



FM96503

HYDRAULICS LAB

*For Mechanical, Production, Marine
Aeronautics & Instrumentation Engineering*



B.S.PYROMATIC INDIA (P) LTD.,

AN ISO 9001 - 2000 CERTIFIED COMPANY

Centrifugal pump test rig - BSPIL-HML-20001

A Centrifugal pump suitable for pump test at variable speeds, pump of size 25mm to discharge 50 LPM at 10m head to normal speed 2000 RPM and electric motor 2 HP 3 phase AC 400/440 V. Drive from the motor to the pump is given by a stepped pulley reduction V belt drive suitable for experiments at four differ speeds with speeds range from 1000 RPM to 2000 RPM supplied with energy meter, Switch and starter. Piping system for the centrifugal pump set with tappings for mounting gauge. Suitable pressure and vacuum gauges set and foot valve. M.S. Collecting tank of size 0.5 x 0.5 x 0.6m gauge glass, scale fitting and a drain Valve and bend.



Reciprocating Pump test rig with 1 HP - BSPIL-HML-20002

A double acting reciprocating pump of size 25 x 20mm with air vessel to discharge about 20 LPM at 40 meters total head coupled to a 1 HP 1420 RPM single phase AC motor. Piping system consisting of pipes with pressure and vacuum gauges with gauge cocks and fittings. M.S. Collecting tank 45 liters capacity 2 Nos. for Circulation

Gear oil pump test rig - BSPIL-HML-20003

A. A gear pump of size 15mm to discharge about 20 L PM against a maximum working pressure of 3 kg/sq coupled to a 1 HP motor suitable for operation on single phase 50 cycles 200 volts AC supply.
 B. Switch and energy meter for the pump set.
 C. Piping system consisting of pipes, valves, starter pressure and vacuum gauges and fittings.
 D. M.S. Collecting tank of size 0.3 x 0.3 x 0.5m height with fittings.
 E. M.S. Reservoir tank about 100 lts. Capacity with provision to mount the pump set.



Submersible pump test rig - BSPIL-HML-20005

a. Deepwell multistage submersible pump of size 40mm delivery pipe to discharge about 150 LPM at 50 Mtrs head with submersible motor of to run on three-phase 400 volts 50 cycle AC supply
 b. TPIC SWITCH AND DOL starter for the above pump set, and an energy meter for measurement of power input.
 c. Ms collecting tank of size 500mm x 500mm x 500mm height for discharge measurement.



Pelton Turbine Test rig - BSPIL-HML-20006

a) Test rig consists of a pelton impulse wheel, designated for laboratory experimental purpose and to conduct test in metric units. 1) design speed 1000/1400 RPM
 The turbine consists of an M S body with suitable nozzle. A rotor assembly with shaft is connected to the alternator, all mounted on a sturdy base frame. The runner and nozzle are made of gunmetal for corrosion resistance. Water inlet pressure is measured by pressure gauge
 b) Alternator and switchboard: Consists of a 1.0 KVA alternator coupled to the pelton turbine. Switchboard consists of a row of bulbs connected to the alternator. These bulbs act as load and could be switched on individually for varying the load. A ammeter and voltmeter are provided for measuring the load voltmeter are provided for measuring the load.
 c) Water to the turbine is provided by a centrifugal monoblock pump set of 5 Hp capacity size 65 mm X 50 mm. The pump operates on 440 volts 3 phase 50 Hz line.
 d)- Other standard accessories include a starter, flow control gate valve and suitable piping.
 e) Flow measuring unit consists of a orifice/VENTURI meter of size 50 mm with pressure taps connected to two pressure gauges mounted on a panel board.
 f) The complete test rig is mounted on a storage tank of 500 litres capacity. The tank is provided with FRP lining for total rust protection.

