

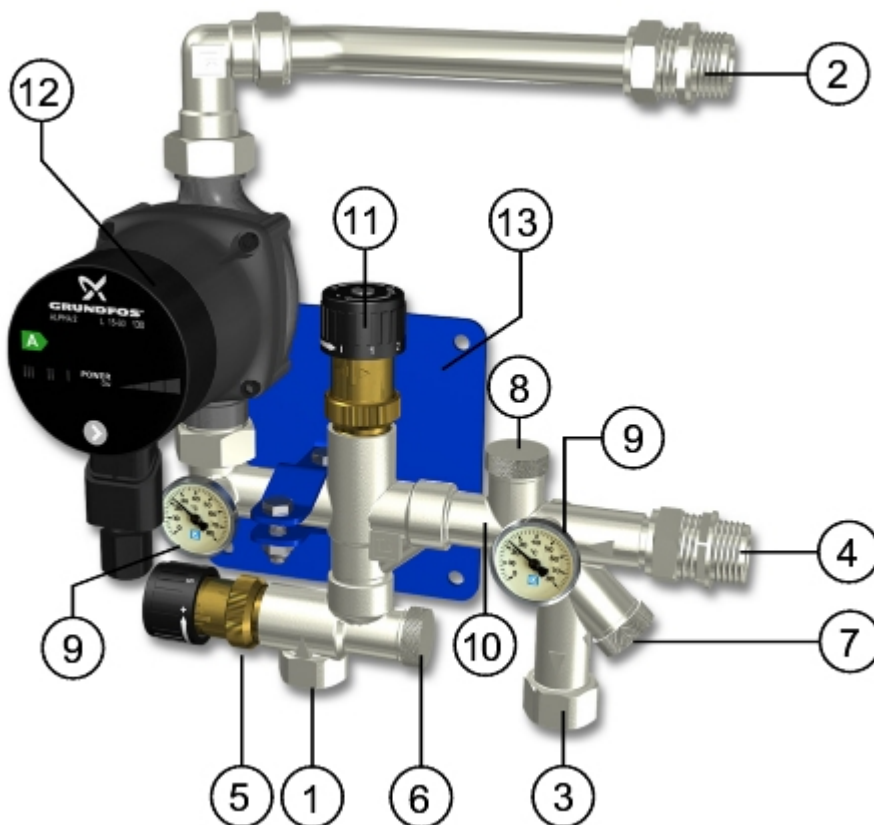
# LK Manifold Shunt VS 2-2,5

## DESIGN

LK Manifold Shunt VS (Variable Speed) is a water temperature control pack complete with two way control valve used in systems with a primary pump. The shunt unit is mountable from both the left and right of LK Manifolds. The shunt unit is fitted as standard with manual controls for both flow (speed and temperature) and high limit temperature settings.

The shunt unit is preferably installed in systems with a weather compensated primary flow temperature; alternatively, LK Manifold Shunt VS may be supplemented with LK Control v.3, (see more under section LK Control v.3 below). Where other electronic control is required, LK can supply suitable valve actuators of 230V or 0-10V. The shunt unit, by use of the built-in max temperature thermostat, may also be used in systems with constant flow temperatures.

The VS (Variable Speed) version is supplied complete with an automatic speed-controlled pump for reduced energy consumption and more quiet operation. Guideline capacity of this shunt unit is 200 m<sup>2</sup> floor surface. The capacity is dependent on the primary temperature, pressure, floor heating installing system, etc.



### 1. Supply flow from primary circuit

3/4" BSP female.

### 2. Supply flow to manifold

1" BSP male.

**3. Return flow connection to primary circuit**

$\frac{3}{4}$ " BSP female.

**4. Return flow from the manifold**

1" BSP male.

**5. 2-port Control valve, Kvs 2.5**

The control valve is manually adjusted for flow temperature, or may be replaced by motorized valve actuators (see LK Control v.3).

**6. Isolation valve - primary supply**

8mm hexagonal socket.

**7. Isolation & flow control valve - primary return**

Valve for adjustment and control of the primary flow, also used as isolation valve. 8 mm hexagonal socket.

**8. VF valve**

The valve is used in systems where the primary side pump cannot provide adequate drive pressure; progressive closing (choking) the valve enables the shunt's pump to draw water from the primary side. 8mm hexagonal socket.

**9. Thermometers**

Built in thermometers to flow and return lines.

**10. Built-in check valve****11. Temperature controller**

Factory-set to 50 °C. Adjustable between 30 - 65 °C (see table below).

