

## FLUID MECHANICS & HYDRAULIC MACHINES LABORATORY

### LIST OF THE EQUIPMENTS

- 1) Flow through Venturimeter & Orifice meter Apparatus
- 2) Bernoulli's theorem Apparatus
- 3) Losses in pipe friction Apparatus
- 4) Centrifugal pump Test rig
- 5) Reciprocating pump Test rig
- 6) Impact of jet Apparatus
- 7) Pelton wheel Test rig
- 8) Francis Turbine Test rig
- 9) Kaplan Turbine Test rig

<b>Name of the Equipment:</b>	<b>FLOW THROUGH VENTURI METER &amp; ORIFICE METER APPARATUS</b>
 <p style="text-align: center;"><b>Flow through Venturimeter &amp; Orificemeter Apparatus</b></p>	

#### Specifications:

- Motor capacity : 0.5 HP
- Manometer size: 500 mm height
- Venturi inlet diameter: 21.5 mm
- Venturi throat diameter: 15.5 mm
- Orifice inlet diameter: 21.5 mm
- Orifice throat diameter: 15.5 mm

#### Experiments that can be conducted:

- 1) To determine the coefficient of discharge of Venturimeter
- 2) To determine the coefficient of discharge of Orificemeter

Name of the Equipment:

## BERNOULLI'S THEOREM APPARATUS



Verification of Bernoulli's Theorem Apparatus

### Specifications:

- Motor capacity: 0.5 HP

### Experiments that can be conducted:

- 1) To verify the Bernoulli's theorem by conducting experiment.

Name of the Equipment:	<b>LOSSES IN PIPE FRICTION APPARATUS</b>
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**Specifications:**

- Motor capacity: 0.5 HP
- Pipe length between tapping's: 1 meter

**Experiments that can be conducted:**

- 1) To determine the frictional losses in pipes of different diameters during the flow of fluid.

Name of the Equipment:

**CENTRIFUGAL PUMP TEST RIG**



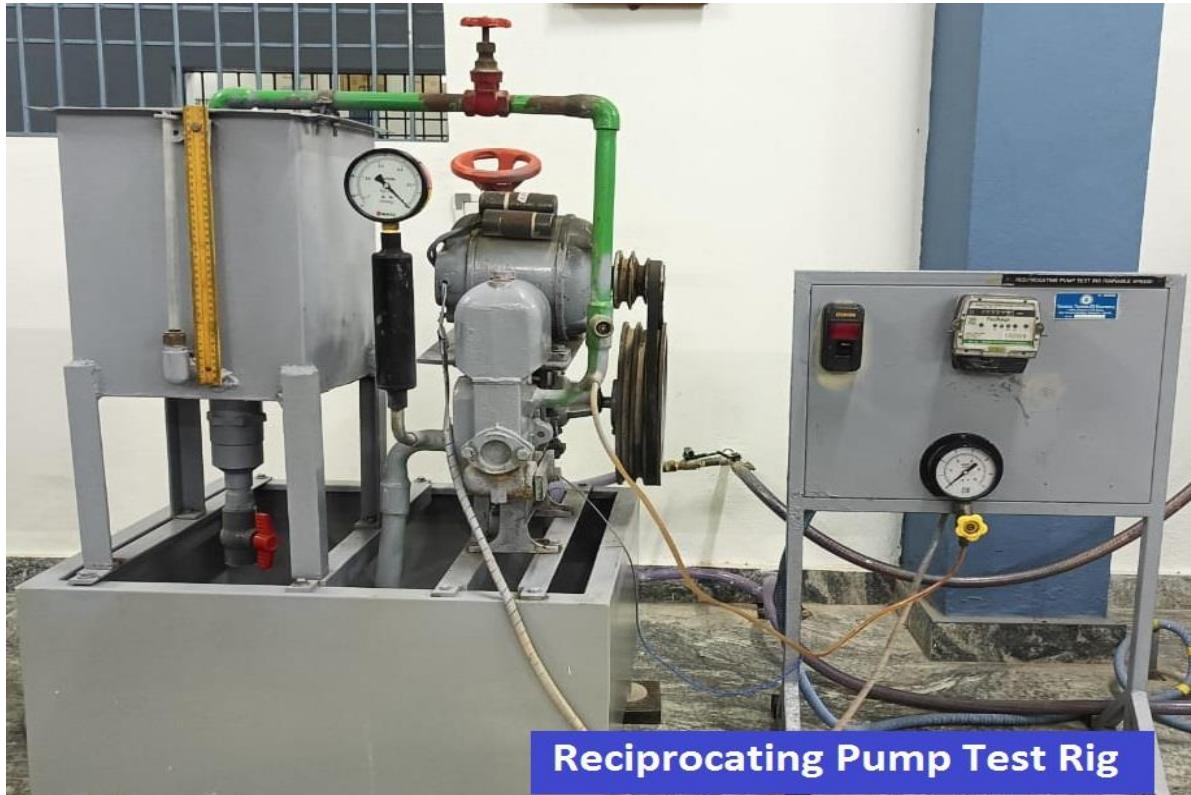
**Specifications:**

- Motor capacity: 1 HP
- Maximum total head: 12 mts
- Discharge capacity: 1.5 liters per sec at 2900 rpm

**Experiments that can be conducted:**

- 1) To determine the performance parameters of Centrifugal pump at constant speed.

Name of the Equipment:	RECIPROCATING PUMP TEST RIG
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#### Specifications:

- Motor capacity: 0.5 HP
- Discharge capacity: 20 litres per min at 1440 rpm

#### Experiments that can be conducted:

- 1) To determine the performance parameters of Reciprocating pump at constant speed.

Name of the Equipment:

## IMPACT OF JET APPARATUS



**Impact of Jet Apparatus**

### Specifications:

- Motor capacity: 0.5 HP
- Type of vanes: Flat & Curved vanes

### Experiments that can be conducted:

- 1) To determine the force exerted by the jet on flat and curved vanes.

Name of the Equipment:

**PELTON WHEEL TEST RIG**



**Specifications:**

- Motor Capacity: 5 HP
- Turbine capacity: 1 HP
- Rated speed: 600 rpm
- Discharge capacity: 300 lpm
- Supply head: 37 mts
- Type: Tangential flow Impulse Turbine

**Experiments that can be conducted:**

- 1) To determine the performance parameters of Pelton wheel at constant speed.
- 2) To determine the performance parameters of Pelton wheel at constant head.

Name of the Equipment:

FRANCIS TURBINE TEST RIG



Francis Turbine Test Rig

**Specifications:**

- Motor Capacity: 15 HP
- Turbine capacity: 3.75 kW
- Rated speed: 1250 rpm
- Discharge capacity: 2000 lpm
- Supply head: 18 mts
- Type: Inward flow reaction Turbine

**Experiments that can be conducted:**

- 1) To determine the performance parameters of Francis Turbine at constant speed.
- 2) To determine the performance parameters of Francis Turbine at constant head.

Name of the Equipment:	<b>KAPLAN TURBINE TEST RIG</b>
 A photograph of a Kaplan Turbine Test Rig. The rig consists of a blue cylindrical turbine unit mounted on a grey metal frame. To the left, there is a control panel with a digital display and several analog pressure gauges. A red motor is connected to the turbine. Various pipes, hoses, and a green vertical pipe are visible, along with a blue support structure. A blue label at the bottom right of the rig reads "Kaplan Turbine Test Rig".	

<b>Specifications:</b>
<ul style="list-style-type: none"><li>• Motor Capacity: 20 HP</li><li>• Turbine capacity: 3.75 kW</li><li>• Rated speed: 1500 rpm</li><li>• Discharge capacity: 5000 lpm</li><li>• Supply head: 8 m</li><li>• Type: Axial flow reaction Turbine</li></ul>
<b>Experiments that can be conducted:</b>
<ol style="list-style-type: none"><li>1) To determine the performance parameters of Kaplan Turbine at constant speed.</li><li>2) To determine the performance parameters of Kaplan Turbine at constant head.</li></ol>