions:

Control EQM
Pre-setting (max. flow)
Differential pressure control
Measuring (ΔH , t , q)
Isolation (for use during system maintenance)

Dimensions:

DN 15-125

Pressure class:

DN 15-50: PN 25
DN 65-125: Class 150

Differential pressure (Δp_V):

Max. differential pressure:
1600 kPa = 16 bar (ΔH_{max})
Min. differential pressure:
Low flow (LF): 24 kPa (ΔH_{min})
Normal flow (NF): 40 kPa (ΔH_{min})
High flow (HF): 80 kPa (ΔH_{min})
(Valid for max. position, fully open. Other positions will require lower differential pressure, check with the software HySelect.)

Flow range:

The flow (q_{max}) can be set within the range:
DN 15/20 (LF): 120-800 l/h
DN 15/20 (NF): 150-1000 l/h
DN 15/20 (HF): 210 - 1400 l/h
DN 25/32 (LF): 480 - 3200 l/h
DN 25/32 (NF): 570 - 3800 l/h
DN 25/32 (HF): 810 - 5400 l/h
DN 40/50 (LF): 1140 - 7600 l/h
DN 40/50 (NF): 1400 - 9500 l/h
DN 40/50 (HF): 1900 - 12600 l/h
DN 65 (LF): 2300-15400 l/h
DN 65 (NF): 3240-21600 l/h
DN 65 (HF): 4440 - 29600 l/h
DN 80 (LF): 2500 - 16700 l/h
DN 80 (NF): 3400 - 22700 l/h
DN 80 (HF): 4900 - 32500 l/h
DN 100 (LF): 4000 - 26600 l/h
DN 100 (NF): 6200 - 41200 l/h
DN 100 (HF): 7500 - 50600 l/h
DN 125 (LF): 5350 - 35600 l/h
DN 125 (NF): 8200 - 54900 l/h
DN 125 (HF): 10000 - 66800 l/h
 q_{max} = l/h at each setting and fully open valve plug.

Temperature:

Max. working temperature:
- with measuring points: 120°C
- without measuring points: 150°C
Min. working temperature: -10°C

Media:

Water or neutral fluids, water-glycol mixtures (0-57%).

Max. lift of the control valve:

DN 15-50: 10 mm
DN 65-125: 20 mm

Leakage rate:

Tight sealing

Characteristics:

Indicative shaped EQM, best suited for modulating control.

Material:

Valve body: Ductile iron EN-GJS-400-15
Valve insert: Brass
Throttle plug: Stainless steel
Valve plug: Stainless steel
Valve seat: Stainless steel
Seat seal: EPDM
Spindle: Stainless steel
 Δp insert: Stainless steel (plastic components for DN 15-50)
 Δp seat: Ryton plastic
Springs: Stainless steel

Surface treatment:

Electrophoretic painting.

Marking:

IMI TA, DN, PN, Kvs, material and flow direction arrow.

Connection:

DN 15-50: External threads according to ISO 228. (Separate connections with NPT threads.)
 DN 65-125: Flanges according to ASME/ANSI B16.42 Class 150.

Actuators:

DN 15-50: TA-Slider 500
 DN 65: TA-Slider 750*
 DN 80 LF/NF: TA-Slider 750*
 DN 80 HF: TA-Slider 1600*
 DN 100 LF: TA-Slider 750*
 DN 100 NF/HF: TA-Slider 1600*
 DN 125: TA-Slider 1600*

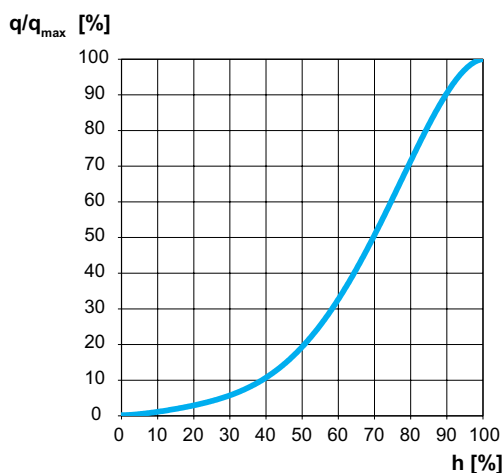
*) Adapter 52 757-907 needed.