**12. Circulation pump**

Circulation pump, Grundfos Alpha 2L 15-60 with automatic speed control.

**13. Wall fixing plate****RECOMMENDATIONS**

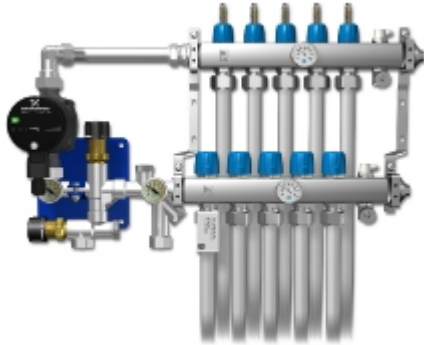
The manual control version of LK Manifold Shunt VS is best used in systems with external temperature (weather) compensation. Check the settings of the temperature limit control. Otherwise, it is advisable to fit the shunt unit with LK Control v.3 to ensure optimum operational comfort and low energy consumption.

The heating system should be fully flushed and cleaned before assembly and must be free of any contamination or particles, which may damage LK Manifold Shunt VS. Max 50% glycol mix.

At assembly, ensure that the pump axle is in the horizontal plane. Valve actuators must not be located below the control valve.

Carefully consider positioning of the shunt unit to minimize structural transmitted sound.

## ASSEMBLY



The shunt unit can be mounted directly to LK Manifolds from both the right and left. To facilitate this, two Manifold Supply Pipes of different lengths are supplied. The longer pipe is used for right mounting to LK Manifold (see illustration above). When fitting from the left, reposition the thermometer through 180° and rotate the pump.

### By-pass

LK Manifold Shunt VS (Variable Speed) is supplied, as standard, with an automatic speed controlled pump; thus the manifold does not require a mechanical By-Pass.

### Assembly in LK Manifold Cabinet

The shunt unit can be assembled to LK Manifold in specially designed wall mounted or built in cabinets. LK Shunt Cabinet WP RF fulfils Sweden's plumbing safety regulations.

- LK Shunt Cabinet WP RF 800\* holds LK Manifold Shunt VS and LK Manifold RF 2-5
- LK Shunt Cabinet WP RF 1150\* holds LK Manifold Shunt VS and LK Manifold RF 2-12
- LK Manifold Cabinet INB 800\*\* holds LK Manifold Shunt VS and LK Manifold RF 2-5
- LK Manifold Cabinet INB 1150\*\* holds LK Manifold Shunt VS and LK Manifold RF 2-12
- LK Manifold Cabinet UTV 800 holds LK Manifold Shunt VS and LK Manifold RF 2-5
- LK Manifold Cabinet UTV 1150 holds LK Manifold Shunt VS and LK Manifold RF 2-12

\* Note! At installation of LK Shunt Cabinet WP RF in a wall, a minimum stud-frame thickness of 120 mm with 13 mm wall covering is required. The shunt unit is placed on the right hand side of the manifold, see instruction LK Shunt Cabinet WP RF. The shunt unit's pump must be turned towards the side of the cabinet. The LK Shunt Cabinet WP RF can be mounted on an existing wall by using LK Base. For more information, contact LK Technical Support.

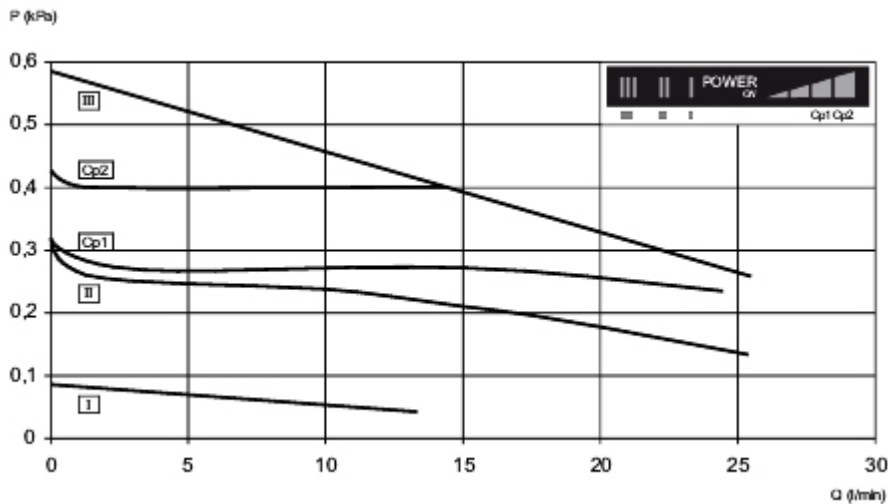
\*\* Note! When installing LK Manifold Cabinet INB, a minimum stud-frame thickness of 120 mm with 13 mm wall covering is required. The shunt unit's pump must be turned towards the side of the cabinet. For more information, contact LK Technical Support.

