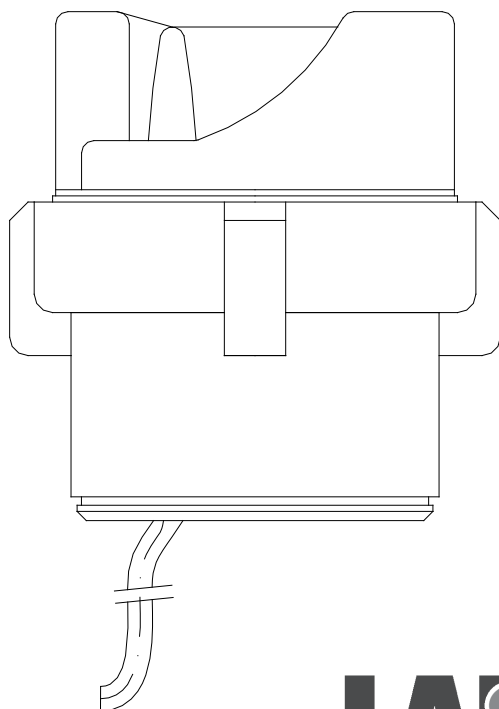


Installation and operation manual

Laing Ecocirc® DC pumps

Models D5 vario



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Application

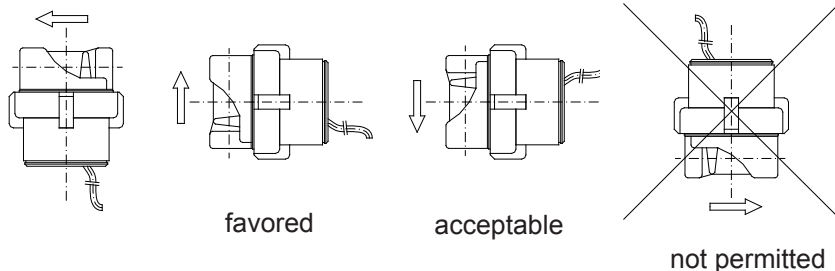
- The Ecocirc D5 vario are direct current wet rotor pumps and are driven by an electronically commutated stator. Therefore, they have a good degree of efficiency.
- The Ecocirc vario D5 can be operated at 8-24 Volt
- Areas of application
 - Computer- or Lasercooling
 - Mobile homes (e.g. hot water heating in a mobil home, weekend home or boat)
 - Circulating systems for industrial use
 - All applications, wherever a high degree of efficiency is needed with 12 V or 24 V co-current flow.

Design

- The pump is available with different pump housings
- Electronics:
 - integrated thermal overload protection
 - integrated interference suppresser
 - integrated reverse polarity protection
 - power cord double-wire, red/black
- The pump and the integrated electronic parts are moisture resistant against sporadic water splash, but not against permanent effect of moisture.
- The pump housing is fixed by the screw ring, which enables easy removing and taking apart.

Installation

- Observe the permitted installation positions (picture below)
- Protect the pump against moisture
- Use check valves before and after the pump, in order to be able to remove the pump again.
- Integrate a check valve in order to avoid that the pump gets flown through against the flow direction which could damage the pump.
- The ambient temperature by pumps in use must not be over 50°C , in rest 90°C are possible.



Electrical connection

Important remark: Electrical installations may only be performed by a properly licensed electrician observing all applicable general and local codes

- Connect to a 8-24 V co-current flow power supply, the red wire has to be connected with positive terminal, the black wire has to be connected with the negative terminal.
- If the system is not filled with water yet, reduce the time of a function test to an absolute minimum. Extended dry operation of the pump will damage the bearing.

Before Startup

- Before Startup please check:
 - Flush the system to remove dirt
 - Make sure the system is filled and the air has been urged.
How to deaerate: The pump must be currentless. Remove the screw ring from the pump a little, so that the air can leak out of the pump.
Attention: Avoid electric parts getting wet!
Then open the lead-in carefully, until some water runs out of the pump.
- Now fasten the screw ring
- The pump can be switched on.
- If you hear air noises initially, these should abate after a short while
- Power cycling the pump several times accelerates the air removal
- If the air noise does not disappear or at least decrease substantially, repurge the system
- Avoid dry run in any case! This will damage the pump.

Startup

- The starting current is much higher than the operating current.
It appears only very short time until the pump is running.
- If the voltage goes down because of the high current, nevertheless the pump will startup , however with an according lower starting torque (see page 5 Starting current)

Integrated overtemperature protection

The pump comes with an integrated overtemperature safety device, which shuts the pump electronics off when reaching overtemperature. Normally the temperature of the pumped media during operation at the highest speed setting is 95° C at this point.

