

# Installation Instructions for the TBPA Circulation Pump GOLD/SILVER C/COMPACT

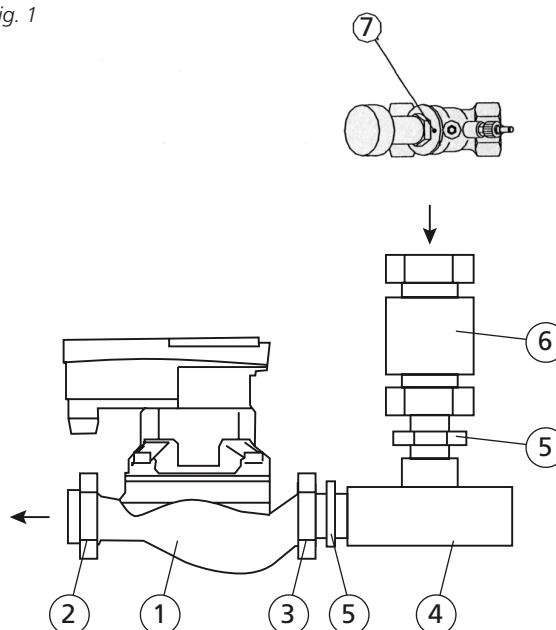
## 1. General

If the air handling system includes an air heater for hot water without anti-frosting protection, the water circuit must include a circulation pump (secondary side), to ensure a steady flow to prevent frosting in the coil. The circulation pump is supplied with a T-fitting, non-return valve and adjusting valve. On delivery, the T coupling and the non-return valve are already fitted together. Connect the pump to coupling (3). Connect the water connection pipe to coupling (2), then connect it to the pump. An adjusting valve to be installed in the return pipe is supplied unmounted with the pump.

## Description

Pump capacity curves and other information about the pump and adjusting valve are specified on the pages that follow. Figure 1 and the table below describe the parts included in each pump kit.

Fig. 1



Item	Qty.	Designation	TBPA-5-009 < 0,074 l/s	TBPA-5-017 0,075-0,17 l/s	TBPA-5-035 0,171-0,35 l/s	TBPA-5-060 0,351-0,6 l/s	TBPA-6-100 0,601-1,0 l/s
1	1	Circulation pump DAB	EVOTRON 40/130	EVOTRON 40/130	EVOTRON 60/130	EVOTRON 60/130	EVOPLUS 40/180 M
2	1	Coupling with gasket	DN 20 F	DN 20 F	DN 25 F	DN 25 F	DN 25 F
3	1	Coupling with gasket					
4	1	T-pipe, tempered	DN 20	DN 20	DN 20	DN 25	DN 32
5	2	Hexagonal nipple					
6	1	Non-return valve with plunger and spring	DN 20 M	DN 20 M	DN 20 M	DN 25 M	DN 32 M
7	1	Adjusting valve	DN 10	DN 15	DN 20	DN 25	DN 32

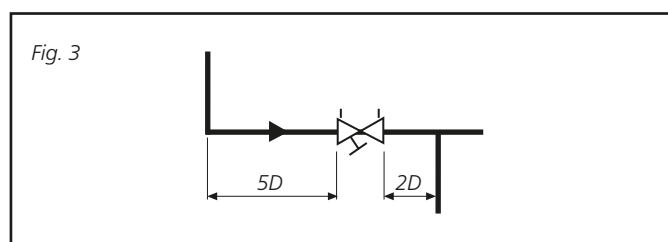
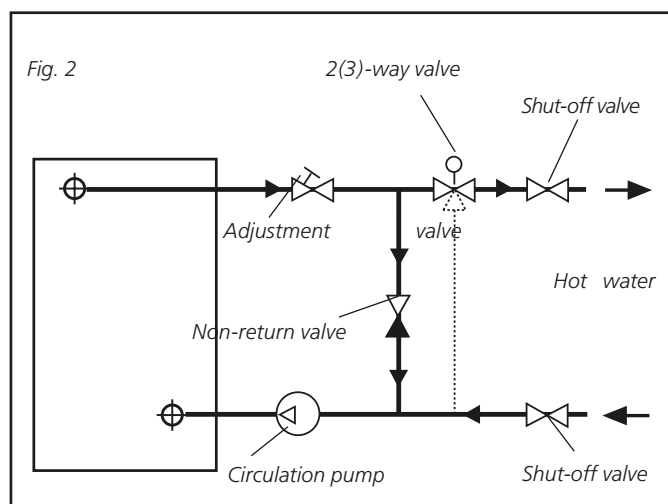
Item	Qty.	Designation	TBPA-6-150 1,01-1,5 l/s	TBPA-6-250 1,501-2,5 l/s
1	1	Circulation pump DAB	EVOPLUS 60/180 M	EVOPLUS 110/180 XM
2	1	Coupling with gasket	DN 25 F	DN 32 F
3	1	Coupling with gasket		
4	1	T-pipe, tempered	DN 40	DN 50
5	2	Hexagonal nipple		
6	1	Non-return valve with plunger and spring	DN 40 M	DN 50 M
7	1	Adjusting valve	DN 40	DN 50

