Installation Instructions for the TBPA Circulation Pump GOLD/COMPACT

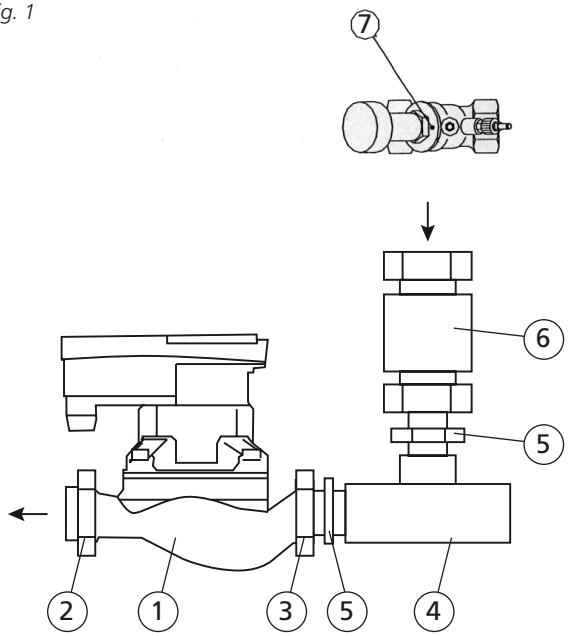
1. General

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

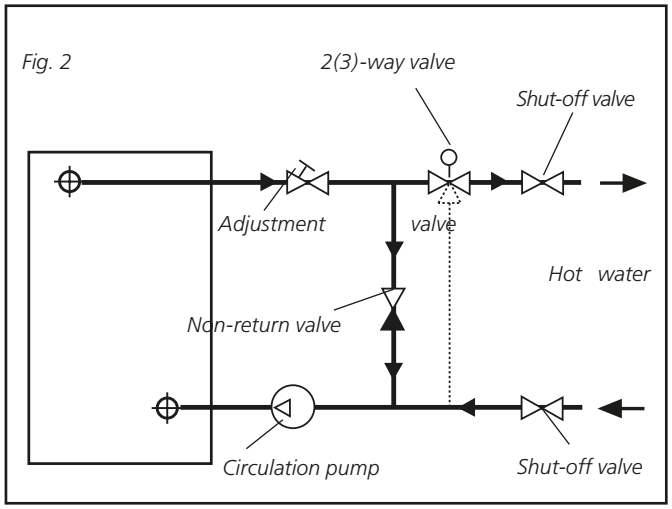


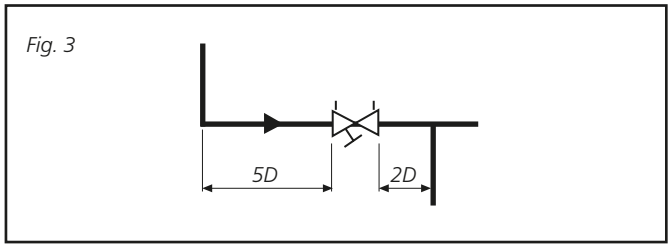
Item	Qty.	Designation	**TBPA-4-009** < 0,09 l/s	**TBPA-4-017** 0,091-0,17 l/s	**TBPA-4-035** 0,171-0,35 l/s	**TBPA-4-060** 0,351-0,6 l/s	**TBPA-4-100** 0,601-1,0 l/
1	1	Circulation pump Wilo	Yonos PARA-RS 25/6 130	Yonos PARA-RS 25/6 130	Yonos PARA-RS 25/6 130	Yonos PARA-RS 25/6 130	Stratos PARA 25/1-8
2	1	Coupling with gasket	DN 25	DN 25	DN 25	DN 25	DN 25
3	1	Coupling with gasket					
4	1	T-pipe, tempered	DN 20	DN 20	DN 20	DN 25	DN32
5	2	Hexagonal nipple					
6	1	Non-return valve with plunger and spring	DN 20	DN 20	DN 20	DN 25	DN32
7	1	Adjusting valve, STAD	DN 10	DN 15	DN 20	DN 25	DN32

Item	Qty.	Designation	**TBPA-4-150** 1,01-1,5 l/s	**TBPA-4-250** 1,501-2,5 l/s
1	1	Circulation pump Wilo	Stratos PARA 25/1-8	Stratos PARA 30/1-12
2	1	Coupling with gasket	DN 25	DN 32
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	DN 50
7	1	Adjusting valve, STAD	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.