For more details on actuators, see separate technical leaflets.

KTM 512 can be equipped with adapters for the most common actuators - see "Adapters for actuators".

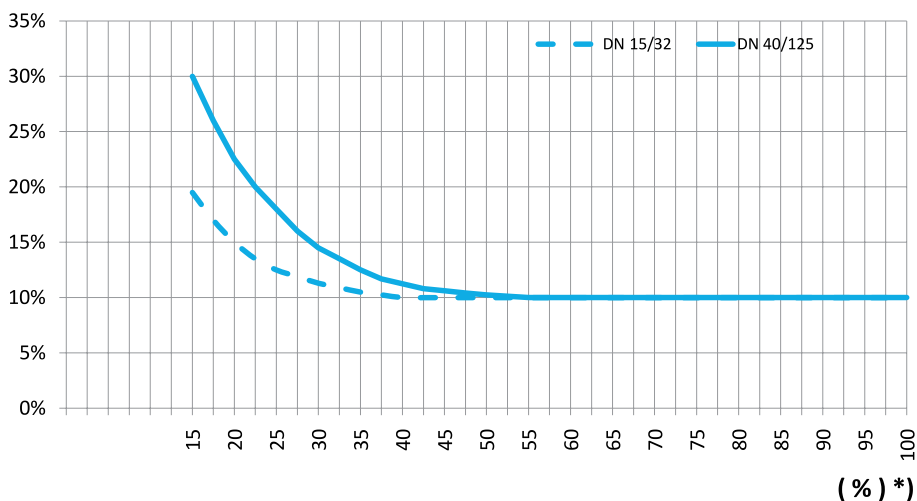
The max. lift of the actuator must be checked. In the case of a shorter lift the maximum achieved flow will be decreased. Consult your local sales office for details.

Valve characteristics



Measuring accuracy

Kv deviation at different settings (LF/NF/HF)



*) Setting (%) of fully open valve.

Correction factors

The flow calculations are valid for water (+20°C). For other liquids with approximately the same viscosity as water (≤ 20 cSt = $3^\circ\text{E}=100\text{S.U.}$), it is only necessary to compensate for the specific density. However, at low temperatures, the viscosity increases and laminar flow may occur in the valves. This causes a flow deviation that increases with small valves, low settings and low differential pressures. Correction for this deviation can be made with the software HySelect or directly in our balancing instruments.

Noise

In order to avoid noise in the installation, the valve must be correctly installed.

Performance of the valves is subject to water quality being of an appropriate regional standard (including particulate and free, entrained and dissolved gases compliant with VDI 2035), failure to do so can result in shortened life span, reduced controllability and noise.

Sizing

The valve is capable of achieving a maximum flow according to the product tables.

Min. differential pressure:

Low flow (LF): 24 kPa (ΔH_{\min})

Normal flow (NF): 40 kPa (ΔH_{\min})

High flow (HF): 80 kPa (ΔH_{\min})

(Valid for max. position, fully open. Other positions will require lower differential pressure, check with the software HySelect.)

Installation

Install the valve in the return pipe, downstream the consumer, or in the inlet pipe, upstream the consumer. 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.

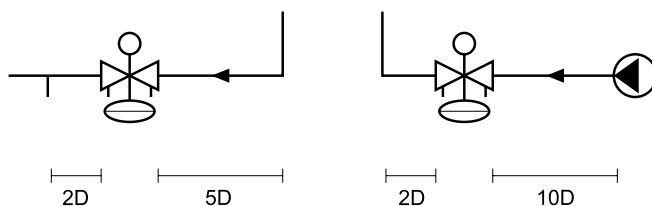
Installation of a strainer upstream of the valve is recommended.

When filling, vent the body by using the venting screws.