## 2. Installation

A qualified plumbing contractor should install the piping. Figure 2 shows the arrangement of the components in the piping. The piping should be insulated according to local regulations.

Install the circulation pump supported by the piping with its motor shaft horizontal. Coupling cover, must not face downwards. Back off the bolts on the pump motor to change the position of the junction box cover. This makes it possible to turn the motor in relation to the pump casing.

Arrange the necessary lengths of straight pipe up and downstream of the adjustment valve as shown in Fig. 3.

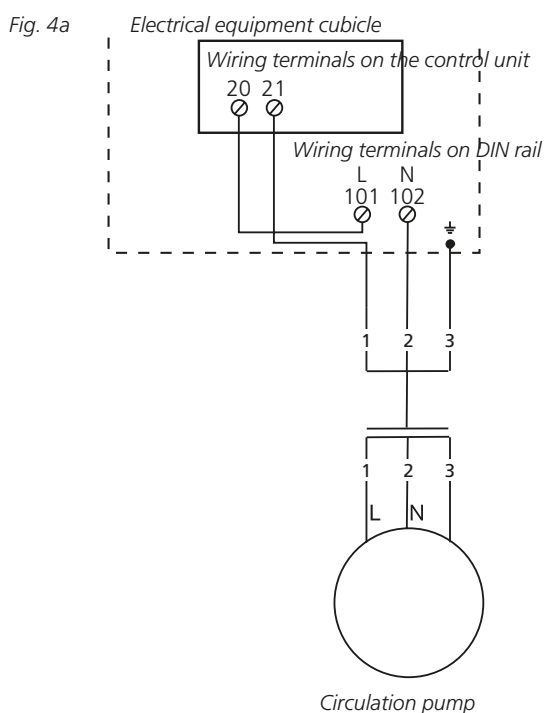


## 3. Electrical connections

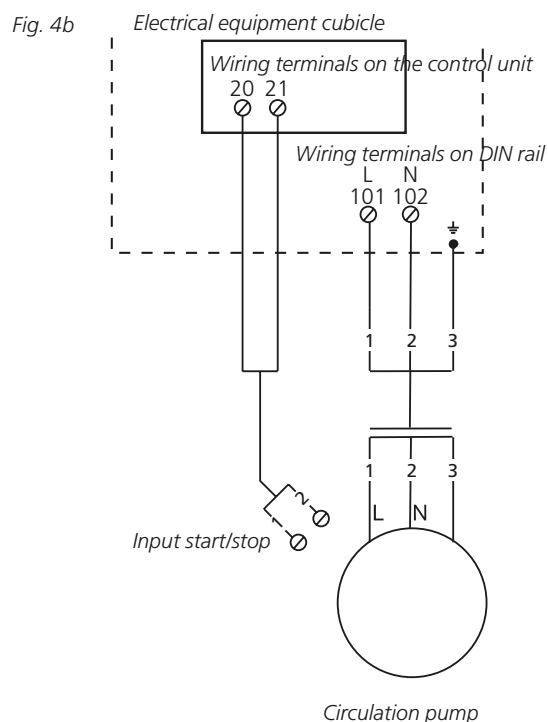
The electrical connections are to be wired by a qualified electrician in accordance with local regulations. The circulation pump is rated for a single-phase, 230 V, 50 Hz power supply. The pump has a block-proof motor; therefore no motor protection is required.

