Assembly instructions, LK MicroShunt 1-2

Design

LK MicroShunt 1-2 is a compact shunt group for use when small underfloor heating areas are connected to an existing heating system.

LK MicroShunt 1-2 adjusts the heating system temperature to the lower temperature required for the underfloor heating system. As a general guideline, at a heat demand of 50 W/m², its capacity is a maximum underfloor heating area of 40 m² and 2000 W. However, the capacity depends on the primary temperature, available pressure, installation method, and other factors.

- For underfloor heating areas up to 40 m², depending on the number and length of circuits.
- Compact design.
- Energy-efficient circulation pump..
- Thermostatic maximum limitation of the supply temperature (accessory).
- Can be changed between one-pipe and two-pipe systems.
- VF valve.
- Easy filling and venting.
- Primary and secondary connections, ¾"Euro-Cone.
- Expandable to two underfloor heating circuits.

Scope of delivery

- Wilo Para Ku15-130/4-20/SC circulation pump with automatic speed control.
- Wilo WS8 Connector.
- 0.5 m hose for venting.
- Wall bracket

NOTE!
Read the installation instructions before you start the work.



LK MicroShunt 1-2.



MicroShunt 1-2 with the LK Micro VKF accessory.

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Accessories

LK Installation Cabinet

Article number	Product name	Intended for
243 55 25	LK Installation Cabinet 350	LK MicroShunt 1-2 without electronic control
243 55 26	LK Installation Cabinet 350 XL	LK MicroShunt 1-2 with or without electronic control

LK Micro VKF

Article number	Product name	Intended for
243 55 30	LK Micro VKF	For connection of two Ø12, Ø16, or Ø20 underfloor heating circuits to LK MicroShunt 1-2.

LK Thermostat with bulb

Article number	Product name
33049	LK Termostat med Bulb

When connecting an LK Actuator or LK Actuator Adapter

Article number	Product name
243 46 11	LK Actuator Adapter VA 26
241 75 91/ 241 81 20	LK Actuator 24 V AC/DC

LK Connection Coupling RF

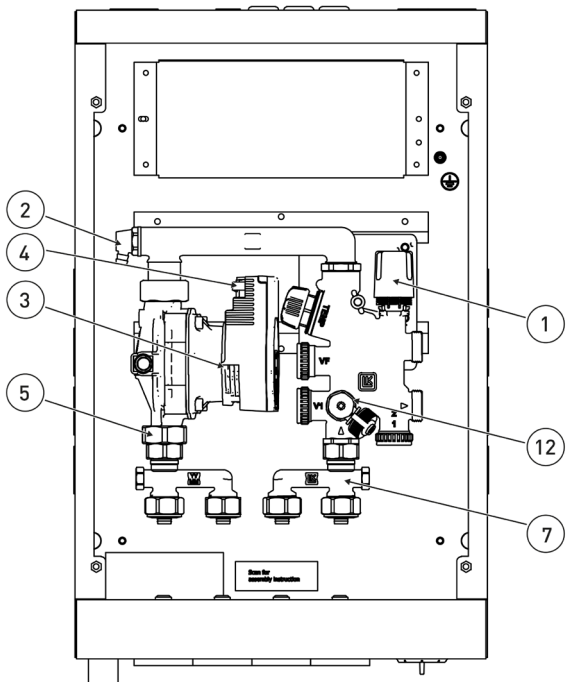
Article number	Intended for	Dim.	For pipe size	Nipple connection
241 94 66	PE/PE-X	12 x ¾"	12 x 2,0	¾" EuroCone
241 72 98	PE-RT/PE-X/PAL	AX16 x ¾"	16 x 2,0	¾" EuroCone
241 94 68	PE-RT/PE-X	20 x ¾"	20 x 2,0	¾" EuroCone

