

# TWORETT, TA-UNI

Manifolds assemblies – Two-pipe



**HEIMEIER**

Pressurisation & Water Quality › Balancing & Control › Thermostatic Control

ENGINEERING ADVANTAGE

Compatible with most radiators on the market, this pre-assembled manifold for two-pipe radiator systems delivers balancing and room temperature control functionality.

> **TRV-2 valve**

For accurate balancing, trouble-free operation and better comfort.

> **Bottom connection**

Ensures smoother installation.

> **Side connection**

Ensures smoother installation.



## > Technical description

**Application:**

Heating systems

**Functions:**

Regulating  
 Presetting  
 Shut-off

**Dimensions:**

DN 10

**Pressure classe:**

PN 10

**Max. differential pressure:**

The max. pressure difference allowed for the valve not to open against a closed thermostat: 100 kPa.

**Temperature:**

Max. working temperature: 120°C  
 Min. working temperature: -10°C

**Material:**

*Diverters:*

Valve body: Hot stamped brass  
 Valve stem: Brass  
 O-rings: EPDM rubber

*Radiator valves:*

TRV-2, TRV-2S:  
 Valve body: AMETAL®  
 Other parts: see separate catalogue leaflet.

RVT and RVO:

Valve body: Hot stamped brass  
 Valve stem: AMETAL®  
 O-rings: EPDM rubber  
 Return spring and screw: Stainless steel  
*Others:*  
 Connection pipes: Steel  
 Radiator connections: AMETAL®

AMETAL® is the dezincification resistant alloy of TA.

**Surface treatment:**

Nickel-plated

**Identification:**

The distributors are marked with TA and a flow direction arrow on the valve body.

*TWORETT:*

The **RSD 802** is marked on its cap with RSD 802, 2-pipe.  
*TA-UNI:*

The cap is marked with 1 or 2 to indicate whether it is set for one- or two-pipe application.

All radiator valves are marked with TA and flow direction arrow on the valve body.

TRV-2/TRV-2S are also marked with country code and dimension, TRV-2 with KEYMARK symbol.

TRV-2: White protection cap.

TRV-2S: Red protection cap. The locking nut at the valve insert is marked in red.

## General

### Diverter

TWORETT/RSD 802, two-pipe, which can be mounted to suit connection from below or from the side, with built in shut-off. TA-UNI, which can be mounted to suit connection from below or from the side, convertible for one- or two-pipe application.

### Radiator valves

TRV-2/TRV-2S can be fitted with a thermostat, but is supplied with a protection cap and KOMBI connection. Using straight valve, the valve body can be arranged parallel or perpendicular to the radiator.

TRV-2/TRV-2S has stepless presetting and is delivered with presetting of 6, i.e. fully open valve. Presetting tool Article No 50 198-004. For further information on TRV-2/TRV-2S see separate leaflet.

RVO hand controlled with KOMBI connection.

### Connection pipes

Nickel-plated steel. 12 mm external diameter, standard length 1100 mm.

Subtract 80 mm from the radiator c/c distance for a TRV-2/TRV-2S straight valve and elbow. When using the TRV-2/TRV-2S reversed angle valve, obtain the distance by subtracting 43 mm from the radiator c/c distance. When using RVO angle valve, subtract 36 mm from the radiator c/c distance.

### Accessories

Radiator connections.

Pipe connections: Steel, copper or PEX pipes can be connected to the diverter using TA's couplings: See catalogue leaflets FPL and FPL-PX.

Thermostats: See catalogue leaflet TRV 300.

Actuator: See catalogue leaflet EMO T.

## Noise

### Two-pipe system

The following conditions must be fulfilled in order to avoid noise in the heating system:

- 1 Flows correctly balanced.
- 2 The water in the system must have been de-aerated.
- 3 Circulation pumps which do not give too high differential pressure.

The maximum recommended pressure drop in order to avoid noise: 30 kPa.

