

# KTCM 512

Pressure independent balancing and control valve –  
For modulating control



Pressurisation & Water Quality › Balancing & Control › Thermostatic Control

ENGINEERING ADVANTAGE

High-performing and compact, these pressure-independent temperature control valves for variable flow heating and cooling systems, are especially suitable for fan-coil applications. 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.

#### > Inline design

Inline flow allows high pressure drops without noise.

#### > Adjustable flow

Ensures the design flow.

#### > Self-sealing measuring points

For quick and easy measurement.



## > Technical description

#### Application:

Heating and cooling systems with variable flow.

#### Functions:

Temperature control, differential pressure control over the built-in control valve and flow control.

#### Dimensions:

DN 15-20

#### Pressure class:

PN 25

#### Max. differential pressure ( $\Delta p_V$ ):

800 kPa = 8 bar

#### Pressure drop across control part of the valve ( $F_c$ ):

LF/NF: 20 kPa

HF: 40 kPa

#### Temperature:

Max. working temperature: 120°C

Min. working temperature: -10°C

#### Setting range:

Maximum flow is adjustable up to 800 l/h (NF), 210 l/h (LF) and 1 150 l/h (HF).

Delivery setting: Position 10 (fully open).

#### Media:

Water and neutral fluids, water-glycol mixtures.

#### Material:

Valve body: Ductile iron EN-GJS-400

Diaphragms and gaskets: EPDM

#### Surface treatment:

Electrophoretic painting.

#### Marking:

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

Identification ring on measuring point:

White = Low flow (LF)

Black = Normal flow (NF)

Red = High flow (HF)

#### Max. lift of the control valve:

4 mm

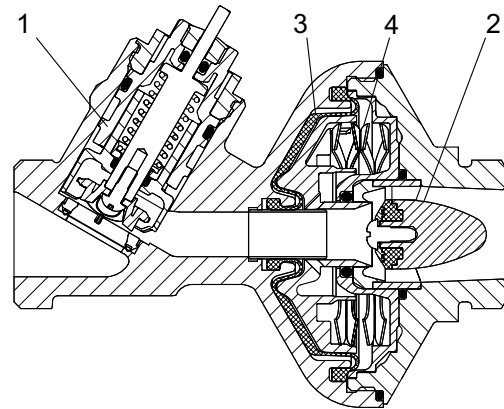
## Operating function

The control valve with integrated balancing (1) and the diaphragm operated differential pressure controller (2) are built in series in a common valve body.

Pressure upstream of the control and balancing part of the valve acts through an internal impulse pipe to the inlet side of the diaphragm (3).

Pressure downstream of the control and balancing part of the valve acts to the outlet side of the diaphragm together with a spring force (4).

The spring force corresponds to a 20 kPa (LF/NF) or 40 kPa (HF) pressure difference on the diaphragm. The pressure from the differential pressure controller relieves the control and balancing part of the valve, and at the same time limits the flow to the preset value.



## Sizing

The valve is capable of a maximum flow of 210 l/h (LF), 800 l/h (NF) or 1 150 l/h (HF).

Minimum pressure drop needed for the valves to operate are 25 kPa (LF/NF) and 45 kPa (HF).

## Installation

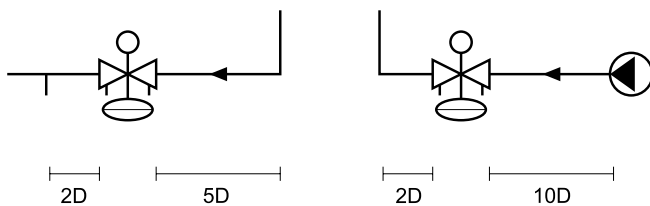
Install in supply or return pipe. Flow direction is shown by the arrow on the valve body. Install the valve so that the control and balancing part of the valve and the measurement points are accessible. Check allowed positions of the actuator.

Installation of a strainer upstream of the valve is recommended.

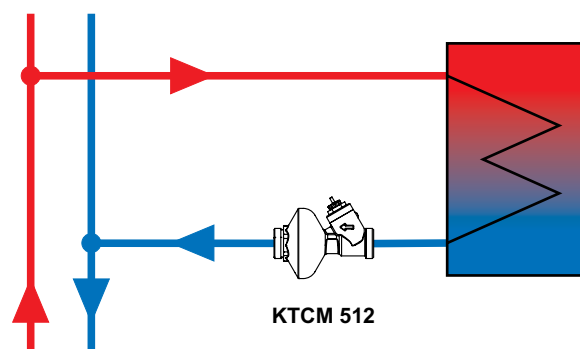
Install the actuator after performing a leakage test.

