

- No running energy costs or emissions
- Designed to be driven direct from a small 12V, 10-30 Watts Photovoltaic panel
- High efficient EC spherical motor
- Only one moving part
- No conventional shaft bearings
- Low maintenance
- Blockage free operation
- In-built self optimising software (MPP Tracking)
- Battery version also available



# Lowara Ecocirc<sup>®</sup> D5 Solar

The multi-awarded DC spherical motor pump for direct connection to photovoltaic panels with automatic performance optimization using MPP technology (Maximum Power Point tracking)

# Lowara Ecocirc® D5 Solar DC pump

## Applications

The Ecocirc D5 Solar pump can be used wherever a highly efficient circulation pump is needed without a direct connection to AC power. It can be connected directly to a photovoltaic panel and is characterized by its small size, high efficiency, very low power consumption and its MPP tracking. The shaftless spherical motor technology enables a long, maintenance free and quiet service life. Areas of application are thermal solar systems for single family homes.

## Soft start-up

The pump has been programmed for a soft startup. When the photovoltaic panel provides sufficient power, the pump first goes through the alignment phase, turning the rotor into the position required for start-up. Then the processor waits until the built-in capacitor has recharged sufficiently. This enables a start-up with minimal power (less than one Watt). Cycling due to unsuccessful starting attempts is minimized. Even after prolonged shutdown, the pump will start reliably.

## 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.



## Technical Data

Motor design	Electronically commutated spherical motor with permanent magnet rotor/impeller	
Voltage	8 - 24 Volt	
Power consumption*	- min. start-up power consumption less than 1 Watt, - max. power consumption 22 W	
Current draw	0,25 - 1,46 A	
Acceptable media	Domestic hot water, heating water, water/glycol mixtures, other media on request**.	
Insulation class	IP 42 / Class F	
Pump housing material	Brass	Noryl
Max. system pressure	1 Mpa (10 bar)	0,15 MPa (1,5 bar)
Max. system temp.***	-10 to + 95°C	+/- 0 to + 60°C
Weight	0,7 kg	0,35 kg

\* Power consumption and start may vary in different installations

\*\* Please check pump performance with more than 20 % glycol

\*\*\*Non-freezing, non condensing.

## Model Designation

Model	max. pump head in kPa	Housing material
D5solar - 38 / 700 B		B = Brass N = Noryl
	Pump housing number (2 digits)	Steps

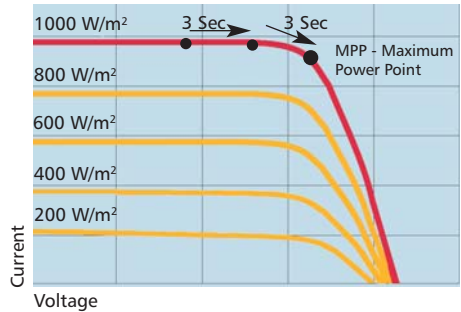
# Automatic performance optimization

## Maximum Power Point Tracking

The Lowara Ecocirc® D5 Solar are the first and only spherical motor pumps with self-optimizing software (see diagram). 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. This is called the "Maximum Power Point" (MPP).

*At this point, the pump achieves the maximum rpm and therefore the maximum performance. There is no need for a separate performance adaptation, the pump will always find its best operating point under any given light and temperature conditions by itself.*

## MPP-Tracking



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

## Product range DC pump Lowara Ecocirc® D5 Solar



Highly efficient DC pump with ECM-Technology and permanent magnetic rotor, MPP-Tracking, soft start at very low insolation (soft start algorithm, less than 1 Watt required), integrated over-temperature protection, 8-24 Volt (driven by a 12 Volt Panel; if driven by a 24 Volt Panel a maximum voltage limitation to 24 V is required), max. input 22 Watt, 0,25 - 1,46 A current consumption, isolation IP 42 / Class F.

Model	Part number	Pump housing	max. system temperature	Housing design & length	Connection	Weight kg
D5 Solar-38/700 B	LH6000403	Brass	95° C	Inline / 65 mm	1/2" female thread	0.9
D5 Solar-38/100 B	LH6000413	Brass	95° C	Inline / 110 mm / RV+KH*	1 1/4" male thread**	
D5 Vario-38/700 B***	LH6000500	Brass	95° C	Inline / 65 mm	1/2" female thread	
D5 Vario-38/100 B***	LH6000501	Brass	95° C	Inline / 110 mm / RV+KH*	1 1/4" male thread**	

\* integrated check valve and ball valve; \*\* for connection to 3/4" union components. Housing has additionally a 1/2" female connection  
 \*\*\* Battery version max 24V.