## Kv values

### TWORETT with radiator valve TRV-2

*With straight valve:*

Kvs complete set: 0,63

Kv $\Delta$ T2K complete set: 0,41

*With reversed angle valve:*

Kvs complete set: 0,60

Kv $\Delta$ T2K complete set: 0,39

### TWORETT with radiator valve TRV-2S

Kvs, complete set: 0,316

Kv $\Delta$ T2K, complete set: 0,246

### Manifold assembly with diverter TA-UNI

Two-pipe system with radiator valve RVO Kvs = 0.79

Two-pipe system with radiator valve TRV-2 Kvs = 0.62

## > Setting

---

### **Presetting, TWORETT**

Preset the TWORETT two-pipe manifold fitted with TRV-2 / TRV-2S.

The Kv values are given for the entire set. When the unit is set to higher Kv values, there will be a slight difference relative to the TRV-2 / TRV-2S. The Kv values will therefore be slightly lower, as the pressure drop in the diverter, connections and pipes are included in the measurement.

TA's method of balancing heating systems results in uniform temperature distribution and energy saving.

Some important features:

- Recommended pressure drop over the radiator valve, 8-10 kPa.
- Low pressure drop in the piping system.
- Correct flow to the radiator.
- The thermostat is adjusted (i.e. max. flow is restricted) so that it stops the energy supply to the radiator when the room temperature rises by 2K.

#### *Shut-off:*

The TWORETT (bottom- and side-connected) can be shut off by screwing in the presetting stem on the distributor fully home, using a 6 mm Allen key. After which the radiator can be removed without having to drain the system.

### **Presetting, TA-UNI**

#### *Converting one-/two-pipe:*

To convert a valve to a two-pipe arrangement, remove the valve cover and use a 2,5 mm Allen key to close the innerspindle fully (= turn clockwise).

Screwing the innerspindle fully anti-clockwise will make the valve operate as a one-pipe valve.

This changeover can be carried out with the valve in operation.

#### *Presetting, one-pipe:*

Delivery setting 50% flow to radiator. Can be varied between 10-50% by resetting the outer spindle.

#### *Presetting, two-pipe:*

Presetting is carried out at the valve. To do this right, see the valve in question.

#### *Shut-off:*

The TA-UNI (bottom- and side-connected) can be shut off by screwing in the presetting stem on the distributor fully home, using a 4 mm Allen key. After which the radiator can be removed without having to drain the system.

#### *Tool for shut-off, converting and presetting:*

Inner spindle: Allen key 2,5 mm

Outer spindle: Allen key 4 mm.

