

# DC pumps **ecocirc**®

An entirely new generation of pumps, with minimum energy consumption, a shaft-less spherical motor and permanent magnet technology.

- economic and powerful
- step-less speed control
- wide variability
- high efficiency
- long life, maintenance free
- silent operation



**LAING**

simply the best · by design

# DC pumps

## ecocirc®

### Applications

Ecocirc pumps (basic, vario and strong) can be used in a wide variety of DC applications where a highly efficient circulation pump is required. Ecocirc pumps are very small, highly efficient and very quiet. The shaftless spherical motor design provides for a long life, maintenance-free pump. Ecocirc pumps are used in a wide variety of applications such as medical devices, electronics cooling, chillers, laser cooling, RV hot water systems, battery cooling, and fuel cells.

### Design

Invented by Laing, the principle of the spherical motor is fundamentally different from conventional canned motor pumps. The single moving part in a spherical motor is a hemispherical rotor/impeller unit. The rotor/impellor rides on an ultra-hard, wear-resistant ceramic sphere. There are no conventional shaft bearings or seals. This eliminates the possibility of bearing-play which is commonly associated with increased noise and the seal-less design eliminates a potential leak path. These pumps are particularly robust and provide an exceptionally long service life in excess of 50,000 hours. Through microprocessor technology, the Ecocirc pump converts the DC input into 3 phase AC output at the precise frequency and voltage for optimum efficiency. The self-realigning bearing is lubricated and cooled by the fluid media. Maintenance is not necessary under normal conditions. Even after lengthy shutdown periods a reliable start-up is virtually guaranteed. Parts exposed to the fluid are completely corrosion resistant even with aggressive fluids.

### Speed controller

The integrated speed controller provides a wide range of control and can be easily adjusted by turning a dial in the pump end. It can be adjusted to vary the hydraulic performance and/or the electrical power consumption. Regardless of the setting, the pump always starts with maximum torque. This ensures a reliable start even at the lowest speed. The pump output does

not vary according to the input voltage. The current draw is altered as the input voltage changes. This is advantageous in applications where a defined pump performance is required, despite a varying voltage supply.

### Integrated over-temperature protection

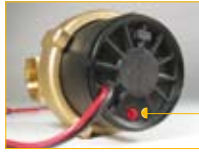
The pump has an integrated over-temperature safety device that shuts the pumps electronics off when reaching the temperature limit of +203° F, as a complete shutdown of the pump may result in adverse effects on a circulating system. Prior to this, the electronics will reduce the pump speed in order to compensate for heat gain. However, if the temperature continues to rise (i.e. the fluid media is too hot), the pump will eventually turn off completely. After cooling, the pump will restart automatically.

