KTM/KTMI 512

CONTROL

CONTROL VALVES / PRESSURE INDEPENDENT BALANCING AND CONTROL 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 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 parabolic plug delivers EQM characteristics.

INLINE DESIGN
Allows high pressure drops without noise.

ADJUSTABLE FLOW
Ensures the design flow.

ADAPTERS
For use with most available actuators.

we knowhow

KTM/KTMI 512

CONTROL

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 (ΔpV):
1600 kPa = 16 bar

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

Temperature:
Max. working temperature: 140°C (120°C for products with measuring points)
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, material and flow direction arrow.

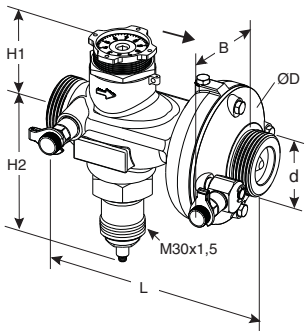
Flanges:
DN 15-50: According to EN-1092-2:1997, type 16.
DN 65-125: According to EN-1092-2:1997, type 21.

Actuators:
KTM/KTMI 512 can be equipped with adapters for the most common actuators - see “Adapters for 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
Threads according to ISO 228

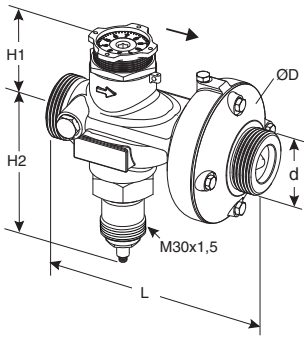
KTM 512
With measuring points



PN 25

TA No	EAN	DN	d	D	L	H1	H2	B	Kvd	q_{max} [m³/h]	Kg
Fc = 12 kPa											
52 796-220	7318793967701	15/20	G1	78	110	45	98	73	4,1	0,9	1,5
52 796-225	7318793967800	25/32	G1 1/4	97	150	53	94	80	16	3,4	2,0
52 796-240	7318793967909	40/50	G2	125	190	66	94	97	35	7	4,5
Fc = 20 kPa											
52 796-020	7318793967008	15/20	G1	78	110	45	98	73	4,1	1,1	1,5
52 796-025	7318793967107	25/32	G1 1/4	97	150	53	94	80	16	4,2	2,0
52 796-040	7318793967206	40/50	G2	125	190	66	94	97	35	10	4,5
Fc = 40 kPa											
52 796-420	7318793964304	15/20	G1	78	110	45	98	73	4,1	1,5	1,5
52 796-425	7318793968609	25/32	G1 1/4	97	150	53	94	80	16	5,3	2,0
52 796-440	7318793968708	40/50	G2	125	190	66	94	97	35	13	4,5

KTM 512
Without measuring point



PN 25

TA No	EAN	DN	d	D	L	H1	H2	Kvd	q_{max} [m³/h]	Kg
Fc = 12 kPa										
52 756-220	7318793957108	15/20	G1	78	110	45	98	4,1	0,9	1,5
52 756-225	7318793957207	25/32	G1 1/4	97	150	53	94	16	3,4	2,0
52 756-240	7318793957306	40/50	G2	125	190	66	94	35	7	4,5
Fc = 20 kPa										
52 756-020	7318793542304	15/20	G1	78	110	45	98	4,1	1,1	1,5
52 756-025	7318793542403	25/32	G1 1/4	97	150	53	94	16	4,2	2,0
52 756-040	7318793866103	40/50	G2	125	190	66	94	35	10	4,5
Fc = 40 kPa										
52 756-420		15/20	G1	78	110	45	98	4,1	1,5	1,5
52 756-425		25/32	G1 1/4	97	150	53	94	16	5,3	2,0
52 756-440		40/50	G2	125	190	66	94	35	13	4,5

→ = Flow direction

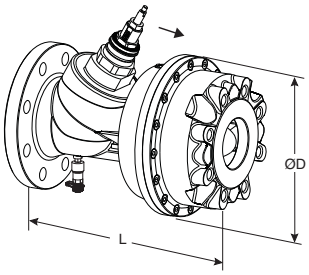
Kvd = Is the Kv value of the differential pressure control component when fully open, used to calculate the minimum pressure drop necessary for the valve to operate according to the formula found under “Sizing”.

