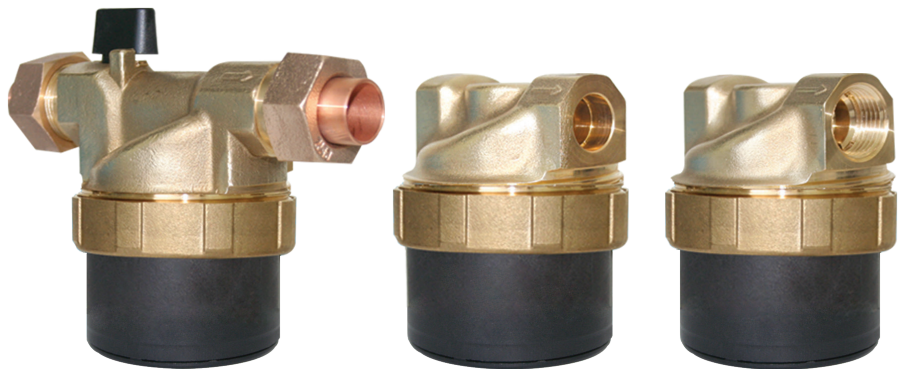


The first DC spherical motor pump for direct connection to photovoltaic panels with automatic performance optimization using Maximum PowerPoint (MPP) tracking.

- Start-up power requires less than 1 watt
- Directly connects to P.V. panel
- Economic and powerful
- Wide variability
- ECM technology
- Shaft-less spherical motor



Laing Thermotech Series D5 Solar

HOT WATER. HOT SAVINGS.

D5 Solar Pump

Hot Water. Hot Savings.

Application

- The D5 solar pump can be used for most circulation pump applications without connection to the power grid but with direct connection a photovoltaic panel.
- This pump is perfect for single family home's closed loop thermal solar systems or any closed loop circulation pump application where conventional power is not available.

Design

- The only moving part is a hemispherical rotor/impeller unit which sits on an ultra-hard, wear-resistant ceramic ball.
- There are no conventional shaft bearings or seals eliminating bearing noise and seal leaks.
- This pump is robust and has an estimated service life in excess of 50,000 hours.
- The self-realigning bearing is lubricated and cooled by the media.
- Even after prolonged shutdown, the pump will start reliably.
- All parts exposed to the fluid are completely corrosion resistant.

Soft Start-up

- When the photovoltaic panel provides sufficient power, the pump goes through the alignment phase by turning the rotor into the position required for start-up.
- The processor then waits until the capacitor is sufficiently charged.
- This enables a start-up with minimal power (less than one watt).