Other fittings

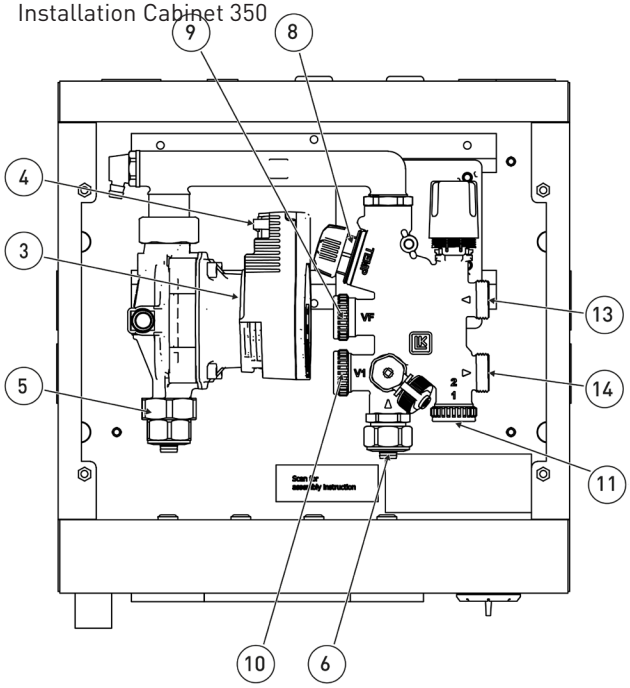
LK Connection Coupling RF 17x2,0				
Article number	**Intended for**	**Dim.**	**For pipe size**	**Nipple connection**
241 94 67	PE/PE-X/AL-PE	-	17 x 2,0	¾" EuroCone
243 47 71	Uponor PePEX	-	17 x 2,0	¾" EuroCone
241 94 64	CU 12	-	12 x 1,0	¾" EuroCone
241 94 65	CU 15	-	15 x 1,0	¾" EuroCone
241 72 98	PE-RT/PE-X/PAL	AX16 x ¾"	16 x 2,0	¾" EuroCone
187 58 90	PE-X/PAL	AX20 x ¾"	20 x 2,0	¾" EuroCone
187 84 61	-	AX16 x ¾"	16 x 2,0	¾" EuroCone
187 84 62	-	AX20 x ¾"	20 x 2,5	¾" EuroCone

Overview – LK MicroShunt 1-2

Installation Cabinet 350 XL



Installation Cabinet 350



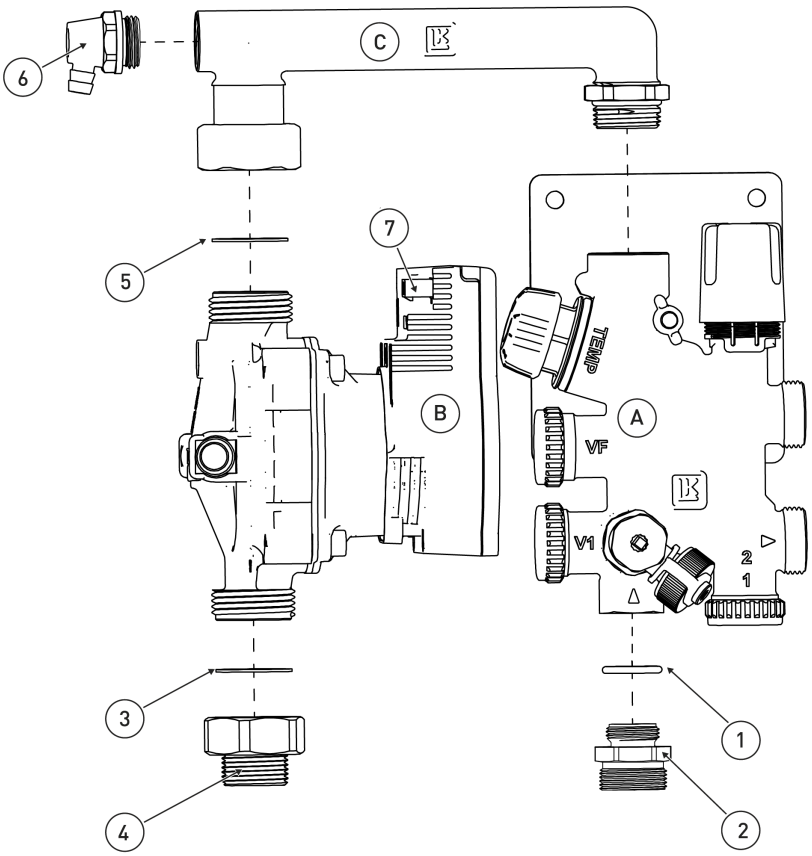
1. Handwheel for adjustment of the primary supply (supplied with the shunt group). Thermostat with capillary-connected room sensor, length 2m (accessory).
2. Air vent valve with hose nipple. A 0.5m hose is supplied.
3. Circulation pump Wilo Para Ku15-130/4-20/SC with automatic speed control.
4. Electrical connection of the circulation pump.
5. Pump connection fitting for connection to the underfloor heating supply, G1" × G ¾" EuroCone (supplied).
6. Nipple for connection to the underfloor heating return, G ½" × G¾" EuroCone (supplied).
7. LK Micro VKF (accessory) with balancing adjustment for the shortest circuit. For connection of two underfloor heating circuits with pipe sizes : Ø12, Ø16 and Ø20 mm (complete with the applicable fitting).
8. Temperature limiter (TEMP). Limits the maximum supply temperature to the underfloor heating system. Factory-set to 45 °C.
9. The VF valve (8 mm hex key) is used only in systems with low available differential pressure from the primary-side circulation pump.
10. Return valve (V1) for shut-off or balancing of the primary-side return (8 mm hex key).
11. Changeover between one-pipe and two-pipe systems. The MicroShunt is supplied set for a two-pipe system. To change to a one-pipe system, unscrew the valve cone (8 mm hex key) until the required radiator temperature is reached.
12. G ½" drain/filling valve for filling the system during installation. The cap can be used to operate the valve and the air vent valve.
13. Primary supply connection, G¾" EuroCone.
14. Primary return connection, G¾" EuroCone.