### GOLD RX/PX/CX/SD, Version E/F

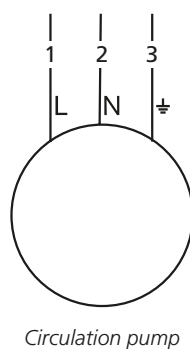
#### EVOTRON



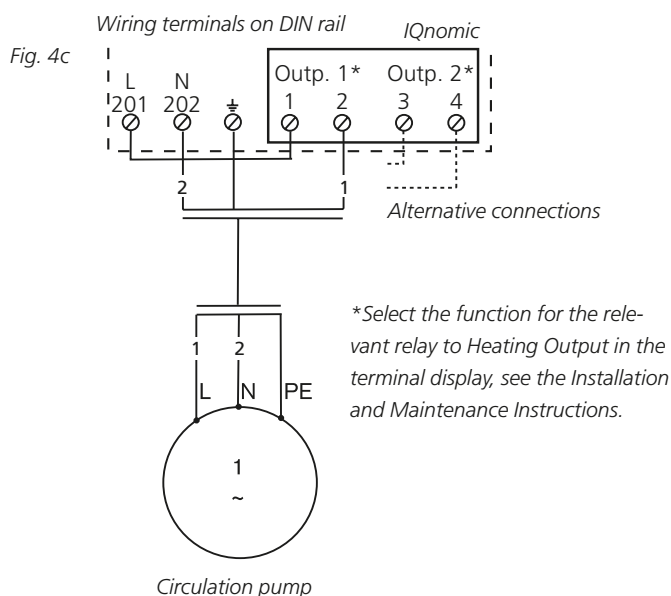
#### EVOPLUS



#### SILVER C



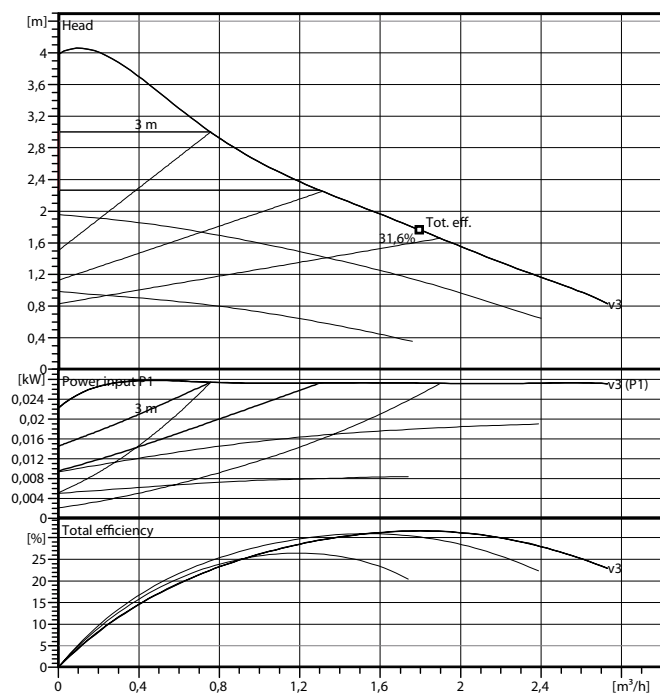
### GOLD LP/COMPACT



## 4. Circulation pumps, wet motor

### Sizing diagrams

#### EVOTRON 40/130



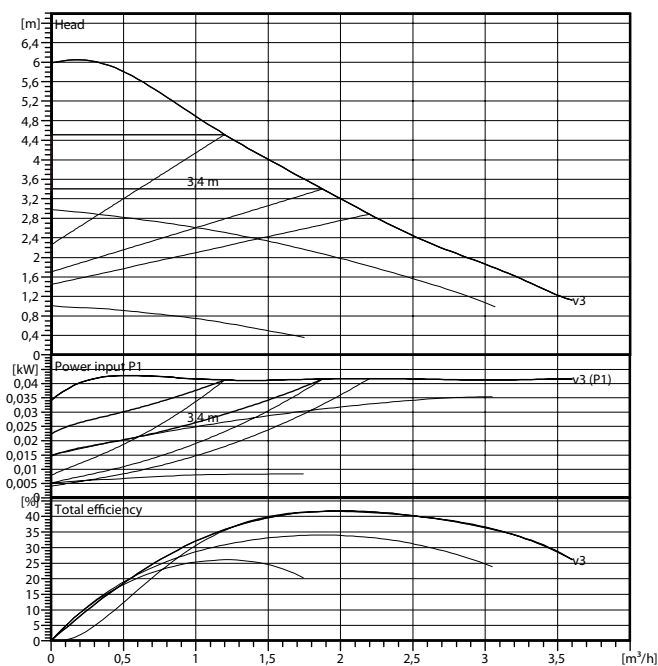
### Electrical data

Frequency:	50 Hz
Rated voltage:	1 x 230 V
Output:	27 W
Nominal current:	0.26 A
Speed:	2900 rpm
Motor protection:	Integrated

### Survey – Pump data

Temperature range, liquid:	-10°C – +110°C