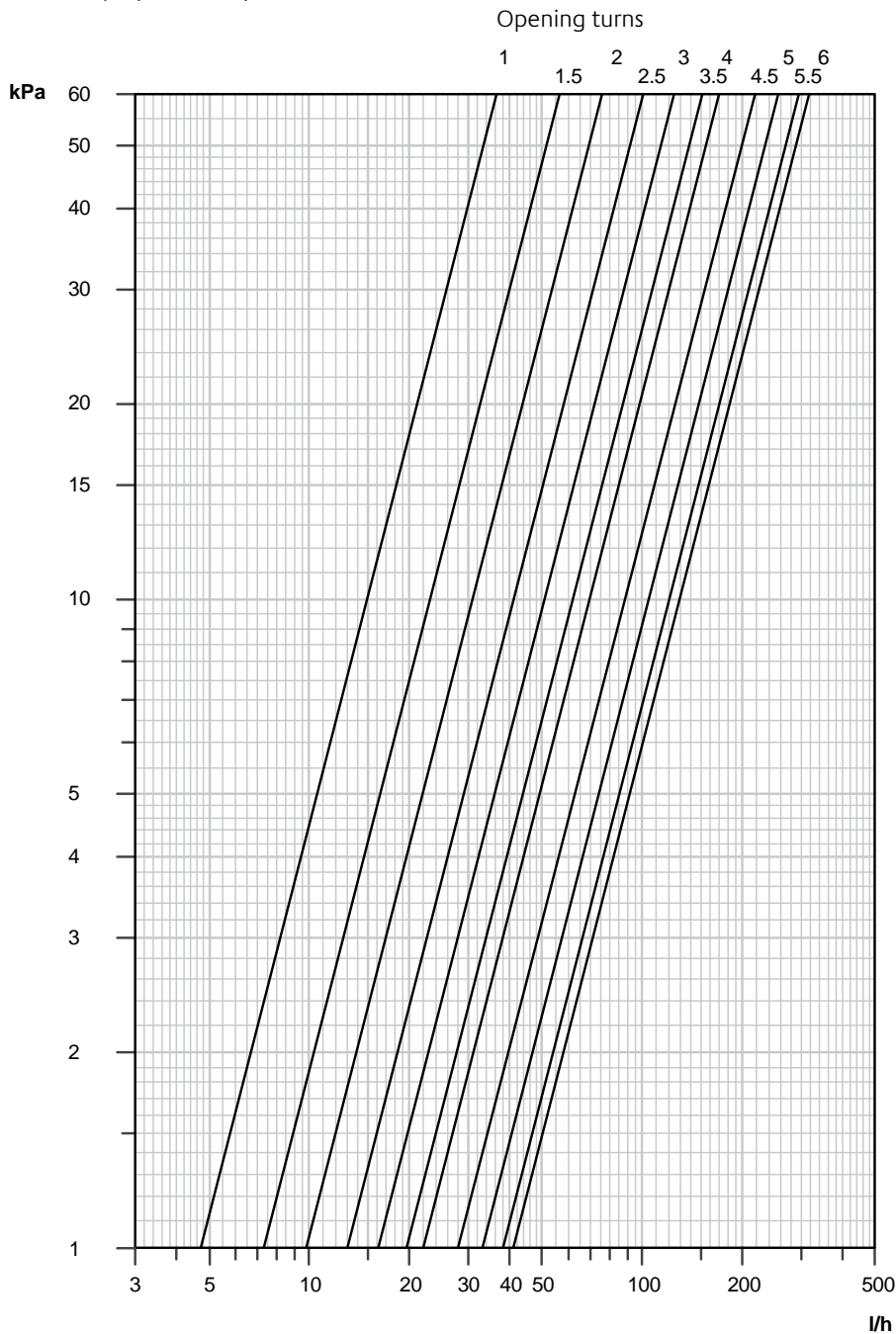
## > Ordering

---

Complete manifold assembly is ordered by required diverter, valve, connection pipe, if any elbow and radiator connections.

## Diagram TWORETT with radiator valve TRV-2 straight, two-pipe

15-130 l/h (at 10 kPa)



Presetting value	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
$K_v\Delta T2K^{**}$	0,047	0,073	0,098	0,130	0,161	0,195	0,220	0,280	0,330	0,380	0,410
l/h at 10 kPa	15	23	31	41	50	62	70	88	104	120	130
$K_v$ , fully open valve disc <sup>***</sup>	0,047	0,073	0,098	0,130	0,161	0,195	0,240	0,330	0,413	0,535	0,630*