KTM/KTMI 512

CONTROL

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

KTM 512
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								
52 791-765	65	220	290	110	145	70	15	22
52 791-780	80	220	310	110	145	70	18	24
52 791-790	100	320	350	160	185	150	32	54
52 791-791	125	320	400	135	210	150	38	58
Fc = 20 kPa								
52 791-865	65	220	290	110	145	70	20	22
52 791-880	80	220	310	110	145	70	24	24
52 791-890	100	320	350	160	185	150	40	54
52 791-891	125	320	400	135	210	150	50	58
Fc = 40 kPa								
52 791-965	65	220	290	110	145	70	30	22
52 791-980	80	220	310	110	145	70	34	24
52 791-990	100	320	350	160	185	150	55	54
52 791-991	125	320	400	135	210	150	70	58

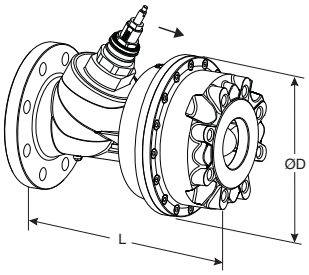
PN 16

TA No	DN	D	L	H1	H2	Kvd	q_{max} [m³/h]	Kg
Fc = 12 kPa								
52 791-490	100	320	350	160	185	150	32	54
52 791-491	125	320	400	135	210	150	38	58
Fc = 20 kPa								
52 791-590	100	320	350	160	185	150	40	54
52 791-591	125	320	400	135	210	150	50	58
Fc = 40 kPa								
52 791-690	100	320	350	160	185	150	55	54
52 791-691	125	320	400	135	210	150	70	58

→ = 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”.

KTM 512
Without measuring point



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								
52 793-765	65	220	290	110	145	70	15	22
52 793-780	80	220	310	110	145	70	18	24
52 793-790	100	320	350	160	185	150	32	54
52 793-791	125	320	400	135	210	150	38	58
Fc = 20 kPa								
52 793-865	65	220	290	110	145	70	20	22
52 793-880	80	220	310	110	145	70	24	24
52 793-890	100	320	350	160	185	150	40	54
52 793-891	125	320	400	135	210	150	50	58
Fc = 40 kPa								
52 793-965	65	220	290	110	145	70	30	22
52 793-980	80	220	310	110	145	70	34	24
52 793-990	100	320	350	160	185	150	55	54
52 793-991	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								
52 793-490	100	320	350	160	185	150	32	54
52 793-491	125	320	400	135	210	150	38	58
Fc = 20 kPa								
52 793-590	100	320	350	160	185	150	40	54
52 793-591	125	320	400	135	210	150	50	58
Fc = 40 kPa								
52 793-690	100	320	350	160	185	150	55	54
52 793-691	125	320	400	135	210	150	70	58

→ = Flow direction

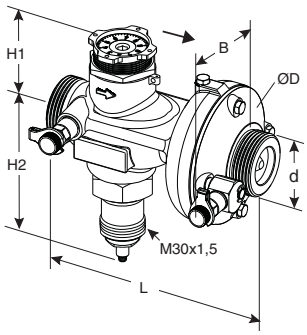
Kvd = Is the Kv value of the differential pressure control component when fully open, used to calculate the minimum pressure drop necessary for the valve to operate according to the formula found under “Sizing”.

KTM/KTMI 512

CONTROL

DN 15-50
Threads according to ISO 228

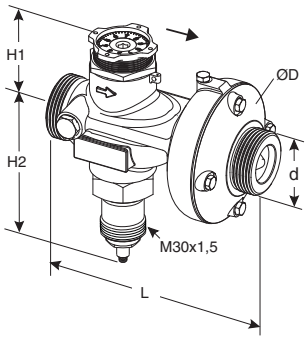
KTMI 512
With measuring points



PN 25

TA No	DN	d	D	L	H1	H2	B	Kvd	q_{max} [m³/h]	Kg
Fc = 12 kPa										
52 792-720	15/20	G1	78	110	45	98	73	4,1	0,9	1,5
52 792-725	25/32	G1 1/4	97	150	53	94	80	16	3,4	2,0
52 792-740	40/50	G2	125	190	66	94	97	35	7	4,5
Fc = 20 kPa										
52 792-820	15/20	G1	78	110	45	98	73	4,1	1,1	1,5
52 792-825	25/32	G1 1/4	97	150	53	94	80	16	4,2	2,0
52 792-840	40/50	G2	125	190	66	94	97	35	10	4,5
Fc = 40 kPa										
52 792-920	15/20	G1	78	110	45	98	73	4,1	1,5	1,5
52 792-925	25/32	G1 1/4	97	150	53	94	80	16	5,3	2,0
52 792-940	40/50	G2	125	190	66	94	97	35	13	4,5