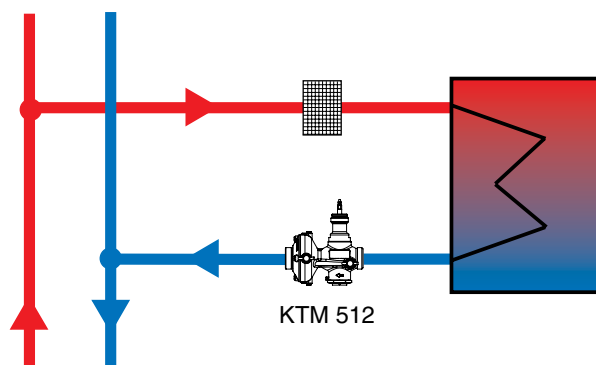
Normal pipe fittings

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

Installation recommendation for accurate measurement due to distortion of fully developed turbulent flow profile.



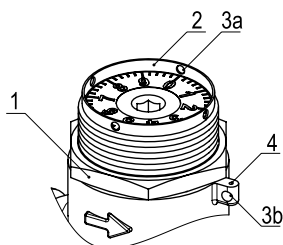
Application example



Setting

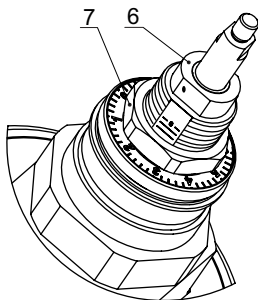
DN 15-50

Release the fixing nut (1). Turn the flow setting screw (2) clockwise to the position of 0,0 turns. Turn the flow setting screw **anticlockwise** corresponding to the number of turns on the flow chart. Tighten the fixing nut. The flow setting can be sealed by using the holes (3a and 3b) on the flow setting screw and the valve body.



DN 65-125

Release the fixing nut (7). Turn the flow setting screw (6) clockwise to the position of 0,0 turns. Turn the flow setting screw **anticlockwise** corresponding to the number of turns on the flow chart. Tighten the fixing nut.



Detailed instructions are delivered with the valves.

Table - Example:

Valid table is delivered with each valve.

KTM 512 DN 15/20 LF					
Position - Einstellung					
	0,0	1,0	2,0	3,0	4,0
,0	0,02	0,29	0,49	0,59	0,72
,1	0,05	0,31	0,50	0,60	0,73
,2	0,07	0,33	0,51	0,62	0,74
,3	0,10	0,35	0,52	0,63	0,75
,4	0,13	0,37	0,53	0,64	0,76
,5	0,16	0,39	0,54	0,66	0,77
,6	0,18	0,41	0,55	0,67	0,78
,7	0,21	0,43	0,56	0,68	0,79
,8	0,24	0,45	0,57	0,69	0,80
,9	0,26	0,47	0,58	0,71	0,81

Flow - Volumenstrom (m³/h)

$p_1=4\text{bar}$ $p_2=3\text{bar}$ $\Delta p=1\text{bar}$
 $\Delta p \ll 1 \text{ bar} \Rightarrow \text{Flow} \approx$

Actuator recommendation and needed actuation force

The minimum actuator force required to operate the KTM 512 valves is dependent upon the maximum inlet pressure of the system. The following table shows the actuator recommendations from IMI Hydronic Engineering and needed actuator force.

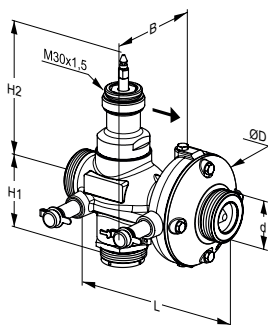
Valve		Stroke [mm]	Theoretical minimum actuator force [N] at different static inlet pressures				
			≤5 bar	≤10 bar	≤15 bar	≤20 bar	≤25 bar
DN 15/20	LF	10	110	135	170	200	235
	NF		110	135	170	200	235
	HF		115	140	175	205	240
DN 25/32	LF		130	155	190	220	255
	NF		140	165	195	230	260
	HF		160	185	215	250	280
DN 40/50	LF		150	175	205	240	270
	NF		170	190	225	255	290
	HF		205	225	255	290	320
DN 65	LF	20	360	410	485	560	630
	NF		400	445	520	595	670
	HF		475	520	595	665	740
DN 80	LF		415	465	535	610	685
	NF		480	520	595	670	740
	HF		600	635	710	785	855
DN 100	LF		480	520	595	670	745
	NF		565	605	675	750	825
	HF		740	765	840	915	985
DN 125	LF	595	630	705	775	850	
	NF	730	755	830	900	975	
	HF	995	1005	1075	1150	1225	