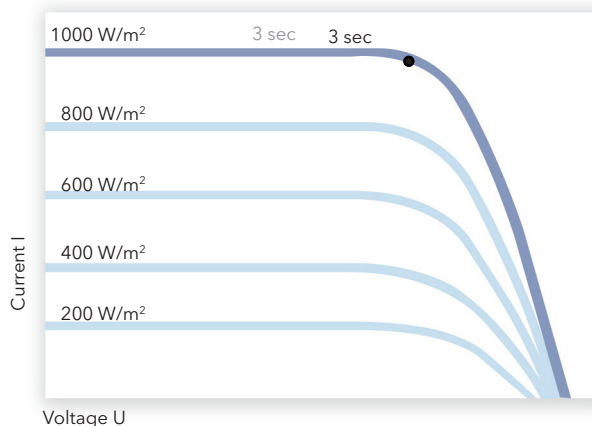
Over-temperature Safety Device

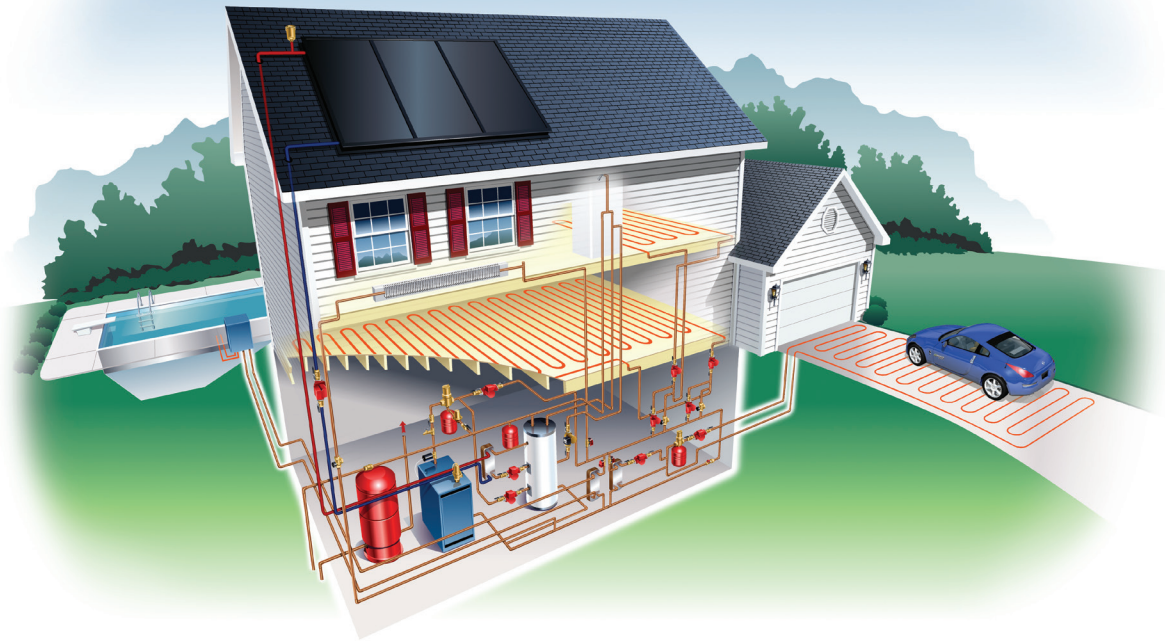
- The D5 Solar pump comes with an integrated over-temperature safety device which shuts off the pump electronics when reaching temperatures over 230°F.
- When the temperature of the pumped fluid is below 203°F the pump will function normally.
- The temperature of the electronic components is influenced by the temperature of the pumped media.
- After reaching a critical temperature 203°F the pump will lower its speed automatically in order to avoid a total shutdown.
- However, if the temperature continues to rise the pump will eventually shut down completely and automatically restart after cooling down.

Maximum Power Point (MPP) tracking

Every three seconds the processor will modify its operating point on the voltage-current curve of the PV panel to find the point of maximum performance. At this point, the pump achieves the maximum rpm and therefore the maximum performance. There is no need for a separate performance device. The ecocirc Solar pump will always find its best operating point under any given light and temperature conditions.

Typical Current-Voltage-curve of a photovoltaic panel. By employing MPP tracking every three seconds, the D5 pumps always automatically achieve maximum performance at any given installation.



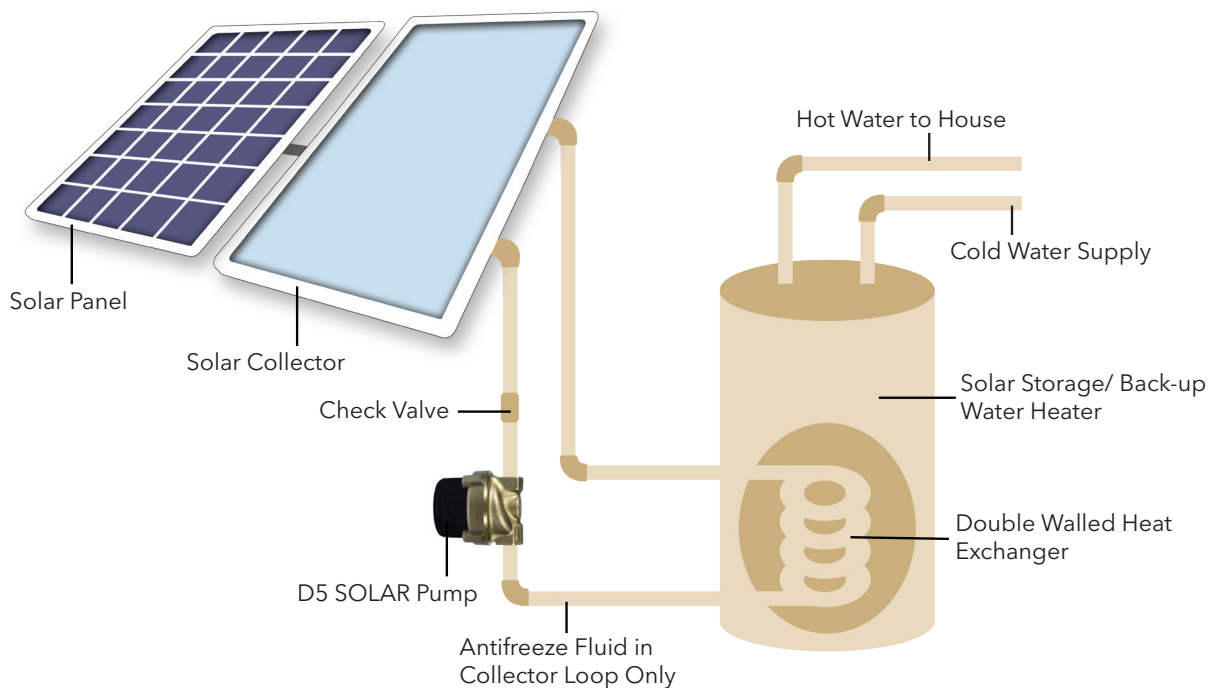


Technical Data

Motor Design:	Electronically commutated spherical motor with permanent magnet rotor/impeller
Voltage:	12 - 24 Volt
Power Consumption*:	Min. start-up power consumption less than 1 Watt, max. power consumption 22 Watts
Current Draw:	0.25 - 1.46 A
Acceptable Media:	Closed loop domestic hot water heating, water/glycol mixtures, other media on request**.
Environment:	IP 42
Insulation Class:	Class F

