

Four Stroke Single Cylinder Variable Compression Ratio Research Diesel Engine

Variable Compression Ratio Engine has been developed for Carrying out extensive Research work in the field of Engine Technology enhancement & for carrying out Analysis related to Alternative Fuel Development for S.I. & C.I. engines.

This setup consists of four stroke single cylinder Variable Compression Ratio (VCR) Research engine, connected to Air cooled or Water cooled dynamometer. Type - Single Cylinder, Four-Stroke, Spark/ Compression Ignition In this engine, the compression ratio can be varied from by means of a system provided on the outside of the engine. Raising or lowering the total head assembly including the valves, camshaft, varies the compression ratio. It is provided with necessary instruments for combustion pressure, Air flow, Fuel flow, temperatures and load measurement.



Data	Parameter
Bore X Stroke	87.5 x 110 mm
Displacement	661 cc
Rated Capacity	5B.H.P @1500 RPM when using High Speed Diesel@CR 17.5:1
Compression Ratio Adjustable from	5:1 to 11:1 (petrol), 12:1 to 20:1 (diesel) (Extendible up to 22.1 when using bio-diesel blends) Compression Ratio Can be continuously varied without changing the cylinder head
Engine Cooling type	Water cooled
Fuel Delivery	Carburettor / Fuel Injection Pump, Direct Injection, LPG Gas Kit
Ignition System	Compression Ignition adjustable
Ignition Coil	Ignition timing -50° BTDC to 10.ATDC
Starting	Using induction motor with electromagnetic Clutch

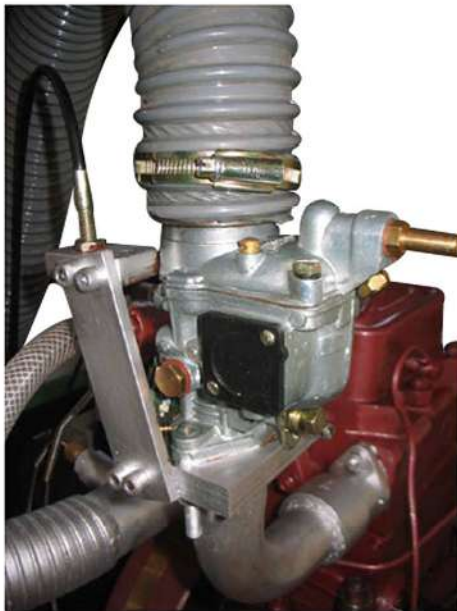
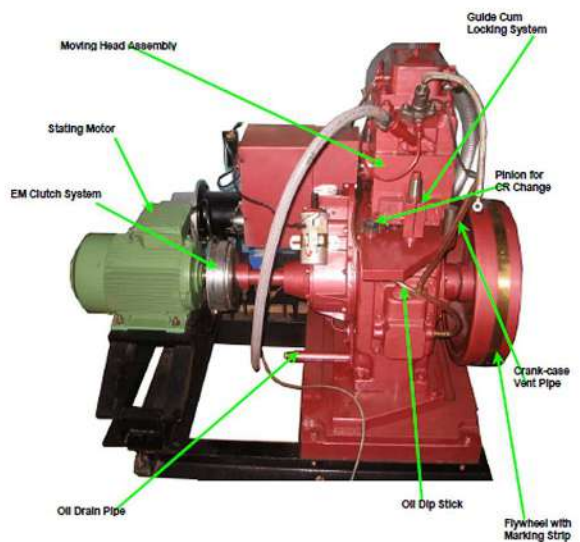


The engine is provided with a pressurized water cooling system. Compression ratio is easily adjusted rotating the driving pinion provided to give drive to move the cylinder up or down a pre-set distance, measured by a micro-meter attachment. Compression ratio is adjustable even when the engine is running. The flywheel is calibrated in Degrees to allow accurate measurement of ignition timing, using stroboscopic light method. An adjustment is provided so that the ignition timing, can be adjusted while the engine is running.

Engine performance brake power, Indicated power, Friction power, Brake thermal Efficiency, BMEP, IMEP, Indicated thermal efficiency, Mechanical Efficiency, Specific fuel consumption, Air fuel ratio, Heat balance and Combustion analysis.

Instrumentation

The compounds like combustion pressure sensor (KISTLER - SW), Crank angle Encoder (Kubler - GERMANY), Data Acquisition card (National Instruments – USA), Dynamometer water cooled (Technomech - INDIA) or Dynamometer air cooled (Powermag – INDIA)



The Application

- Alternative Fuel Development for SI and CI Engines
- Optimizations of Conventional CI Governed Engines for Various Bio Diesels and Bio-Diesel Blends
- Improvement of Conventional Governed Diesel Engines
- Testing of and Optimization of Fuel Additives
- Testing of Lubrication Oils.
- Standard Spares of Kirloskar Engines, such as valves, crank-shaft, connecting rod etc can be used
- Loading Equipments, Sensors for Performance and Heat Balance Sheet and Combustion Analyzer forms a complete R&D Solutions

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