Recommended actuator	Actuator force [N]	Max stroke [mm]
TA-Slider 500/24	500	18
TA-Slider 750/24	750	20
TA-Slider 1600/24	1600	33

Actuator	Supply voltage	Cable length [m]	EAN	Article No
TA-Slider 500	24 VAC/VDC	1	5901688828441	322225-10111
		2	5902276883453	322225-10112
		5	5902276883460	322225-10113
TA-Slider 500 Fail-safe	24 VAC/VDC	1	5902276898761	322225-10614
		2	5902276898778	322225-10615
		5	5902276898785	322225-10616
TA-Slider 750	24 VAC/VDC		5901688828458	322226-10110
TA-Slider 750 Fail-safe Plus	24 VAC/VDC		5902276898822	322226-10319
TA-Slider 1600	24 VAC/VDC		5902276816789	322228-10110
TA-Slider 1600 Fail-safe Plus	24 VAC/VDC		5902276816987	322228-10319

For more variants and details on actuators, see separate technical leaflets or contact IMI Hydronic Engineering. Adapters needed for DN 65-125.

Articles – With measuring points (max. 120°C)



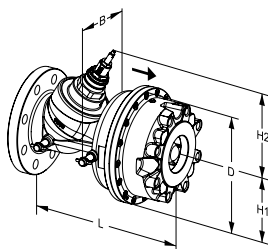
DN 15-50

External thread according to ISO 228.

Separate connections with NPT threads – see “Connections for DN 15-50”.

PN 25

DN	d	D	L	H1	H2	B	q _{max} [m ³ /h]	Kg	EAN	Article No
LF, low flow										
15/20	G1	78	110	45	119	83	0,8	1,5	3831112507692	52 796-220
25/32	G1 1/4	97	150	53	115	90	3,2	2,0	3831112507722	52 796-225
40/50	G2	125	190	66	113	106	7,6	4,5	3831112507753	52 796-240
NF, normal flow										
15/20	G1	78	110	45	119	83	1,0	1,5	3831112507708	52 796-020
25/32	G1 1/4	97	150	53	115	90	3,8	2,0	3831112507739	52 796-025
40/50	G2	125	190	66	113	106	9,5	4,5	3831112507760	52 796-040
HF, high flow										
15/20	G1	78	110	45	119	83	1,4	1,5	3831112507715	52 796-420
25/32	G1 1/4	97	150	53	115	90	5,4	2,0	3831112507746	52 796-425
40/50	G2	125	190	66	113	106	12,6	4,5	3831112507777	52 796-440



DN 65-125

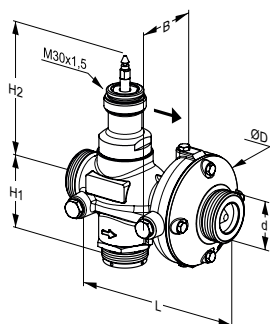
Flanges – Do not need any separate connections.

Flanges according to ASME/ANSI B16.42 Class 150.