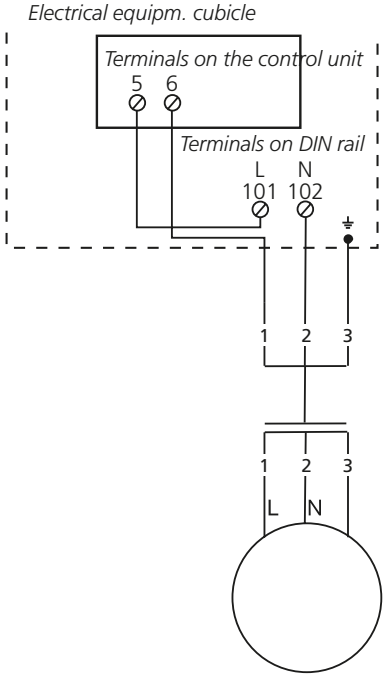
3. Electrical connections

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.

3.1 Yonos PARA-RS

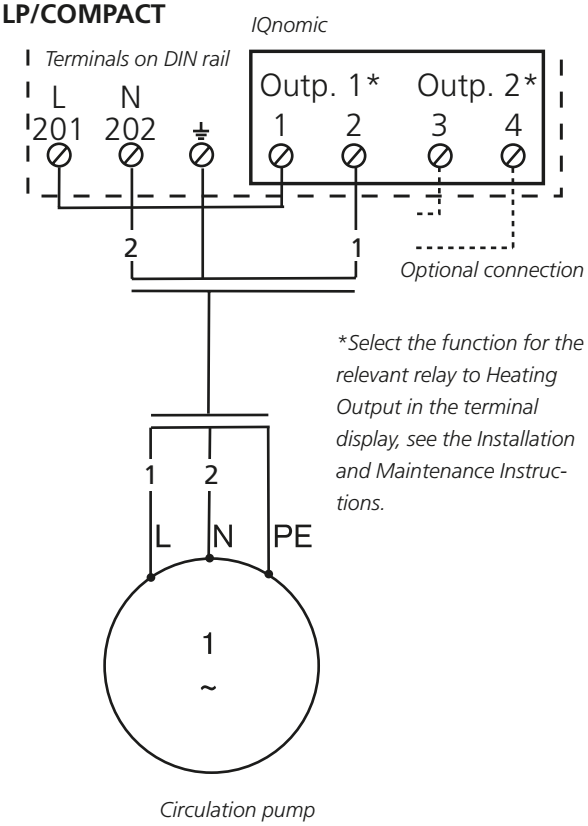
GOLD RX/PX/CX/SD

Fig. 4a



GOLD LP/COMPACT

Fig. 4b

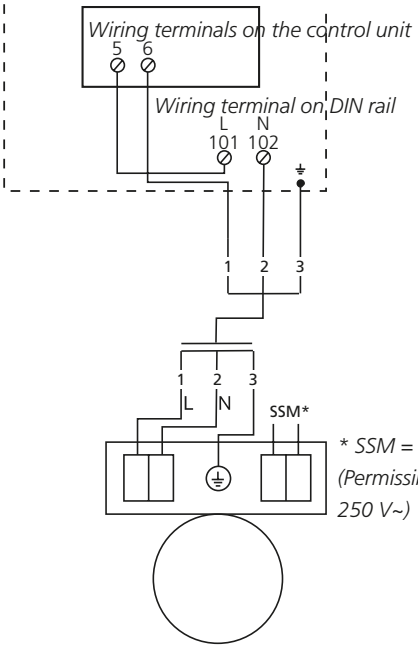


**Select the function for the relevant relay to Heating Output in the terminal display, see the Installation and Maintenance Instructions.*