Max. perm. operating pressure:	10 bar
Size of pipe connections:	1.5"
Max. permissible static pressure:	PN 10
Enclosure class:	IP44
Weight:	2.7 kg

#### EVOTRON 60/130



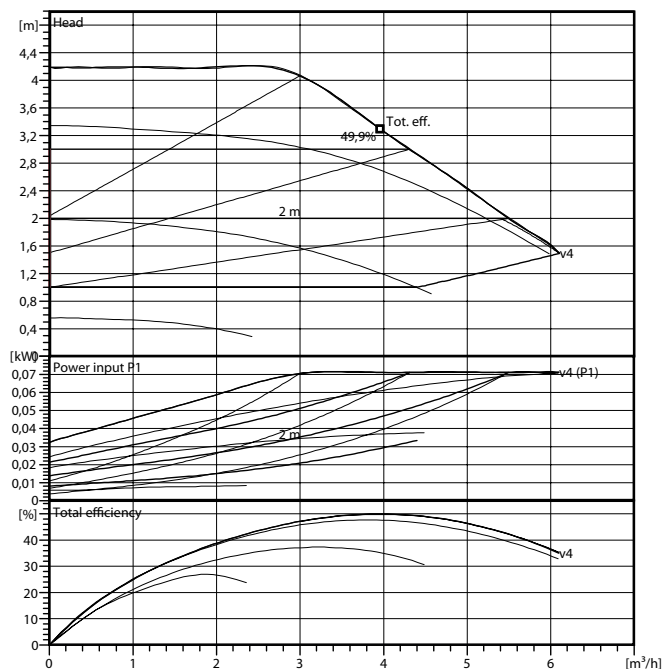
### Electrical data

Frequency:	50 Hz
Rated voltage:	1 x 230 V
Output:	42 W
Nominal current:	0.4 A
Speed:	2900 rpm
Motor protection:	Integrated

### Survey – Pump data

Temperature range, liquid:	-10°C – +110°C
Max. perm. operating pressure:	10 bar
Size of pipe connections:	1.5"
Max. permissible static pressure:	PN 10
Enclosure class:	IP44
Weight:	2.7 kg

