

# 1 Intended application



**First read the safety information in the operating manual for your Proline thermostat.**

The Level Controller LCZ 0660 facilitates the safe operation of an open external load with the following Proline thermostats: P 8, RP 845, RP 855 and RP 870. If no bath bridge heating is mounted.

Included in shipment: two mounting screws, one connecting hose and one hose clip also.

The level controller is placed in position instead of the thermostat bath cover. The function is provided by closed-loop control of the level in the thermostat. A float and a butterfly valve in the feed line, i.e. on the pressure side, reduce the amount of liquid fed to the external bath in that the fed amount is controlled to be equal to the drawn-off amount. Consequently, a constant level prevails in the internal bath.

**Further technical data:**

1. The level controller can only be connected to the Proline thermostats listed above.
2. The level controller can be used in the temperature range from -30 ... 180°C. Above 120°C however the insulating hose should be removed, because otherwise it becomes brittle.  
Note that when using the *Reverse Flow Protection Device with LiBus LCZ 9673*, it also has a restricted temperature range of up to 130°C.
3. The difference in levels of the external bath and thermostat may be up to a max. of ±1m.
4. If the liquid levels of the external bath and the thermostat are not equal, then the *Reverse Flow Protection Device with LiBus LCZ 9673* should also be fitted. It prevents liquid in a vessel flowing into one which is located lower one after the thermostat has been switched off.
5. The level controller keeps the liquid level in the thermostat bath constant to about ±1cm. From this the following variations in volume result in the individual Proline thermostats and therefore also on the connected external vessel. Volume changes due to temperature are not taken into account here.

LAUDA Proline thermostat	P 8	RP 845 RP 855 RP 870
Volume change in liters for 1cm level change	0.5	0.5

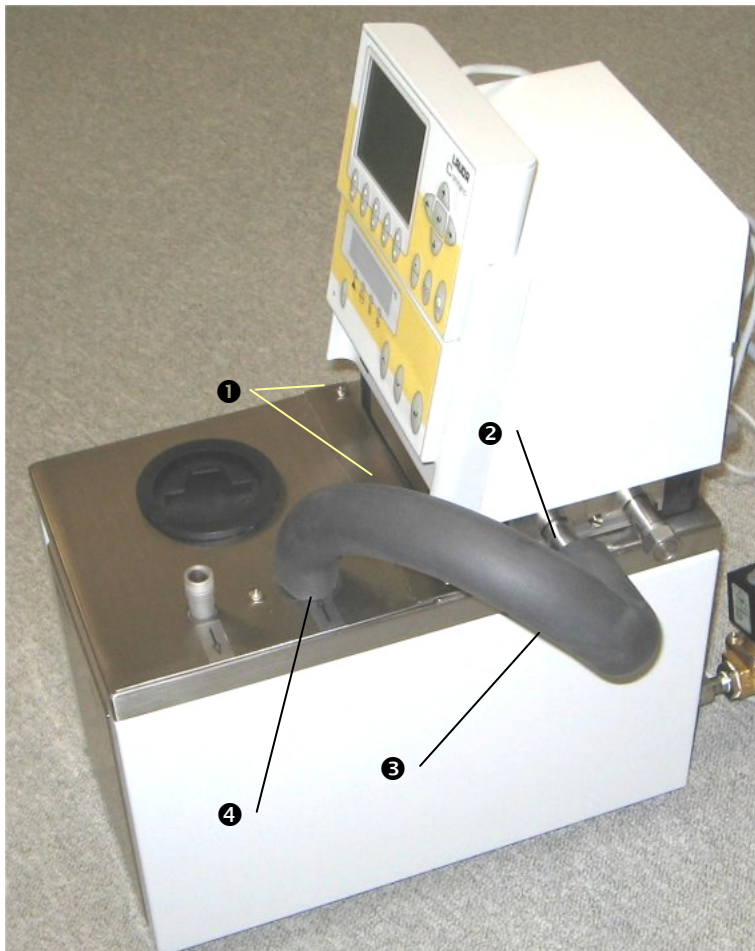
6. A *Connection Set for external In- and Outlet (LCZ 0679)* available as an accessory can be clamped on the edge of the external bath. Both pipes have a standard external thread connection of M16x1 onto which the two hose olives (+ union nuts), included in the supplied items, can be screwed for hoses with 13 mm internal diameter.
7. The *Automatic Filling Device with LiBus LCZ 9661* can be operated in parallel to the level controller.