## CIRCULATION PUMP

LK Manifold Shunt VS circulation pump is supplied with automatic speed control. This ensures reduced energy consumption and efficient operation as the pump adjusts the flow to the requirement of the system. A cast arrow

on the pump housing shows the direction of flow. For floor heating, it is advisable to set the pump on constant pressure regulation; please refer to the capacity chart below. Select the constant pressure curve which best matches the design system flow and pressure drop, choose curve Cp1 or Cp2. The electrical connection is easily set up with the accompanying plug-in. The plug-in replaces the 2-poled power switch. The plug has built-in cable strain relief for the supply cable. The circulation pump has built-in thermal motor protection. Ensure that the pump never runs dry and that the system is de-aerated before operation.

### Capacity chart



### SETTING FOR THE TEMPERATURE CONTROLLER

The temperature controller can be set between 30 - 65 °C. The factory setting is set at 50 °C. Always check the setting at the time of installation; please refer to the table below.

| Setting | Temperature |
|---------|-------------|
| Min     | 30 °C       |
| 1       | 36 °C       |
| 2       | 38 °C       |
| 3       | 42 °C       |
| 4       | 46 °C       |
| 5       | 50 °C       |
| Max     | 65 °C       |

### Systems with constant flow temperature

The shunt unit can be used in systems where constant flow temperature is needed. Close the control valve. Set the temperature controller at the projected flow temperature e.g. 45 °C (but see LK design data). Subsequently, open the control valve until (example) 45 °C is read off the flow-side thermometer.

### VARIABLE FLOW VALVE

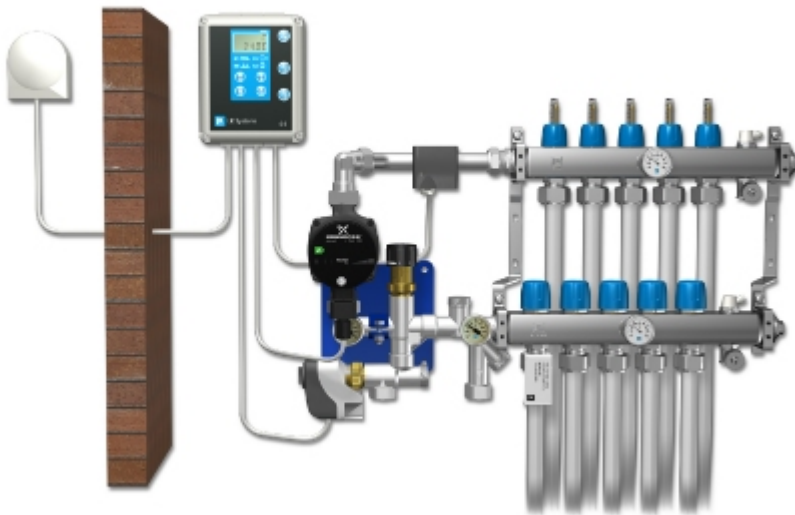
#### Return line primary circuit

The primary flow can be adjusted by adjusting the flow control valve in line with the table below.

| Revol | Kv(m <sup>3</sup> /h) |
|-------|-----------------------|
| 2     | 0,4                   |
| 3     | 0,7                   |
| 4     | 1,2                   |
| 5     | 1,7                   |
| 6     | 2,2                   |
| 7     | 2,7                   |
| 8     | 3,2                   |
| 9     | 3,7                   |
| 10    | 4,1                   |
| 11    | 4,5                   |
| 12    | 5,0 Kvs               |

### LK CONTROL v.3 (ACCESSORY)

LK Control v.3 is a complete unit for outdoor temperature (weather) compensated heat regulation, adapted and pre-programmed for LK's floor heating systems. LK Control v.3 consists of a control unit, valve actuator as well as a flow and outdoor temperature sensor. As an option, LK Control v.3 can be supplemented with LK Room Unit v.3 for regulating room temperature to the control unit's heat curve. This function is similar to a room thermostat, but with the possibility of remote control of the control unit. LK Room Unit v.3 is often used in areas with an open floor plan where only one room sensor is needed.