Turgo Impulse wheel Turbine - BSPIL-HML-20007, Turgo Impulse wheel Turbine with 15HP with Dynamometer - BSPIL-HML-20007A

A. SUMP : Made From MS. coated inside with fiber glass, enforced, about 650-700 liters capacity, drain value, with solid frame work to fix all components of test rig.
 B. TURBINE : Specially designed Turgo Impulse wheel with 2 nozzle, 2 spere value runner, impulse wheel with specially designed buckets, wheel is dynamically balanced, chrome plated, impeller held between two bearing, coupled to a dynamometer directly. Speed upto 1200rpm, capacity about 3-4 BHP < head about 50 meter.
 C. DYNAMOMETER : It can be either Rope brake dynamometer or DC generator Rope Brake dynamometer: With brake drum, drum cooling system Scoop for water outlet, rope, two spring balance etc.,
ELECTRICAL DYNAMOMETER: DC Generator, 3-4 Hp, 1200 rpm, single Phase, 220 V DC with load bank comprising of Resistance, switches With Control panel comprising of Digital Voltmeter and ammeter, digital RPM meter, indicators, fuse etc.,
 D. GAUGES : Pressure gauges - 0-7 bar - 3 Nos, Vacuum gauge - 0-760mm - 1 no
 E. VETURIMETER : Made from fabricated Sheet with pressure tapping, valves
 F. MANOMETER : Mercury manometer, mt with stand, scale, mercury, U tube
 G. STARTER : 3 Phase Star-Delta Starter, good reputed make
 H. PUMP SET: 10-15 Hp mono block pump, with head of 50mt, about 700 lpm Discharge, 3 phase, with suction pipe, foot valve, foot mounted
 I. PIPINGS: Ms/GI pipes of 3 Or 4 inch dia, flanges, elbows PIPINGS , bends, etc..
 J. VALVES : Gate valve - 1 No, Sphere Valve - 2 Nos



Francis Turbine test rig - BSPIL-HML-20008

Francis Turbine test rig with 15 HP - Extra Fiber glass lining charge (FRP) for the above inside M.S Tank

- BSPIL Francis Turbine with a rope brake dynamometer to develop 5 Hp at 1500 (50 feet) head for a flow of 2100
- Pm (460gpm) complete with mounted pressure gauge and vacuum gauge supplied with a set of dead weights in metric units and spring balance. The turbine is designed for laboratory experimental and study purpose and to conduct test in metric units consists of spiral casing, runner and shaft mounted on overhung ball and roller bearing guide blade and operating mechanism Perspex cylinder and draft tube all mounted on suitable frame.
- Centrifugal monoblock pump set suitable for the supply of water for Francis Turbine size 4*4 inch to discharge 2100 lpm (460 gpm) at 12m (69 feet) head with 15 HP 2800 rpm. Squirrel induction motor 3 phase, 400/440 volts. A.C supply.
- Venturimeter size 100 mm dia to measure the discharge differential monometer to read lpm with mercury for the venturimeter.
- Piping system consisting of 100 cm (4 inches) pipes, valves, fittings, and a complete set suitable for a test rig.
- M.S sump of size 1m X 3m X 0.7 m to store sufficient water for independent circulation through the unit for experimentation arrange within the floor space of the main unit.
- Rigid M.S Frame completely fitted with all the above items a self sufficient package unit, suitable for operation without any foundation.



Kaplan turbine test rig - BSPIL-HML-20009

BSPIL Kaplan Turbine Test Rig (1HP Capacity)

- BSPIL Kaplan turbine with rope brake dynamometer to develop 1 Kw 1500 rpm for complete with pressure gauge, a special Perspex sheet tube fitted between the runner casting and the draft tube for visual observation supplied with a set of dead weights in metric units and a experimental and study purpose and to conduct test in metric units consists of a spiral casting, runner shaft mounted on overhung ball and roller bearing. Guide blade made of gun metal and operating mechanism, Perspex cylinder and draft tube all mounted on suitable frame.
- A centrifugal monoblock pump 5 HP 2880 rpm 3 phase 440 volt with mixed flow pump with volute casing suitable for the supply of water to Kaplan.
- Piping line and gate valve.
- Venturimeter to measure the discharge.
- Suitable pressure gauge along with cocks for the venturimeter.
- The complete test rig is mounted on a storage tank of 500 litres capacity.
- The tanks is provided with FRP lining for total rust protection.
- Switch and starter fixed in a panel board.