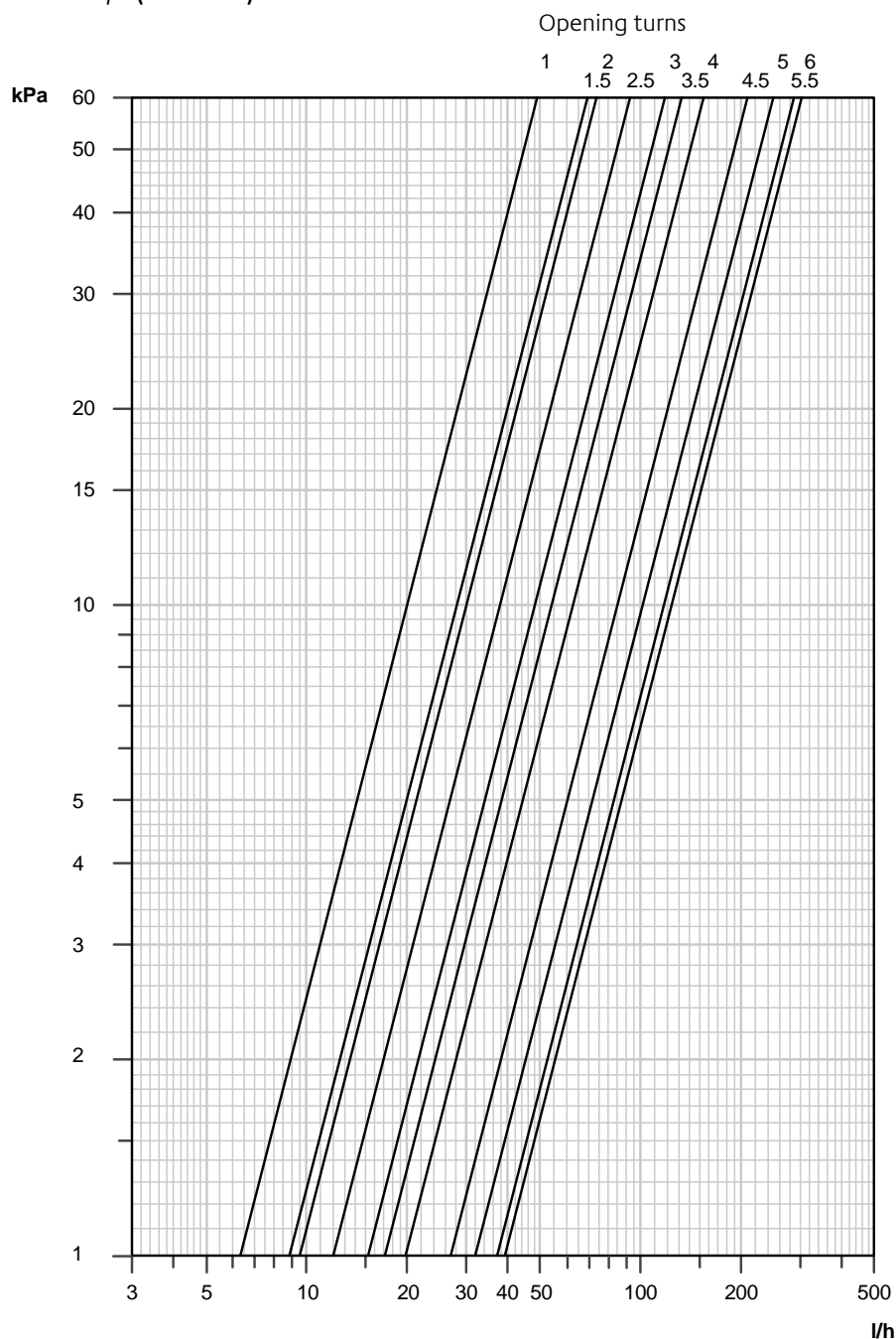
\*) Fully open valve.

\*\*) The values are valid when used together with thermostic head TRV 300.

\*\*\*) The values are valid for on/off regulation with, for example, thermo actuator EMO T.

## Diagram TWORETT with radiator valve TRV-2 reversed angle, two-pipe

20-123 l/h (at 10 kPa)



Presetting value	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
<b>KvΔT2K**</b>	0,063	0,089	0,095	0,120	0,152	0,171	0,198	0,270	0,320	0,370	0,390
<b>l/h at 10 kPa</b>	20	28	30	38	48	54	63	85	101	117	123
<b>Kv, fully open valve disc***</b>	0,063	0,089	0,095	0,123	0,158	0,180	0,221	0,310	0,420	0,560	0,600*