## TROUBLESHOOTING

### The floor heating circuit is not heating up or not heating sufficiently

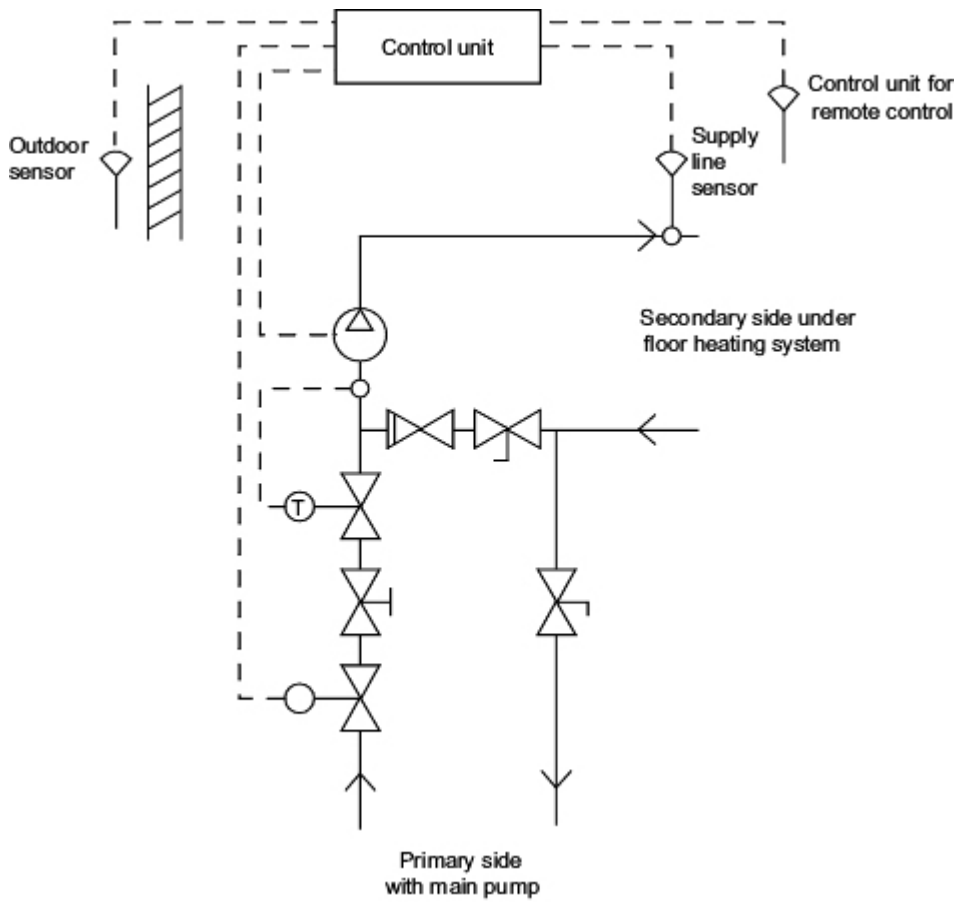
- Check that primary isolation valves are open.
- Check settings on the control valve.
- Check the manifold actuator and adjustment valves are open.
- Check the temperature controller setting.
- Check that the correct pump curve is selected.

If the above checks have been completed and the heat to the manifold is still insufficient, this may point to too little drive (operating) pressure from the primary side main circulation pump (normally at the boiler). Check the main circulation pump operation and, whether pump speed can be increased. If that does not help, the shunt unit's circulation pump can help "draw" water from the primary side to the manifold by progressively closing the VF valve until the required temperature is reached.

## TECHNICAL DATA

|                                 |   |
|---------------------------------|---|
| Article no.                     | 241 85 12   |
| Maximum operating pressure      | 0,6 Mpa   |
| Operating temperature secondary | Max 65 °C   |
| Operating temperature primary   | Max 80 °C   |
| Ambient temperature             | Max 40 °C   |
| Control valve                   | Kvs 2,5   |
| Isolation & flow control valve  | Kvs 5,0   |
| Material                        | Nickel-plated brass MS58,<br>stainless acid-proof steel |
| Maximum glycol mixture          | 50 %  |
| Circulation pump                | Grundfos Alpha 2L 15-60,<br>with cast iron pump housing |
| Voltage                         | 1 phase 230V AC, -10 % / +6<br>%, 50 Hz, PE             |
| Load                            | Max 45 W  |
| Current                         | Max 0,38 A  |
| Encapsulation class             | IP42  |
| Insulation class                | F   |
| Relative humidity               | Max 95 %  |

## FLOW DIAGRAM



DIMENSIONS