Function and Requirements

- For LK MicroShunt and the underfloor heating system to operate correctly, the existing heating system must have a circulation pump and outdoor temperature-compensated supply temperature. LK MicroShunt adjusts the heating system temperature to the lower temperature required for the underfloor heating system.
- Before installation, flush the heating system. The system must not contain contaminants or additives that can damage the product.

Installation

- Install LK MicroShunt above the underfloor heating system to facilitate venting.
- When you select the installation location, consider possible structure-borne noise. Preferably, install the shunt group in a purpose-designed cabinet in accordance with industry practice. Refer to the section **Installation Cabinet.**



A = LK MicroShunt 1-2
B = Wilo Para Ku15-130/4-20/SC
C = U-pipe.

1. O-ring.
2. EuroConus nipple.
3. Pump gasket.
4. Pump coupling, MicroShunt.
5. Pump gasket.
6. Manuell air vent.
7. Electrical socket, Wilo Para Ku15-130/4-20/SC.

Installation of LK MicroShunt 1-2.

Pipe Connections

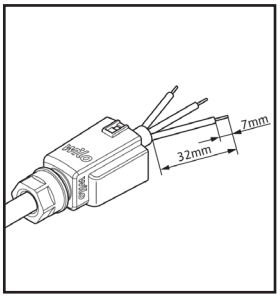
- The primary and secondary connections of LK MicroShunt have external G ¾" EuroCone threaded connections.
- A wide range of connection options is available for the primary and secondary sides. Fittings for Ø12 mm and Ø15 mm copper pipes and for PEX, PAL and PE-RT pipes in various sizes are available as accessories. Refer to the LK range of fittings at www.lksystems.se.

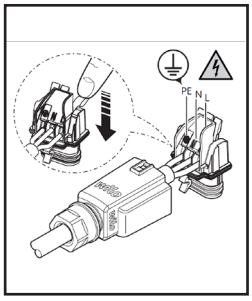
Electrical connection of the circulation pump

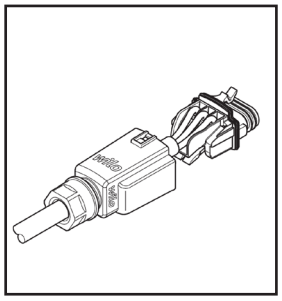
NOTE!
A qualified electrician must make the electrical connection of the circulation pump in accordance with applicable regulations.
The pump has a fixed three-core cable and a Wilo connector with integrated strain relief.
The Wilo connector eliminates the need for a two-pole isolating switch.
Protect the electrical connection with a maximum 10 A time-delay fuse.

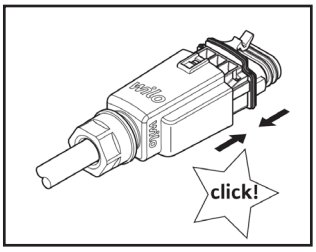
Installation of the electrical connector – Step 1

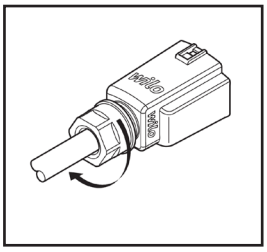
Connect L, N and PE of the supply cable to the Wilo connector as shown in steps 1 to 5 in the illustrations.