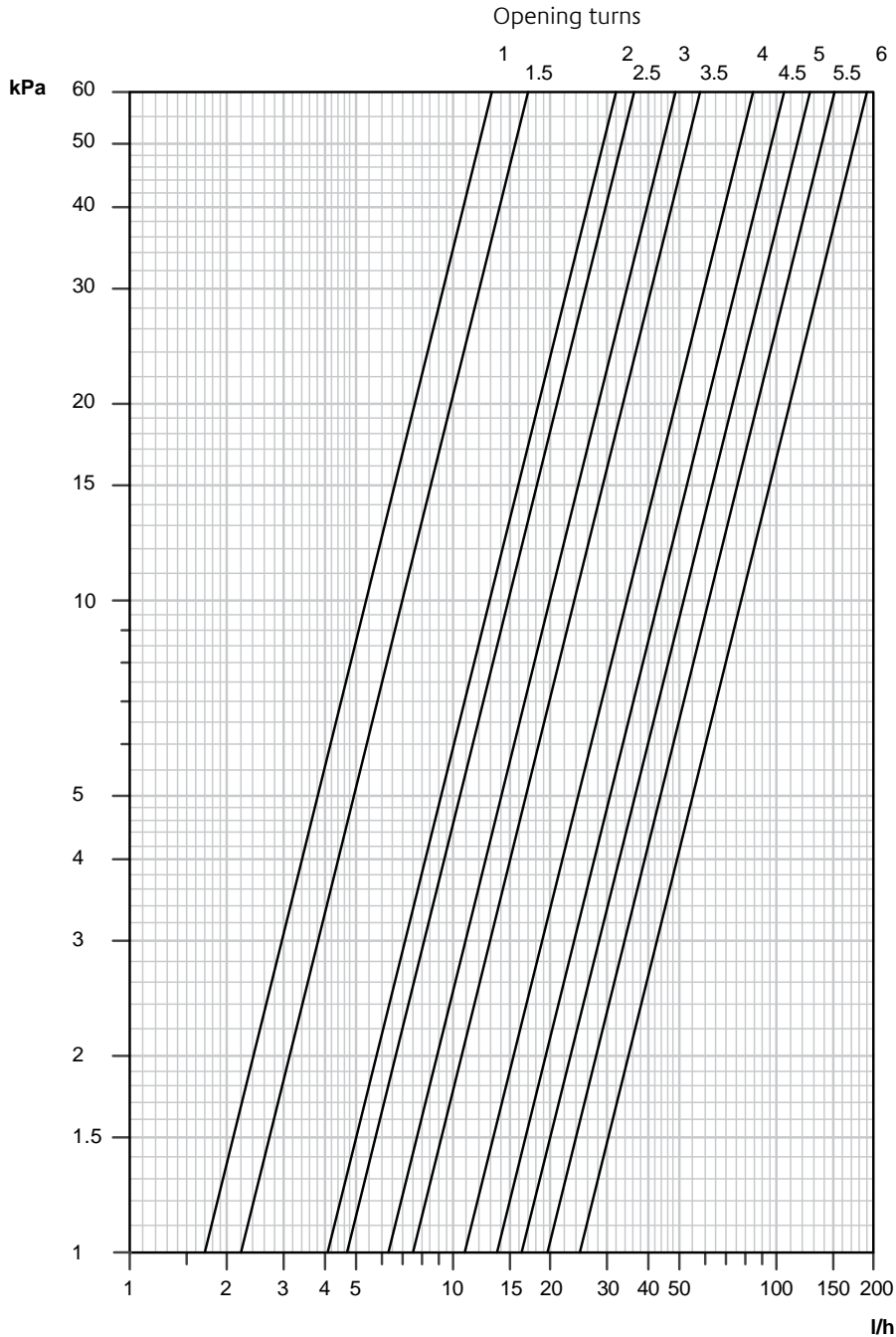
\*) Fully open valve.

\*\*) The values are valid when used together with thermostic head TRV 300.

\*\*\*) The values are valid for on/off regulation with, for example, thermo actuator EMO T.

