

# RAINBOW POWER COMPANY LTD

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## Making a Filter for your Hydro

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Course Info



Living with Solar Course

These courses are held regularly.

Next course is on the weekend 24th-25th March. 2007

**Registration by Friday 16th March. 2007**

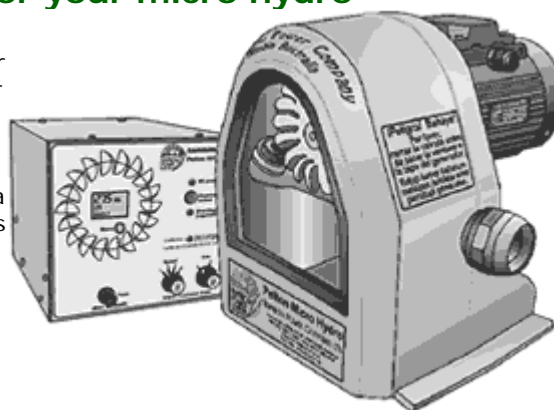


See the Sundaya Product Range.

## Micro Hydro additional information:

### Making a filter for your micro hydro

The construction of a filter for a hydro or other water intake is a complex and interesting engineering problem. Sometimes, you need to experiment with a couple of different designs to come up with a successful one. Some of the issues which need to be considered or which can effect the operation include:



- size and depth of the water pool - flow rate of the stream and the flow required by the hydro or water system - the size, amount and type of debris in the water - eg: sand, leaves, silt - problems of flooding or abnormal stream flow

In general, we'd suggest you make your filter out of some material which won't corrode - eg: stainless steel, plastic, polyethylene. Some filters have very large holes which are in turn covered by fly screen or shade cloth type material. The area of all the holes in total should be at least 10 times the diameter area of the pipe. The diameter of each hole should be less than the smallest nozzle or jet you plan to use on the turbine. If your turbine does not initially perform to expectation we suggest you remove the filter temporarily to see if this makes a difference. If it does, you need a larger filter or more holes in it. However, be aware that running a turbine without a filter for even a short time could suck in material which could settle in your pipe or block your jet. A blocked jet can cause water hammer which could damage your installation.

Some creeks have a lot of leaf or other debris or sediment in them. If your filter is larger with lots of holes, it will not be so likely to suck in debris (which can clog the holes in some cases) or cause a swirling eddy or vortex which tends to suck in debris. This vortex action may be worsened if your filter is too close to the surface of the water. If it is too close to the bottom it may suck in sediment from the bottom of the creek). Such a vortex or other turbulence could cause air to be sucked into your pipe. Pockets of air can rise to any humps you have in your pipe. This collection of air could greatly reduce your flow and pressure. Larger pockets of air could also cause surges or water hammer which can damage your system.

Some people have used a length of their pipe material (or a larger size of it) and drilled many hundreds of small holes in it for their filter. Do not use pipe fittings which will corrode in the water.

If you have a lot of debris or sediment in your creek, you may need to install a grate, trash collector or settling tank to help overcome these problems.

If there is a danger of the filter becoming clogged you may wish to install a 'snorkel' or 'shepherds crook' to allow air to be sucked in if the filter clogs. Otherwise the vacuum may collapse your filter or pipe.

If you install a pipe through a concrete wall, we suggest you use a larger pipe than your penstock in case you need to upgrade the penstock size or add an irrigation line in the future.

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Local Date|Tuesday, 13-Feb-2007 08:58:53 EST

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