1. 

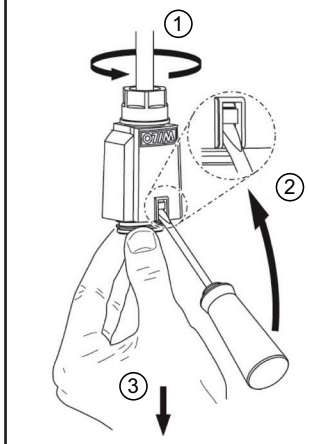
2. 

3. 

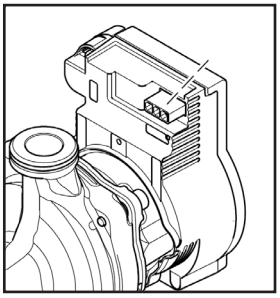
4. 

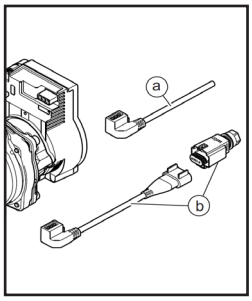
5. 

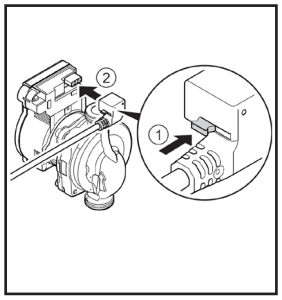
Disconnecting the electrical connector

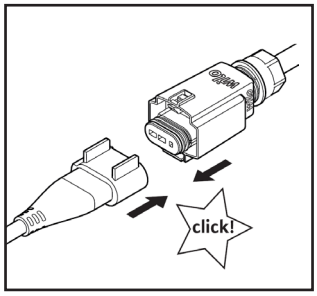


Installation of the electrical connector – Step 2

1. 

2. 

3. 

4. 

Bilder från Wilos manual för Wilo Para Ku15-130/4-20/SC.

Installation of LK Thermostat with Bulb (accessory)

To install the LK Thermostat with Bulb accessory, remove the handwheel. Then install the thermostat. Preferably, install the capillary-connected sensor on an internal wall.

Installation of LK Actuator

Wireless or wired electronic room temperature control is available as an option for LK MicroShunt 1-2. In this case, replace the handwheel with an electric LK Actuator and LK Actuator Adapter VA 26.

Installation Cabinet

The installation can be concealed in purpose-designed cabinets in accordance with industry practice. Cabinets are available for recessed or surface mounting. The cabinets are made of 1 mm powder-coated sheet steel and have a sealed base with rubber pipe entries. The cabinet base has an outlet for leakage indication, which permits drainage of any leakage water

Article number	Product name	Intended for
243 55 25	LK Installation cabinet 350	LK MicroShunt / LK Mini loop valve RTB without electronic control.
243 55 26	LK Installation cabinet 350 XL	LK MicroShunt / LK Mini loop valve RTB with or without electronic control.
188 23 48	LK Frame/Hatch GV INB 390 x 390 x 26 mm	LK Installation Cabinet 350 installed recessed in the wall.
188 13 08	LK Frame/Hatch GV INB 390 x 580 x 26 mm	LK Installation Cabinet 350 XL installed recessed in the wall.
205 48 38	LK Frame/Hatch GV UTV 350 x 340 x 14 mm	LK Installation Cabinet 350 installed surface-mounted on the wall.
188 13 10	LK Frame/Hatch GV UTV 350 x 540 x 26 mm	LK Installation Cabinet 350 XL installed surface-mounted on the wall.
188 13 01	LK Plinth GV 350 mm	Surface mounting of LK Installation Cabinet 350 & 350 XL.

Commissioning

Venting

Flush the system with water to vent the system and remove possible contaminants.
The circulation pump must be switched off during this procedure. Follow the steps below.