## Diagram TWORETT with radiator valve TRV-2S straight and reversed angle, two-pipe

5-78 l/h (at 10 kPa)



Presetting value	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
KvΔT2K**	0,017	0,022	0,041	0,047	0,063	0,075	0,109	0,136	0,163	0,195	0,246
l/h at 10 kPa	5	7	13	15	20	24	34	43	52	62	78
Kv, fully open valve disc***	0,017	0,022	0,041	0,047	0,063	0,075	0,111	0,142	0,177	0,228	0,316*

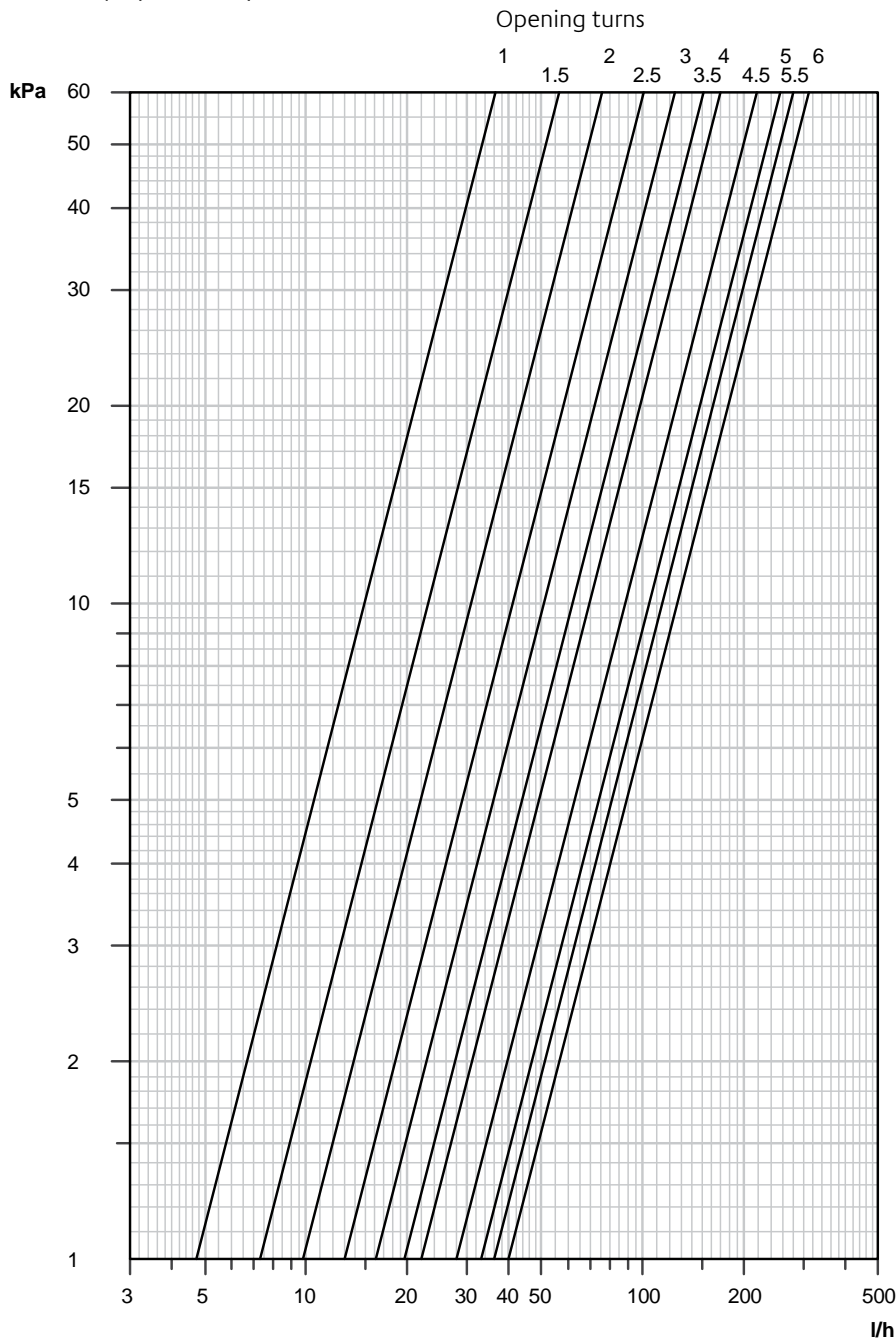
\*) Fully open valve.

