

MT505 AUTOMOTIVE ENGINE TEST BED

GENERAL DESCRIPTION:

The equipment is intended for testing automotive engine.

The engine rests on four supports on one end of the test bed. The supports can be adjusted in three directions to accommodate different size engine. The dynamometer with speed and torque sensors rests on another end of the test bed. The engine is connected to the dynamometer by a double universal joint with a safety guard. Cooling of the engine and the dynamometer is by a cooling tower. A flexible stainless steel hose is provided for exhaust pipe connection. Engine throttle and dynamometer load control are by knobs.

Instruments are provided for measurement of dynamometer torque and speed, fuel flow rate, air flow rate and temperatures.

A fuel tank with fuel flow and air flow measuring instruments are on a stand next to the engine.

Instruction manual is also included.



Test bed with water brake absorber with optional equipment



Instrument box for water absorber



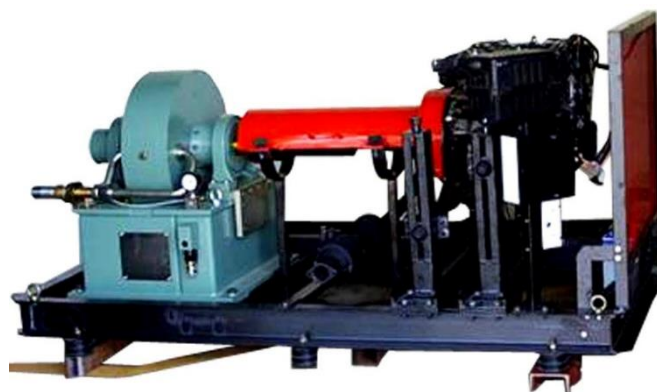
*Airbox, fuel tank
Thermostatic tank and fuel flow measuring device*



Cooling tower



Instrument box for water-cooled eddy current absorber



Test bed with water cooled eddy current absorber with optional equipment

EXPERIMENT CAPABILITIES:

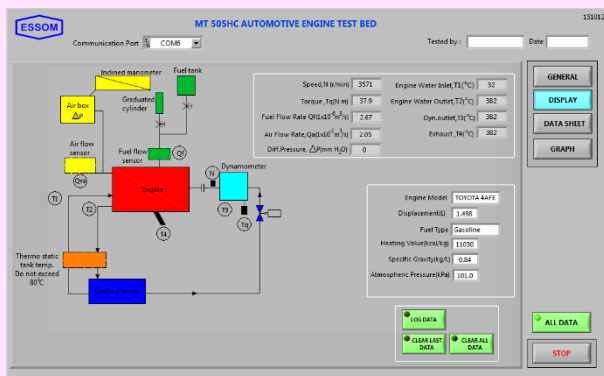
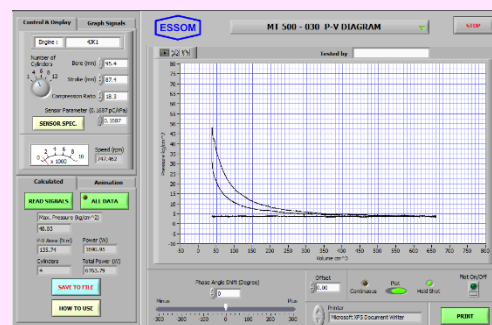
- Torque vs engine speed at various throttle settings.
- Engine brake horsepower and efficiency vs speed.
- Specific fuel consumption.
- Air / fuel ratio.
- Volumetric efficiency.

TECHNICAL DATA:

- Dynamometer:
 - Type : Water brake absorber.
 - Maximum torque : At 4000 rpm. over 900 Nm.
 - Maximum speed : 7000 rpm.
- Engine: Good used gasoline engine : 1500 cc or larger, with fuel injection system, O₂ sensor and catalytic converter.
- Cooling system:
 - Type : Cooling tower with circulating pumps
 - Capacity : Depending on engine size.
- Measuring instruments :
 - Sensors with digital display : Torque and speed
 - : Differential pressure (for air box with pulse reducer and orifice plate for measuring air flow rate)
 - : Temperature of engine cooling water inlet and outlet, absorber water outlet, exhaust gas, and ambient air.
 - Fuel flow rate : Graduated cylinder and stop watch.
- Safety features :
 - Low oil pressure warning lamp, battery charging lamp, pump operation lamp, over temperatures for engine and dynamometer, and propeller shaft guard.
- Other accessories : Battery, alternator, starter, and fuel tank.
- Software for data display and analysis by computer (separately supplied).
- Power supply : 380 V, 3 Ph, 50 Hz. Other power supply is available on request.

OPTIONAL EQUIPMENT:

- Good used diesel engine instead of gasoline engine.
- MT 500-030 P-V diagram set.
- MT500-030D Sensor adapter for selected diesel engine.
- MT500-030G Sensor adapter for selected gasoline engine.
- MT 505-ECWA Water cooled eddy current absorber instead of water brake absorber.
- MT 505-005 Thermostatic tank for engine cooling water temperature control.
- MT 505-010 Fuel flow digital display.
- MT 505-041 Torque arm with standard weights for torque calibration.
- PH 100-030 Water manometer for differential pressure calibration.
- MT 505-050 Computer interface Sensors with computer interface unit for key data acquisition instead of analog data measuring instruments.
- Other optional equipment, please contact manufacturer (essom@essom.com)



Speed	Torque	Fuel consumption	Air flow rate	A/P ratio	Engine Water Inlet	Engine Water Outlet	Exhaust gsm	Power	Bstc	Brow Thermal Efficiency	Isometric Efficiency			
r/min	Nm	l/h	m³/s		°C	°C		kW	g/kwh	%	%			
5030	15.4	3.06	2.19	20.4	22.25	11.81	39	43	409	8.1	0.88	7.79	15.51	
4442	20.9	2.78	2	272.72	22.02	12.91	32	49	42	523	9.72	0.74	10.23	39.72
4090	28.3	2.72	1.96	251.3	21.47	12.87	34	52	43	570	12.03	0.59	11.96	41.77
3717	37.9	2.65	1.92	290.8	20.5	12.51	30	56	45	629	14.17	0.49	11.54	45.99
3153	43.1	2.45	1.76	280.75	19.63	13.3	38	55	43	682	14.25	0.45	17.96	49.9
2580	53.3	2.36	1.70	287.98	18.5	12.76	38	56	42	695	14.4	0.43	17.84	57.44

Test Bed:

Net (unpacked) shipping dimensions WxLxH : 130 x 400 x 225 cm
 Net weight : Approx. 750 kg

Cooling Tower:

Net (unpacked) shipping dimension WxLxH Maximum up to : 270 x 196 x 223 cm
 Net weight : Approx. 225 kg