### Technical data

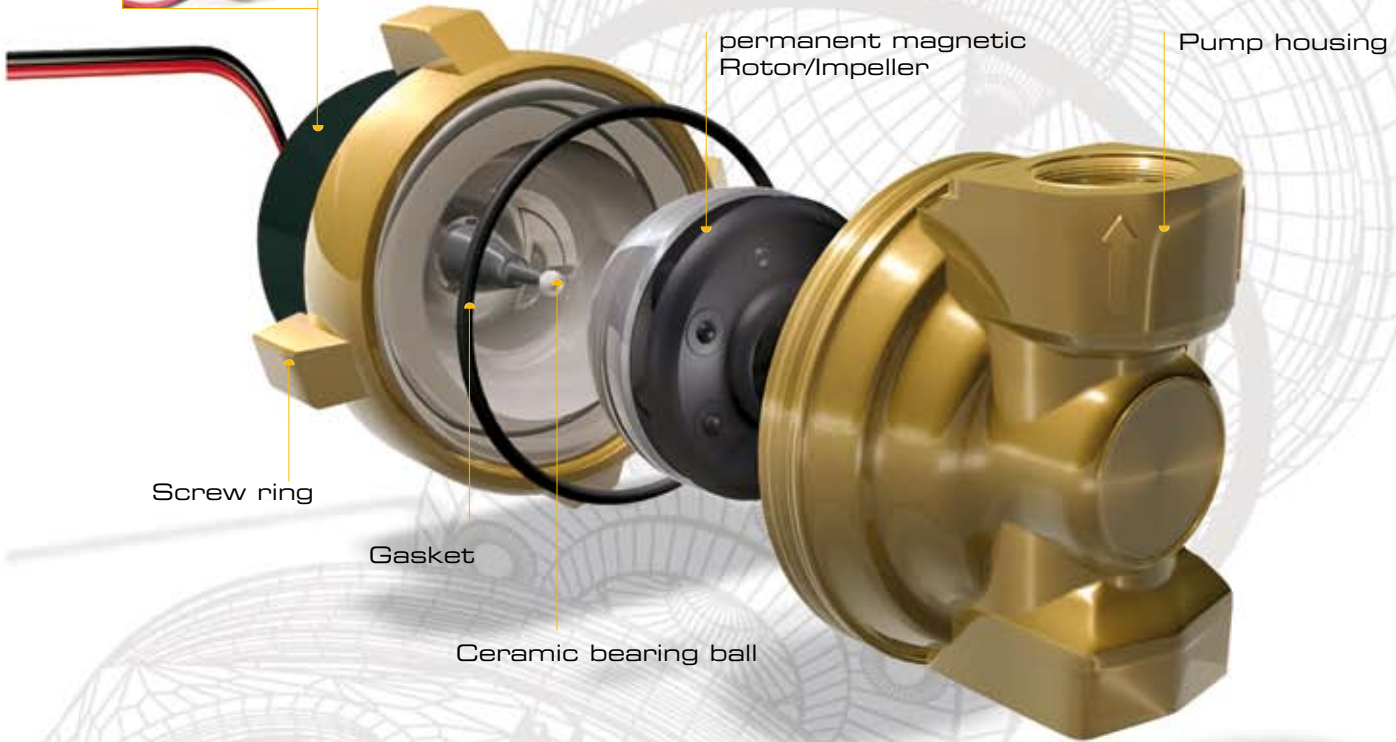
Motor design	Electronically commutated spherical motor with permanent magnet rotor/impeller
Voltage	8 - 25 Volt
Power consumption	see pump curves
Current draw	D5basic and vario: 0.25 - 1.46 A D5strong: 0.13 - 2.1 A
Acceptable media	domestic hot water, water/glycol mixtures, other media on request*.
Insulation class	IP 42 / Class F
Max. system pressure	150 PSI - 1.0 MPa (10 bar) for pumps with brass housings  50 PSI - 0.35 MPa (3.5 bar) for pumps with plastic housing
Max. system temperature	-10° F to +203° F (-10 to + 95°C) for pumps with brass housing (non-freezing) +32° F to +140°f (+/- 0 to + 60°C) for pumps with plastic housing (non-freezing)
Weight	1.54 LBS. (0.7 kg) for pumps with brass housing .77 LBS. (0.35 kg) for pumps with plastic housing

\* when using more than 20 % glycol, check pump performance

# Design



Stator / Pump motor with speed control in the end cap on D5vario



permanent magnetic Rotor/Impeller

Pump housing

Screw ring

Gasket

Ceramic bearing ball



1/2" female pipe thread



1/2" sweat connection



1/2" sweat union connection

## ecocirc® Bronze series

Model	Voltage Power Consumption / Current	Pump housing material	Connection	Shipping Weight
D5_/710 B	8-25 Volt DC, 3-35 Watts, 0.30 - 1.50 Amps	Bronze	1/2" female pipe thread	3,0
D5_/720 B	D5strong: 3-55 Watts, 0.13 - 2.1 Amps		1/2" sweat connection	
D5_/090 B			1/2" Sweat Union Connection w/Check Valve	



