



ATL - Series Fluid Mechanics Lab



Determination of hydrostatic pressure acting on a vertical surface submerged in a water



Reynold's apparatus

Minor losses in pipes

Impact of Jet on

Vanes experiment

Performance test on

Reciprocating Pump





Free And Forced Vortex



Pitot tube experiment



Performance Test on Francis turbine



Pump in series and Parallel



Devices



Apparatus





Performance Test on Pelton Wheel Turbine



Hydraulic Jump Apparatus



Orifice meter setup



Major losses in pipes



Notch and Weir Apparatus



Performance Test on Francis turbine



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Determination of hydrostatic pressure acting on a vertical surface submerged in a water (ATL 3322)

Specifications:

- 1. Sets of weights: \geq 4 no. s
- 2. Radius of test quadrant: ≥ 200 mm
- 3. Perspex tank and test quadrant
- 4. Tank capacity: ≥ 4 Ltrs Detailed technical manual and On- site Training



Determination of Metacentric Height of ship model (ATL 3323)

>> Specifications:

- 1. Reservoir Tank Size: minimum 500 X 500 X 200 mm
- 2. Ship Model Size: minimum 200 X 300 mm
- 3. Circular Weights: minimum 4 No's
- 4. Graduated Arc for measuring tilt angle
- 5. Detailed Technical Manual and On-site Training





Pressure measurement devices (ATL 3324)

>> Specifications:

- 1. Box Dimensions: minimum 800 X 400 X 1600 mm
- 2. U- tube manometer: 300-0- 300 (Mercury filled)
- 3. Inclined Tube Manometer: 250-0250 Inclined Limb (Mercury Filled)
- 4. Bourdon Type Pressure Gauge
- 5. Bourdon Type Vacuum Gauge
- 6. Large Syringe to Demonstrate Working of Each Device
- 7. Piping with necessary Valves and Fittings
- 8. Detailed Technical Manual and onsite training

Venturi meter and Orifice meter setup (ATL 3325)

>> Specifications:

Box Dimensions: minimum 1400 X 400 X 1500 mm



U- tube manometer: U Tube Water Manometer of suitable size Orifice Diameter: ≥15 mm

Venturi meter: Throat Diameter ≥15 mm

Sump tank capacity: ≥ 70 litres MOC: SS-304 with Matt Buffing

Volumetric tank capacity: \geq 30 litres.

Pump: Monoblock type, 0-60 litre/min, Motor ≥ 0.5 HP, Branded make Piping with necessary Valves and Fittings Digital Stop Watch with 1/10 second Accuracy

8. 1 Detailed Technical Manual and On-site Training

9. SUPPLY: Supply according to the requirements. Single phase, 220 V, 6 Amps to be provided by user, AC supply

Reynold's apparatus (ATL 3326)

>> Specifications:

Sump Tank: minimum dimensions 500 X 400 X 200 Flow Pipe length: ≥ 600 mm Measuring Flask: capacity of minimum 1 litre 1. Dye Material: Potassium Permanganate

- 2. Pump: Submersible type
- 3. Piping with necessary Valves and Fittings
- 4. Digital Stop Watch with 1/10 second Accuracy
- 8. Detailed Technical Manual and On-site Training

9. SUPPLY: Supply according to the requirements. Single phase, 220V, 6 Amps to be provided by user , AC supply

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Free And Forced Vortex (ATL 3327)

>> Specifications:

- 1. Box Dimensions: ≥ (800 X 400 X 1500) mm
- 2. Revolving Tank Diameter: ≥ 200 mm
- 3. DC Motor with Thyristor Drive
- 4. X-Y Co-ordinate Probe
- 5. No. Of Orifice: minimum 2 Nos.
- 6. Sump tank capacity: ≥70 litres MOC: SS-304 with Matt Buffing
- 7. Volumetric tank capacity: ≥ 35 litres. MOC: SS-304 with Matt Buffing
- 8. Pump: Monoblock type \geq 0.25 HP
- 9. Piping with necessary Valves and Fittings
- 10. Digital Stop Watch with 1/10second Accuracy
- 11. Detailed Technical Manual and on-site training
- 12. SUPPLY: Supply according to the requirements. Single phase, 220 V, 6 Amps to be provided by user , AC supply