Class 150

DN	D	L	H1	H2	B	q _{max} [m ³ /h]	Kg	EAN	Article No
LF, low flow									
65	220	290	110	175	136	15,4	22	3831112529533	52 764-665
80	220	310	110	175	134	16,7	24	3831112529540	52 764-680
100	320	350	160	196	179	26,6	54	3831112529557	52 764-690
125	320	400	160	196	178	35,6	58	3831112529564	52 764-691
NF, normal flow									
65	220	290	110	175	136	21,6	22	3831112527515	52 751-065
80	220	310	110	175	134	22,7	24	3831112527522	52 751-080
100	320	350	160	196	179	41,2	54	3831112527539	52 751-090
125	320	400	160	196	178	54,9	58	3831112527546	52 751-091
HF, high flow									
65	220	290	110	175	136	29,6	22	3831112527553	52 751-165
80	220	310	110	175	134	32,5	24	3831112527560	52 751-180
100	320	350	160	196	179	50,6	54	3831112527577	52 751-190
125	320	400	160	196	178	66,8	58	3831112527584	52 751-191

→ = Flow direction

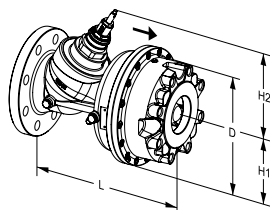
Articles – Without measuring points (max. 150°C)

DN 15-50

External thread according to ISO 228.

Separate connections with NPT threads – see “Connections for DN 15-50”.

PN 25

DN	d	D	L	H1	H2	B	q_{max} [m ³ /h]	Kg	EAN	Article No
LF, low flow										
15/20	G1	78	110	45	119	55	0,8	1,5	3831112529274	52 761-820
25/32	G1 1/4	97	150	53	115	62	3,2	2,0	3831112529304	52 761-825
40/50	G2	125	190	66	113	78	7,6	4,5	3831112529335	52 761-840
NF, normal flow										
15/20	G1	78	110	45	119	55	1,0	1,5	3831112529281	52 762-820
25/32	G1 1/4	97	150	53	115	62	3,8	2,0	3831112529311	52 762-825
40/50	G2	125	190	66	113	78	9,5	4,5	3831112529342	52 762-840
HF, high flow										
15/20	G1	78	110	45	119	55	1,4	1,5	3831112529267	52 765-720
25/32	G1 1/4	97	150	53	115	62	5,4	2,0	3831112529298	52 765-725
40/50	G2	125	190	66	113	78	12,6	4,5	3831112529328	52 765-740


DN 65-125
Flanges – Do not need any separate connections.

Flanges according to ASME/ANSI B16.42 Class 150.

Class 150

DN	D	L	H1	H2	q_{max} [m ³ /h]	Kg	EAN	Article No
LF, low flow								
65	220	290	110	175	15,4	22	3831112529588	52 761-965
80	220	310	110	175	16,7	24	3831112529618	52 761-980
100	320	350	160	196	26,6	54	3831112529649	52 761-990
125	320	400	160	196	35,6	58	3831112529670	52 761-991
NF, normal flow								
65	220	290	110	175	21,6	22	3831112529595	52 762-965
80	220	310	110	175	22,7	24	3831112529625	52 762-980
100	320	350	160	196	41,2	54	3831112529656	52 762-990
125	320	400	160	196	54,9	58	3831112529687	52 762-991
HF, high flow								
65	220	290	110	175	29,6	22	3831112529601	52 765-865
80	220	310	110	175	32,5	24	3831112529632	52 765-880
100	320	350	160	196	50,6	54	3831112529663	52 765-890
125	320	400	160	196	66,8	58	3831112529694	52 765-891

→ = Flow direction

Adapters for actuators

For DN 15-50

For recommended actuators

For actuator	EAN	Article No
TA-Slider 500, TA-Slider 500 Fail-safe*	-	-
TA-Slider 750, TA-Slider 750 Fail-safe Plus	3831112512023	52 757-035

*) Included with the valve.

