ROVER 2¼ LITRE DIESEL ENGINE...

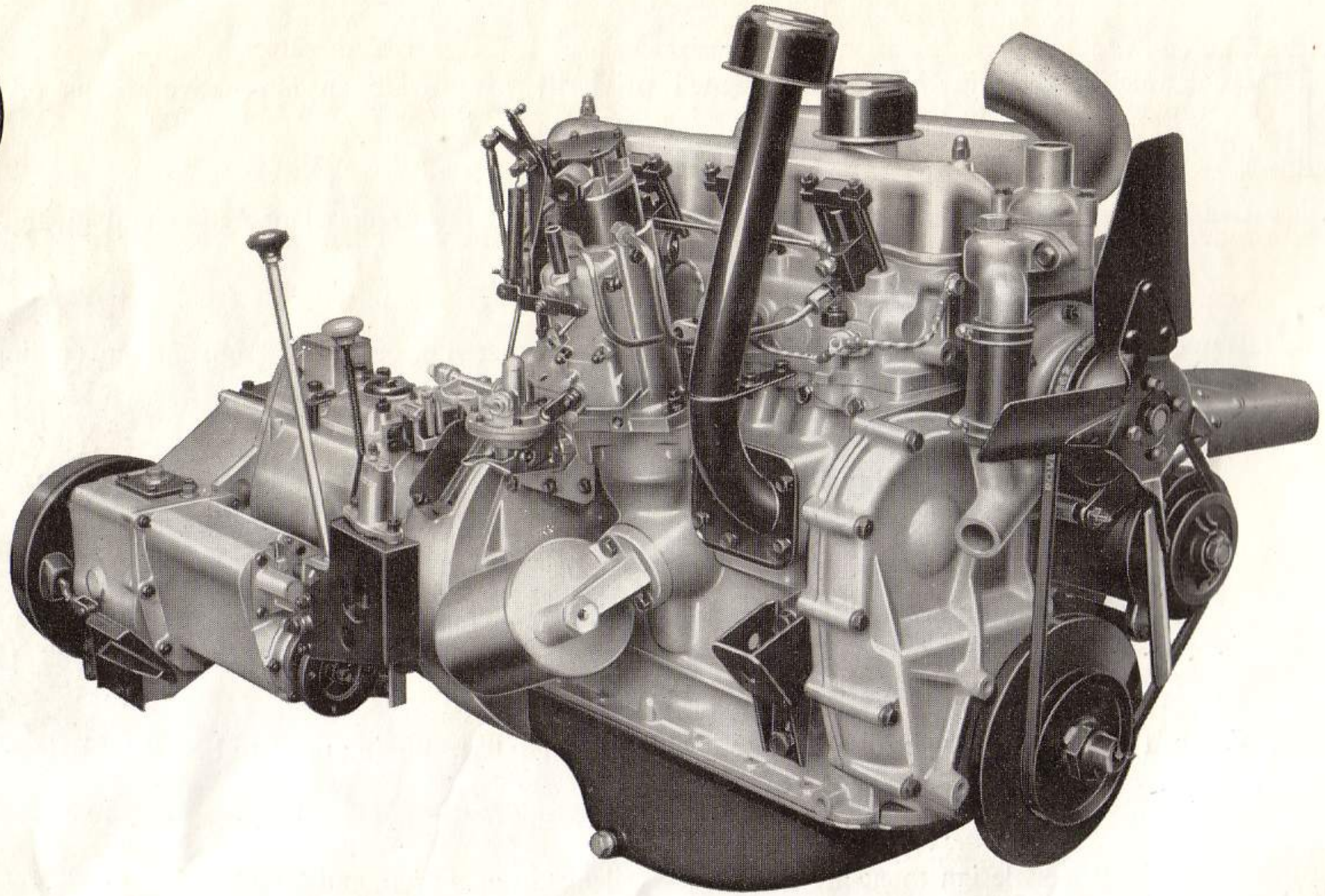
. . . as fitted to the LAND-ROVER

THE Rover diesel engine has been designed primarily to provide an alternative means of power for the Land-Rover, increasing its efficiency in conditions which favour diesel operation and giving it even greater universal appeal. It is a Rover product, a fact which in itself is a guarantee of sound design and outstanding workmanship.

It offers the high standard of reliability and toughness required for service with the "World's Most Versatile Vehicle".

It is a rugged, four-cylinder unit of 2¼ litres capacity, developing 62 b.h.p. at 4,000 r.p.m. The speed range is sufficiently close to that of the Land-Rover petrol engine to enable the same transmission units to be used. It incorporates several features of special Rover design to ensure smoothness, silence in operation, and long life.