3/4" NPT



1/2" Hose



3/4" Hose

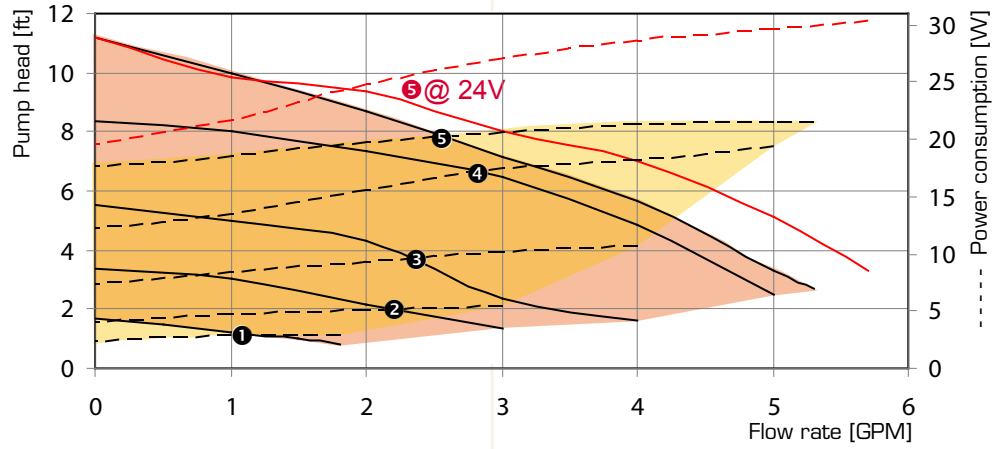
## ecocirc® Plastic series

Model	Voltage Power Consumption / Current	Pump housing material	Connection	Brackets	Shipping Weight
D5_/850 N	8-24 Volt DC, 3-35 Watts, 0.30 - 1.50 Amps	Plastic (Noryl)	3/4" male thread		2,0
D5_/810 N	D5strong: 3-55 Watts, 0.13 - 2.1 Amps		1/2" hose barb		
D5_/790 N			3/4" hose barb		

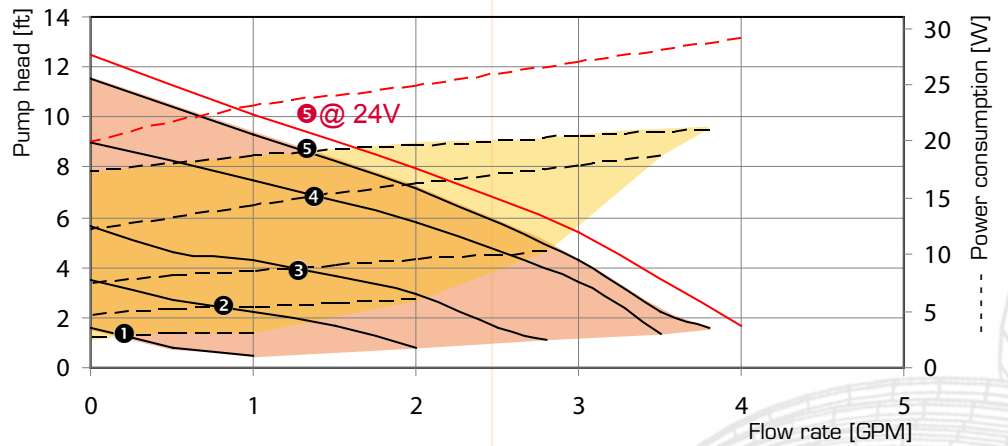
# Pump curves D5 vario and D5 basic

Please note that pump curves vary depending on the pump housing, the speed control setting and the supply voltage. More detailed information is available on request. All pump curves shown are at 12-24 Volts and at different speed controller settings (1 2 3 4 5) unless otherwise noted. **The 4 curve is the fixed performance of the D5basic.**