>> Orfice and Mouthpiece Apparatus (ATL 3328)

>> Specifications:

- 1. Set of Orifice: \geq 3 mm & \geq 6 mm (Brass or acrylic).
- 2. Set of Mouthpiece: ≥ 10mm Día (Brass)
- 3. X-Y Probe or 5 Nos. Trajectory Probes
- 4. Constant Head Tank: dimensions minimum 300 x 300 X 400 mm MOC: SS304
- 5. Sump tank capacity: ≥ 70 litres MOC: SS304 with Matt Buffing
- 6. Volumetric tank capacity: ≥ 35 litres. MOC: SS304 with Matt Buffing
- 7. Pump: Monoblock type, \geq 0-60 litre/min, Motor \geq 0.5 HP
- 8. Piping with necessary Valves and Fittings
- 9. Digital Stop Watch with 1/10 second Accuracy

10. SUPPLY: Supply according to the requirements. Single phase, 220 V, 6 Amps to be provided by user, AC supply

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11. Detailed Technical Manual and On-site Training

Major losses in pipes (ATL 3329)

Specifications:

- 1. Box Dimensions: minimum dimensions 2000 X 400 X 1400 mm
- 2. U- tube manometer: 300-0- 300 or Inverted U Tube Water Manometer of suitable size
- 3. Number of Pipe: 3 Nos.
- 4. Test Length: ≥ 1 meter
- 5. Sump tank capacity: ≥70 litres MOC: SS304 with Matt Buffing
- 6. Volumetric tank capacity: ≥ 35 litres. MOC: SS304 with Matt Buffing
- 7. Pump: Monoblock type, \geq 0-60 litre/min, Motor \geq 0.5 HP
- 8. Piping with necessary Valves and Fittings









9. Digital Stop Watch with 1/10
second Accuracy
10. Detailed Technical Manual and
On-site Training
11. test pipes are generally
provided with the apparatus:
- ½" UPVC PIPE / ½" G.I.
PIPE/ 1" G.I. PIPE
12. SUPPLY: Supply according to
the requirements. Single phase,
220 V, 6 Amps to be provided byuser, AC supply

Minor losses in pipes (ATL 3330)

>> Specifications:

- 1. Box Dimensions: 1500 X 400 X 1600 mm
- 2. U- tube manometer: 300-0- 300 or Inverted U Tube Water Manometer of suitable size
- 3. Number of fittings: 5 Nos.
- 4. Sump tank capacity: \geq 70 litres MOC: SS-304 with Matt Buffing
- 5. Volumetric tank capacity: ≥ 35 litres. MOC: SS-304 with Matt Buffing
- 6. Pump: Monoblock type, \geq 0-60 litre/min, Motor \geq 0.5 HP
- 7. Piping with necessary Valves and Fittings
- 8. Digital Stop Watch with 1/10 second Accuracy
- 9. Detailed Technical Manual and On-site Training

10. pipe fittings are generally provided with the apparatus:- Elbow, Bend, Sudden Expansion, Sudden Contraction and Valve

11. SUPPLY: Supply according to the requirements. Single phase, 220 V, 6 Amps to be provided by user, AC supply

Pitot tube experiment (ATL 3331)

Specifications:

- 1. Pitot tubes: Static and Stagnation Pressure tubes
- 2. Acrylic pipe Section: ≥ 20 mm ID
- 3. Input Tank: Minimum150 X 150 X 500 mm
- 4. Sump tank capacity: \geq 70 litres MOC: SS-304 with Matt Buffing
- 5. Measuring tank: \geq 30 litres MOC: SS-304 with Matt Buffing
- 6. Pump: Monoblock type, \geq 0-60 litre/min, Motor \geq 0.5 HP
- 7. Piping with necessary Valves and Fittings
- 8. Digital Stop Watch with 1/10 second Accuracy
- 9. Detailed Technical Manual and On-site Training