### Normal pipe fittings

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



### Application example

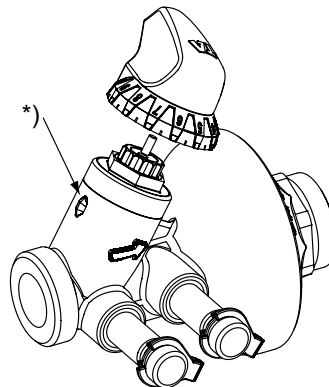


## Setting

KTCM is delivered preset at position 10 (fully open). Presetting of a valve for a given flow, e.g. corresponding to position 8, is done as follows:

1. Place the presetting tool, Article No 52 133-100, at the valve.
2. Turn the presetting tool so that position 8 is pointing at the index\* of the valve body.
3. Remove the presetting tool. The valve is now pre-set.

The charts under "Flow measuring" show flow at various positions of presetting.



## Flow measuring

To measure the flow through the valve, use TA's balancing or measuring instruments. The actuator must be in fully open position or removed. The measuring points are self-sealing. Remove the caps and insert the probes through the seals. After measuring replace the caps.

KTCM 512 LF (low flow)

| Position | Flow [l/h] | Kv   |
|----------|------------|------|
| 1        | 35         | 0,06 |
| 2        | 45         | 0,10 |
| 3        | 75         | 0,16 |
| 4        | 105        | 0,23 |
| 5        | 135        | 0,28 |
| 6        | 160        | 0,35 |
| 7        | 170        | 0,37 |
| 8        | 180        | 0,40 |
| 9        | 195        | 0,44 |
| 10       | 210        | 0,47 |

KTCM 512 NF (normal flow)

| Position | Flow [l/h] | Kv   |
|----------|------------|------|
| 1        | 70         | 0,15 |
| 2        | 85         | 0,18 |
| 3        | 115        | 0,22 |
| 4        | 195        | 0,40 |
| 5        | 290        | 0,61 |
| 6        | 350        | 0,78 |
| 7        | 410        | 0,96 |
| 8        | 550        | 1,20 |
| 9        | 710        | 1,62 |
| 10       | 800        | 1,90 |

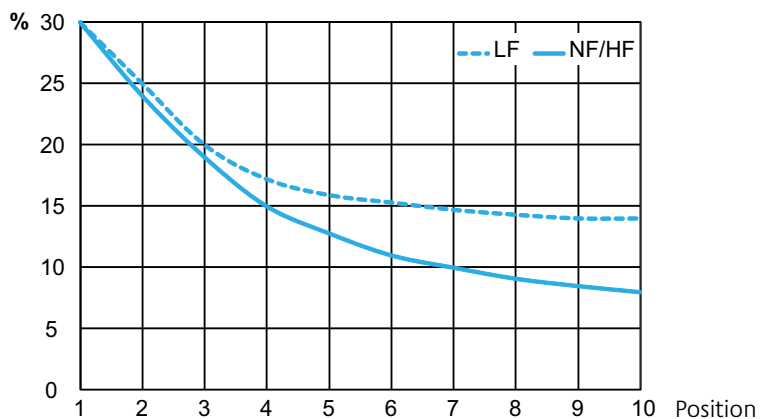
KTCM 512 HF (high flow)

| Position | Flow [l/h] | Kv   |
|----------|------------|------|
| 1        | 100        | 0,19 |
| 2        | 125        | 0,21 |
| 3        | 150        | 0,29 |
| 4        | 265        | 0,40 |
| 5        | 405        | 0,61 |
| 6        | 505        | 0,78 |
| 7        | 605        | 0,96 |
| 8        | 775        | 1,20 |
| 9        | 1025       | 1,62 |
| 10       | 1150       | 1,90 |

