Product Code . LSK-FM-10472

Impact of a Jet

Description

To understand correctly how a turbine (a Pelton wheel for example) works, students need to understand how jet deflection produces a force on turbine vanes. They also need to know how this force affects the rate of momentum flow in the jet.

To perform experiments, students level the apparatus and zero the weigh beam assembly. They set the flow from the hydraulic bench to maximum, and measure the jet force. They reduce the flow from the hydraulic bench in several increments.

At each increment they record the force of the jet on the plate and the flow rate. They then repeat the experiments for different test plates. Students compare their experimental results to those calculated from theory, working out graphs of rate of delivery of momentum against force on the plate.

The Impact of a Jet apparatus shows students the force produced by a jet of water as it strikes a flat plate or hemispherical cup. They can then compare this to the momentum flow rate in the jet.

To extend the range of investigations, the 120-Degree Conical Plate and 30- Degree Angled Plate are available separately. For use with Digital Hydraulic Bench, the equipment comprises a transparent cylinder containing a vertically tapered nozzle and a test plate.

The cylinder is on legs and mounts on the top of the hydraulic bench. The nozzle, supplied by the hydraulic bench, produces a high-velocity jet of water which hits the test plate.

The test plate connects to a weigh beam assembly with jockey weight which measures the jet force. A drain tube in the base of the cylinder directs water back into the hydraulic bench, allowing accurate flow rate measurement.

All test plates are all easily interchangeable, taking only a few seconds and needing no tools.