### EVOPLUS 40/180 M



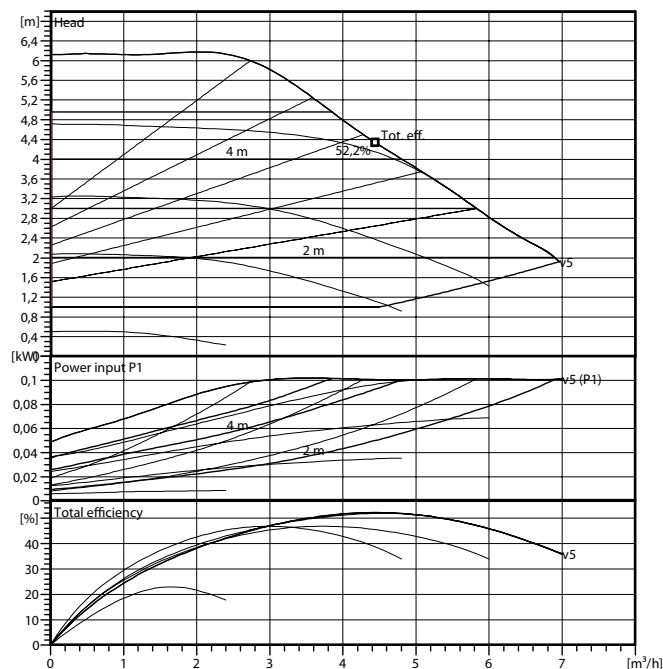
#### Electrical data

Frequency: 50 Hz  
 Rated voltage: 1 x 230 V  
 Output: 70 W  
 Nominal current: 0.52 A  
 Speed: 4200 rpm  
 Motor protection: Integrated

#### Survey – Pump data

Temperature range, liquid: -10°C – +110°C  
 Max. perm. operating pressure: 16 bar  
 Size of pipe connections: 1.5"  
 Max. permissible static pressure: PN 16  
 Enclosure class: IP44  
 Weight: 2.8 kg

### EVOPLUS 60/180 M



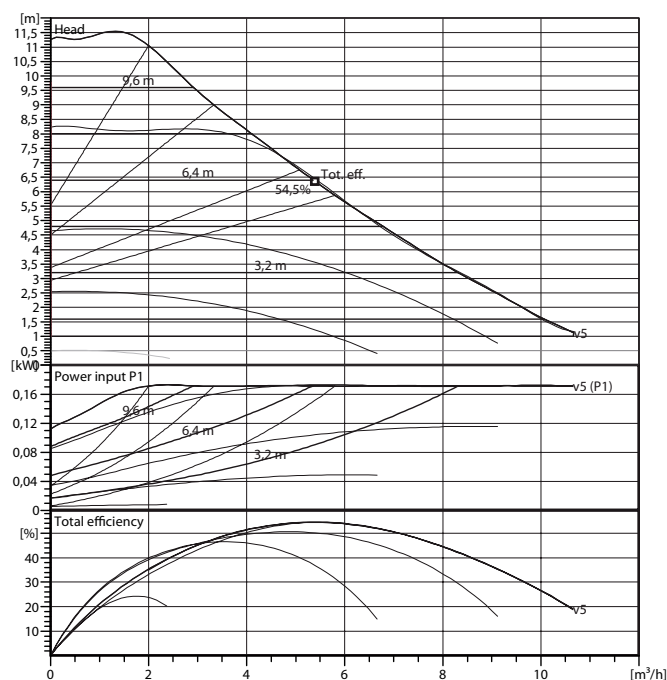
#### Electrical data

Frequency: 50 Hz  
 Rated voltage: 1 x 230 V  
 Output: 100 W  
 Nominal current: 0.72 A  
 Speed: 4200 rpm  
 Motor protection: Integrated

#### Survey – Pump data

Temperature range, liquid: -10°C – +110°C  
 Max. perm. operating pressure: 16 bar  
 Size of pipe connections: 1.5"  
 Max. permissible static pressure: PN 16  
 Enclosure class: IP44  
 Weight: 2.8 kg

## EVOPLUS 110/180 XM



### Electrical data

Frequency:	50 Hz
Rated voltage:	1 x 230 V
Output:	170 W
Nominal current:	1.18 A
Speed:	4200 rpm
Motor protection:	Integrated

### Survey – Pump data

Temperature range, liquid:	-10°C – +110°C
Max. perm. operating pressure:	16 bar
Size of pipe connections:	2 "
Max. permissible static pressure:	PN 16
Enclosure class:	IP44
Weight:	2.8 kg

## 5. 9505 Adjustment valve

### General

#### Drainage

Valves without drainage nipple are fitted with a cover. This cover can be replaced by a set of drainage fittings available as an accessory.

#### Measurement tappings

The measurement tappings are self-sealing. Whenever measurements are to be made, remove the cover and insert the measurement through the self-sealing measuring tapping.

### Technical Description

#### Range of Application

Heating and cooling systems. Mains water plants.

