Order Code - 32097
Base Hydraulic Bench Module (Digital)

Tesca Base Digital Hydraulic Bench Module for Experiments in Fluid Mechanics 32097 is of volumetric type and has been designed to provide continuous and controlled supply of water to conduct various experiments using auxiliary modules in typical Fluid Mechanics and Hydraulics Laboratory. The unit is an ideal service unit for conducting student projects. Once filled, no external water supply is required. Water is recycled between the Experiment Module, Measuring Tank and the Storage Tank by the Centrifugal Pump.

Several experiments in Fluid Mechanics and Hydraulics require continuous and controlled supply of water. The Basic Hydraulic Bench provides a controlled recirculation water supply to conduct experiments.

The Basic Hydraulic Bench is a very important module and is recommended for all Fluid Mechanics and Hydraulics Laboratories in Educational Institutions. It is a basic module for flow related experiments using auxiliary modules. Available in non-corrosive, non-breakable long lasting Fibre Glass.

Features

- Self contained and fully portable mobile unit.
- Available in three options:
  - Light weight body made of reinforced fiber glass and corrosion resistant materials.
  - All stainless steel SS304 metal body for long life
  - Mild Steel sheet metal body for economical price.
- Closed water circuit consisting of Measuring Tank, Storage Tank and the Centrifugal Pump.
- Control valve to regulate the pump and adjust the flow rate.
- Work space on Bench Top has integrated flow channel for flow measurements using Weirs and is fitted with stepped edge to ensure safe and easy mounting of experiment modules.
- Suitable pipe connectors are provided in the Bench Top to enable easy change of experiment modules.
- Graduated and stepped Measuring Tank for both low and high volume flow rates.
- Level Indicators for water level are provided in the Open Channel and Measuring Tank.
- Variable area Flow Meter (10-75 liters per minute) is also provided to measure flow rate independently.
- Stilling baffles are provided to reduce turbulence.
- Sight tube with scale provided to indicate instantaneous water level.
- Bull's eye level is provided to ensure proper position of the Bench and accurate reading of levels.
- Remote Actuator provided to operate the Dump Valve at the base of Measuring Tank
- Over Flow provided in Measuring Tank to avoid flooding.
- Separate Storage Tank Outlet facility provided to enable the Bench to be used in any hydraulic circuit.
- Push button starter provided for the centrifugal pump.
- Power supply includes over-load and under-voltage protection.

Specifications

- Measuring Tank: 25Litres
- Storage/Sump Tank: 185 Litres
- Volumetric Tank, Small: 25 Litres
- Volumetric Tank, Large: 70 Litres (combined)
- Centrifugal pump: 0.5HP (1HP)
- Flume: 720Lx230Wx170H in mm
- Pump Head:25 Mtrs (35 Mtrs)
- Pump Start: Mushroom Push Button
- Digital Flow Meter: 3000 LPH
- Beaker: Measuring beaker with scale for very small volumetric flow rates
- Content: 5L
- Stopwatch
- Protections:
  - Electrical Overload & Under-Voltage
  - Remote Actuator for Dump Valve

Note: Specifications are subject to change.

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- Over Flow for Measuring Tank

Technical Details

- Base module for supplying experimental units in fluid mechanics
- Closed water circuit with storage tank, submersible pump and measuring tank
- Measuring tank divided in two for volumetric flow rate measurements
- Measuring beaker with scale for very small volumetric flow rates
- Measurement of volumetric flow rates by using a stopwatch
- Work surface with integrated flume for experiments with weirs
- Work surface with inside edge for safe placement of the accessory and for collecting the dripping water
- Storage tank, measuring tank and work surface made of Fiber Glass

Option

1. The Storage Tank Capacity can be increased to 250 liters based on the requirements of the user.
2. 'Sci-Cal' software Operates on MS-Windows:

Optional

'Sci-cal' Software & Interface: 'Tesca' software, interface & related sensors enable plotting of require graphs through the formulae integrated into software. The students can carry out experiments and see graphs and results in 'Labview'.

Depending on the measurement method, the measured values can be read off the analogue manometer or digital displays. The measured values are transmitted directly to a PC via USB. The data acquisition software is included.

- To run through PC the experiments carried on with the hydraulic bench and the below kits
- The experimental data should be entered manually by the user and processed by software
- Possible to display on video or print the diagrams referred to the exercises can be used in any PC with the following minimum configuration:
- Pentium CPU; HDD, 1G free space minimum; SVGA graphics card; 32 MB RAM; USB port; Operating system Windows 7 or later

A list of common experiments that can be conducted using the Basic Hydraulic Bench is given below:

1. Impact of a Jet - Order Code - 32001
2. Flow over Weirs - Order Code - 32002
3. Bernoulli's Theorem Demonstration Order Code - 32003
4. Orifice Discharge - Order Code - 32004
5. Energy Loss in Bends - Order Code - 32005
6. Osborne Reynolds Demonstration Order Code - 32006
7. Energy Loss in Pipes - Order Code - 32007
8. Hydrostatic Pressure - Order Code - 32008
9. Flow Visualization in Channels Order Code - 32021
10. Metacentric Height - Order Code - 32009
11. Stability of Floating Bodies - Order Code - 32012
12. Series & Parallel Pumps - Order Code - 32013
13. Centrifugal Pump Characteristics Order Code - 32014
14. Free and Forced Vortices - Order Code - 32015
15. Pipe Surge and Water Hammer Apparatus
16. Pelton Turbine - Order Code - 32017
17. Orifice & Free Jet Flow - Order Code - 32018
18. Flow Meter Demonstration - Order Code - 32019
19. Cavitation Phenomenon Demonstration Order Code - 32020
20. Laminar Flow Demonstration
21. Radial Flow Turbine - Order Code - 32025
22. Venturi Meter
23. Pipe Friction Apparatus - Order Code - 32026
24. Flow Channel 1m Length - Order Code - 32027
25. Depression Measurement System (Vacuum Gauge)
26. Axial Flow Turbine - Order Code - 32084
27. Pump Impeller Display Panel Order Code - 32023
28. Laminar And Turbulent Pipe Flow Apparatus

Options

Based on the request by the user, provision can be made to study the performance of the Centrifugal Pump at various load conditions. The pump is coupled to the Motor Dynamometer with an inverter, digital speed indicator and the spring balance to measure the pump input.
Pressure gauges are provided at pump inlet and exit to measure the head developed.

Services Required

Electrical Supply, 220-240 V earthed single-phase, 50 Hz.

Overall Dimensions

1350 mm X 800 mm X 1100H mm.

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