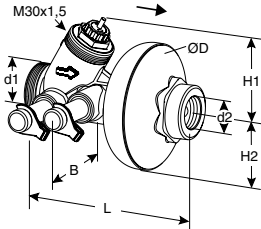
Recommended setting: Position 3-10

## Measuring accuracy

Kv deviation at different settings



## Articles



### Male thread x female thread

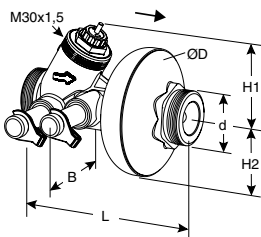
Threads according to ISO 228

Fc = 20 kPa

| Article No                       | DN | d1 | d2   | D  | L   | H1 | H2 | B  | Kvd | Q <sub>max</sub><br>[l/h] | Kg  |
|----------------------------------|----|----|------|----|-----|----|----|----|-----|---------------------------|-----|
| <b>KTCM 512 LF (low flow)</b>    |    |    |      |    |     |    |    |    |     |                           |     |
| 52 798-415                       | 15 | G1 | G1/2 | 78 | 110 | 53 | 39 | 58 | 4   | 210                       | 0,9 |
| 52 798-420                       | 20 | G1 | G3/4 | 78 | 110 | 53 | 39 | 58 | 4   | 210                       | 0,9 |
| <b>KTCM 512 NF (normal flow)</b> |    |    |      |    |     |    |    |    |     |                           |     |
| 52 798-515                       | 15 | G1 | G1/2 | 78 | 110 | 53 | 39 | 58 | 4   | 800                       | 0,9 |
| 52 798-520                       | 20 | G1 | G3/4 | 78 | 110 | 53 | 39 | 58 | 4   | 800                       | 0,9 |

Fc = 40 kPa

| Article No                     | DN | d1 | d2   | D  | L   | H1 | H2 | B  | Kvd | Q <sub>max</sub><br>[l/h] | Kg  |
|--------------------------------|----|----|------|----|-----|----|----|----|-----|---------------------------|-----|
| <b>KTCM 512 HF (high flow)</b> |    |    |      |    |     |    |    |    |     |                           |     |
| 52 798-615                     | 15 | G1 | G1/2 | 78 | 110 | 53 | 39 | 58 | 4   | 1 150                     | 0,9 |
| 52 798-620                     | 20 | G1 | G3/4 | 78 | 110 | 53 | 39 | 58 | 4   | 1 150                     | 0,9 |



### Male thread

Threads according to ISO 228

Fc = 20 kPa

| Article No                       | DN | d  | D  | L   | H1 | H2 | B  | Kvd | Q <sub>max</sub><br>[l/h] | Kg  |
|----------------------------------|----|----|----|-----|----|----|----|-----|---------------------------|-----|
| <b>KTCM 512 LF (low flow)</b>    |    |    |    |     |    |    |    |     |                           |     |
| 52 792-120                       | 20 | G1 | 78 | 110 | 53 | 39 | 58 | 4   | 210                       | 0,9 |
| <b>KTCM 512 NF (normal flow)</b> |    |    |    |     |    |    |    |     |                           |     |
| 52 792-320                       | 20 | G1 | 78 | 110 | 53 | 39 | 58 | 4   | 800                       | 0,9 |

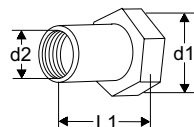
Fc = 40 kPa

| Article No                     | DN | d  | D  | L   | H1 | H2 | B  | Kvd | Q <sub>max</sub><br>[l/h] | Kg  |
|--------------------------------|----|----|----|-----|----|----|----|-----|---------------------------|-----|
| <b>KTCM 512 HF (high flow)</b> |    |    |    |     |    |    |    |     |                           |     |
| 52 795-920                     | 20 | G1 | 78 | 110 | 53 | 39 | 58 | 4   | 1 150                     | 0,9 |

→ = Flow direction

Kvd = Is the Kv value of the differential pressure control component when fully open.

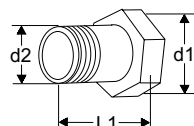
## Connections



### With female thread

Threads according to ISO 228

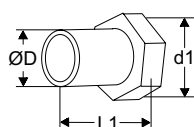
| Article No | EAN           | d1 | d2   | L1* |
|------------|---------------|----|------|-----|
| 52 759-015 | 7318793546609 | G1 | G1/2 | 26  |
| 52 759-020 | 7318793546708 | G1 | G3/4 | 32  |



### 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  |

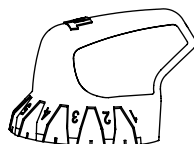


### For welding

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

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

## Accessories



### Presetting tool

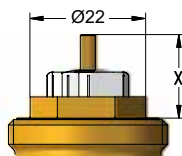
For TBV-C, TBV-CM, TBV-CMP, KTCM 512

| Article No | EAN           |
|------------|---------------|
| 52 133-100 | 7318793886002 |

### Actuator TSE-M

#### 24V AC

For more details of TSE-M, see separate catalogue leaflet.



KTCM 512 is developed to work together with the TSE-M actuator. Actuators of other brands require a working range of:

X = 11,50 - 15,80 (closed - fully open)

Tour & Andersson (TA) will not be held responsible for the control function if actuators other than TSE-M are used.

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