

## MT 502E SINGLE CYLINDER ENGINE TEST BED



MT 502E with gasoline engine and eddy current absorber

### GENERAL DESCRIPTION

This is a standard test bed for a single cylinder gasoline or diesel engine.

The engine is connected to a dynamometer on the test bed by a direct coupling with a safety guard. Instruments are provided for measurement of dynamometer torque and speed, fuel flow rate, air flow rate, and temperatures. Dynamometer load and engine throttle are manually controlled. The fuel tank and the air box are on a stand next to the engine.

Instruction manual is also included.

### EXPERIMENT CAPABILITIES:

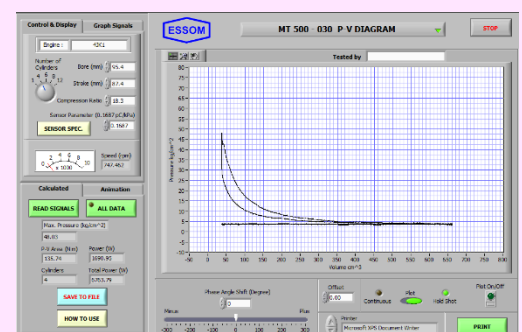
- Torque vs engine speed at various throttle setting.
- Engine brake horsepower and efficiency vs speed
- Specific fuel consumption
- Air/fuel ratio
- Volumetric efficiency

### TECHNICAL DATA

- Dynamometer
  - Type : Air cooled eddy current absorber
  - Maximum speed : Over 5000 rpm
- In the case of diesel engine, larger capacity, EDA-010A-2 is supplied.
- Engine : Single cylinder gasoline engine 3.7 kW or as required.
- Measuring instruments
  - Fuel flow rate : Graduated cylinder and stopwatch
  - Air flow rate : Air box with pulse reducer, orifice plate, and inclined water manometer
  - Barometer
  - Sensors with digital display : Torque and speed.
- Accessories : Temperatures for absorber water outlet, ambient air, and exhaust gas
- Accessories : Fuel tank and coupling guard
- Software for data display and analysis by computer (separately supplied).
- Power supply : 220 V, 1 Ph, 50 Hz. Other power supply is available on request.

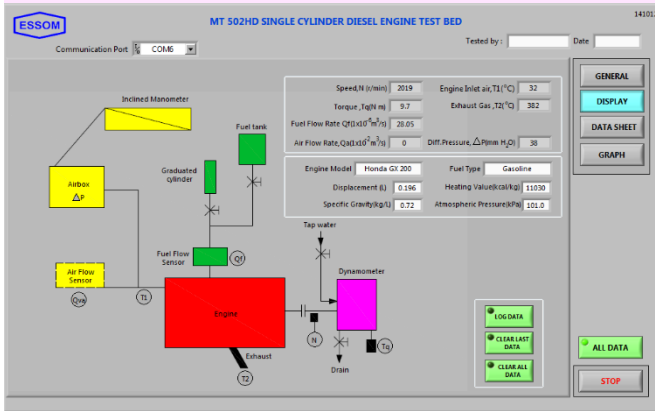
### OPTIONAL EQUIPMENT

- MP 100-011 Differential pressure digital display
- MT 502-001 Additional interchangeable 5 kW diesel engine. In this case, additional fuel tank, fuel filter and carburetor adapter are also supplied.
- MT 500-030 P-V diagram set. The set consists of pressure sensor with signal conditioner and computer interface unit with software for data display and analysis on computer (separately supplied). It is to be used with MT500-030D or MT500-030G sensor.
- MT500-030D Sensor adapter for selected diesel engine
- MT500-030G Sensor adapter for selected gasoline engine



**OPTIONAL EQUIPMENT**

- MT 501-010 Fuel flow digital display.
  - MT502-014 Dynamometer water cooling unit with pump instead of outside water supply.
  - MT 501-015 Air flow digital display.
  - MT 502-041 Torque arm with standard weights for torque calibration.
  - PH 100-030 Water manometer for differential pressure calibration.
  - MT 502-050 Computer interface
- Sensors with computer interface unit for key data acquisition instead of analog data measuring instruments. This comprises:
- Fuel flow sensor instead of graduated cylinder and stop watch.
  - Differential pressure sensor instead of inclined water manometer.
  - Computer interface unit



Speed r/min	Torque Nm	Fuel consumption Qf 1x10 <sup>-3</sup> m <sup>3</sup> /s	Air flow rate Qa 1x10 <sup>-3</sup> m <sup>3</sup> /s	A/F ratio	Temperature (C) Ambient Air Exhaust Gas Water inlet Water outlet	Power kW	Brfc g/kwh	Brake Thermal Efficiency η <sub>br</sub> %	Volumetric Efficiency η <sub>v</sub> %
3635	9.7	0.55	1.1	4.77	13.84 32 327	3.692	0.386	19.68	80.47
3434	10.4	0.54	1.08	4.5	12.17 32 354	3.739	0.377	20.14	80.23
3234	10.6	0.43	0.86	4.22	13.47 32 367	3.378	0.314	24.21	80.18
3035	10.9	0.41	0.825	4	13.76 32 369	3.487	0.307	24.79	80.16
2832	11.1	0.36	0.753	3.66	11.73 32 370	3.28	0.332	22.92	80.15
2631	11.4	0.35	0.738	3.13	10.91 32 375	2.866	0.331	26.84	80.04
2019	11.6	0.28	0.561	2.63	8.41 32 382	2.432	0.297	25.62	80.02

Net (unpacked) shipping dimensions WxLxH : 75x 150 x 100 cm  
 Net weight : Approx. 180 kg