- **Risk of overflow:** If oils at temperatures below freezing point are used as the bath liquid, ice particles can occur which cause a breakdown in the function of the level controller.
- The volume expansion at high temperatures can lead to the **overflow** of the external bath vessel.
- The hose on the suction side must not collapse due to the prevailing vacuum; use thicker-walled hose if required.
- Secure the hoses against slippage using hose clips or use V2A metal hoses with union joints.
- After switching on, check the level in the thermostat bath. It should lie about 2-3 cm below the cover panel. The level in the external bath can only be changed by adding or draining off bath liquid.

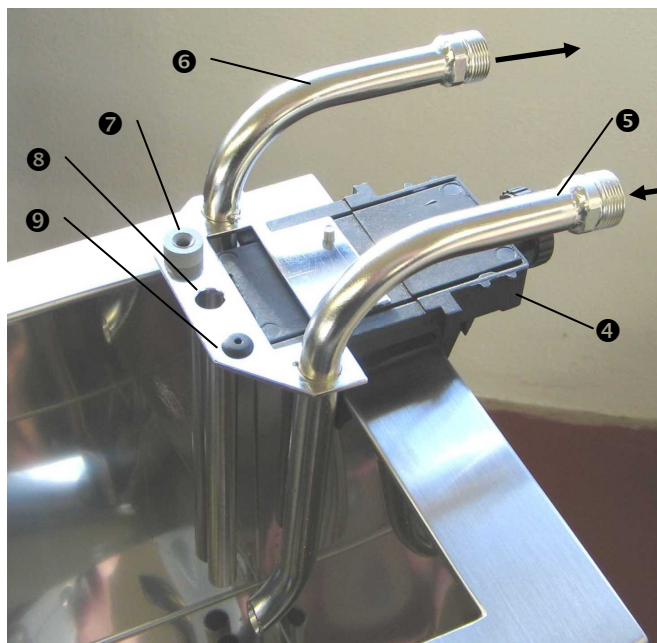
## 2 Assembly (with Proline P8 as example)

### 2.1 Fitting the Level Controller LCZ 0660 to the thermostat



- Unscrew the two front mounting screws **1** on the Proline bath bridge.
- Take off the bath cover and put on the level controller. Make sure the float can move freely.
- Fit the overlapping safety guard with the two new delivered screws **1** M4x10 on the bath bridge.
- Remove the plug **2** on the side pump connection **2** for the feed (pressure side).
- Screw the hose **3** to the side thermostat feed pump connection **2**. Use an AF19 open-ended wrench on the hose and hold it with AF14 on the pump connection.
- Set up the other end of the hose over the tube **4** of the level controller and fasten with the delivered clip. Make sure that the hose is neither fold or drilled to allow for maximum flow.
- Bath liquid can, if required, be filled through the opening which is covered with the lid.

## 2.2 Mounting the Connection Fitting LCZ 0679 on the external bath



- Clamp the connection fitting for the feed and return to the external bath using the screw clamp ④.
- The feed ⑤ can be recognized from the curved outlet.
- The return ⑥ dips down vertically into the bath.
- An external Pt100 with 4 mm shaft diameter can be inserted into the elastic holder ⑦.
- The hole ⑧ is used for accommodating the Pt100 clamps HX 077 or HX 078 which are available as accessories.
- An external Pt100 with 1.9 mm shaft diameter can be inserted into the elastic holder ⑨.
- The two hose olives (+ union nuts) for hoses with 13 mm internal diameter included in the supplied items are not illustrated.

## 2.3 Level difference of the thermostat to the external bath

For the implementation of the hose connections between the level controller and the external bath it is decisive how they are arranged with respect to one another. Depending on the temperature and the bath medium, either ready-made V2A hoses from the LAUDA accessory catalog or elastomer hoses from the LAUDA range of accessories and the hose olives from the thermostat accessories are required.

### 2.3.1 Thermostat and external bath at the same level

In the simplest case the bath edges of both vessels are located at the same height. In this case make the hose connection.

### 2.3.2 Thermostat and external bath not at the same level

If the bath medium levels of the thermostat and the external bath are not at the same level, we recommend the use of the *Reverse Flow Protection Device LCZ 9673*. Installation ⇒ Section 2.4.