A complete shutdown after reaching overtemperature condition can result in adverse effects on the circulating system. Since the temperature of the electronic components is influenced by the temperature of the pumped media as well as by the speed setting, the pump will lower its speed automatically after reaching a critical temperature level in order to avoid a total shutdown. However, if the temperature continues to rise (caused e.g. by too hot pumped media), the pump will eventually shut down completely. After cooling down, the pump will restart automatically.

Speed controller

The pump can be adjusted over a wide range of control by the integrated speed controller. It can be used either for the adjustment of the desired hydraulic performance or for the limitation of the electric power consumption. Regardless of the setting, the pump is always starting with maximum torque. This ensures a safe start even at the lowest speed. In 24 Volt operation, at highest setting the maximum speed is maintained over the whole performance curve. At smaller voltages the pump either cannot keep the adjusted speed over the whole performance curve and slows down at higher flow rates, or the pump cannot reach the adjusted speed at all. For example, if the pump is powered with 8 Volts, only the pump curves up to the speed setting 3 can be obtained. If the voltage is varied during operation (for example when connected to a solar panel), the pump will keep the adjusted speed as long as the voltage makes this possible. In this case the current draw is altered accordingly. This is advantageous in applications where a certain pump performance is required despite a varying voltage supply.

Technical data

Installation and operation manual Laing Ecocirc® D5 vario

Motor design	Electronically commutated spherical motor with permanent magnetic rotor/impeller
Voltage	8 - 24 Volt
Max. fluid temperature	95° C for pumps with brass housing 60° C for pumps with plastic housing
Max. ambient temperature	50°C
Power consumption	see pump curves
Current consumption	at 12 Volt: 0,25 - 1,9 A at 24 Volt: 0,25 - 1,5 A
Acceptable media	domestic hot water, heating water, water/glycol mixtures, other medias on request*.
Insulation class	IP 42 / Class F

Max. system pressure
1 MPa (10 bar) for pumps with brass housing
0,15 MPa (1,5 bar) for pumps with plastic housing

Max. system temperature
-10 to + 95°C for pumps with brass housing (non-freezing)
+/- 0 to + 60°C for pumps with plastic housing (non-freezing)

Weight
0,7 kg for pumps with brass housing
0,35 kg for pumps with plastic housing

*please check pump performance with more than 20 % glycol

Pump curves (see next page)

Please note that the pump curves depend on the pump housing, the speed control setting and the supply voltage. We will be glad to give you more detailed information on request. All pump curves shown here are at 12 Volt and at different speed controller settings.

Speed control settings / RPM:

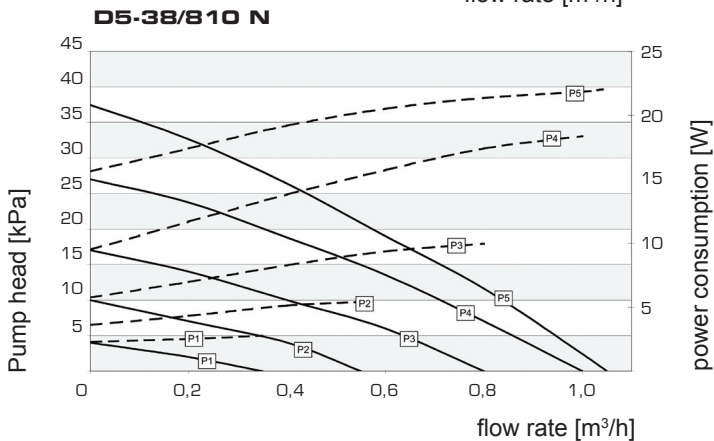
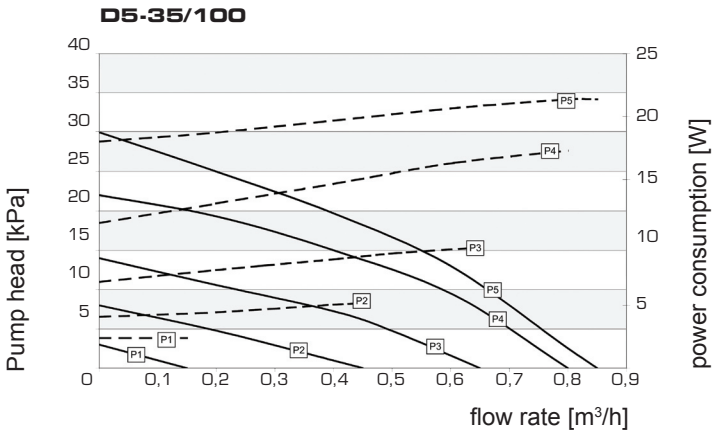
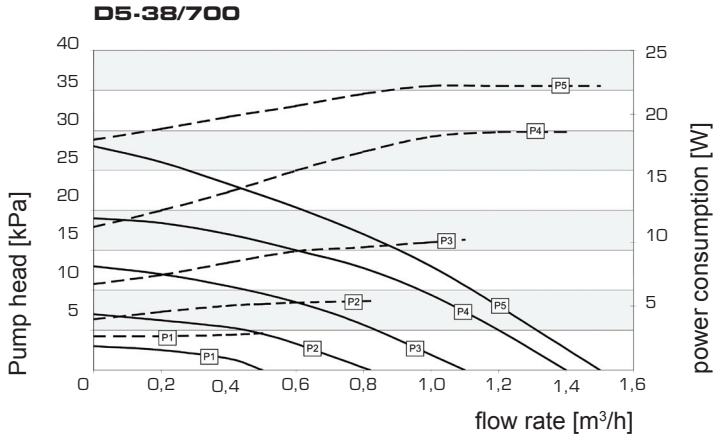
P1: 1.800 RPM