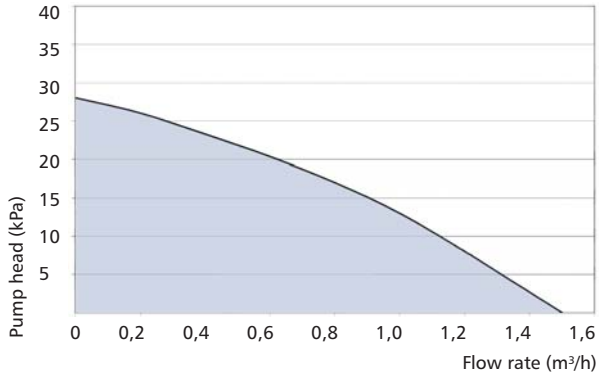
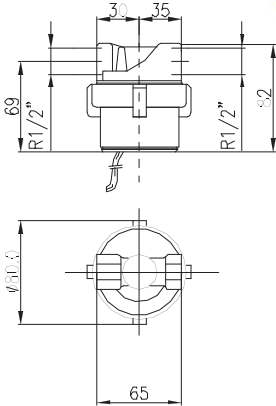
## Accessories, components and spare parts Lowara Ecocirc® D5 Solar

Model	Part number	Description	Product category
RV 1/2"	LH9500001	Brass check valve 1/2" male thread x 1/2" female thread	7 K
KH 1/2"	LH9500020	Chrome plated brass ball valve 1/2" male thread x 1/2" female thread	
AV 1/2" x 1/2"	LH9500024	2 pieces brass union fitting 1/2" male thread x 1/2" female thread	
AV 5/4" x 3/4"	LH9500025	2 pieces brass union fitting 1 1/4" female thread x 3/4" female thread	
MW C	LH9500041	Mounting plate for D5 Solar pumps	

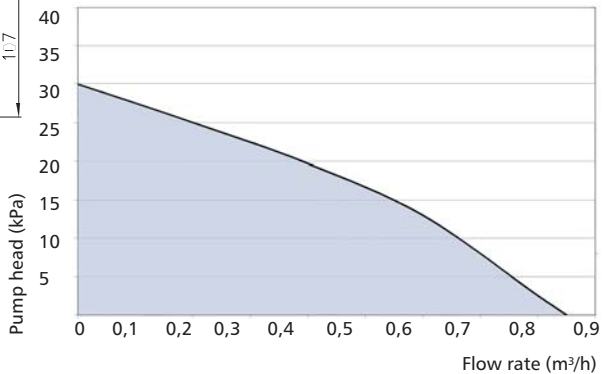
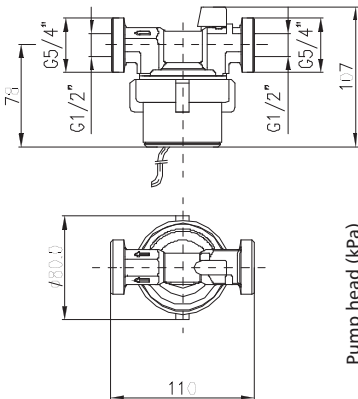
# Pump curves and dimensional drawings Lowara Ecocirc® D5 Solar

Dimensional drawings in mm, pump curves at 12 Volt,  
min. start-up power consumption less than 1 Watt (12 Volt panel),  
max. power consumption approx 22 Watts.