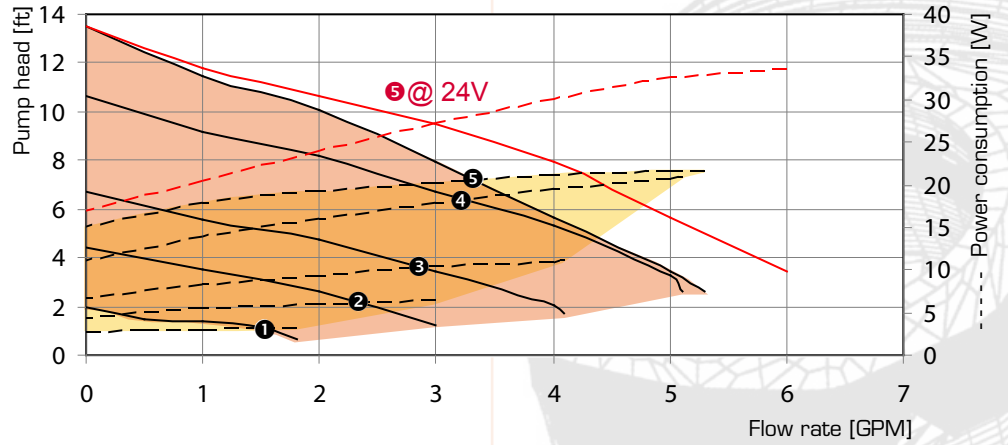
**D5-38/710 B and D5-38/720 B**



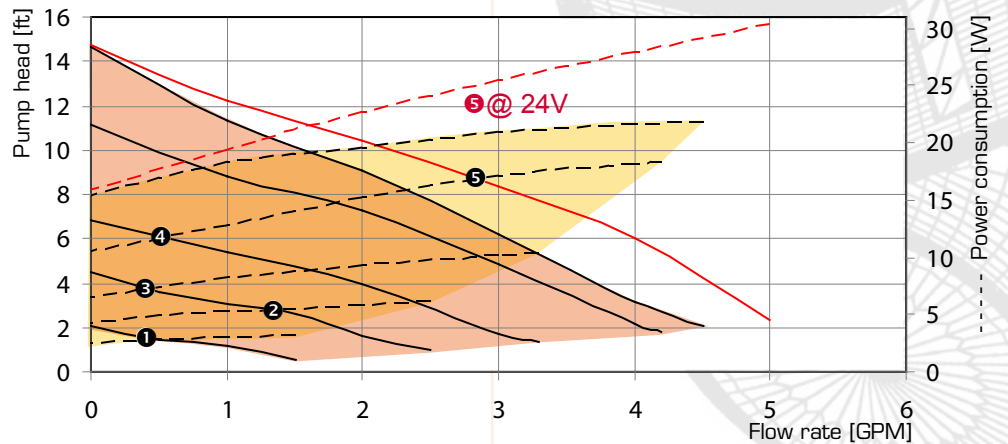
**D5-38/090 B**



**D5-38/790 N and D5-38/850 N**



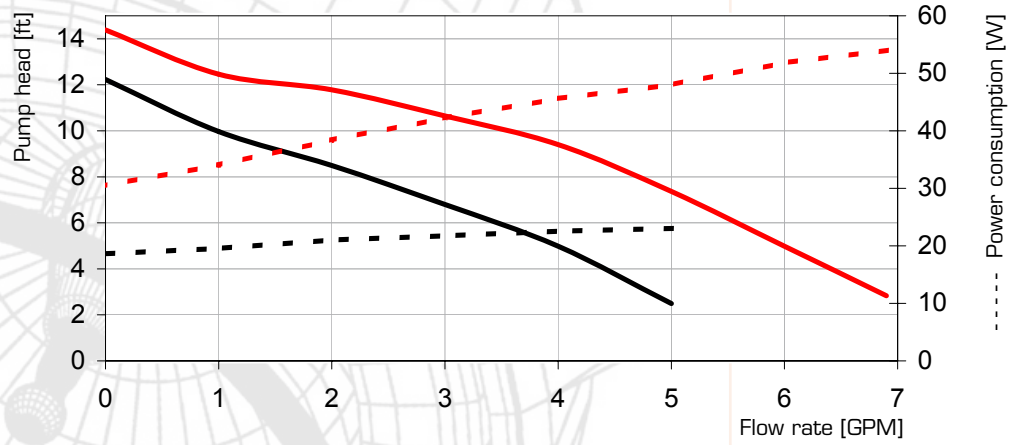
**D5-38/810 N**



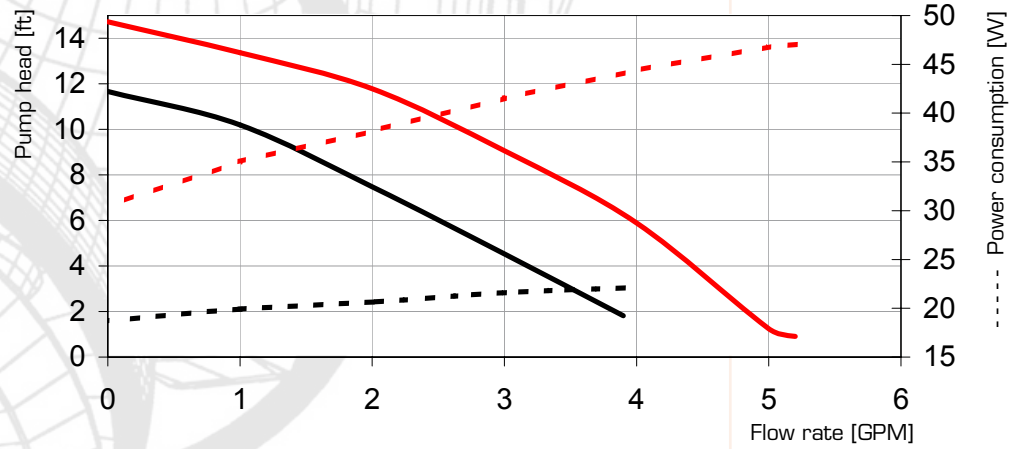
