Sizing Guide

SOLAR PUMP™

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Solar Pumps™ are available for flow rates from 0.3 to 12 L/min (0.1 to 3.2 USGPM). Select the appropriate model using the table shown below.

Model	Flow range (L/min)	Flow range (USGPM)	Fittings	Integral strainer
P24070	0.3 - 2.4	0.1 - 0.6	3/8" compression	yes
P50140	1.0 - 5.0	0.3 - 1.3	1/2" compression	yes
P118330	2.0 - 12.0	0.5 - 3.2	5/8" compression	no *

* external 100 mesh strainer must be installed on the inlet.

The flow rate depends on the pressure drop in the hydraulic loop, and the power supplied to the pump, which depends on the size of PV module and the level of sunlight. The performance curves for the P24070 and P50140 show flow rate vs. power from the PV module, including losses in the linear current booster (LCB).

The performance curves for the P118330 show pump head vs. flow rate for various levels of power to the motor from the PV module, including losses in the linear current booster (LCB).

The flow rates noted in the table above are for operation with a 12 volt (nominal) PV module and a 12 volt (nominal) current booster. Using two PV modules wired in series, to produce 24 volts (nominal), and using a 24 volt (nominal) current booster is possible. With this arrangement the maximum flow rates are almost doubled to 5, 10 and 24 L./min (1.3, 2.6 and 6.3 USGPM) respectively for the three Solar Pumps™. Consult with our engineering department for a specific application in the flow range 12-24 L/min.

The maximum permissible current to the pump motor is 3.0 amperes. The Solar Pump™ should not be operated with a PV module rated higher than 50Wp. The Soalr Pump™ can also be driven using a conventional DC power supply. In this case, there may not be a need for a linear current booster (LCB).

Model P118330 does not come with an integral strainer. This pump should be installed with an external 1/2" strainer complete with a 100 mesh filter (125 microns) in the supply line to the pump.

Selecting a Solar Pump anmd PV module for your Application

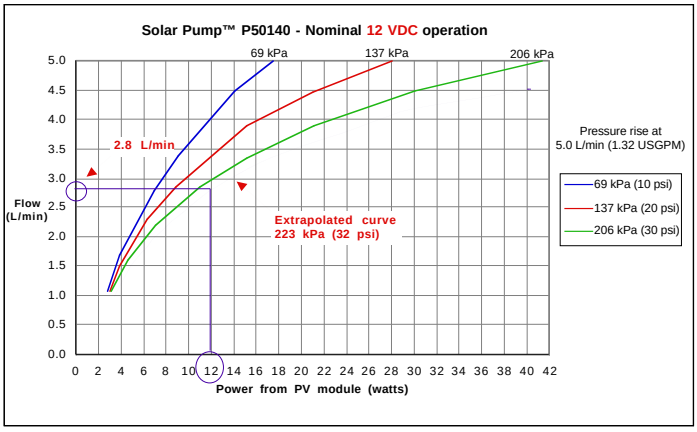
Example:

Desired design flow rate is 2.8 L/min (0.74 USGPM) at a pressure drop of 125 kPa (18 psi).

Using the table above, Model P50140 is the correct pump.

The reference flow rate for the P50140 Solar Pump™ is 5.0 L/min. To approximate the pressure drop for the design hydraulic loop at 5.0 L/min multiply 125 kPa, the design pressure drop, by (5.0 L/min)/(2.8 L/min) = 223 kPa, (32 psi). The prssure drop is approximately directly proportional to flow tate at these low values.

Extrapolate to the right of the curve for 206 kPa (30 psi), at 2.8 L/min, to obtain about 12 W at 223 kPa (32 psi).The PV module will operate at 14.5 volts, therefore choose a 0.83 amp PV module (12 W/14.5 V = 0.83 amps). A 0.83 amp PV module, at full sun (17 Vpv), is rated at 14 Wp. If a 14 Wp module is not available choose the next larger module.