KTMI 512
Without measuring point



PN 25

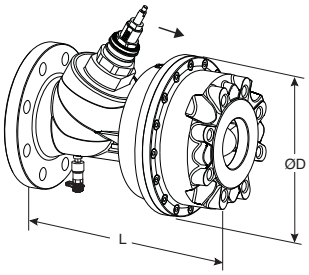
TA No	DN	d	D	L	H1	H2	Kvd	q_{max} [m³/h]	Kg
Fc = 12 kPa									
52 794-320	15/20	G1	78	110	45	98	4,1	0,9	1,5
52 794-325	25/32	G1 1/4	97	150	53	94	16	3,4	2,0
52 794-340	40/50	G2	125	190	66	94	35	7	4,5
Fc = 20 kPa									
52 794-420	15/20	G1	78	110	45	98	4,1	1,1	1,5
52 794-425	25/32	G1 1/4	97	150	53	94	16	4,2	2,0
52 794-440	40/50	G2	125	190	66	94	35	10	4,5
Fc = 40 kPa									
52 794-520	15/20	G1	78	110	45	98	4,1	1,5	1,5
52 794-525	25/32	G1 1/4	97	150	53	94	16	5,3	2,0
52 794-540	40/50	G2	125	190	66	94	35	13	4,5

→ = 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”.

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

KTMI 512
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								
52 792-765	65	220	290	110	145	70	15	22
52 792-780	80	220	310	110	145	70	18	24
52 792-790	100	320	350	160	185	150	32	54
52 792-791	125	320	400	135	210	150	38	58
Fc = 20 kPa								
52 792-865	65	220	290	110	145	70	20	22
52 792-880	80	220	310	110	145	70	24	24
52 792-890	100	320	350	160	185	150	40	54
52 792-891	125	320	400	135	210	150	50	58
Fc = 40 kPa								
52 792-965	65	220	290	110	145	70	30	22
52 792-980	80	220	310	110	145	70	34	24
52 792-990	100	320	350	160	185	150	55	54
52 792-991	125	320	400	135	210	150	70	58

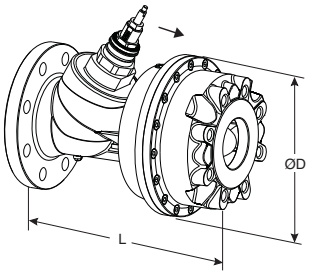
PN 16

TA No	DN	D	L	H1	H2	Kvd	q_{max} [m³/h]	Kg
Fc = 12 kPa								
52 792-490	100	320	350	160	185	150	32	54
52 792-491	125	320	400	135	210	150	38	58
Fc = 20 kPa								
52 792-590	100	320	350	160	185	150	40	54
52 792-591	125	320	400	135	210	150	50	58
Fc = 40 kPa								
52 792-690	100	320	350	160	185	150	55	54
52 792-691	125	320	400	135	210	150	70	58

→ = 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”.

KTMI 512
Without measuring point



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								
52 794-365	65	220	290	110	145	70	15	22
52 794-380	80	220	310	110	145	70	18	24
52 794-390	100	320	350	160	185	150	32	54
52 794-391	125	320	400	135	210	150	38	58
Fc = 20 kPa								
52 794-465	65	220	290	110	145	70	20	22
52 794-480	80	220	310	110	145	70	24	24
52 794-490	100	320	350	160	185	150	40	54
52 794-491	125	320	400	135	210	150	50	58
Fc = 40 kPa								
52 794-565	65	220	290	110	145	70	30	22
52 794-580	80	220	310	110	145	70	34	24
52 794-590	100	320	350	160	185	150	55	54
52 794-591	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								
52 794-090	100	320	350	160	185	150	32	54
52 794-091	125	320	400	135	210	150	38	58
Fc = 20 kPa								
52 794-190	100	320	350	160	185	150	40	54
52 794-191	125	320	400	135	210	150	50	58
Fc = 40 kPa								
52 794-290	100	320	350	160	185	150	55	54
52 794-291	125	320	400	135	210	150	70	58

→ = 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

For DN 15-50

KTM 512

TA No	EAN	For actuator
52 757-001	7318793848901	Siemens SQS, Belimo NRDVX-3-T-SI
52 757-002	7318793849007	JCI VA-745x
52 757-003	7318793849106	TA-R25
52 757-004	7318793849205	TAC Forta
52 757-005	7318793849304	TAHC MC55, MC100
52 757-006	7318793849403	Heimeier thermostatic head
52 757-007	7318793849502	Lineg NL
52 757-008	7318793849601	Danfoss AMV 20, 23
52 757-009	7318793849700	Belimo NRDVX-SR-T-CA
52 757-010	7318793849809	Honeywell ML 6420, 6425, 7420, 7425
52 757-011	7318793849908	Samson 5825
52 757-012		Siemens SQX, SKD
52 757-013		Belimo NV24 MFT + UNV 003
52 757-014		Sauter AVM 104/114, 105/115, 124, 125
52 757-015		Belimo NV24 MFT + UNV 002
52 757-016		Clorius V2.05, V4.10
52 757-018		JCI VA-715x, VA-720x, VA-774x
52 757-023		Kieback & Peter MD200
52 757-024		TAHC MC25