1. Shut off the primary supply with the handwheel. Shut off the primary return. Make sure that the changeover valve for one-pipe and two-pipe systems is fully screwed in and that the primary return valve V1 is closed.
2. Make sure that the VF valve is fully closed. This forces the filling water to flow through the underfloor heating return to the air vent at the high point of LK MicroShunt 1-2.
3. Install the hose connection on the filling valve.
4. Flush the underfloor heating side through the filling valve. Vent and drain through the air vent until the water runs clear.
5. Close the air vent and the filling valve.
6. Open the primary side by setting the handwheel back to the open position.
   Make sure that the VF valve is fully open.
7. Air from the primary side can now be vented through the air vent.
8. Öppna primär returventil V1. Om LK MicroShunten 1-2 är ansluten till 1-rörs radiatorsystem ska omkopplaren för 1 till 2-rörssystem injusteras.
9. Start the circulation pump and use its automatic venting function to remove accumulated air from the pump housing. Refer to the section **Circulation Pump**.

Balancing

As LK MicroShunt 1-2 is intended for connection to an existing heating system, the available differential pressure and flow on the primary side are usually unknown. Without this information, it is not possible to calculate theoretical balancing values for LK MicroShunt 1-2. In this case, balance the system as follows:

1. Perform the venting procedure. Refer to the section “Venting”.
2. Start the circulation pump. When the venting process is complete, select the constant-pressure curve that best matches the requirements of the system. Refer to the capacity diagram below.
3. Set the changeover valve marked 2/1 for a one-pipe or two-pipe radiator system. The factory setting is for a two-pipe system. For a one-pipe system, open the valve until sufficient heat output and temperature are achieved in the downstream radiators.
4. Set the primary temperature from the heat source temporarily to approximately 55 °C for LK MicroShunt 1-2.
5. Set the temperature limiter marked TEMP according to the table below.
   The normal setting is approximately 45 °C.
6. If the Thermostat with Bulb accessory is used, set it according to the table below.
7. Allow the system to stabilise for approximately 10 minutes. The supply temperature on the secondary side should now be between 35 and 45 °C.
8. Finally, reset the primary temperature from the heat source to the normal operating temperature.

	**MERK!** **If the temperature is too low, refer to “Troubleshooting”.** When you start a system with an unheated concrete slab, it can take up to 24 hours for the supply temperature to reach the correct level. **If the temperature is too high** Adjust the supply temperature with the temperature limiter according to the table below.

Setting the temperature limiter (TEMP)

For limiting the underfloor heating supply temperature.

Setting (temperature limiter (TEMP))	Maximum temperature
0	22 °C
1	25 °C
2	35 °C
3	40 °C
4	45 °C
5	55 °C

Setting the thermostat with capillary-connected room sensor (accessory)

Thermostat setting	Room temperature
1	8 °C
2	14 °C
3	22 °C
4	26 °C
5	32 °C

Circulation Pump

- The circulation pump has automatic speed control. This reduces energy consumption and noise because the pump adjusts the flow to the requirements of the system. An arrow moulded into the pump housing shows the direction of flow. **The pump is factory-set to constant-pressure curve 3.**
- For underfloor heating, use constant-pressure control. Select the constant-pressure curve that best matches the requirements of the system. Refer to the **Capacity Diagram**.
- Make sure that the pump never runs dry and that the system is fully vented before commissioning. Use the automatic venting function of the pump during start-up.

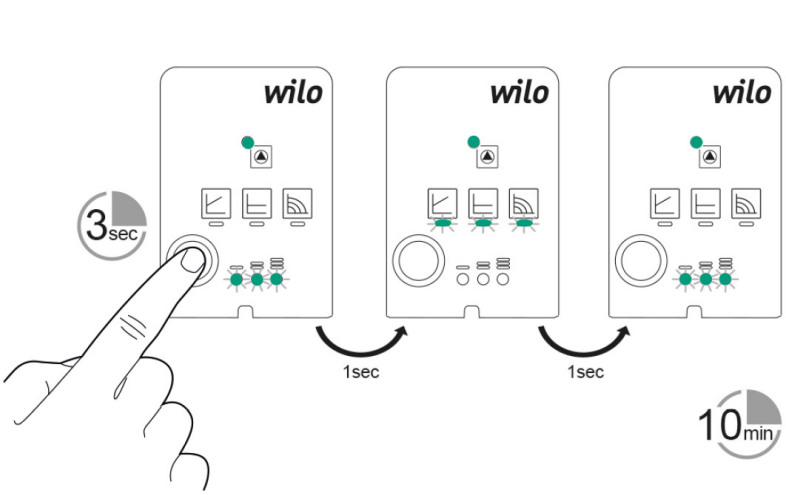
Setting the pump function selector

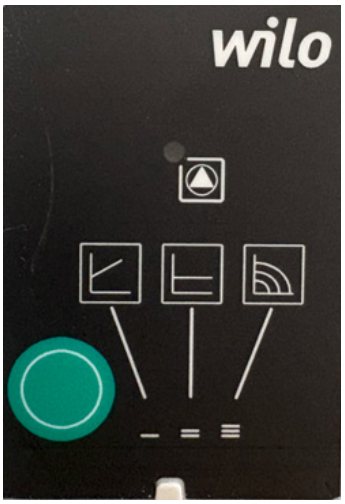
Use the round green push-button to adjust the pump settings. The green LEDs show the selected setting..