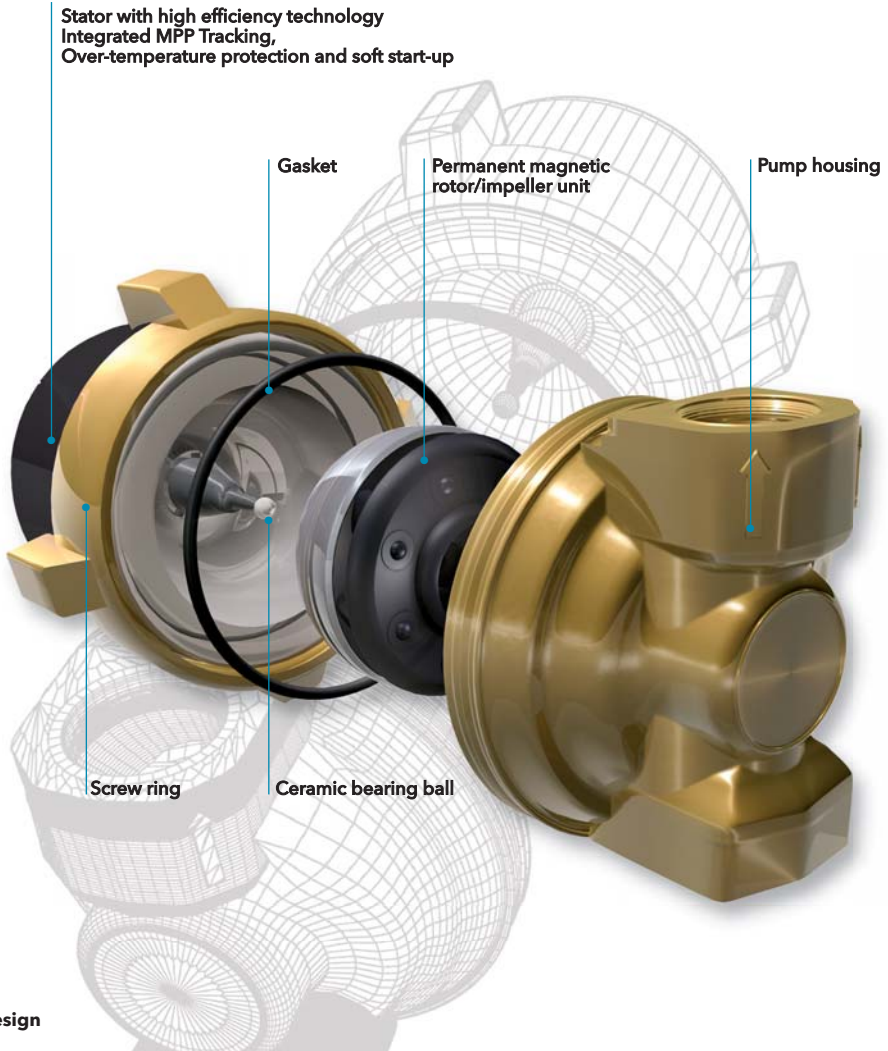
**D5 Solar-38/700 B**  
**D5 Vario-38/700 B**



**D5 Solar-38/100 B**  
**D5 Vario-38/100 B**



# Lowara Ecocirc® D5 Solar design



## Design

The principle of the spherical motor is fundamentally different from conventional canned motor pumps. The only moving part in a spherical motor is a hemispherical rotor/impeller unit, which sits on an ultra-hard, wear-resistant ceramic ball.

There are no conventional shaft bearings or seals. This rules out, in effect, the possibility of play in the bearings and the increase in noise associated with it.

These pumps are particularly robust and give exceptionally long service. The self-realigning bearing is lubricated and cooled by the media.

Maintenance is not necessary under normal conditions and even after lengthy shutdown periods a reliable start-up is virtually guaranteed. The parts exposed to the fluid are completely corrosion resistant.

# About Xylem

Xylem (XYL) is a leading global water technology provider, enabling customers to transport, treat, test and efficiently use water in public utility, residential and commercial building services, industrial and agricultural settings. The company does business in more than 150 countries through a number of market-leading product brands, and its people bring broad applications expertise with a strong focus on finding local solutions to the world's most challenging water and wastewater problems. Launched in 2011 from the spinoff of the water-related businesses of ITT Corporation, Xylem is headquartered in White Plains, N.Y., with 2011 revenues of \$3.8 billion and 12,500 employees worldwide.

The name Xylem is derived from classical Greek and is the tissue that transports water in plants, highlighting the engineering efficiency of our water-centric business by linking it with the best water transportation of all - that which occurs in nature. For more information, please visit us at [www.xylem.com](http://www.xylem.com)



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cod. UKLIT0040 P03/12