KTMI 512

TA No	For actuator
52 757-019	TAC Forta
52 757-021	Sauter AVM 104/114, 105/115, 124, 125
52 757-022	Siemens SQX, SKD

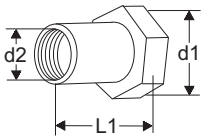
For DN 65-125

KTM/KTMI 512

TA No	For actuator
52 757-901	Belimo NV24 MFT + UNV 003
52 757-902	Danfoss AMV 55
52 757-903	Siemens SQX, SKD
52 757-904	Sauter AVN 224, AVF 234, AVM 234
52 757-905	TAHC MC 55
52 757-906	TAC Forta

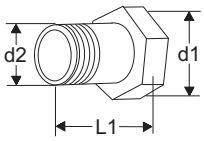
CONNECTIONS

With female thread
Threads according to ISO 228



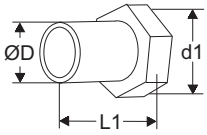
TA No	EAN	d1	d2	L1*
52 759-015	7318793546609	G1	G1/2	26
52 759-020	7318793546708	G1	G3/4	32
52 759-025	7318793546807	G1 1/4	G1	47
52 759-032	7318793546906	G1 1/4	G1 1/4	52
52 759-040	7318793547002	G2	G1 1/2	52
52 759-050	7318793547101	G2	G2	64,5

With male thread
Threads according to ISO 7



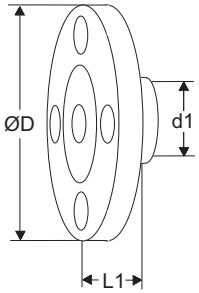
TA No	d1	d2	L1*
52 759-115	G1	R1/2	34
52 759-120	G1	R3/4	40
52 759-125	G1 1/4	R1	40
52 759-132	G1 1/4	R1 1/4	45
52 759-140	G2	R1 1/2	45
52 759-150	G2	R2	50

For welding



TA No	EAN	d1	D	L1*
52 759-315	7318793547200	G1	20,8	37
52 759-320	7318793547309	G1	26,3	42
52 759-325	7318793547408	G1 1/4	33,2	47
52 759-332	7318793547507	G1 1/4	40,9	47
52 759-340	7318793547606	G2	48,0	47
52 759-350	7318793547705	G2	60,0	52

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



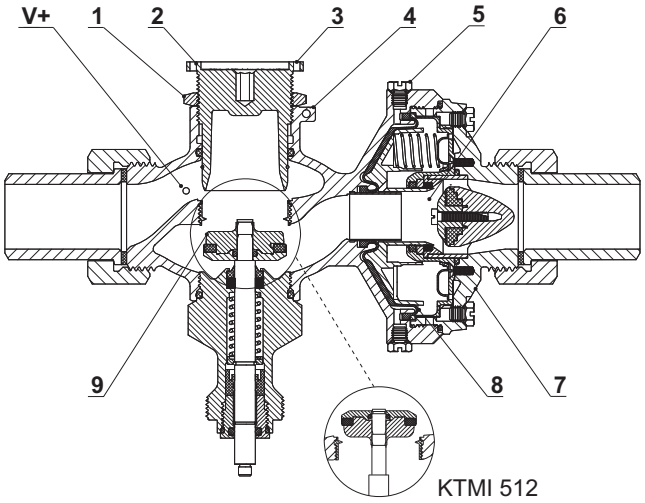
TA No	EAN	d1	D	L1*
52 759-515	7318793547804	G1	95	10
52 759-520	7318793547903	G1	105	20
52 759-525	7318793548009	G1 1/4	115	5
52 759-532	7318793548108	G1 1/4	140	15
52 759-540	7318793548207	G2	150	5
52 759-550	7318793548306	G2	165	20