3.2 Stratos PARA

GOLD RX/PX/CX/SD

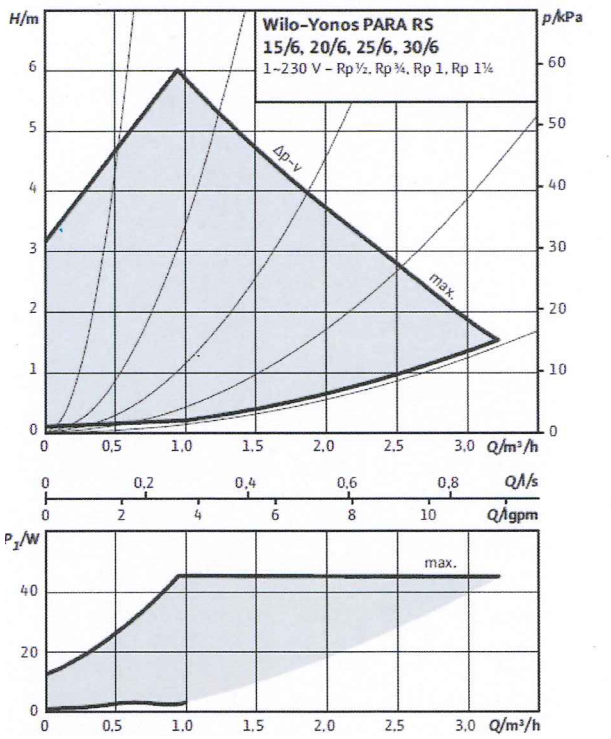
Fig. 4c

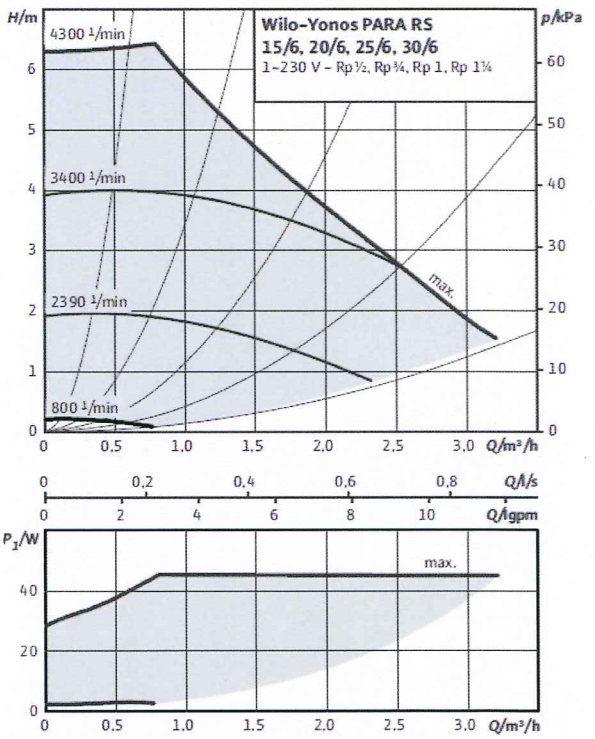


** SSM = Common alarm (Permissible load: 1 A, 250 V~)*

4. Circulation pumps, wet motor

Sizing diagram: Yonos PARA-RS 25/6 130





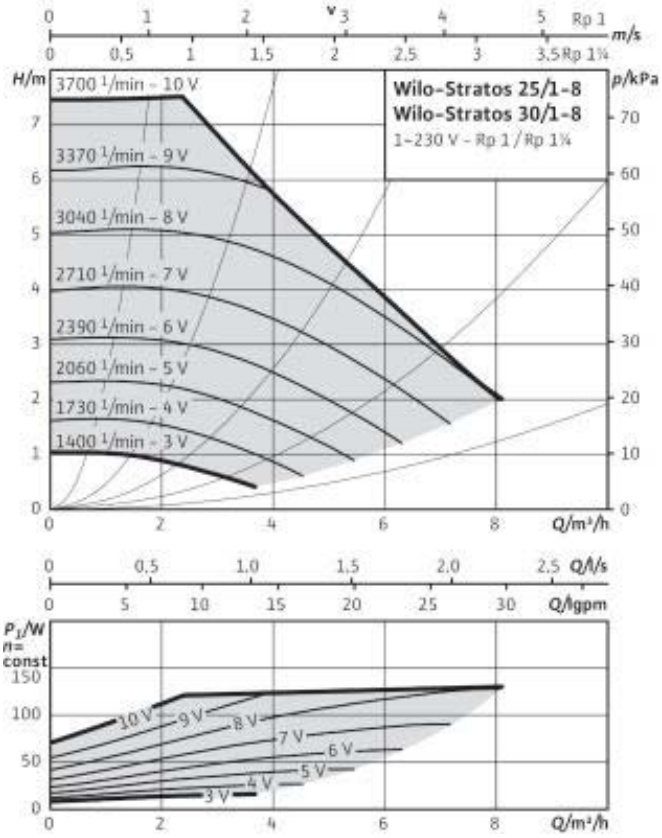
Electrical data

Frequency:	50/60 Hz
Rated voltage:	1 x 230 V
Rated power:	37 W
Current:	0.028 – 0.44 A
Power consumption:	3 - 45 W
Speed of rotation:	800 - 4300 rpm
Protective motor switch:	Integrated

Survey – Pump Data