10. SUPPLY: Supply according to the requirements. Single phase, 220 V, 6 Amps to be provided by user, AC supply

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Bernoulli's Apparatus (ATL 3332)

>> Specifications:

- 1. Converging Diverging Perspex Test Section: 200 mm
- 2. No. of Pressure Tappings: 7 Nos.
- 3. Sump tank capacity: ≥ 70 litres MOC: SS-304 with Matt Buffing
- 4. Volumetric tank capacity: ≥ 35 litres. MOC: SS304 with Matt Buffing
- 5. Pump: Monoblock type; ≥0.5 HP
- 6. Piping with necessary Valves and Fittings
- 7. Digital Stop Watch with 1/10 second Accuracy
- 8. Detailed Technical Manual and On-site Training

9. SUPPLY: Supply according to the requirements. Single phase, 220 V, 6 Amps to be provided by user, AC supply

Notch and Weir Apparatus: (ATL 3333)

- **1.Rectangular Notch**
- 2.Triangular Notch
- **3.Trapezoidal Notch or Cipollett**

Specifications:

- 1. Open Flow Channel: dimensions minimum 250 x 200 x 1000 mm
- 2. Rectangular Notch:≥ 45 mm wide
- 3. Triangular Notch: \geq 450 and 600
- 4. Trapezoidal Notch: Slope 1:4
- 5. Sump tank capacity: ≥70 litres MOC: SS304 with Matt Buffing
- 6. Volumetric tank capacity: ≥ 30 litres.MOC: SS-304 with Matt Buffing
- 7. Pump: Monoblock type, \geq 0-60 litre/min, Motor \geq 0.5 HP
- 8. Piping with necessary Valves and Fittings
- 9. Digital Stop Watch with 1/10 second Accuracy
- 10. Detailed Technical Manual and On-site Training

11. SUPPLY: Supply according to the requirements. Single phase, 220 V, 6 Amps to be provided by user, AC supply

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Impact of Jet on Vanes experiment (ATL 3334)

>> Specifications:

- 1. Set of Nozzle:4 mm & 8 mm (Brass).
- 2. Set of Vanes: Hemispherical and Flat Plate (Optional Inclined)
- 3. Jet Collection Tank: ≥ 250 mm Diameter MOC: Perspex
- 4. Sump tank capacity: \geq 70 litres MOC: SS304 with Matt Buffing
- 5. Measuring tank: \geq 30 litres MOC: SS-304 with Matt Buffing
- 6. Pump: Monoblock type, \geq 060 litre/min, Motor \geq 0.5 HP
- 7. Piping with necessary Valves and Fittings









8. Digital Stop Watch with 1/10 second Accuracy

9. Detailed Technical Manual and On-site Training

10. SUPPLY: Supply according to the requirements. Single phase, 220 V, 6 Amps to be provided by user, AC supply

Performance Test on Francis turbine (ATL 3335)

>> Specifications:

- 1. Output Power: 1 KW
- 2. Discharge: 1000 LPM (Approx.) Supply Head: 10 m (Approx.)
- 3. Speed: 1000 RPM (Approx.)
- 4. Runner: Having Curved Vanes
- 5. Dynamometer: Rope Brake type
- 6. Sump Tank: Capacity 200 Ltrs
- 7. Water Circulation: Centrifugal Pump, Standard Make, Capacity 5 HP Three Phase.
- 8. Discharge Measurement: Differential Flowmeter with Manometer
- 9. Digital RPM Indicator
- 10. Instruction Manual will be provided along with the Apparatus
- 11. Utilities required: •Water Supply and Drain.•Electricity 5 kW, 440V AC, Three Phase.