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

OPERATING FUNCTION

DN 15-50

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

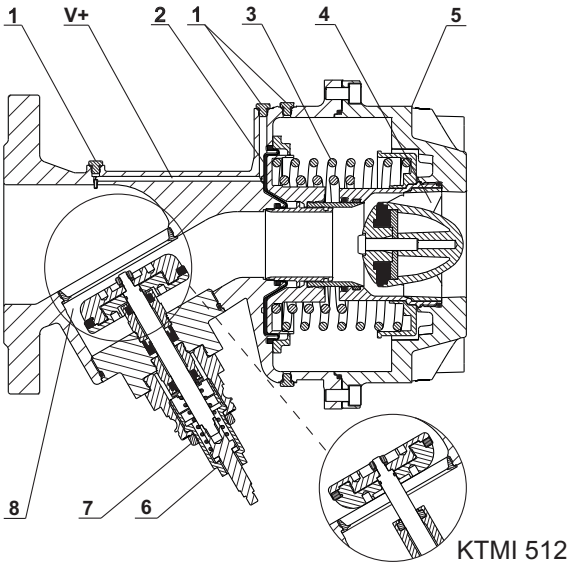


KTM 512
The throttle (2) for flow adjustment, the control valve (9) and the diaphragm operated inline the differential pressure controller (6) are built in series in a common valve body.
Pressure upstream of the throttle acts through an internal impulse pipe (V+) to the inlet side of the diaphragm (8).
Pressure downstream the control valve acts to the outlet side of the diaphragm together with a spring force.
The spring force corresponds to 12, 20 or 40 kPa (Fc value) pressure difference on the diaphragm.
The differential pressure controller pressure relieves the control valve, and at the same time limits the flow to the preset value. As the control valve is pressure relieved, it is possible to use low force actuators.

KTMI 512
It is a KTM valve with inversed action. Use in district heating substations, if the safety function is needed, with the actuators that retract the stem in case of the safety function activation.
The function is similar to KTM, but in this valve the throttle (2) acts as a control valve lift limitation device.

DN 65-125

1. Venting screws
2. Diaphragm
3. Spring
4. Inline differential pressure controller
5. Valve body
6. Flow adjustment screw
7. Fixing nut
8. Control valve



KTM 512
The control valve (8) and the diaphragm operated inline differential pressure controller (4) are built in series in a common valve body.
Pressure upstream of the control valve acts through an internal impulse pipe (V+) to the inlet side of the diaphragm (2).
Pressure downstream of the control valve acts to the outlet side of the diaphragm together with a spring force.
The spring force corresponds to 12, 20 or 40 kPa (Fc value) pressure difference on the diaphragm.
The differential pressure controller pressure relieves the control valve, and at the same time limits the flow to the preset value. As the control valve is equipped with lift limitation device, stepless adjustment of maximum flow is possible. As the control valve is pressure relieved, it is possible to use low force actuators.

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

KTM/KTMI 512

CONTROL

SIZING

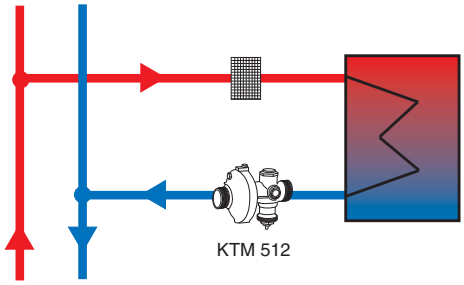
1. Select the smallest size for the flow you need according to q_{max} in the product tables.
2. Check that the available Δp is lager than the sum of the pressure drops calculated according to the formula:

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

INSTALLATION

Install the valve in the return pipe, downstream of the consumer, or in the inlet pipe, upstream of 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 the available positions of the actuator. Installation of a strainer upstream of the valve is recommended.
When filling, vent the body by using the venting screws.

Application example:

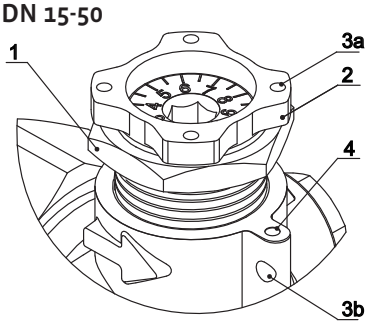


SETTING

KTM/KTMI 512 (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 15-50



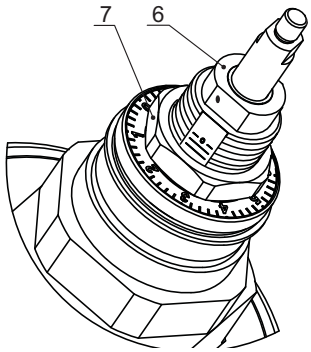
KTM 512 (DN 65-125)

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.

KTMI 512 (DN 65-125)

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

DN 65-125



Detailed instructions are delivered with the valves.

Table - Example:

Valid table is delivered with each valve.