#### Function

Commissioning, pressure drop and flow measurements, shut off and drainage.

The valve can regulate the flow when you turn the handle to change the setting. There are 40 different positions on the handle.

The valve can stop the flow and on a restart there is a memory function that returns the valve back to the previous setting.

The valve can be used for measuring the flow across the valve by measuring the pressure in the two measurement points.

#### Pressure class

PN 20. (PN 25 at max. permissible operating temperature, 100°C)

#### Temperature

Max. permissible operating temperature: 130°C.

Min. permissible operating temperature: - 10°C.

#### Kv values

The values below or those in the diagram on the next page can be used for calculation of the pipe system.

DN Turns	10	15	20	25	32	40	50
0,5	0,09	0,37	0,4	1,4	1,4	2,7	3,9
1	0,19	0,55	0,7	2	3,3	3,5	7,8
1,5	0,33	0,75	0,9	2,6	4,1	4,5	10,6
2	0,5	0,94	1,2	3,5	5,1	6,1	14,8
2,5	0,66	1,18	1,5	4,8	7,6	10	19,9
3	0,81	1,75	2,2	5,5	10,4	14,1	23,9
3,5	0,92	2,44	3,4	6	11,2	17,6	27,2
4	0,97	2,67	4,1	6,4	12	19,5	29,8

### Presetting

The valve can be preset by means of the appropriate flow diagram for the relevant valve size. The presetting of the valve can be read in the "main" and "secondary" scale on the handle. Double zeros indicate that the valve is closed.

- The primary valve setting (main) is shown in the lower window, where the values move in a vertical direction. Each number indicates one whole turn.

- The secondary valve setting (secondary) is shown in the upper window, where the values move in a horizontal direction. Each number indicates one tenth of a turn.

To set a valve to a certain pressure drop setting that e.g. is equivalent to 2.3 turns in the diagram, proceed as follows:

1. Close the valve completely.

2. Open the valve 2.3 turns.

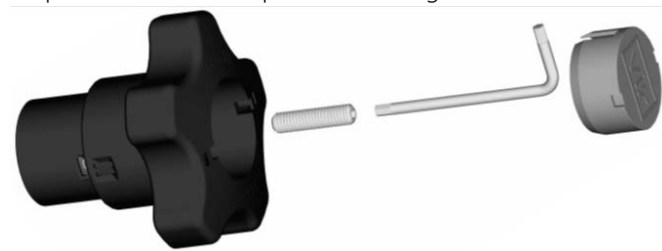
3. The memory stop can be set as follows:

- Remove the plastic cover on the handle using a small tool:

- Insert the 3 mm Allen key supplied into the hole in the center. Make sure that the topset® is in its required position and tighten the inner screw clockwise until it stops. Do not tighten it too hard.

- Replace the plastic cover. You can prevent unauthorized persons from changing the setting by security sealing the cover of the handle's upper section. This can be done by using a special wire with a security seal that you insert through the existing grooves.

The valve can now be closed, and thus influence the flow at anytime. When the valve is opened again the memory stop will return to the previous setting.



4. The valve is now set.

To check the presetting, close the valve. The setting indicated should then be 0.0. After that, open it to stop. The presetting will then be indicated, in this case: 2.3.