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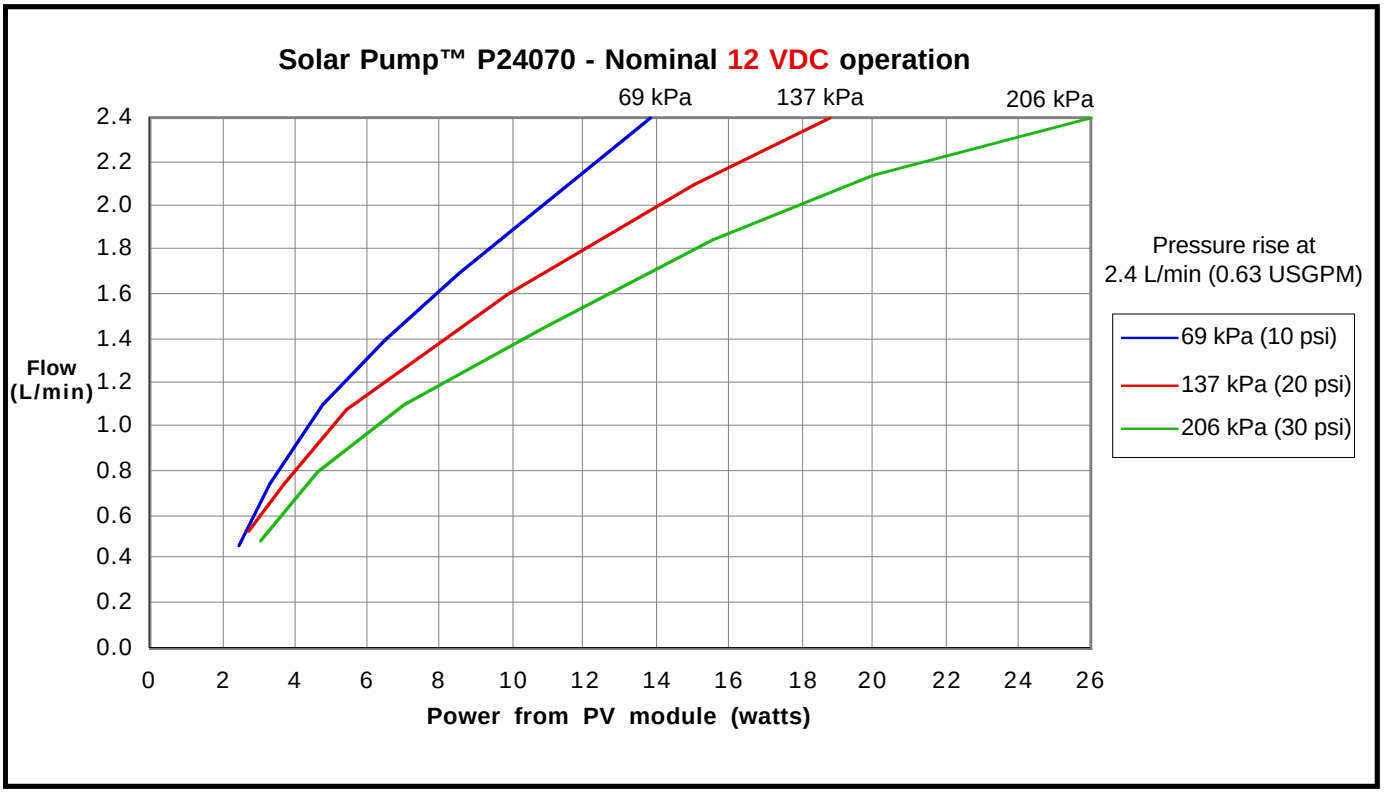

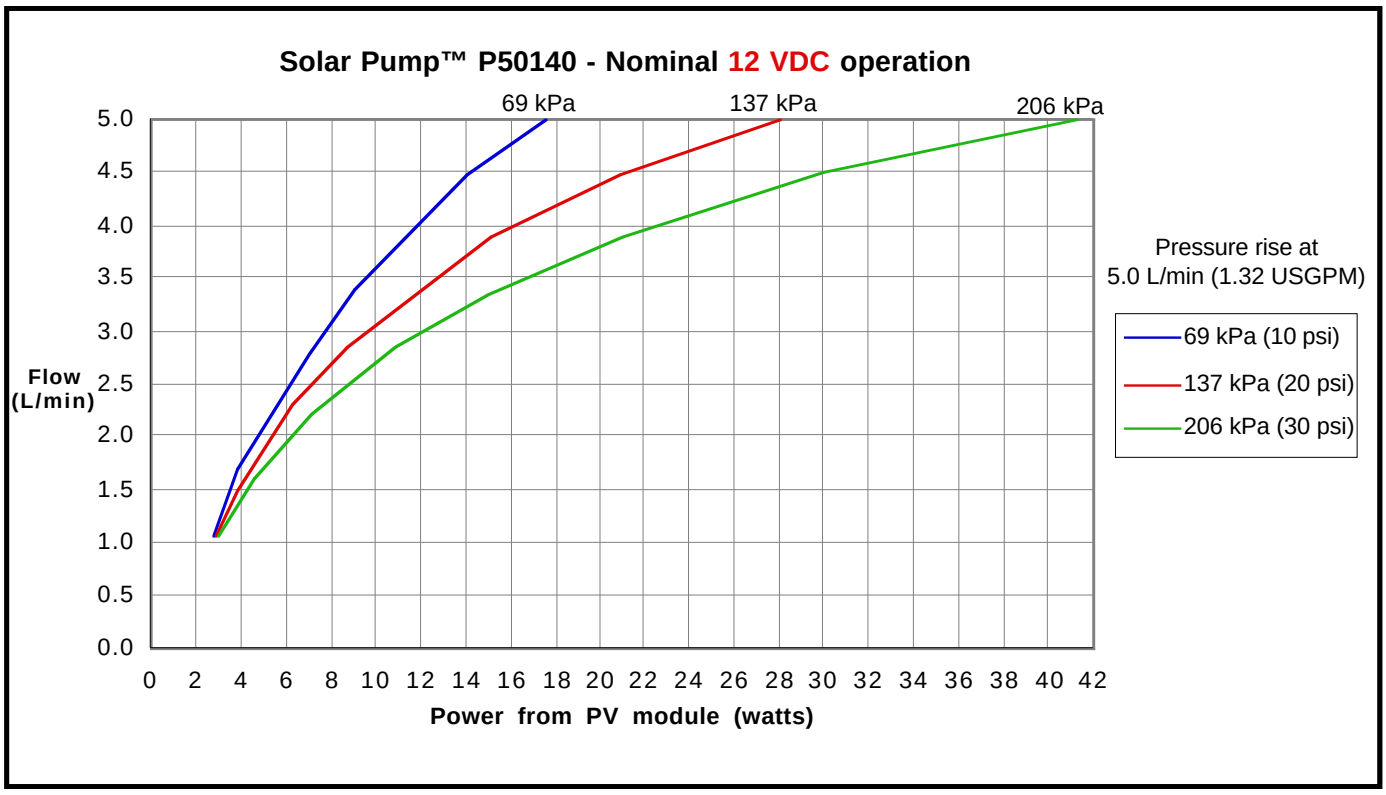

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