	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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we knowhow

KTMI 512 DN 25/32 NF

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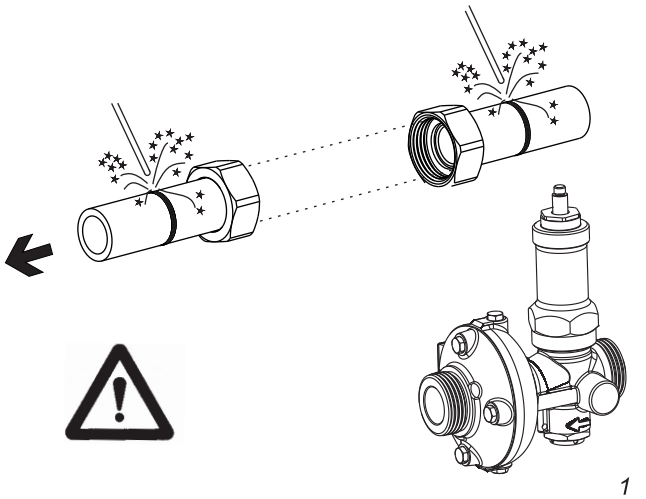
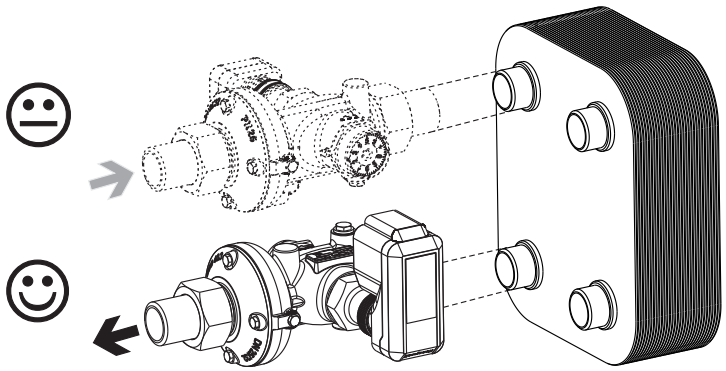


1



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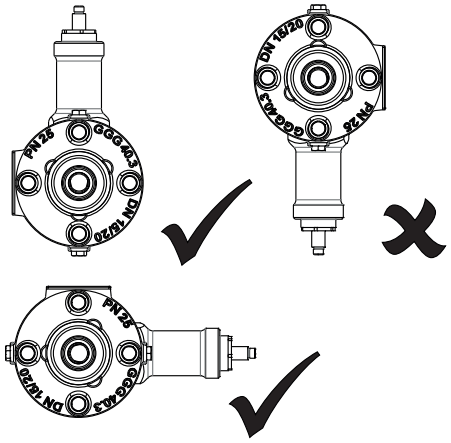

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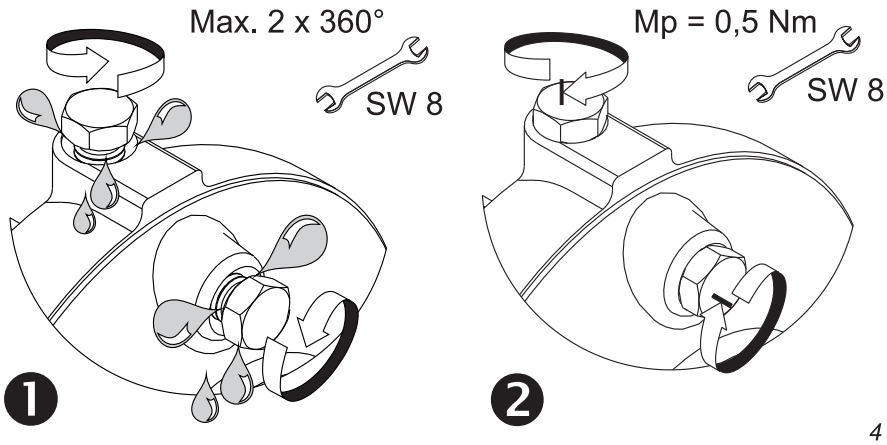

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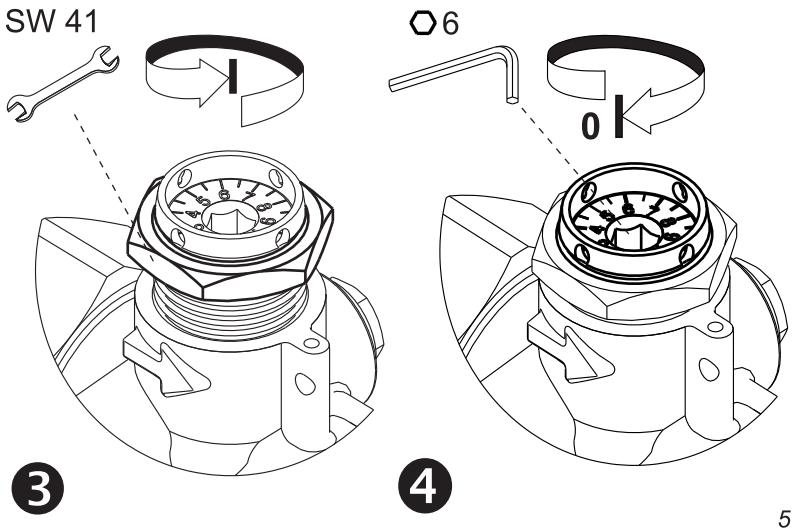