•Floor Area 2 x 1 m

Performance Test on Pelton Wheel Turbine (ATL 3336)

Specifications:

- 1. Pelton Wheel: 300 mm Diameter with 18 Buckets .
- 2. Sump tank capacity : ≥ 200 liters High Grade Plastic or (SS304)
- 3. Flow rate measurement: Orifice meter with Burdon type pressure gauge

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- 4. Pump : Monoblock type, 4 litre/sec, Head 20 mtrs; Motor 5 HP
- 5. Piping with necessary Valves and Fittings
- 6. Digital RPM Indicator
- 7. Detailed Technical Manual and On-site Training

8. Service requirements: Water Supply and Drain. Electricity 5 kW, 440V AC, Three Phase Floor Area 2 x 1m.







Performance Test on Francis turbine (ATL 3337)

>> Specifications:

1. Centrifugal Pump: 1 HP Head range upto 20 mtrs Discharge Range upto 150 LPM

- 2. Pump Motor Controller: Variable Frequency Drive
- 3. Sump tank capacity: ≥70 litres MOC: SS-304 with Matt Buffing
- 4. Volumetric tank capacity: ≥30 litres MOC: SS304 with Matt Buffing
- 5. Burdon Type Gauges to measure Suction and Delivery line pressure.
- 6. Energy meter to measure input power
- 7. Optional Digital RPM Indicator
- 8. Optional Data Logging Software
- 9. Detailed technical manual and onsite training
- 10. Supply: 440 V, 15 A, 3 ph. AC supply
- 11. A hand tachometer

Specifications:

Pump (2 units) Type : Centrifugal Pump; Max head : 21 mts of Water;
Max flow : 90 LPM • Reservoir Tank: Cylindrical, transparent tank;
Volume : ≥20 L • Pressure gauge: Delivery side: 0 to 7 bar ; Suction side : 0-760 mm of Hg • Flow Rotameter Size : 1" Range : 0 to 150 LPM
• Digital Energy meter to measure input power • Digital RPM Indicator

Variable Frequency Drive
 Emergency Switch
 Detailed technical

manual Service Requirement: • 1 ph. 230 V 15 Amps AC supply • Floor Area 1.2 x 1 mtrs (Height 1 mtrs)

Performance test on Reciprocating Pump (ATL 3339)

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>> Specifications:

- 1. Pump: Pressure upto 5 Kg/cm2 Two Piston Type
- 2. Motor: 1 H.P. 3 Phase Motor with Variable Frequency Drive
- 3. Sump tank capacity: ≥70 litres MOC: SS-304 with Matt Buffing
- 4. Volumetric tank capacity: ≥ 30 litres MOC: SS-304 with Matt Buffing
- 5. Burdon Type Gauges to measure Suction and Delivery line pressure.
- 6. Energy meter to measure input power
- 7. Optional Digital RPM Indicator
- 8. Optional Data Logging Software
- 9. Detailed technical manual and on-site training
- 10. Supply 440 V, 15 A, 3 ph. AC supply











Hydraulic Jump Apparatus (ATL 3340)

>> Specifications:

- 1. Open Flow Channel: 150 x 250 x 1500 mm MOC: Pespex
- 2. Adjustable Gate and Sliding depth gauge
- 3. Sump tankcapacity : ≥ 70 litres MOC: SS-304 with Matt Buffing
- 4. Volumetric tank capacity : \geq 30 litres MOC: SS-304 with Matt Buffing
- 5. Pump : Monoblock type, 0-60 litre/min, Motor 0.5 HP
- 6. Piping with necessary Valves and Fittings
- 7. Digital Stop Watch with 1/10 second Accuracy
- 8. Detailed Technical Manual and On-site Training



Darcy Law Apparatus (ATL 3341)

Specifications:

- 1. Cylinder: Material Acrylic. Dia. 200 Mm (Approx)
- 2. Height: 500 Mm Approx
- 3. Water Circulation: FHP Pump.
- 4. Flow Measurement: Using Rota Meter
- 5. Sump Tank: Made Of Stainless Steel, Compatible Capacity
- 6. Tank Will Be Made Up Of Stainless Steel.
- 7. Stop Watch: Mechanical Type, 0.2 Sec. Resolution
- 8. Control Panel Comprise Of Speed Control Unit, Standard Make
- On/Off Starter, Mains Indicator, Fuse Etc.
- 9. The Whole Set- Up Is Well Design And Arranged In Good Quality Painted Structure.

10.Comprehensive Instruction Manual 'and on site training. SUPPLY: Supply according to the requirements. Single phase, 220 V, 6 Amps to be provided by user, AC supply

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