# Pump curves D5 strong

24 Volt versions in red, 12 Volt versions in black

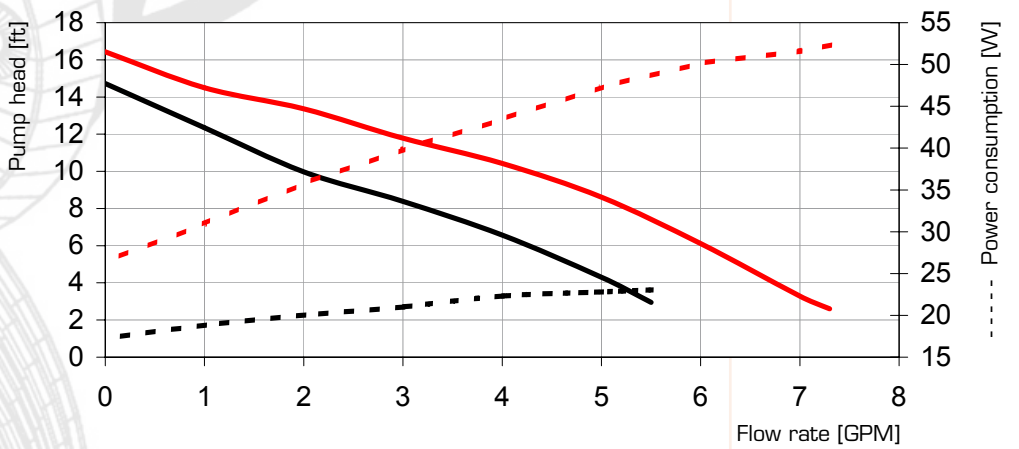
**D5-38/710 B and D5-38/720 B**



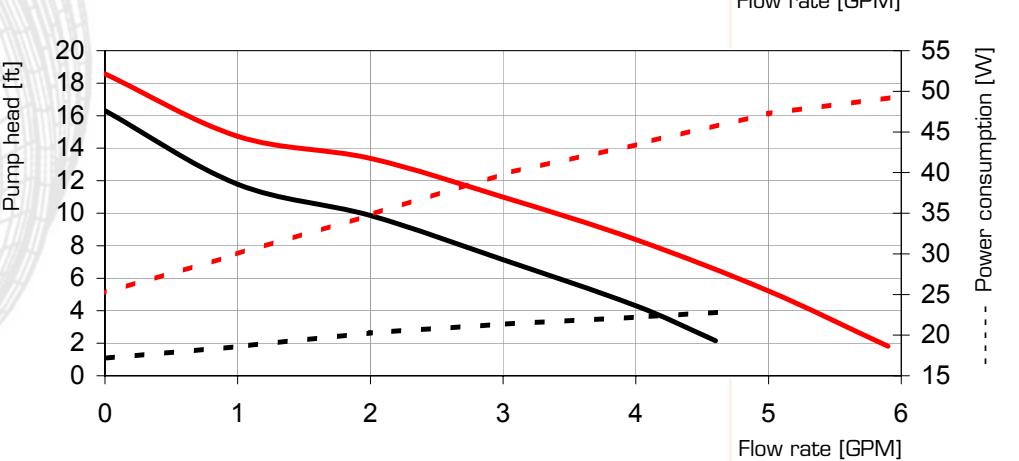
**D5-38/090 B**



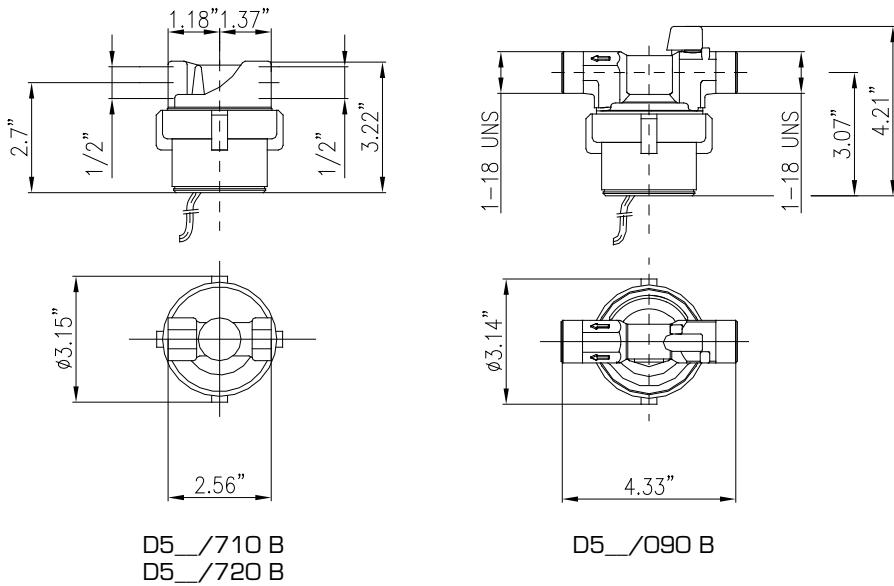