Temperature range for 57°C ambient temperature:	0°C – 95°C
Max. permissible operating pressure:	6 bar
Size of pipe connections:	1″
Max. permissible static pressure:	PN 6
Enclosure class:	IPx4D
Insulation class:	F
Weight:	2 kg

Sizing diagram: Stratos PARA 25/1-8



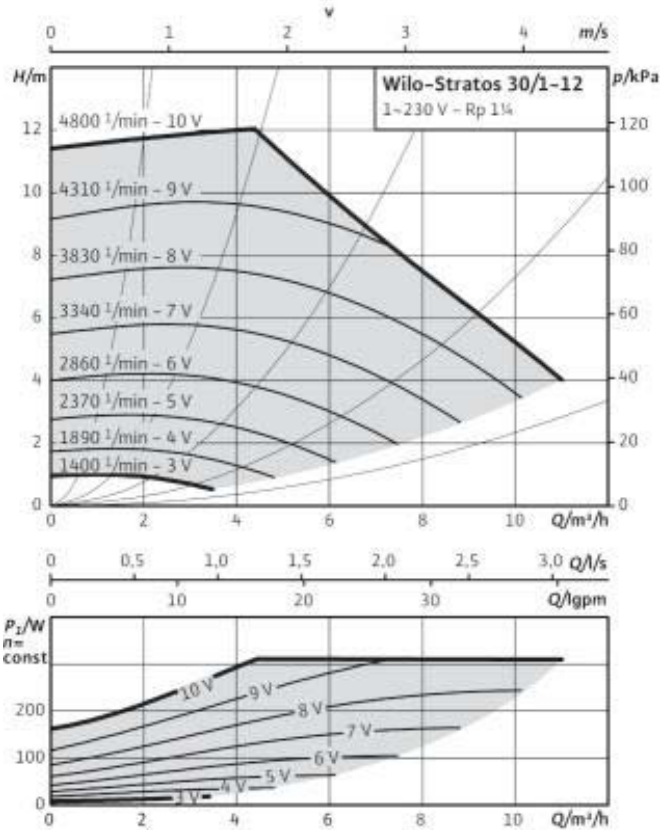
Electrical data

Frequency:	50/60 Hz
Rated voltage:	1 x 230 V
Rated power:	100 W
Current:	0.13 – 1.20 A
Power consumption:	9 - 130 W
Speed of rotation:	1400 - 3700 rpm
Protective motor switch:	Integrated

