**ENGINE TEST BED**

**MODEL: TH 03**

**HIS Engine Test Bed (Model: TH 03)** is a self-contained compact unit designed for easy installation and bench mounting. An eddy current dynamometer is used to load the engine. The dynamometer is provided with a manual control of the load. The test set is supplied with, as standard, a Robin engine which is a single cylinder, four-stroke, spark ignited, air-cooled, side valve type of engine. This is a typical small engine commonly used in various industrial and domestic applications throughout the world.

The engine and dynamometer are carried on a solid steel base plate resiliently mounted within a steel framework. Included within the framework are the fuel system, which incorporates a fuel tanks and valves, and the air induction system. The instrumentation and control panel are mounted on the front frame.

An additional engines, four-stroke diesel engine is supplied and easily interchangeable with the standard engine to enable characteristics comparisons. This alternative engine is air-cooled single cylinder engine.
An optional PV Diagram system is also available to visually demonstrate the PV Diagram.

FEATURES

i) Self contained, compact and easily installed bench mounted unit

ii) Single cylinder air-cooled and interchangeable engines:

   a) Four stroke gasoline engine (169 cc)
   b) Four stroke diesel engine (219 cc)

iii) Eddy Current Dynamometer and Controller

iv) Fully instrumented for air and fuel flow, temperatures, speed and power

EXPERIMENTAL CAPABILITIES

♦ Engine performance curve at full and partial load.

♦ Engine efficiency and fuel consumption variation with speed and load.

♦ Determination of the following engine parameters at different speed:
  - Engine torque
  - Engine power
  - Volumetric fuel consumption
  - Specific fuel consumption
  - Air flow rate
  - Air-to-fuel ratio
  - Volumetric efficiency
  - Brake mean effective pressure (bmep)

SPECIFICATIONS

A self-contained compact designed engine test bed constructed on a solid steel base plate resiliently mounted within a steel framework. Two types of engine are supplied complete with a Eddy Current Dynamometer and fuel system, which incorporates a fuel tank.

Wheel Stand:

Fabricated steel stand designed specifically to mount the test set comes with additional engines.

Engines:

Two different types of engine are supplied with the test set.

a) Four Stroke Petrol Engine

Robin EX17D air-cooled, single cylinder, spark ignited.
Displacement, cc : 169
Output, kW (hp) : 4.2 (5.63) @ 4,000 rpm.
Max. torque (Nm) : 11.3 / 2500 rpm

b) Four Stroke Diesel Engine

Yanmar L48 single cylinder with compression ignition.
Displacement, cc : 219
Output, kW (hp) : 3.1 (4.15) @ 3,000 rpm.
Bore x stroke, mm : 70.0 x 55

Eddy Current Dynamometer:

Relative humidity : 20 - 90% PH
Measuring accuracy of torque : +/- 0.2 - 0.3% FS
Measuring accuracy of rotational speed : +/- 1 r/min

Instrumentation and Control:

The control panel is made of epoxy coated mild steel for mounting the instrumentation and it carries full operating instructions together with details of the test procedures.

The controls include a manual engine throttle and adjustment of the excitation applied to the Eddy Current Dynamometer which act together to provide complete and efficient control of the engine speed and load.
Instrumentations for the followings are included:

a) Engine speed
b) Engine Torque
c) Air-flow measurement
d) Fuel flow measurement using electronic balance
e) Multipoint temperature indication by thermocouples for:
   - air inlet temperature
   - fuel temperature
   - lubricating oil temperature
   - exhaust temperature

Engine power and torque may be easily determined from the dynamometer controller.

**OPTIONAL ITEMS**

- PV
  - PV DIAGRAM
    i) 1 unit of crank shaft transmitter
    ii) 1 unit of charged pressure transmitters (applicable for one engine only)
    iii) 1 unit of oscilloscope

- EI
  - DIGITAL INSTRUMENTATIONS
    i) 5 units of digital indicator
    ii) 4 units of temperature sensor c/w transmitters
    iii) 1 unit of electronic balance
    iv) 1 unit of electronic air flowmeter
    v) 1 unit of speed sensor
    vi) 1 unit of torque sensor

**-DAS**
  - SOLDAS DATA ACQUISITION SYSTEM
    i) A PC with latest Pentium Processor
    ii) An electronic signal conditioning system
    iii) Stand alone data acquisition modules
    iv) Windows based software
      - Data Logging
      - Signal Analysis
      - Process Control
      - Real-Time Display
      - Tabulated Results
      - Graph of Experimental Results

**-CAL**
  - SOLCAL COMPUTER AIDED LEARNING SOFTWARE
    i) Interactive multimedia features
    ii) Graphical simulation
    iii) Experiment results samples
    iv) Full experiment manuals

**REQUIREMENTS**

a) Electrical supply: 220-240VAC/50/2A. Since all the power is dissipated as heat to the surroundings, adequate ventilation must be provided.

b) Engine exhaust outlet.

**OVERALL DIMENSIONS**

- Height: 1.60 m
- Width: 1.50 m
- Depth: 1.00 m
SOFTWARE & E-LEARNING

Our range of teaching equipment can be complemented with our SOLDAS and SOLCAL software.

**SOLDAS®** - Supervisory Control & Data Acquisition
- Data Logging
- Signal Analysis
- Process Control
- Real-Time Display
- Tabulated Results
- Graph of Experimental Results

**SOLCAL®** - Computer Aided Learning
- Multimedia Features
- Interactive
- Graphic Simulation
- Experiment Result Samples
- Full Experiment Manuals

Contact us for a catalog CD

**SOLUTION ENGINEERING SDN. BHD.**
(Co. No. 174876-M)

**Sales Office:**
No.3, Jalan TPK 2/4, Taman Perindustrian Kinrara, 47100 Puchong, Selangor Darul Ehsan, Malaysia.
Tel. No. : +(603) 80758000
Fax. No. : +(603) 80755784

**R&D Office:**
G-2A, Incubator 3, Technology Park Malaysia, Bukit Jalil, 57000 Kuala Lumpur, Malaysia.
Tel. No. : +(603) 8996 0023

**Email**  : solution@solution.com.my
**Web site**  : http://www.solution.com.my/

**AGENT:**

---

**BUATAN MALAYSIA**

**MSC– Status Company**

**ISO 9001 Registered**

---