KT 512

Pressure independent balancing and control valve –
For ON/OFF control

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.

❯ **Inline design**
Inline flow allows high pressure drops without noise.

❯ **Adjustable flow**
Ensures the design flow.

❯ **M30x1.5 connection**
Most available small actuators can be used.

❯ Technical description

Application:
Heating and cooling systems with variable flow.

Functions:
Differential pressure control over the built-in control valve and flow limitation.
For on/off actuator

Dimensions:
DN 15/20

Pressure class:
PN 25

Max. differential pressure (ΔpV):
500 kPa = 5 bar

Pressure drop in the throttle (Fc):
12, 20 and 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

Surface treatment:
Electrophoretic painting.

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

Actuators:
Most available small actuators with M30x1,5 threaded connection. The max. lift of the actuator must be checked. For more information on TA's actuator TSE, see separate catalogue leaflet.
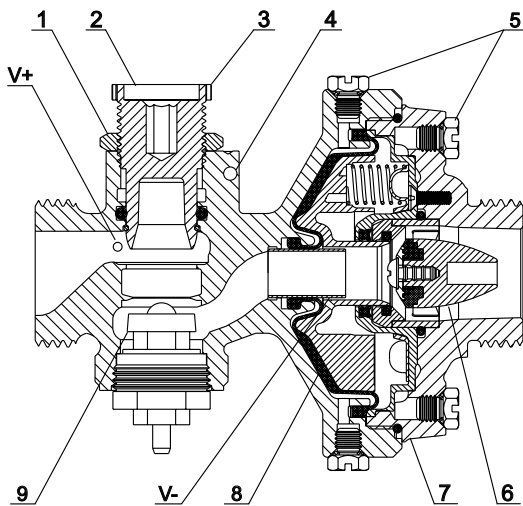
Max. lift of the control valve:
1.8 mm

❭ 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 valve according to q_{max} in the product table.
2. Check that the available Δp is bigger than the sum of the pressure drops calculated with the formula:

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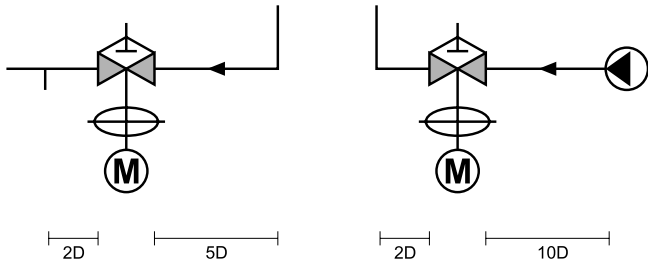
❭ Installation

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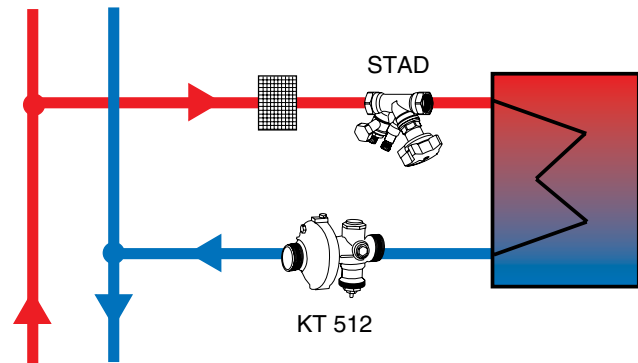Instead of the plug R1/4 you can install drain valve or measurement nipple for pressure or temperature measurement.

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

Application example

❭ Setting

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

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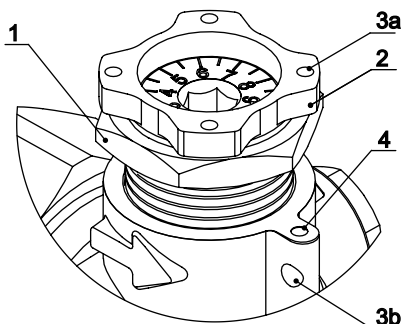**c** Lock the fixing nut. When you lock the nut hold the throttle in place with an allen key.
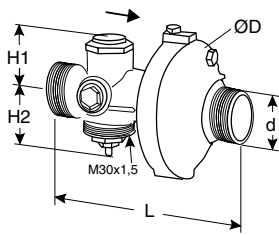

Table - Example:
Valid table is delivered with each valve.

