

FUNCTIONAL DESCRIPTION

LK 100 SmartComfort CT is an electronic constant temperature controller for water supplied heat in radiators and underfloor heating systems. It can also be used for solid fuel boilers connected to an accumulator tank. The SmartComfort adjusts the mixing valve so that the heating always has the supply temperature that has been set.

TECHNICAL DATA

Primary voltage, adapter	100-240 VAC, 50/60 Hz
Secondary voltage, adapter	24 VDC
Connector, AC adapter	Europlug CEE 7-6 or USA: NEMA 1-15 or UK: BS 1363
Power consumption	< 3 VA
Ambient temp.	Min. 0°C/Max. +50°C (in operation) Min. 32°F/Max. 122°F (in operation)
Control range	5°C - 99°C, 41°F - 210°F
Angle of rotation	90° /clockwise and counterclockwise
Torque	5 Nm
Manual operation	Yes, when needed
Air humidity	<90% Rh, without condensation
Enclosure class, actuator	IP 40 (according to EN 60529)
Enclosure class, AC adapter	IP 20
Protection class	III SELV (EN 60730-1) (double insulated)

WARNING! RISK OF PERSONAL INJURY!

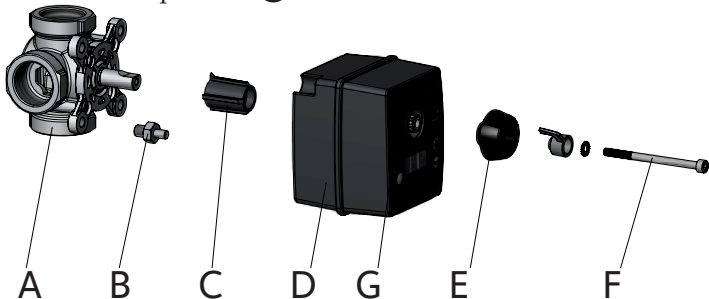
Before starting installation work disconnect power supply. Make sure to adhere to valid safety regulations.



INSTALLATION

Installing the Actuator:

- Turn the axle of the mixing valve A counterclockwise and remove the knob without changing the position of the axle.
- Screw the fixation bolt B in a suitable hole on the mixing valve A. Remove possible existing bolt. Push the adapter C on the mixing valve axle so that the axle bottoms in the hole. The supplied adapter C suits most valve axles. Other versions of this adapter are available as accessories. Please contact LK Armatur AB for more information.
- Fit the actuator D to the adapter C. The bolt B should fit in the intended hole on the actuator.
- Fit the knob E so that the indicator points to the counterclockwise end position. Tighten the knob with the washer and the screw F.
- Use a screwdriver to turn the decoupling screw G to the position with hand symbol . Turn the valve with the knob E from one end position to the other. It is important that the motor can be turned the whole turning angle (90°).
- Connect the AC adapter to the connector marked on the actuator. Important! The AC adapter must never be exposed to water.
- Connect the cable from the supply sensor to the connector marked on the actuator.
- Use a screwdriver to turn the decoupling screw G back to the Automatic position .



Installation, use and maintenance must be carried out by technical qualified personnel. All instruction in this manual should be observed and understood before starting any work with the SmartComfort. For safety reasons no modifications or amendments are allowed. Only original AC adapter is allowed.

DELIVERY CHECK

Check that the delivery includes the following components:

- Actuator
- Mounting kit (Fixation bolt, fixing screw, lockwasher, adapter)
- Knob with indicator
- Flow line sensor with 1 m cable
- AC adapter 100-240 VAC, 50/60 Hz with 1.8 m cable
- Cable ties

WARNING! RISK OF BURNS!

Avoid touching the hot supply line pipe when clamping the supply sensor.

