



DESCRIPTION:

During deceleration, acceleration and deflection of a flowing fluid, there is a change of velocity and thus a change in momentum. Changes in momentum result in forces.

In practice, the motive forces are used to convert kinetic energy into work done, for example in a Pelton turbine. In this unit jet forces are generated and studied with the aid of a water jet that acts on and is diverted by an interchangeable deflector. The experimental unit includes a sump tank and measuring tank with piezometer tube, centrifugal pump for circulating the water, transparent tank, a nozzle, three interchangeable deflectors with different deflection angles and a weight-loaded scale. The force of the water jet is adjusted via the flow control valve provided in the delivery line. Experiments study the influence of flow velocity and flow rate as well as of different deflection angles. The jet forces generated by the water jet are measured on the weight-loaded scale. The forces are calculated using the momentum equation and compared with the measurements.

EXPERIMENT:

- Demonstration of the principle of linear momentum
- Study of the jet forces
- Influence of flow rate and flow velocity
- Influence of different deflection angles

Technical Details:

- **Tank :**
 \varnothing inner: 150mm
 height: 300mm
- **Nozzle :**
 Material : PVC
 Dia : 10 mm
- **Deflector :**
 flat surface: 90°
 Hemisphere (semi-circular surface): 180°
 conical surface: 135°
- **Tanks :**
 Sump Tank : 70 liters
 Measuring Tank : 30 liters

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



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IT-2013, Ramchandrapura Industrial Area,
 Sitapura Extension, Jaipur-302022, India.



info@tesca.in
 www.tescaglobal.com

- **Pump**
Type : centrifugal
Capacity : 0.5 hp
- **Weights:**
4x 0.2N
3x 0.3N
2x 1N
2x 2N
2x 5N
- Sensors are provided for data acquisition. Software is provided with usb connection to PC .
- A flow sensor for measurement of discharge
- Load cell for measurement of force

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