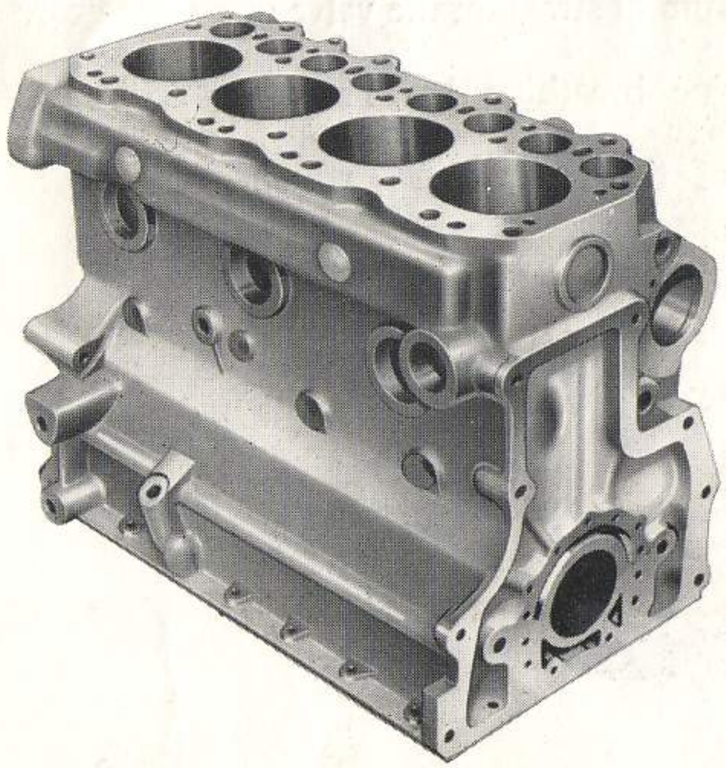
ROVER Diesel



POWERFUL, RUGGED, ECONOMICAL

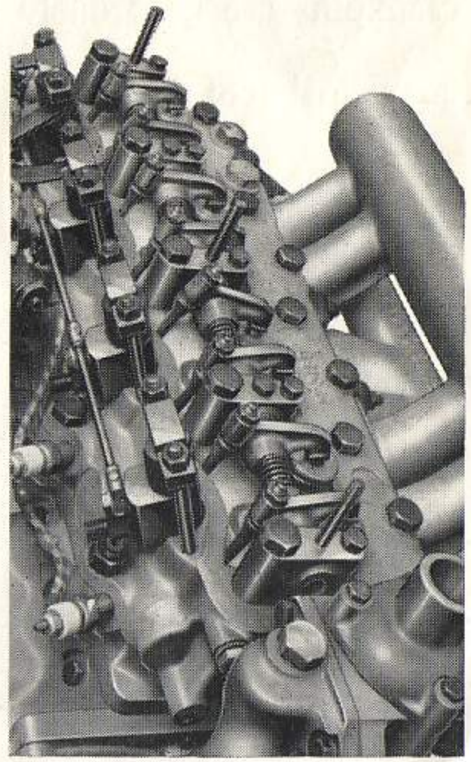
ROBUST CYLINDER BLOCK

Cylinder block and head are iron castings of exceptional rigidity. Ample water passages are incorporated in both components to ensure a free flow of coolant where it is most needed, i.e., round the cylinders and injector pockets and between the valves.



OVERHEAD VALVES

The overhead valves are operated by solid push rods and rockers from a Duplex chain driven camshaft. Valve heads are of large diameter to give efficient breathing and they are cooled by ample water passages between the ports. Rubber rings are fitted to all valve guides to maintain good oil sealing. The inlet manifold is of improved design to give increased torque at low engine speeds.



COUNTERBALANCED CRANKSHAFT

A three-bearing counterbalanced crankshaft is forged from steel and machined in the hardened state. Journals and crankpins are generously proportioned to suit the high compression of the engine and give long life.

COPPER-LEAD BEARINGS

Main and big-end bearing shells are of steel-backed copper with lead-tin overlay. Bearings of this type are well-known for their great lasting qualities and are, indeed, used in all Rover engines.

SPECIAL CAMSHAFT DESIGN

The camshaft is made of case-hardened steel. The special design of the cams allows a high valve lift while ensuring the minimum of stress on the valve operating gear. Thus, good engine breathing has not been achieved at the expense of the components which, in fact, have an exceptionally long life.