* Power consumption and start-up may vary in different installations

** Please check pump performance with more than 20% glycol; if used in open loop domestic water, the bearing life will decrease due to mineral deposits



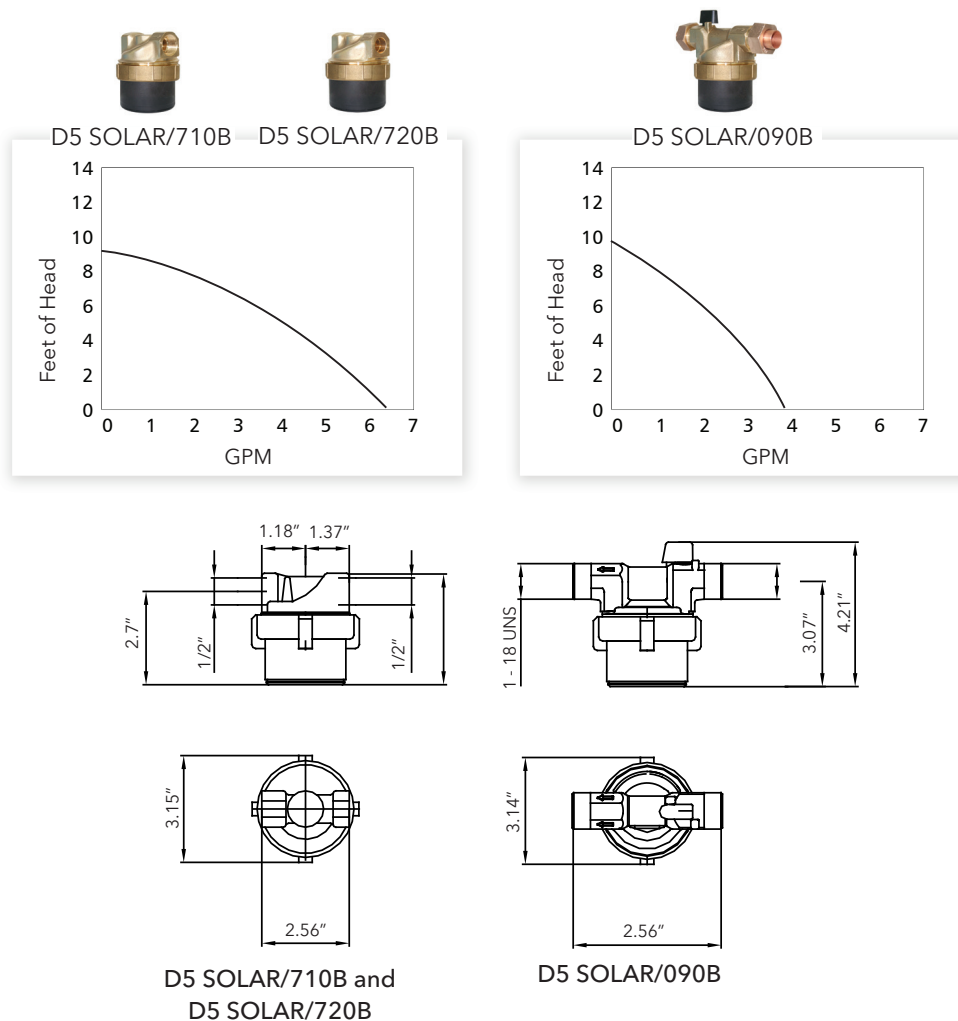
Available Models

Part Number	Description	Model	Weight
LMB15107992	Lead Free Brass* Solar Circulator 1/2" Sweat	D5-SOLAR/720B	2 lbs.
LMB15107993	Lead Free Brass* Solar Circulator 1/2" NPT	D5 SOLAR/710B	2 lbs.
LMB15107995	Lead Free Brass* Solar Circulator 1/2" Union Sweat	D5 SOLAR/090B	2 lbs.

*Less than 0.25% Pb by weight on wetted parts surface areas.

Model	Pump Housing Material	Max. System Temperature	Housing Design	Connection	Max. Pressure
D5 SOLAR/720B	Brass	203°F	Inline	1/2" Sweat connection	150 PSI
D5 SOLAR/710B	Brass	203°F	Inline	1/2" Female pipe thread	150 PSI
D5 SOLAR/090B	Brass	203°F	Inline / BV+CV+PV*	1/2" Union Sweat	150 PSI

* built-in ball valve, check valve and purge valve



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