5

KTMI 512 DN 25/32 NF

Position - Einstellung

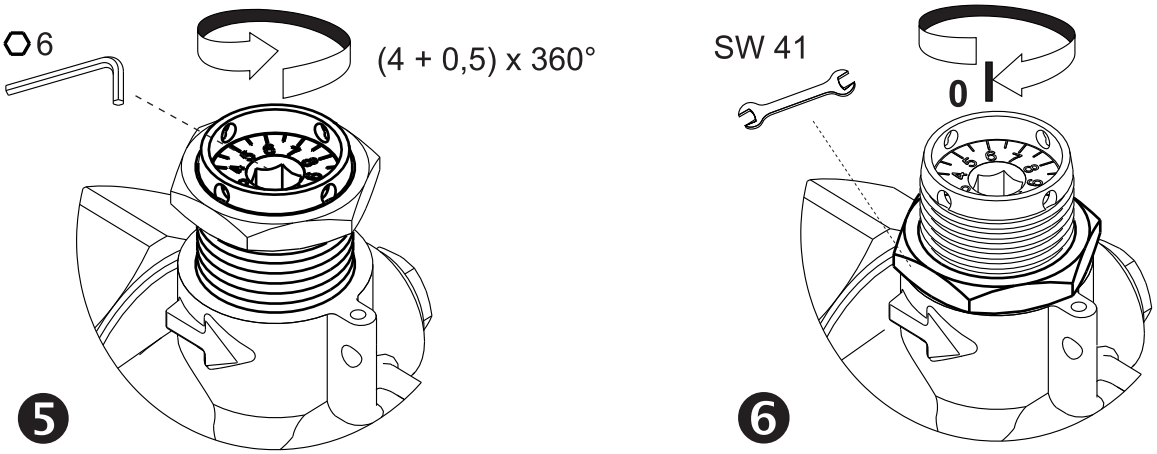
	0,0	1,0	2,0	3,0	4,0	5,0
,0	0	237	705	1522	2707	3939
,1	24	284	787	1641	2830	3993
,2	47	331	868	1759	2953	4047
,3	71	377	950	1878	3077	4101
,4	95	424	1032	1996	3200	4155
,5	119	471	1114	2115	3323	4210
,6	142	518	1195	2233	3446	4264
,7	166	565	1277	2352	3569	4318
,8	190	611	1359	2470	3693	4372
,9	213	658	1440	2589	3816	4426

Flow - Volumenstrom (l/h)

p_1=4bar p_2=3bar Δp=1bar

Δp < >> 1 bar ⇒ Flow = ≈

6



7

KTMI 512 - START-UP PROCEDURE

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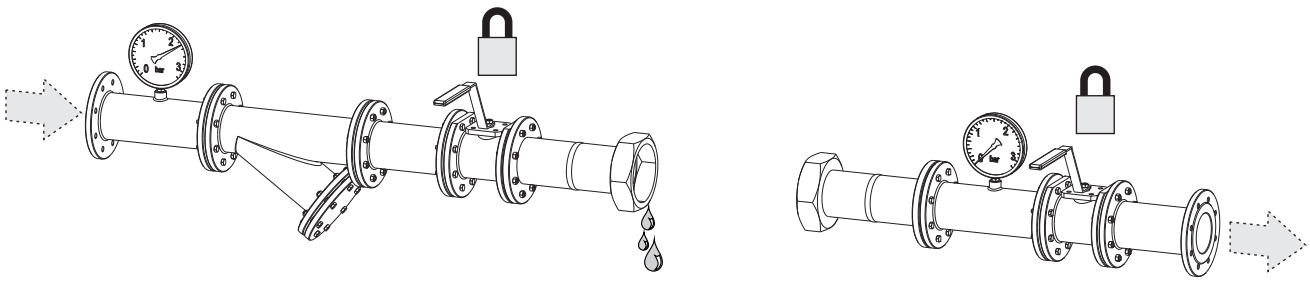
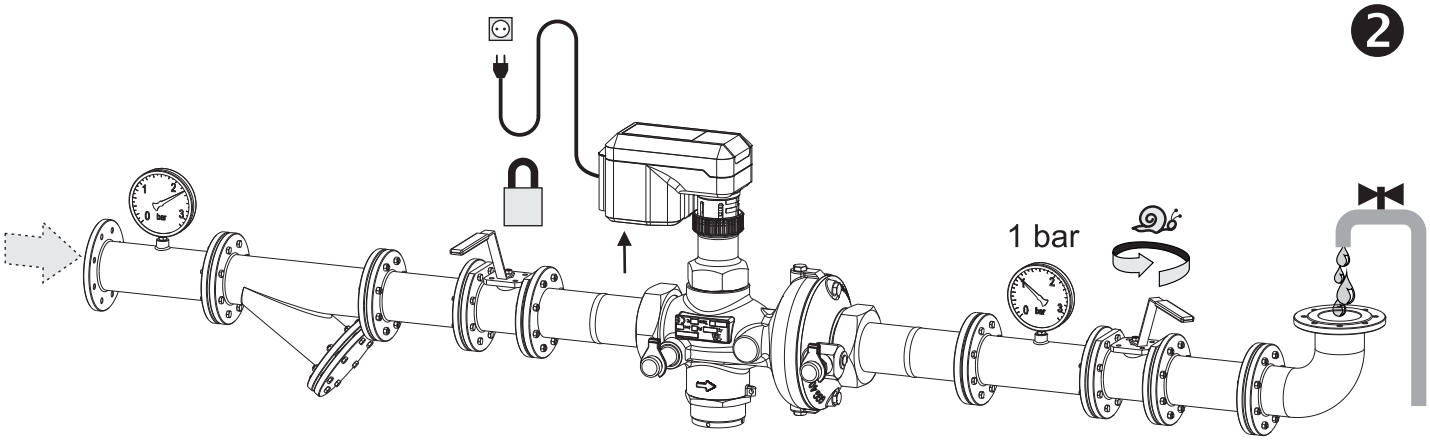
1