\*\*) The values are valid when used together with thermostic head TRV 300.

\*\*\*) The values are valid for on/off regulation with, for example, thermo actuator EMO T.

## Diagram TA-UNI with radiator valve TRV-2 straight, two-pipe

15-127 l/h (at 10 kPa)



Presetting value	1	1,5	2	2,5	3	3,5	4	4,5	5	5,5	6
<b>KvΔT2K**</b>	0,047	0,073	0,098	0,130	0,161	0,195	0,220	0,280	0,330	0,360	0,400
<b>l/h at 10 kPa</b>	15	23	31	41	51	62	70	89	104	114	127
<b>Kv, fully open valve disc***</b>	0,047	0,073	0,098	0,130	0,161	0,195	0,240	0,330	0,420	0,500	0,620*

\*) Fully open valve.

\*\*) The values are valid when used together with thermostic head TRV 300.

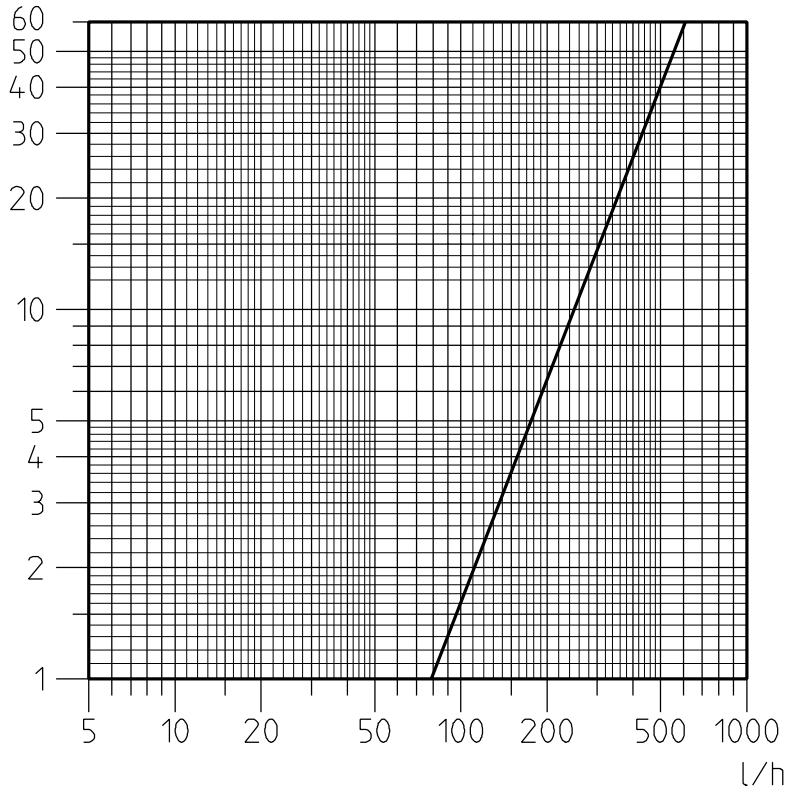
\*\*\*) The values are valid for on/off regulation with, for example, thermo actuator EMO T.



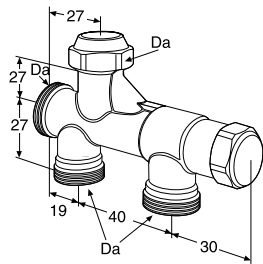
## Diagram TA-UNI with radiator valve RVO, two-pipe

Kv 0,79 fully open.

kPa

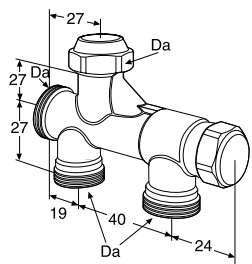


## Diverter



### TWORETT/RSD 802

Article No	EAN	DN	Da	Kvs*	
50 802-100	7318792694400	10	M22x1,5	1,54	<b>RSD 802 2-pipe</b>