Survey – Pump Data

Temperature range for 40°C ambient temperature:	-10°C – +110°C
Max. permissible operating pressure:	10 bar
Size of pipe connections:	1.5″
Max. permissible static pressure:	PN 10
Enclosure class:	IP 44
Insulation class:	F
Weight:	3.7 kg

Sizing diagram: Stratos PARA 30/1-12



Electrical data

Frequency:	50/60 Hz
Rated voltage:	1 x 230 V
Rated power:	200 W
Current:	0.22 – 1.37 A
Power consumption:	12 - 310 W
Speed of rotation:	1400 - 4800 rpm
Protective motor switch:	Integrated

Survey – Pump Data

Temperature range for 40°C ambient temperature:	-10°C – +110°C
Max. permissible operating pressure:	10 bar
Size of pipe connections:	2″
Max. permissible static pressure:	PN 10
Enclosure class:	IP X4D
Insulation class:	F
Weight:	5.5 kg

5. STAD 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

Adjustment, pressure drop and flow measurements, shut-off and discharge.

Pressure Class

PN20

Temperature

Max. operating temperature: 120°C
Min. operating temperature: -20°C

Material

The valves are made of AMETAL
Seat seal: Cone with EPDM O-ring.
Spindle seal: EPDM Polyamid O-ring.
Knob: Polyamid.
AMETAL® is TA Hydronic's dezincification-retardant alloy.

Labelling

Block: PN 20/150, DN and inch designations
Knob: Valve type and DN.

Kv

The figures below or the chart on the next page can be used for calculating the Kv of duct systems.

DN / RPM	10/09	15/14	20	25	32	40	50
0,5	-	0,127	0,511	0,60	1,14	1,75	2,56
1	0,090	0,212	0,757	1,03	1,90	3,30	4,20
1,5	0,137	0,314	1,19	2,10	3,10	4,60	7,20
2	0,260	0,571	1,90	3,62	4,66	6,10	11,7
2,5	0,480	0,877	2,80	5,30	7,10	8,80	16,2
3	0,826	1,38	3,87	6,90	9,50	12,6	21,5
3,5	1,26	1,98	4,75	8,00	11,8	16,0	26,5
4	1,47	2,52	5,70	8,70	14,2	19,2	33,0

Presetting

A valve can be set for a specific pressure drop that e.g. corresponds to 2.3 turns read in the chart, as follows:
1. Close the valve completely (Fig. 5).
2. Open the valve 2.3 turns (Fig. 6).
3. Turn the inner spindle clockwise until it stops. Use a 3 mm Allen key.
4. The valve is now set.

To check the setting, close the valve. 0.0 should be indicated. Then open it to the stop. The setting is then indicated, in this case 2.3 (Fig. 6).
As guidance in determining the right valve dimension and setting (pressure drop), the charts provided show the pressure drop at various settings and flows for every valve size.
A fully open valve has been opened 4 turns (Fig. 7). Opening it more than 4 turns won't increase its capacity.