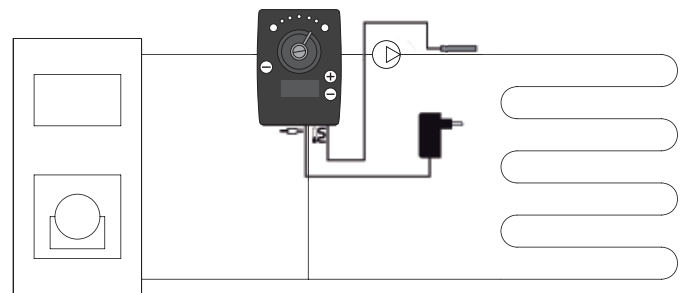


INSTALLATION OF THE SUPPLY SENSOR

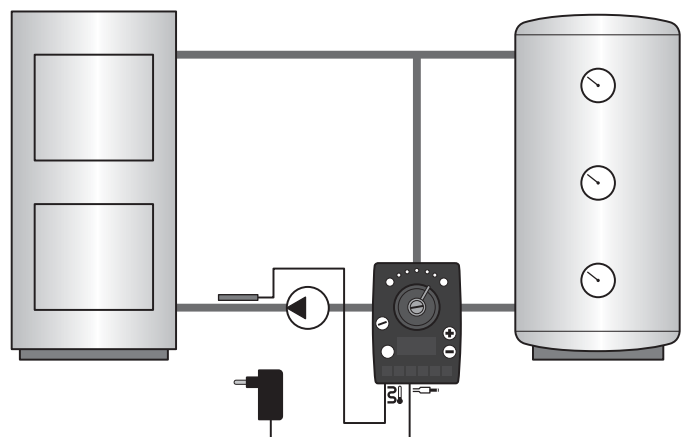
Use the supplied cable ties to clamp the supply sensor on an uninsulated part of the supply line approximately 1 m after the mixing valve. If necessary, thermal conductivity paste can be applied. The pipe then must be insulated to obtain the best temperature measurement.

Connect the sensor cable to the notch marked on the actuator.

LK 100 in an Underfloor Heating System



LK 100 in a Solid Fuel System



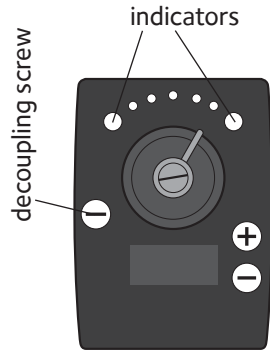
ACTUATOR, FUNCTIONS AND SETTINGS

INDICATION

Above the knob on the actuator, there are two indicators: hot (red) or cold (blue).

At normal operation both indicators shine

When the angle of rotation is changed, the indicator is blinking in the turning direction. The blinking shifts to fixed light shortly after the motion has stopped.



CELSIUS / FAHRENHEIT

At delivery the display shows °C. If, during operation, the plus and minus buttons are pushed for more than 3 seconds the symbols °C and °F alternate. Release the buttons to choose desired symbol.


AUTOMATIC CHOICE OF DIRECTION


Adaptation to mixing valves with different opening directions is done through an actuator test to determine whether the valve opens clockwise or counterclockwise. The test takes a few minutes and occurs on the first start-up.

The actuator selects and saves the opening direction. Automatic direction selection only works if there is heat in the system. If the actuator cannot determine the correct direction, the manual setting should be selected.


MANUAL DIRECTION SELECTION

First check whether the mixing valve rotates clockwise or counterclockwise. Then set the actuator opening angle as follows:

Clockwise operation: Upon start-up, keep the plus button  pressed in for more than 3 seconds. The display counts down 3-2-1. The direction is indicated by a red light on the right of the actuator. The actuator selects clockwise operation and the indicator switches to a solid light.

Counterclockwise operation: Upon start-up, keep the minus button  pressed in for more than 3 seconds. The display counts down 3-2-1. The direction is indicated by a red light on the left of the actuator. The actuator selects counterclockwise operation and the indicator switches to a solid light.

MANUAL OPERATION

The actuator can be decoupled to allow manual operation of the mixing valve. This is done by using a screwdriver to rotate the decoupling screw 90° clockwise to the position with the hand symbol , which will then start to flash.

RESET TO FACTORY SETTINGS

When the power is switched on, press the plus and minus buttons simultaneously for more than 10 seconds. The display counts down 10-9-8.....-1.

FAULT INDICATION


The indicators on the actuator are also used to call attention at fault. The indicators alternate between red and blue light at the following faults:

- If the opening direction not has been chosen.
- If the automatic choice of direction has failed.
- If the flow line sensor suddenly should fall outside the normal measuring range, which will cause the actuator to stop in the position it was in before the failure.

TROUBLESHOOTING

When the temperature setting in the system changes, it will take some time, from a couple of hours up to 24 hours, before the temperature corresponds to the new setting. The time will depend on the operation of the heating system, dimensioning, building insulation, etc.

If the heating system is still not considered to be operating satisfactorily, check the following points:

1. Check that the heating boiler or the accumulator tank is at the correct temperature.
2. Check that the circulation pump is running.
3. Check that the radiator and shut-off valves are open.
4. Check that the power supply is switched on and the fuses are intact.
5. Check that the mixing valve operates freely.
6. Check that the actuator has been installed correctly on the mixing valve axle.
7. Check that there is no air in the system.
8. Check that the control system is correctly installed.
9. Check that the decoupling knob is in the automatic  position.
10. Check that the heating system is correctly installed and can be operated manually.