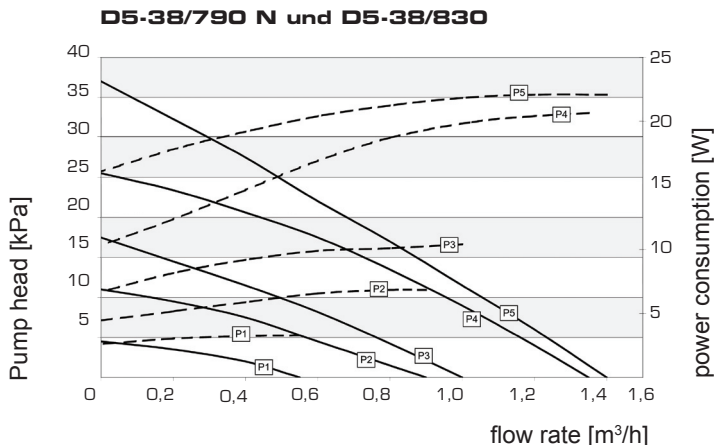
P2: 2.550 RPM

P3: 3.300 RPM

P4: 4.050 RPM

P5: 4.800 RPM





Problems - FAQ

Pump does not run

- Check if the voltage is applied.
- If voltage is applied, and the pump is hot, the thermal overload protection might have switched-off the pump. Wait until the pump is cooled again, it will turn on automatically.
- The pump is blocked - clean the pump from defilement (The pump must be currentless. Close the shut-off valves. Open the screw ring carefully and clean the pump. Attention: water will run out of the pump, avoid electric parts getting wet)
- The pumped fluid is too hot. (Make sure the pumped fluid temperature is within the allowed range of temperature)

Loud flow noise

- The system has not been purged correctly. Re-purge the system (see page 4, chapter before startup)
- There might be dirt inside the pump housing. Clean the pump inside (The pump must be currentless. Close the shut-off valves. Open the screw ring carefully and clean the pump. Attention: water will run out of the pump, avoid electric parts getting wet).

Cleaning the pump - changing the rotor

- The pump must be currentless
- Close the shut-off valves on both sides of the pipe.
- Open the screw ring carefully. Attention: water will run out of the pump. Avoid electric

parts getting wet or water running over the motor. Take away the stator.

- Take out the rotor carefully by picking it at the blade wheel as seen on the picture
- Check the pump housing, the rotor and the stator for impurities and remove them. Clean the pump.
- Put the rotor back in the stator and check whether it can be turned easily. If not, the bearing might be abraded (Swirl marks on the bottom side of the rotor)
 - Put in the new rotor
 - Change the pump against a new one
- If the rotor can be turned easily, close the pump again
 - Remove the gasket. Clean the gasket and the nut and the area on the stator where the gasket lays.
 - Put the gasket back inside the pump housing. Assemble the stator with the screw ring. The screw ring must not be installed by huge tools. Normally it is enough to assemble the screw ring manually.
- If the pump still does not work, replace the motor.

The logo for Laing GmbH, featuring the word "LAING" in a bold, sans-serif font. The letter "I" is stylized with a white crescent shape inside its upper loop.

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