1. Press the round green push-button to select constant-pressure control.
2. Then press the push-button to select the required pump curve.
3. To unlock or lock the push-button, press and hold it for eight seconds..
4. Press and hold the round green push-button for three seconds to start the venting function.
5. For a manual restart, press and hold the push-button for five seconds.

Automatic venting function

- When the underfloor heating system has been filled with water, flushed and vented, start the circulation pump.
- During start-up, use the pump's automatic venting function to remove accumulated air from the rotor chamber.
- The automatic venting function starts after three seconds and operates for ten minutes. A rapidly flashing green LED indicates that the venting function is active. See the illustration below.
- When the venting process is complete, select the constant-pressure curve that best matches the requirements of the system. Refer to the "Capacity Diagram". If no selection is made, the pump automatically switches to constant-pressure operation at the maximum capacity setting.





Venting settings for Wilo Para Ku15-130/4-20/SC..

Constant-pressure curve

For underfloor heating, set the pump to constant-pressure control. Select the constant-pressure curve that best matches the requirements of the system. Refer to the **Capacity Diagram**.



Symbol for constant-pressure control.

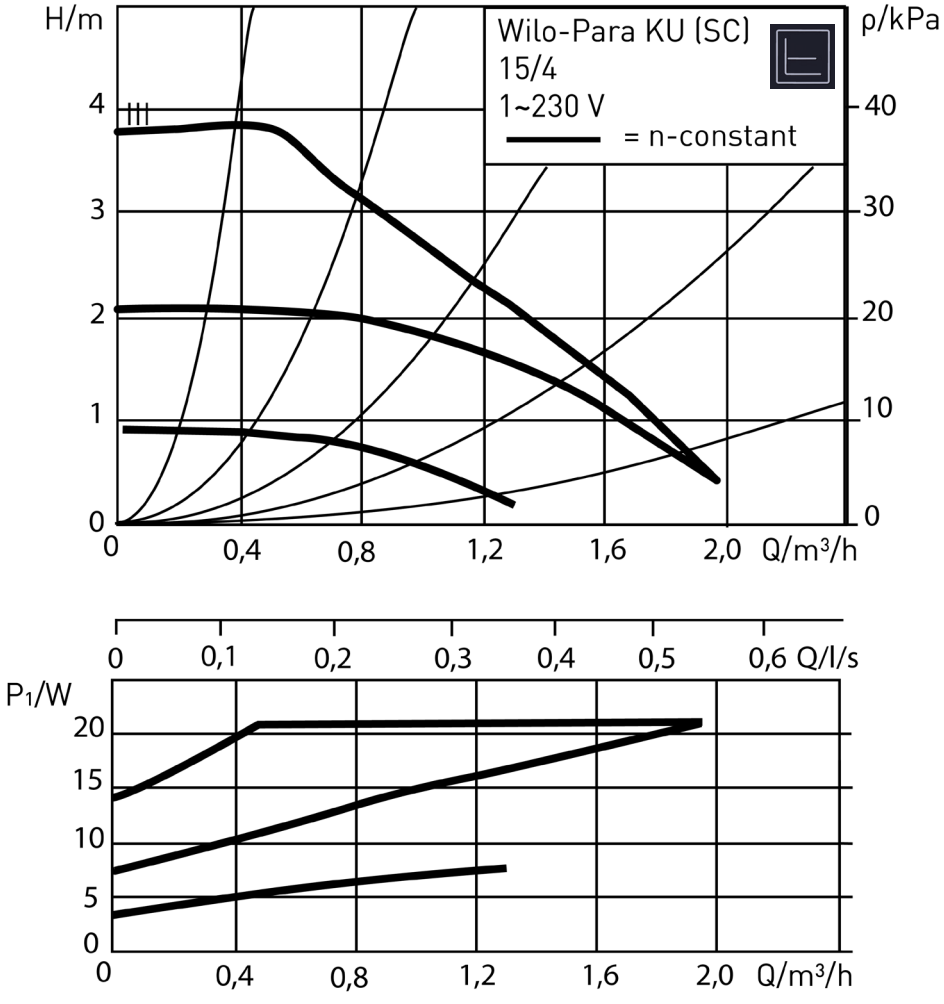
Proportional-pressure curve

Proportional-pressure control is not normally used for underfloor heating.