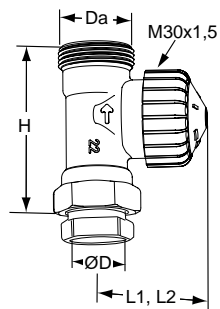


### TA-UNI

Article No	EAN	DN	Da	Kvs*	
50 600-200	7318792642906	10	M22x1,5	1,0	<b>2-pipe</b> (convertable to 1-pipe)

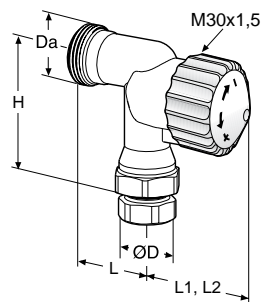
\*) Whole manifold assembly.  
Kvs = m<sup>3</sup>/h at a pressure drop of 1 bar and fully open valve.

## Valves with presetting



### TRV-2, TRV-2S Straight Thermostatic controlled

Article No	EAN	DN	D	Da	L1	L2**	H	KvΔT2K	
50 861-112	7318793759207	10	12	M22x1,5	36	107	50	0,047- 0,468	<b>TRV-2</b>
50 861-212	7318793848000	10	12	M22x1,5	36	107	50	0,017- 0,316	<b>TRV-2S</b>

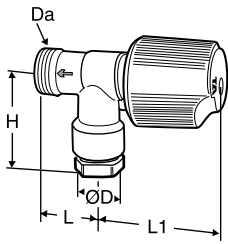


### TRV-2, TRV-2S Reversed angle Thermostatic controlled

Article No	EAN	DN	D	Da	L	L1	L2**	H	KvΔT2K	
50 864-112	7318793850508	10	12	M22x1,5	27	37	108	46,5	0,047- 0,468	<b>TRV-2</b>
50 864-212	7318793864802	10	12	M22x1,5	27	37	108	46,5	0,017- 0,316	<b>TRV-2S</b>

\*\*\*) Valve with fitted thermostatic head TRV 300.  
KvΔT2K = The values are valid when used together with thermostic head TRV 300 (without diverter).

## Valves without presetting



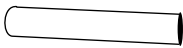
### RVO Angle

Hand controlled

Article No	EAN	DN	D	Da	L	L1	H	Kvs
50 610-112	7318792644405	10	12	M22x1,5	27	67	34	1,0

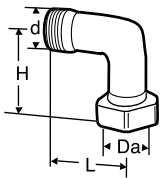
Kvs = m<sup>3</sup>/h at a pressure drop of 1 bar and fully open valve.

## Connection pipe



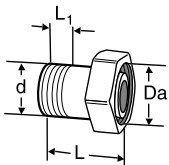
Article No	EAN	ØD	L
50 630-001	7318793923103	12	1100

## Radiator connections



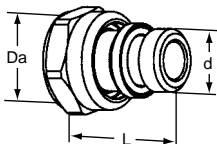
### Elbow

Article No	EAN	d	Da	L	H
50 702-510	7318792689802	M22x1,5	M22x1,5	27	26,5



### Straight

Article No	EAN	d	Da	L	L1
50 701-510	7318792687402	R3/8	M22x1,5	25	8
50 701-516	7318792687600	R1/2	M22x1,5	25	10



### Straight with O-ring

Article No	EAN	d	Da	L
50 707-610	7318793825704	G3/8	M22x1,5	33
50 707-616	7318793825803	G1/2	M22x1,5	33

Thermostatic head - see catalogue leaflet TRV 300.

Thermoelectric actuator - see catalogue leaflet EMO T.

Other accessories - see catalogue leaflet ACCESSORIES.

Couplings - see catalogue leaflet FPL.

*The products, texts, photographs, graphics and diagrams in this document may be subject to alteration by TA Hydronics without prior notice or reasons being given.*

*For the most up to date information about our products and specifications, please visit [www.tahydraulics.com](http://www.tahydraulics.com).*

*1-20-5 TWORETT, TA-UNI 09.2013*

---