



## RESEARCH ENGINE TEST BEDS RICARDO HYDRA ENGINE

### DESIGN FEATURES

- ◆ Versatile Design to Give Flexibility of Build
- ◆ 450 cc Light Duty Single Cylinder Engine
- ◆ Gasoline or D.I. or I.D.I. Diesel Versions
- ◆ Regenerative D.C. Dynamometer
- ◆ Closed Loop Speed Control
- ◆ Digital D.C. to A.C. Thyristor Drive
- ◆ Automatic Safety Shut Down System
- ◆ Thermostatically Controlled Coolant and Lubricant Cooling System
- ◆ Heaters for Inlet Air, Coolant and Lubricant
- ◆ Seismic Mass Engine Mounting to Isolate Vibration
- ◆ Remote Rack/Throttle Servo Control
- ◆ Remote Ignition Timing Control System
- ◆ Remote Diesel Static Injection timing Control
- ◆ Remote Petrol Injection Period control
- ◆ All Signals Available for Data Logging
- ◆ Engine Suitable for Supercharging

### OPTIONS

- ◆ Alternative Bore and Stroke
- ◆ Alternative Combustion Systems
- ◆ Alternative Gasoline Engine Compression Ratios
- ◆ Choice of 2, 3 or 4 Valves
- ◆ Single or Dual Camshafts
- ◆ Composite Camshaft
- ◆ Gasoline to Diesel Conversion Kits
- ◆ Diesel to Gasoline Conversion Kits
- ◆ Optical Access for Combustion Photography
- ◆ Optical Access for Laser Doppler Air Motion Studies
- ◆ Engine Self Starter
- ◆ Long Bed With DC Dynamometer
- ◆ Short Bed Without Dynamometer
- ◆ Air Compressor to Supercharge Engine
- ◆ Electronic Indicating Equipment
- ◆ Coolant Flow Meter
- ◆ Inlet Air Flow Meter
- ◆ Fuel Flow Meter
- ◆ Blow-By Meter
- ◆ Exhaust Gas Analysis Equipment

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## PRODUCT LIST

- P8800 Hydra long bed assembly including seismic mass, cooling module, ancillaries pillar, dc, dynamometer, dynamometer drive cubicle and control and instrumentation console, but excluding engine.
- P8802 Computer Controlled Hydra Long Bed Facility.
- P8805 Hydra short bed assembly including seismic mass, cooling module and ancillaries pillar but excluding engine.
- P8815 Engine control module containing throttle/rack control, ignition advance control/diesel static injection timing control, and petrol injection period control.
- P8816 Engine mounted self starter.
- P8817 Boost Air package to supercharge Hydra engines.
- P8820 Ricardo Hydra standard Gasoline engine with 9.0:1 compression ratio.
- P8822 Alternative cylinder head and cambox with compression ratio 8:1.
- P8823 Alternative cylinder head and cambox with compression ratio 11:1.
- P8824 Alternative cylinder head and cambox with compression ratio 13:1.
- P8825 Conversion kit to apply to a standard Ricardo Hydra to achieve optical access. Major components include extender piston with quartz window, upper cylinder block and liner, lower piston and liner, extended camshaft drive belt and cover, extended camshaft drive belt back-plate, camshaft belt tensioner, mirrors, engine water heater, camera mounting bracket, modified crankcase door.
- P8826 Composite camshaft - Gasoline.
- P8827 Four valve cylinder head and cambox conversion kit to change two valve gasoline engine to four valve.
- P8830 Ricardo Hydra standard D.I. (direct injection) Diesel engine.
- P8835 Photographic conversion kit for through the piston viewing - standard D.I. Diesel engine.
- P8836 Variable camshaft - Diesel (D.I. and I.D.I.).
- P8837 Variable swirl inlet port cylinder head - Diesel (D.I.).
- P8840 Ricardo Hydra standard I.D.I. (Comet Mk VB) Diesel engine.
- P8845 Photographic conversion kit for through the piston viewing - standard I.D.I. Diesel engine.
- P8850 Conversion kit to change from Gasoline to D.I. Diesel build. Major components include inlet manifold, piston-connecting rod assembly, cylinder head assembly, cylinder liner, fuel injection pump, fuel injection pump drive, front cover, fuel injection pump control, fuel injection pump mounting plate.
- P8860 Conversion kit to change from Gasoline to I.D.I. Diesel build. Major components include inlet manifold, piston-connecting rod assembly, cylinder head assembly, cylinder liner, fuel injection pump, fuel injection pump drive, front cover, fuel injection pump control, fuel injection pump mounting plate.
- P8870 Conversion kit to change from Gasoline to D.I. and I.D.I. Diesel builds. Major components include inlet manifold, piston-connecting rod assembly x 2, cylinder head assembly x 2, cylinder liner x 2, fuel injection pump x 2, fuel injection pump drive, front cover, fuel injection pump control, fuel injection pump mounting plate.
- P8880 Conversion kit to change from either Diesel engine, to Gasoline engine. Major components include inlet manifold, throttle and plenum assembly, cylinder liner, cylinder head assembly, piston-connecting rod assembly.
- P8890 Conversion kit to change from D.I. Diesel to I.D.I. Diesel build. Major components include piston-connecting rod assembly, cylinder head assembly, cylinder liner, fuel injection pump.
- P8895 Conversion kit to change from I.D.I. Diesel to D.I. Diesel build. Major components include piston-connecting rod assembly, cylinder head assembly, cylinder liner and fuel injection pump.
- P4600 Four Channel Electronic Indicating Equipment - Gasoline (see separate leaflet).
- P4605 Two Channel Electronic Indicating Equipment - Gasoline and Diesel (see separate leaflet).
- P7007 Turbine type coolant flowmeter.
- P7200/28 Laminar flow air meter and microprocessor control display unit (see separate leaflet).
- P8135 Compuflow gravimetric fuel flow measuring.

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The Company may alter detail specifications at its discretion and without notice, in line with its policy of continuous development.