Symbol for proportional-pressure control.

Capacity diagram



Capacity diagram, Wilo Para Ku15-130/4-20/SC..

Troubleshooting

The underfloor heating circuit does not heat up

- Check that the thermostat (accessory) is set to the required room temperature.
- Check that the control valve and the return valve on the primary side are open.
- Check that the temperature limiter (TEMP) is set correctly.
  Refer to the table **Setting the Temperature Limiter**.
- Check the electrical connection, operation and setting of the circulation pump.

!	**NOTE!** If you have completed the adjustments in the list above and the underfloor heating output is still insufficient, the available differential pressure from the primary side can be too low. First, check whether you can increase the setting of the circulation pump on the primary side. If this does not solve the problem, the circulation pump in LK MicroShunt 1-2 can help draw water from the primary side to the secondary side. Gradually close the VF valve (clockwise) until the correct temperature is reached.

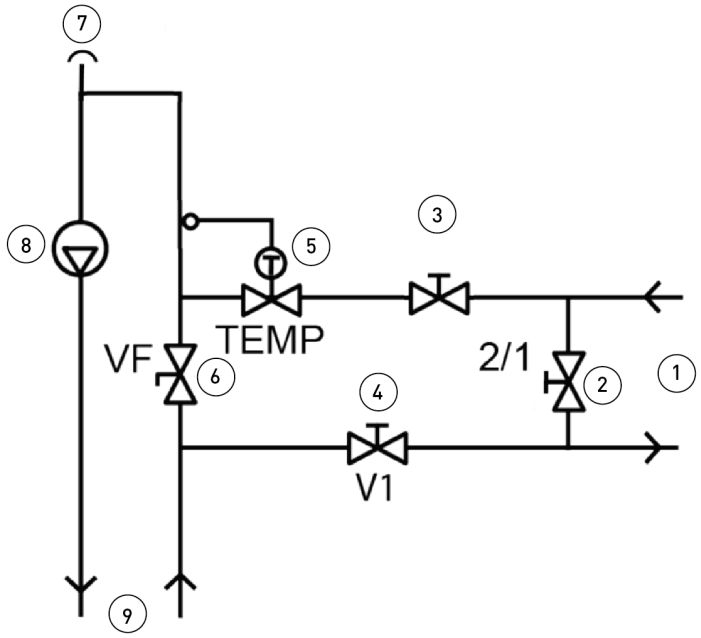
The return temperature of the underfloor heating circuit is too low

- Increase the capacity of the circulation pump with the function selector.

The radiators downstream of the MicroShunt do not heat up in a one-pipe system

- LK MicroShunt 1-2 is supplied set for a two-pipe system. For a one-pipe system, change the setting.
  Refer to **Commissioning**, under **Balancing**.

Flow diagram



1. Primary side with main pump.
2. Changeover from two-pipe to one-pipe system (2/1).
3. Control valve with handwheel.
4. Shut-off/balancing valve, primary return.
5. Temperature limiter (TEMP)
   Maximum limitation of the supply temperature to the underfloor heating system.
6. VF valve
7. Air vent
8. Circulation pump
9. Secondary side, underfloor heating system

Technical data

Article number	243 55 29
Maximum operating pressure	0.6 MPa
Maximum differential pressure during operation	0.1 MPa
Secondary operating temperature	+12 - +55 °C
Primary operating temperature	Max. 80 °C
Ambient temperature	Max. 60 °C
Circulation pump	Wilo Para Ku15-130/4-20/SC
Maximum valve capacity	Kvs 1.05
Maximum valve capacity with self-acting thermostat installed at the maximum setting and a room temperature of approximately 20 °C	Kv 0.9
Voltage	1~230V +10/-15%, 50/60Hz
Power	Max. 20 W
Current	Max. 0.26 A
Enclosure class	IP X4D
Insulation class	F
Pump approval	CE / EAC / UA / UKCA

Dimensional drawing