For other actuators

For actuator	EAN	Article No
Belimo NRDVX-3-T-SI	3831112503595	52 757-001
Belimo NRDVX-SR-T-CA	3831112512047	52 757-037
Belimo UNV 002	3831112511972	52 757-029
Belimo UNV 003	3831112512061	52 757-041
Clorius V2.05, V4.10	3831112500167	52 757-016
Danfoss AMV 10, 13, 20, 23	3831112503465	52 757-008
JCI VA-745x	3831112505490	52 757-002
JCI VA-715x, VA-720x, VA-774x	3831112512009	52 757-033
K&P MD200	3831112512030	52 757-036
Honeywell ML	3831112512078	52 757-042
HORA MC25	3831112504950	52 757-024
HORA MC45	3831112511965	52 757-028
HORA MC100 FSE/FSR	3831112511538	52 757-026
Lineg NL	3831112505339	52 757-007
Samson 5825	3831112500259	52 757-011
Schneider Electric FORTA M400, M800	3831112503007	52 757-019
Siemens SQX, SKD, SKB	3831112505360	52 757-022
Siemens SAX	3831112531703	52 757-045
Sauter AVM 104/114	3831112511989	52 757-030
Sauter AVM115SF901 (TA-R25)	3831112511996	52 757-031
Sauter AVM115SF901 (TA-R25 plastic)	3831112512054	52 757-038
TA-MC55, TA-MC55Y, TA-MC100	3831112512023	52 757-035

For DN 65-125

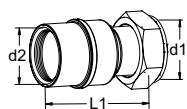
For recommended actuators

For actuator	EAN	Article No
TA-Slider 750, TA-Slider 750 Fail-safe Plus, TA-Slider 1600, TA-Slider 1600 Fail-safe Plus	3831112512085	52 757-907

For other actuators

For actuator	EAN	Article No
Belimo UNV 003	3831112512283	52 757-901
Belimo NV24 (TA-NV24)	3831112512283	52 757-901
Danfoss AMV 55, AMV 655	3831112533905	52 757-924
HORA MC100 FSE/FSR	3831112511781	52 757-912
Schneider Electric Forta	3831112512092	52 757-906
Siemens SQX, SKD, SAX	3831112510661	52 757-903
TA-MC55, TA-MC55Y	3831112509269	52 757-905
TA-MC100	3831112512085	52 757-907
TA-MC160	3831112511910	52 757-913

Connections for DN 15-50



With internal thread NPT

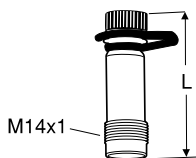
Threads according to ANSI/ASME
B1.20.1-1983.
Swivelling nut

d1	d2	L1*	EAN	Article No
G1	1/2 NPT	49	3831112533516	52 751-311
G1	3/4 NPT	58	3831112533523	52 751-312
G1 1/4	1 NPT	73	3831112533394	52 751-307
G1 1/4	1 1/4 NPT	80	3831112533400	52 751-308
G2	1 1/2 NPT	82	3831112533417	52 751-309
G2	2 NPT	93	3831112533424	52 751-310

*) Fitting length (from the gasket surface to the end of the connection).

Other types of connections (ISO), see international version of KTM 512.

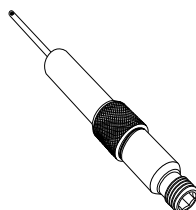
Accessories



Measuring point

AMETAL®/EPDM

L	EAN	Article No
44	7318792813207	52 179-014
103	7318793858108	52 179-015

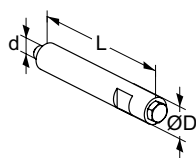


Measuring point, extension 60 mm

Can be installed without draining of the system.

AMETAL®/Stainless steel/EPDM

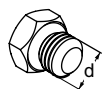
L	EAN	Article No
60	7318792812804	52 179-006



Venting extension

Suitable when insulation is used.
Stainless steel/EPDM/Brass.

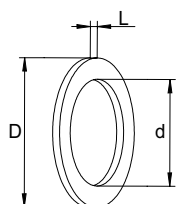
d	D	L	EAN	Article No
M6	12	70	3831112531727	52 759-220



Venting screw

Brass/EPDM

d	EAN	Article No
M6	3831112527980	52 759-211



Gasket

Spare part for NPT connections
52 751-3xx.
EPDM

Valve	d	D	L	EAN	Article No
DN 15/20	20	30	4	3831112534117	239050-00000
DN 25/32	25	39	3	3831112534124	239050-00001
DN 40/50	40	56	3	3831112534131	239050-00002

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