### 2.4 Installing the Reverse Flow Protection Device LCZ 9673

Establish whether the thermostat is arranged below or above the external bath and install it according to the graphics and illustration in A or B.

A: Proline thermostat <u>below</u> external bath	B: Proline thermostat <u>above</u> external bath
<p>❶ Bath of Proline thermostat</p> <p>❷ Level controller with floatation valve</p> <p>❸ Solenoid valve of reverse flow protection device</p> <p>❹ Non-return valve of reverse flow protection device</p>	<p>❺ External bath</p> <p>❻ Connection Fitting LCZ 0679</p> <p>❼ Hose connections</p>
<p>Connect the non-return valve on the <b>level controller feed</b>:</p> <ul style="list-style-type: none"> <li>– Screw the non-return valve ❹ with the union nut side (M16x1) to the outlet of the level controller using an AF19 open-ended wrench.</li> <li>– If required, mount the connection fitting for the external feed and return or alternatively fit the pipe connections with M16x1 external threads to the external bath.</li> </ul>	<p>Connect the non-return valve to the <b>return pipe</b> of the external bath:</p> <ul style="list-style-type: none"> <li>– If required, mount the connection fitting for the external feed and return or alternatively fit the pipe connections with M16x1 external threads to the external bath.</li> <li>– Screw the non-return valve ❹ with the union nut side (M16x1) to the (straight) return pipe of the connection fitting of the external bath using an AF19 open-ended wrench.</li> </ul>

A: Proline thermostat <u>below</u> external bath	B: Proline thermostat <u>above</u> external bath
<ul style="list-style-type: none"> <li>- Screw on the connecting hose ⑦ or alternatively the hose olive from the thermostat accessories onto the M16x1 external thread connection using an AF19 open-ended wrench. Counter the torque on the valve with an AF24 open-ended wrench. Connect the other hose end to the (curved) feed pipe of the connection fitting of the external bath.</li> </ul>	<ul style="list-style-type: none"> <li>- Screw the connecting hose ⑦ or alternatively the hose olive from the connection fitting accessories onto the M16x1 threaded connection. Counter the torque on the non-return valve with an AF24 open-ended wrench.</li> <li>- Remove the plug on one of the two pump connections for the return (suction side).</li> <li>- Connect the other end of the hose or alternatively the hose olive from the thermostat accessories to the thermostat. Use an AF19 open-ended wrench on the hose and hold it with AF14 on the pump connection.</li> </ul>
<p>Connect the solenoid valve on the thermostat <b>return</b>:</p> <ul style="list-style-type: none"> <li>- Remove the plug on one of the pump connections for the return (suction side).</li> <li>- Screw the valve ③ with the union nut side (M16x1) onto the pump connection. Use an AF19 open-ended wrench on the valve and hold it with AF14 on the pump connection.</li> </ul> <p>Screw on the connecting hose ⑦ or alternatively the hose olive from the thermostat accessories using an AF19 open-ended wrench. When doing this, counter the torque on the valve with an AF22 open-ended wrench. Connect the other end to the (straight) discharge pipe of the external bath.</p>	<p>Connect the solenoid valve to the <b>feed pipe</b> of the external bath:</p> <ul style="list-style-type: none"> <li>- Screw the valve ③ with the union nut side (M16x1) onto the (curved) feed pipe of the connection fitting. As with the non-return valve, hold with an AF19 open-ended wrench.</li> </ul> <p>Screw on the connecting hose ⑦ or alternatively the hose olive from the connection fitting accessories onto the outlet of the level controller using an AF19 open-ended wrench. When doing this, counter the torque on the valve with an AF22 open-ended wrench. Screw the other end on the return of the pump connection and hold with AF14.</p>
<ul style="list-style-type: none"> <li>- Insert the connecting cable of the solenoid valve into a free 70S socket on the thermostat and secure it. Use a T-piece if all sockets are occupied.</li> <li>- It is recommended that the temperature limits of the operating temperature range of the reverse flow protection device are entered on the thermostat as Til and Tih (⇒ thermostat operating manual).</li> <li>- Fill with bath liquid (⇒ thermostat operating manual).</li> <li>- Mains switch to ON.</li> <li>- The solenoid valve closes automatically with mains off and standby and when a fault occurs.</li> <li>- The reverse flow protection device is now ready for operation. The special functions (status indicators and works setting) are described in the operating manual for the reverse flow protection device.</li> </ul>	

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 From command software version: -

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