Position - Einstellung				
	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 - Volumenstrom (l/h)				

p_1=4bar p_2=3bar Δp=1bar
Δp < >> 1 bar $\Delta \Rightarrow$ Flow = $\approx$

❯ Articles

Article No	EAN	DN	d	D	L	H1	H2	Kvd	q_{max} [m³/h]	Kg
Fc = 12 kPa										
52 754-120	7318793541802	15/20	R1	78	110	45	40	4,1	0,9	1,0
Fc = 20 kPa										
52 754-020	7318793541703	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

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".

❯ Connections

With female thread
Threads according to ISO 228

Article No	EAN	d1	d2	L1*
52 759-015	7318793546609	G1	G1/2	26
52 759-020	7318793546708	G1	G3/4	32

With male thread
Threads according to ISO 7

Article No	EAN	d1	d2	L1*
52 759-115		G1	R1/2	34
52 759-120		G1	R3/4	40

For welding

Article No	EAN	d1	D	L1*
52 759-315	7318793547200	G1	20,8	37
52 759-320	7318793547309	G1	26,3	42

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

Article No	EAN	d1	D	L1*
52 759-515	7318793547804	G1	95	10
52 759-520	7318793547903	G1	105	20

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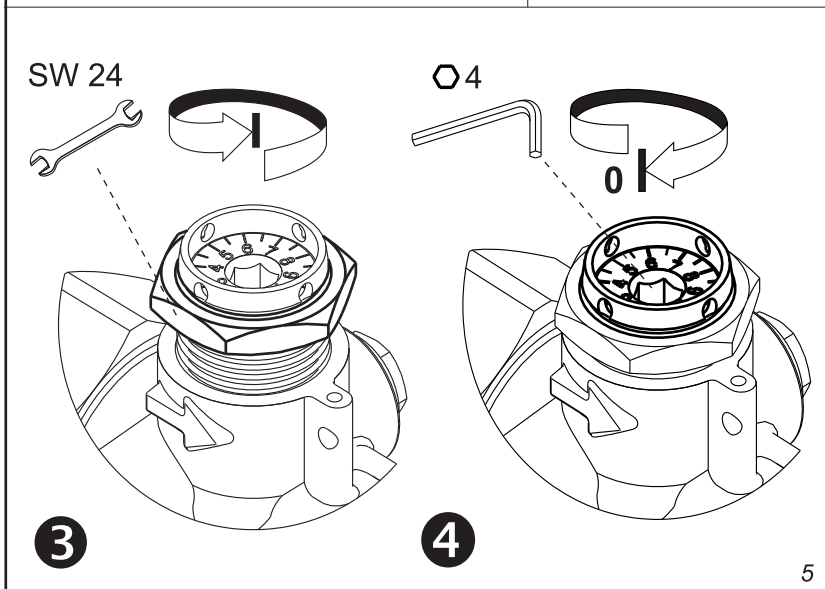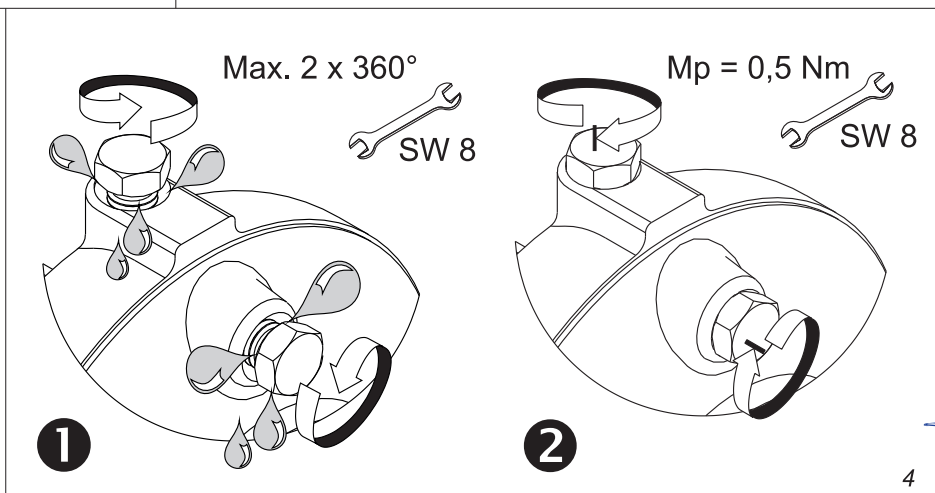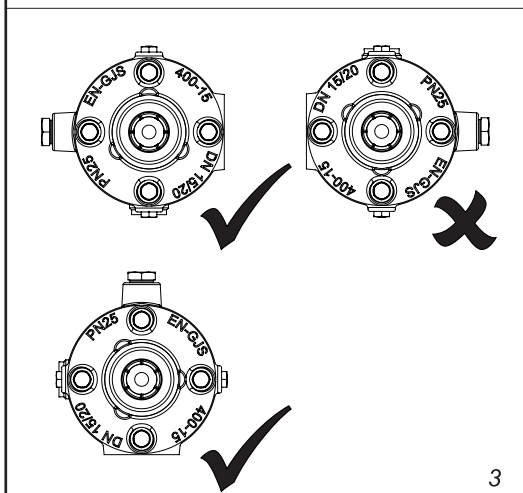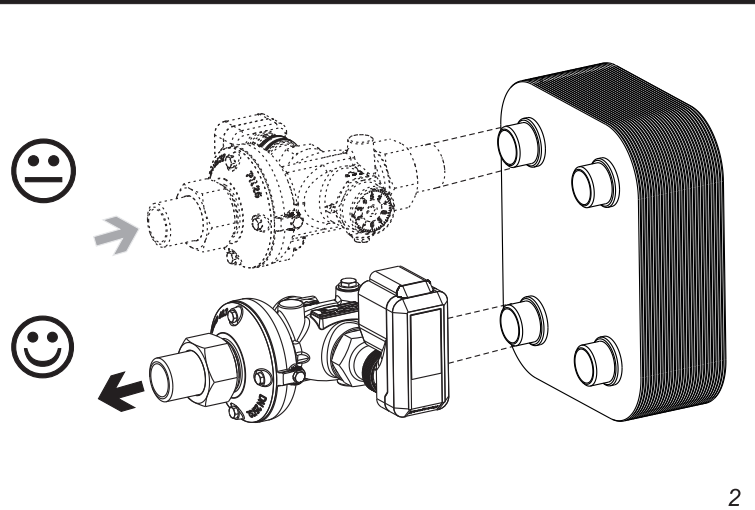
Accessories

Measuring point
Max 120°C (Intermittent 150°C)