ROLLER-TYPE TAPPETS

One of the many interesting features of the Rover diesel engine is the novel design of the roller-type tappets. The roller which follows the cam runs in a lead-tin plated bronze shoe which in turn slides in a nickel chrome cast iron tappet guide. In this way the high valve lifts and consequent high acceleration needed for good engine breathing are obtained with the absolute minimum of wear on the cams. Here is another important contribution to the efficiency and long life of the engine.

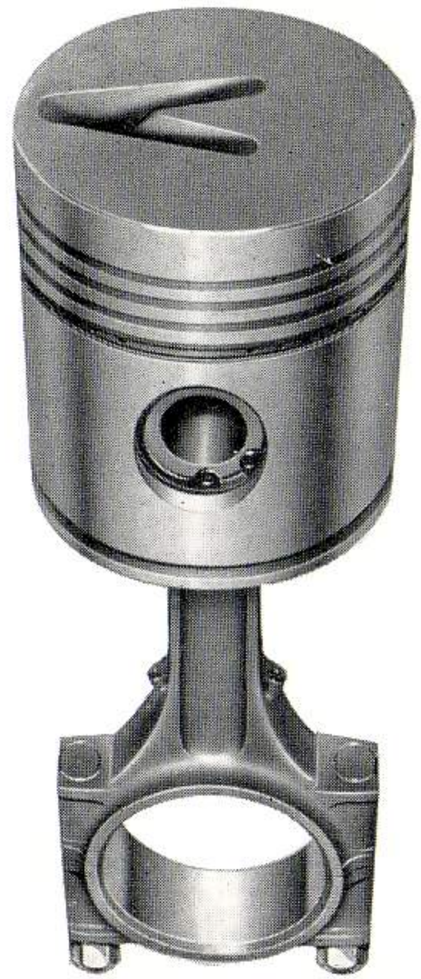
HYDRAULIC TIMING CHAIN TENSIONER

Following normal Rover practice, tension on the timing chain is maintained by an hydraulic tensioner which is fed with oil from the engine lubricating system. It exerts pressure on the chain by means of a jockey sprocket and ensures smooth, silent operation throughout the life of the engine. At engine idling speeds when oil pressure is low a special ratchet device keeps the tensioner in position and prevents the chain from slackening. A rubber damper pad is also fitted on the taut side of the chain to prevent whip.

PISTONS AND CONNECTING RODS

Pistons are made of low expansion aluminium alloy and have provision for one parallel-faced, chrome-plated compression ring and two taper-faced compression rings. Provision is also made for two oil control rings.

The lower oil control ring is not initially required but can be fitted at a later stage in the life of the engine to counteract any increase in oil consumption after arduous and prolonged service.



Connecting rods are of forged steel and incorporate a jet hole through which oil from the big-end bearings is squirted on to the thrust side of the cylinder walls. The upper part of the big-end is so made that piston and connecting rod may be withdrawn upward through the cylinder bores to facilitate servicing.

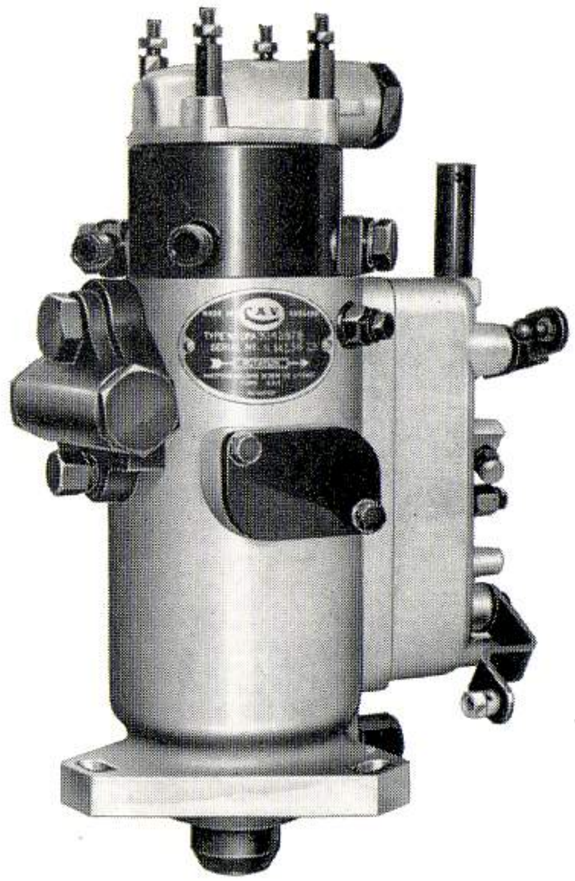
COMBUSTION CHAMBER

Incorporated in the Ricardo Comet V combustion chamber is a Rover provisional patent. This takes the form of pimples which improve the heat transfer between the chamber surface and the gas and assist the mixing of air and fuel giving, ultimately, a reduction in engine noise.