Impact of Jet on Vanes - BSPIL-HML-M-20010

M.S. Nozzle housing to receive interchangeable G.M. Nozzle fitted insides a casing with two opposite transport sides and incommoding weighing mechanism with a steel yard and a set of dead weights in kgm units to brackets to receive interchangeable G.M. vanes mounted on a M.S. collecting tank of size 0.6x0.6x0.8mm with bypass arrangement and a drain valve.

G.M.Nozzle of diameter 20mm and 25mm and 2 G.M.vanes one each in

- Semicircular vane with 180deg deflection.
- Curved vane with 90deg deflection

Hydraulic Ram test rig - BSPIL-HML-M-20011

Hydraulic ram of size 50 x 15mm to work against delivery head coupled up to 30 meters from a supply head of 2.5 meter to discharge about 60 LPH at 15 meter head.

M.S. Supply tank of about 250 lts. Capacity with fittings mounted on an iron stand, a supply pipe of size 50mm dia and a pressure gauge.

M.S. Collecting tank about 20 lts. Capacity with standard fittings for the measurement of useful water.

Hook gauge and notch plate use in measurement of wastewater for conducting experiments.



Air Blower testing equipments (Energy meter method) - BSPIL-HML-20013

One experimental centrifugal type blower test rig suitable for experiments of interchangeable impellers of backward, radial and forward curved vanes so that the effect of different type of blading could be well demonstration. The approximate discharge of air is 20 cubic meter per minute at a pressure of 20cm of water column.

One orifice meter and a differential manometer of 0.5m height to Measure the discharge.

A different manometer 0.5m height with connecting plastic tubes To determine the total pressure developed.

2 numbers of Pitot tubes mounted at the inlet duct and outlet 2 nos. Of differential manometer of 0.5m height.

2 Thermometers fitted at the inlet and outlet.

The blower is directly coupled to an induction motor of 3 HP speed 2880 RPM. To determine the input power by energy meter

Outlet pipe of 3m total length. A sluice valve with flanges to control the discharge. Suitable stand to hold the pipe.

Hydraulic demo Trainer with LC - BSPIL-HML-20014

Effective application of hydraulic and automation componetns and systems requires a thorough understanding of machinery and an ability to easily discuss and follow new and different technical issues. This high quality training aid provides a valuable tool for instruction of the fundamentals of industrial hydraulics.

Specifications

- Sump : 40-50 liter capacity.
- Vane or gear type.
- Flow : 10-20 lpm at working pressure 35-50kg/cm².
- Drive motor: 1-2hp single phase, induction motor- 1400-2000rpm.
- Pressure relief valve for safety and pressure adjustment.
- Valve : direction control.
- Flow control : pressure reducing, sequencing, non-return, solenoid operated directional control valve, and relief valve. 2-4 numbers of pressure gauges for pressure measuring.

- Hydraulic cylinder: double acting 2 nos.
- Return line filter.
- Sequencing and pressure reducing.
- Hydraulic cylinder.
- Single acting (1 no.)
- Two numbers of pressure gauges will be provided for measuring processes.
- Solenoid operated directional control valve and non-return valve.
- Universal manifold.
- Programmable logic control for timing.
- Limit switch - 3 nos.





Single Cylinder Single Stage Air Compressor Test Rig- BSPIL-THR-PE-TCEA-20052

BSPIL Single Stage Air Compressor Test Rig: 2HP

One single stage reciprocating air compressor suitable for a pressure of 7 Kg/cm² and having a displacement of 0.15 m³ per minute driven by and AC single phase motor of 2 HP along with switch, starter and energy meter.