L

R1/4

Article No	EAN	L
52 179-009	7318792813108	39
52 179-609	7318792814600	103

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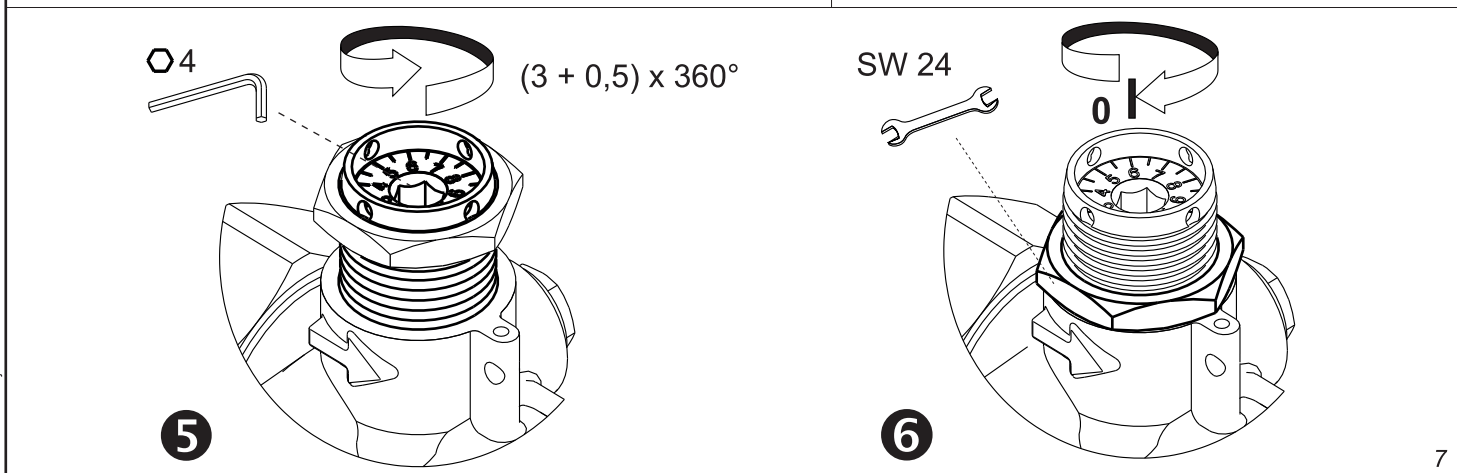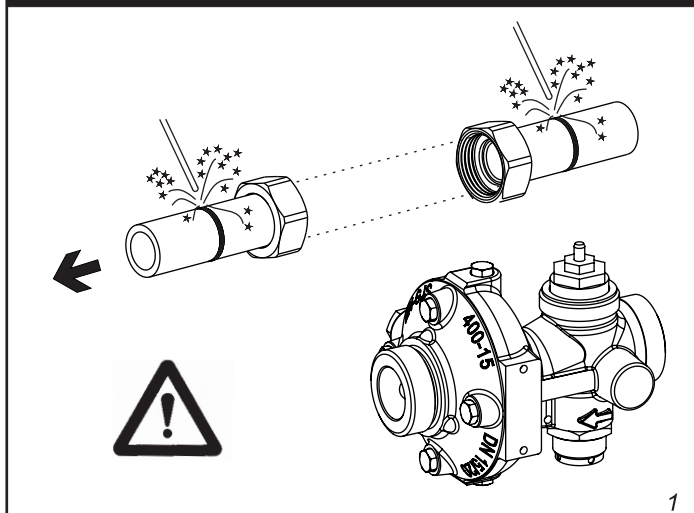
6-10-25 KT 512 03.2011

IMI TA

1

2

3

Max. 2 x 360°

SW 8

Mp = 0,5 Nm

SW 8

❶ ❷

4

SW 24

⬡ 4

0

❸ ❹

5

KT 512 DN 15/20 LF

Position - Einstellung

	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 - Volumenstrom (l/h)

p_1=4bar p_2=3bar Δp=1bar

Δp < >> 1 bar $\Rightarrow$ Flow = ≈

6

⬡ 4

(3 + 0,5) x 360°

❺

SW 24

0

❻

7

Approved by:

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1

2

3

Max. 2 x 360°   SW 8

Mp = 0,5 Nm   SW 8

❶   ❷

4

SW 24   ⬡ 4

❸   ❹

5

KT 512 DN 15/20 ; Fc = 20

Position - Einstellung					
	0,0	**1,0**	**2,0**	**3,0**	**4,0**
,0	18	220	529	819	1015
,1	38	251	558	839	1025
,2	58	282	587	858	1034
,3	79	313	616	878	1044
,4	99	344	645	897	1053
,5	119	375	674	917	1063
,6	139	405	703	937	1073
,7	159	436	732	956	1082
,8	180	467	761	976	1092
,9	200	498	790	995	1101
Flow - Volumenstrom (l/h)					

$p_1 = 4\,bar$ $p_2 = 3\,bar$ $\Delta p = 1\,bar$

$\Delta p < \gg 1\,bar \Rightarrow Flow = \approx$

6

⬡ 4   (3 + 0,5) x 360°

SW 24

❺   ❻

7

KT 512 - START-UP PROCEDURE

1

2

1 bar

3

Δ H

4

Max P