C.A.V. DPA INJECTION PUMP

The C.A.V. DPA Injection Pump is a single-cylinder, opposed plunger, inlet metering distributor pump. It incorporates an all-speed mechanical governor and a speed sensitive advance unit.

This type of injection pump is compact in construction



and relatively simple in design. The complete pump is an air-tight unit thus protected against the entry of foreign matter during operation. No special lubrication arrangements are necessary since the pump lubricates itself.

PINTAUX-TYPE INJECTION NOZZLES

Fuel injection nozzles are of the Pintaux type which incorporate two jets. The auxiliary jet sprays the fuel into the hottest portion of the combustion chamber and enables the engine to be started easily from cold. The main jet comes into operation at normal running speeds. Glow plugs are also fitted as an additional aid to starting the engine in extra low temperatures. They are controlled from the instrument panel and their use for a brief period before starting ensures an instantaneous result.

SPECIFICATION

GENERAL

Four cylinders, overhead inlet and exhaust valves, Bore and Stroke 3 $\frac{9}{16}$ in. × 3$\frac{1}{2}$ in. (90·475 mm. × 88·9 mm.). Cubic capacity 2,286 c.c. B.H.P. (max.) 62 at 4,000 r.p.m. Torque (max.) 103 lb./ft. at 1,800 r.p.m. Compression Ratio 23:1.

Cylinders. Integral.

Cylinder Head. Detachable, cast iron carrying all valve gear.

Valve Operation. By rockers, solid push rods and roller cam followers.

Crankshaft. Forged steel. Fully balanced and with counterweights.

Main Bearings. Three, thin shell, steel backed, copper-lead. Thrust taken at centre bearing.

Camshaft. Forged steel. Four bearings of wrap round white metal on steel backing. Drive by Duplex roller chain. Chain tension maintained by self-adjusting jockey sprocket controlled by coil compression spring and oil pressure.

Tappets. Chill cast rollers running in lead tin plated bronze shoes.

Pistons. Low expansion aluminium alloy, tin plated with Rover V trough cast in the crown. One parallel-faced chrome compression ring. Two taper-faced iron compression rings. One drilled scraper ring. Fully floating gudgeon pins.

Valves. Exhaust. EN 54 Steel.
Inlet. Silchrome No. 1 Steel.

Connecting Rods. Forged steel with thin shell steel backed copper-lead big-end bearings.

LUBRICATION. By submerged gear type pump driven from camshaft. Oil delivered to main, big-end and camshaft bearings and to tappet gallery under a running pressure of 50-60 lb./sq. in. Rocker shaft and rockers lubricated by external pipe from the camshaft bearing oil gallery. Gauze pump intake filter in the sump; removable full flow external oil filter.

Oil Filler. Tube from front camshaft housing side cover plate incorporating oil wetted breather. Similar breather fitted to valve rocker cover.

Sump capacity. 11 pints. Level determined by dipstick.

COOLING SYSTEM. Pump operated and by-pass thermostat controlled. Water gallery cast on the side of the cylinder block directs water between the bores. It is then routed up to the head where it passes round injector and combustion chamber bosses. From here the water is directed through tube inserts which squirt the water between the portings. Pressurised.

Pump. Centrifugal type, belt driven, mounted on front end of cylinder block.

Radiator. Fin and tube type.

Fan. Four bladed (fabricated). Mounted on water pump spindle and both driven by common belt. Belt tensioned by pivot mounted dynamo.

Thermostat. By-pass type.

Capacity of system. 17 pints.

INDUCTION SYSTEM. Separate induction manifold.

AIR CLEANER AND SILENCER. A.C. large capacity oil bath type.

EXHAUST SYSTEM:

Silencer. Flexibly mounted.

Tail pipe. Integral with silencer.

FUEL SYSTEM:

Fuel lift pump. A.C. mechanical, driven off eccentric on camshaft.

Fuel filter. C.A.V. paper element type with air bleed.

Injection pump. C.A.V. DPA type with mechanical governor and advance unit.

Injector nozzles. Pintaux type.

Combustion chambers. Ricardo Comet V plus Rover provisional Patent.

Glow plugs for cold starting. K.L.G. 14 mm., 17 V., 38 A., 2-P.

ENGINE UNIT MOUNTING. Flexibly mounted on bonded rubber at four points, two at front of crankcase and two on transfer box.

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BY APPOINTMENT TO HER MAJESTY QUEEN ELIZABETH II

MANUFACTURERS OF MOTOR CARS AND LAND-ROVERS

THE ROVER COMPANY LIMITED

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