2



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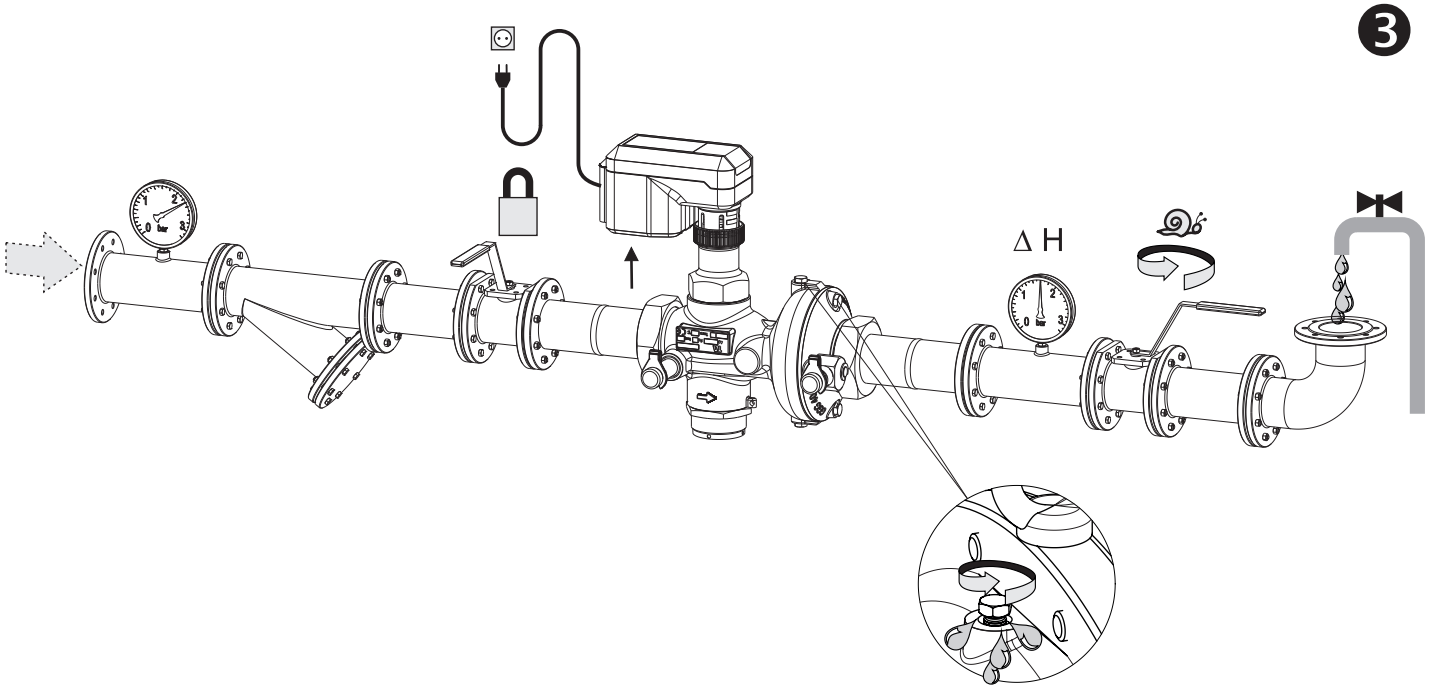

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