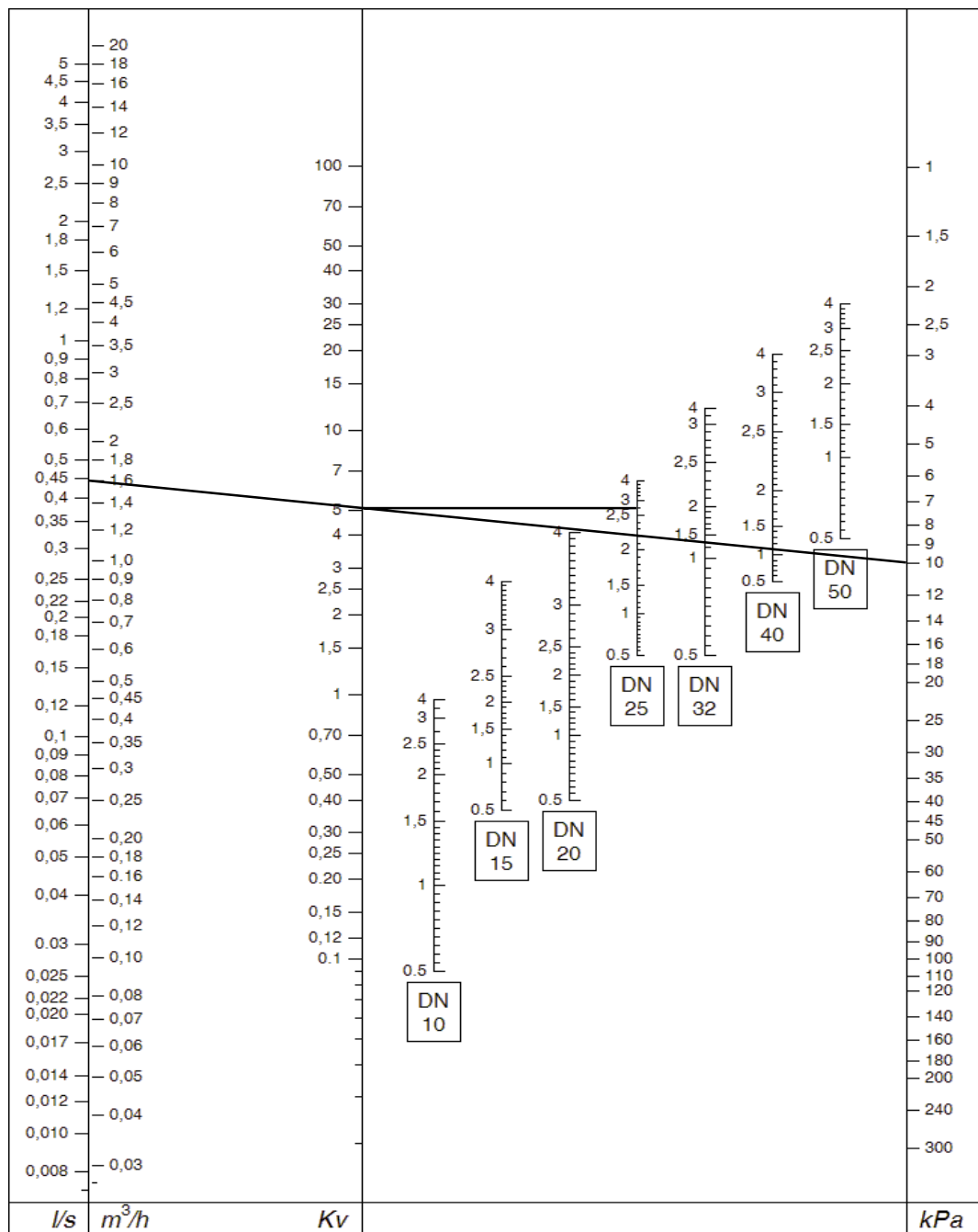
Diagrams that indicate the pressure drop at various settings and flows for each size of valve are provided for guidance in determining the correct valve size and presetting (pressure drop).

A fully open valve corresponds to 4 turns. To open it more than 4 turns will not enhance its capacity.

## 6. Chart

This chart shows pressure drops across the valve. A straight line that connects the flow-Kv-pressure drop lines shows the interrelationship between the various figures.

The setting for each valve size can be obtained by plotting a horizontal line from the Kv obtained.



### Example

#### Problem

Pre-setting for DN25 at a desired flow of 1.6 m³/h and pressure drop 10kPa.

#### Solution

Plot a line between 1.6 m³/h and 10 kPa. The line intersects the kv line at Kv=5. Then plot a horizontal line from Kv=5 to the DN 25 scale which indicates 2.75 turns.

#### IMPORTANT!

If the flow figure turns out to be outside of the chart, you can read it as follows:

Assume the example above that gives 10 kPa, Kv=5 and a flow of 1.6 m³/h. At 10 kPa and Kv=0.5 the flow will be 0.16 m³/h and at Kv=50 the flow will be 16 m³/h. Thus for every given pressure drop, you can read 0.1 or 10 times the flow and Kv from the chart.