Fig. 5
Closed valve

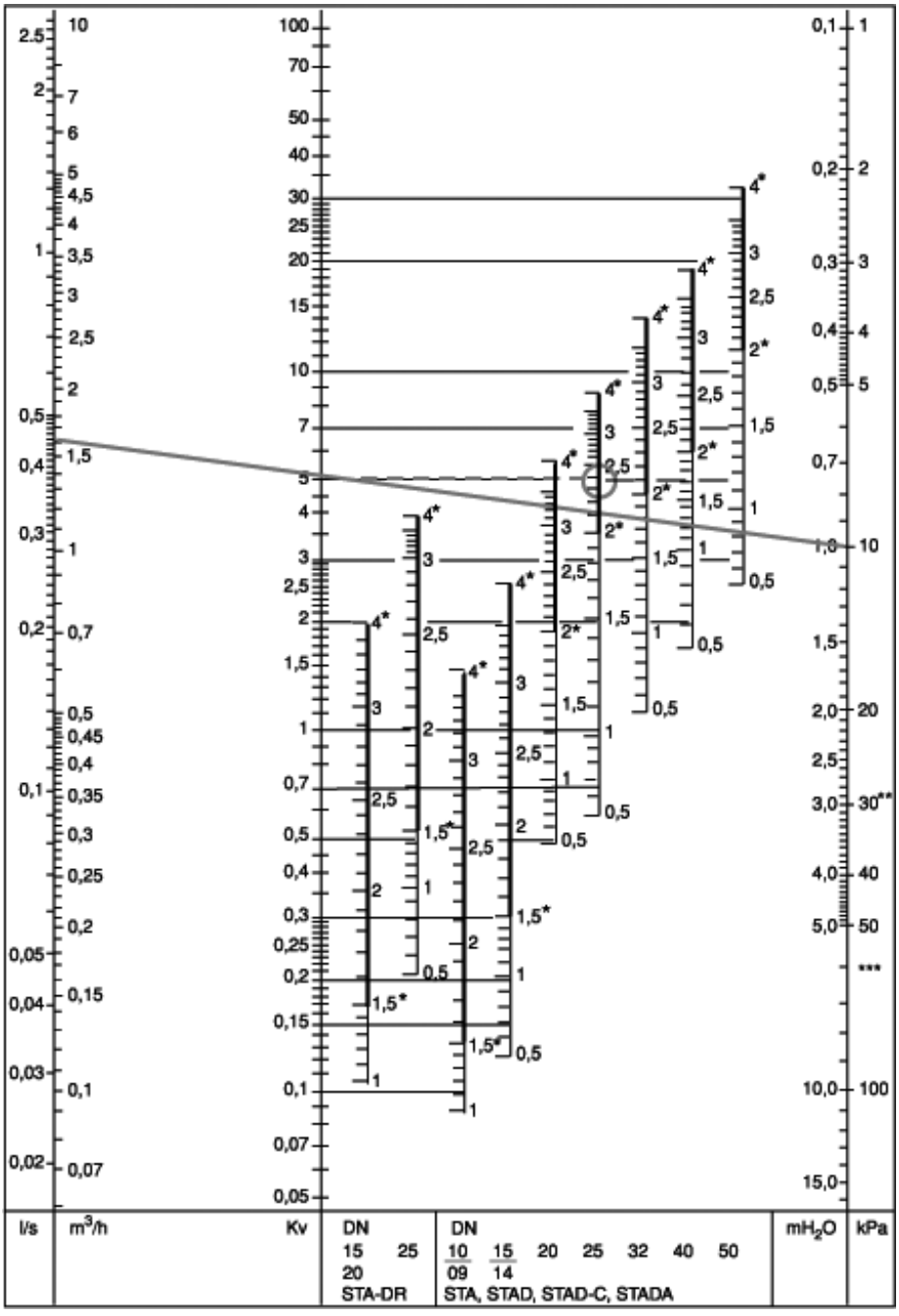
Fig. 6
Open 2,3 turns

Fig. 7
Fully open valve

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 m^3/h and pressure drop 10kPa.

Solution

Plot a line between 1.6 m^3/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 2.35 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 m^3/h. At 10 kPa and Kv=0.5 the flow will be 0.16 m^3/h and at Kv=50 the flow will be 16 m^3/h. Thus for every given pressure drop, you can read 0.1 or 10 times the flow and Kv from the chart.