The following standard accessories are provided:

Pressure gauge, Pressure safety release valve, Shut off valve Non-return valve, Reservoir fitted with oil and water separator with a drain cock and automatic pressure switch.

An orifice type air intake measuring device with M.S air intake tank of size 50cm x 50cm x 50cm orifice plate and inclined manometer.

The performance curves of the air compressor at takes speed namely volumetric efficiency and isothermal efficiency Vs. delivered pressure of the air compressor can be obtained with the setup.

Single Cylinder Two Stage Air Compressor Test Rig - BSPIL-THR-PE-TCEA-20053

BSPIL Two Stage Air Compression Test Rig

a) one experimental type 2 stage reciprocating air compressor, air cooler, suitable for a pressure of 12 Kg/Cm² having a displacement of 0.4 cubimetre per minute, driven by squirrel cage induction motor 5 HP tumion mounted electric dynamometer type V belt drive and fitted with torque arm and spring balance. The above motor suited 400/440v 3-phase 50 Cycles A.C. Supply. The motor is provided with switch foundation bolted.

b) Accessories:

The Equipment complete with the following standard accessories comprising the following: Two Pressure gauges for measuring the pressure of each stage. One shut off valves, pressure released valve. A receiver fitted with oil and water separator a drain cock and automatic pressure switch.

c) Air Intake Measuring Arrangement:

Air Intake measuring device with orifice plate differential manometer of 0.5m height M.S air intake reservoir of Size 0.5m*0.5*0.5m

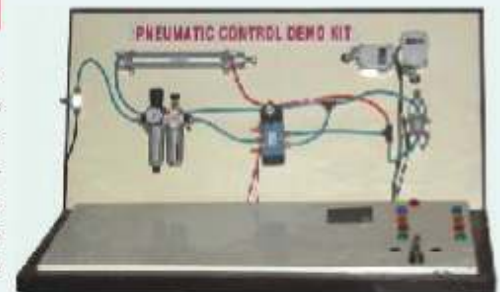
d) Digital thermometer with sensor



Electro Pneumatic Demo Trainer (LC Logic Controller) - BSPIL-DYN-04017

Electro Pneumatic Demo Trainer (PLC Logic Controller) - BSPIL-DYN-04017B

This versatile equipment is designed to have integrated hands-on training aid for students to have basic principles of pneumatics and compressed air devices. This unit allows for the bread boarding of numerous pneumatic circuits to illustrate a wide selection of pneumatic circuits along with the associated lab. This system comes with Manual and Instructor guide. This creates a learning experience that provides a complete and practical introduction to pneumatic technology. The Pneumatic Trainer may be supplied on a Roll About Cart BSPIL-DYN-04017(a) or as a tabletop unit. The system is integrated with Industrial grade Cylinder, Pneumatic Control Valve, FRL Unit, Joints, Elbows, Limit Switch, Solenoid Valves, Timer and Logic Circuit. Realistic Modern Quick Snap State of Art Tubing and Accessories are used. The System comes with or without compressor a ½ HP compressor is enough to operate the realistic demo model which will be highly interactive for educational purpose. Other Demo kits made by us - Hydraulic Demo Unit/ Flow Demo Unit and other major Mechanical Lab requisites.



Hydraulic Dynamometer - BSPIL-HML-20025

Hydraulic dynamometer is Impeller type,

Valve regulated and the size is 150 mm in height and the diameter is 320 mm.

Motor Capacity 5 HP.

We do manufacture and deal other mechanical labs such as : Imaging, Metallurgy, Dynamics, Metrology, Thermal, Biotechnology, Refrigeration & Air Conditioning, Fluid Mechanics, Foundry, Non Destructive Testing, Strength Of Materials, Workshop.

* Above Specifications are indicative and may have variations as per Current R&D

Marketed by:-



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