**D5-38/790 N and D5-38/850 N**



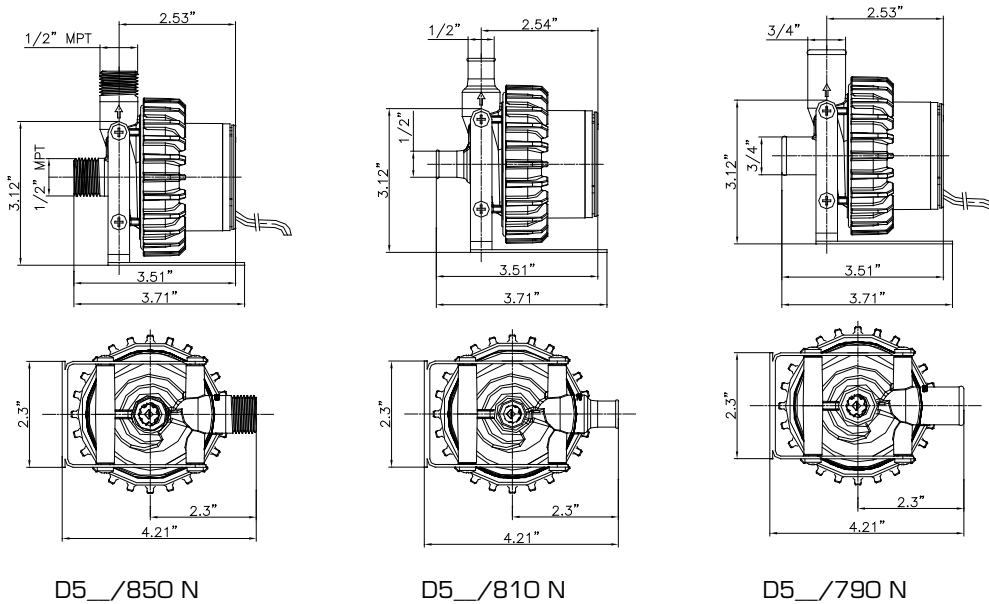
**D5-38/810 N**



## Dimensional drawings D5 with brass housing



## Dimensional drawings D5 with plastic housing



BR-19 10/09/07 Subject to change without notice

