

Pelton Wheel Instructions

This cast epoxy impeller is designed to provide efficient performance on micro-hydro Pelton wheel water turbines. Power from water increases with head and increases with flow rate but is limited by pipe friction. Maximum power for any pipe size occurs when the frictional losses in the pipe equals one third of the static head. Any increase in flow rate beyond this point will result in less power. Both power and water usage should be controlled by a choice of nozzle sizes. Adequate filtration on the water supply is essential. The area of the intake screen should be large enough to reduce the effect of clogging by leaves etc. The screen should have holes small enough to exclude any particles that may block the smallest expected nozzle size. The Pelton wheel is suitable for nozzles up to 13mm diameter with nozzle aligned such that jet strikes runner in centre of bucket as shown.

Installation

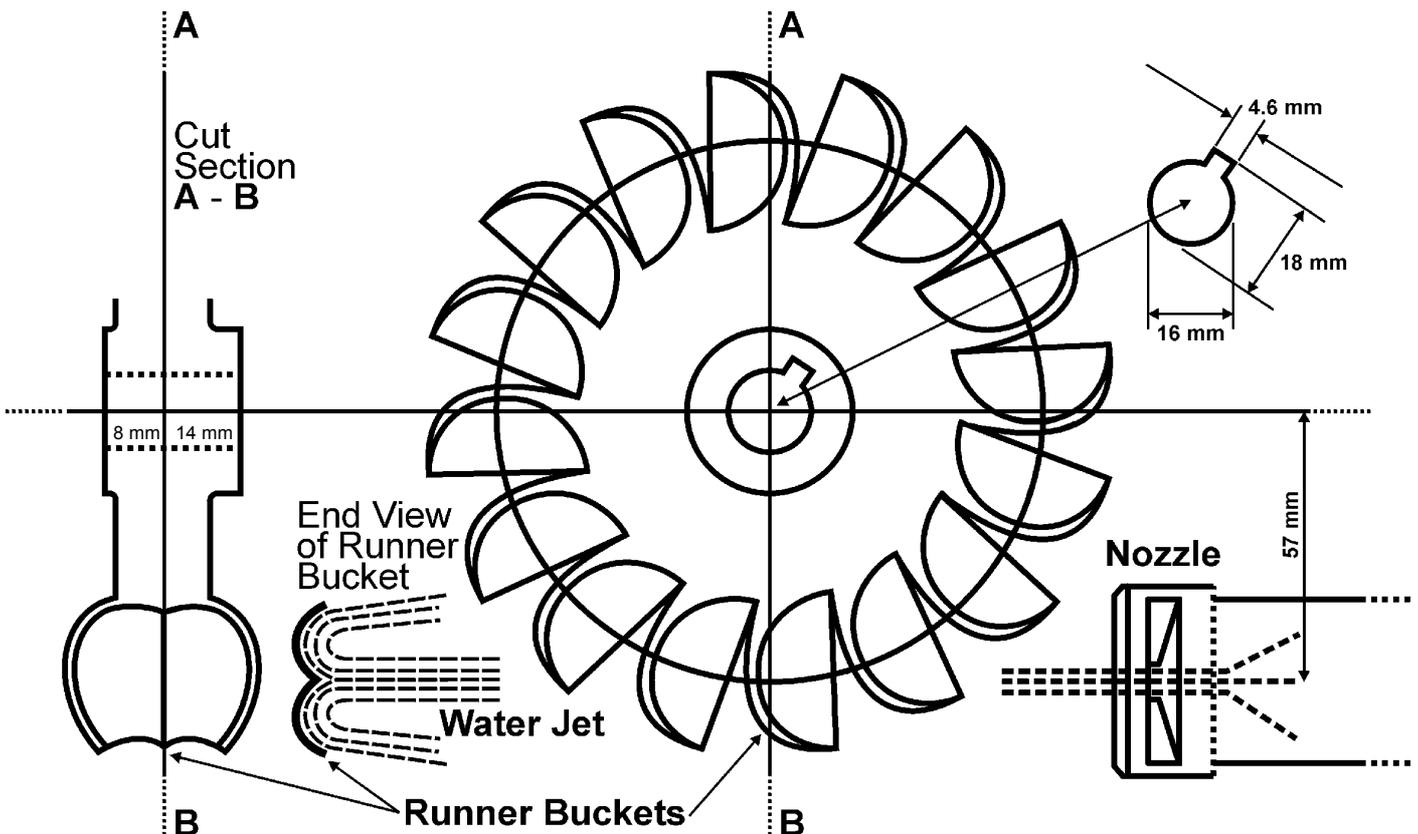
The wheel is made to fit a 16 mm shaft. Correct attachment to the generator shaft is important. Thick stainless steel or galvanized washers of at least 25 mm outside diameter should be used on both sides of the wheel to distribute pressure evenly over the casting. A spring washer is essential. The nut should be tightened to 6.5 N/m torque (firm with a 160 mm spanner).

Alignment

Correct alignment of the water jet is important with this design of impeller, both to achieve maximum efficiency and to prevent possible damage to the blade edge of the runner buckets. The nozzle must be adjusted so that the jet strikes the wheel tangentially 57 mm from the centre of the wheel. Check also that the jet impinges on the centre line of the runner buckets. A clearance of at least 65mm is recommended between runner and turbine case.

Pelton Runner Specifications

Impeller Material	Cast Epoxy Resin Composite
Diameter	133 mm
Shaft Diameter	16 mm
Keyway Width	4.76 mm (3/16 th inch)
Hub Depth	22 mm
Nozzle Alignment	57 mm tangentially to centre of shaft



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