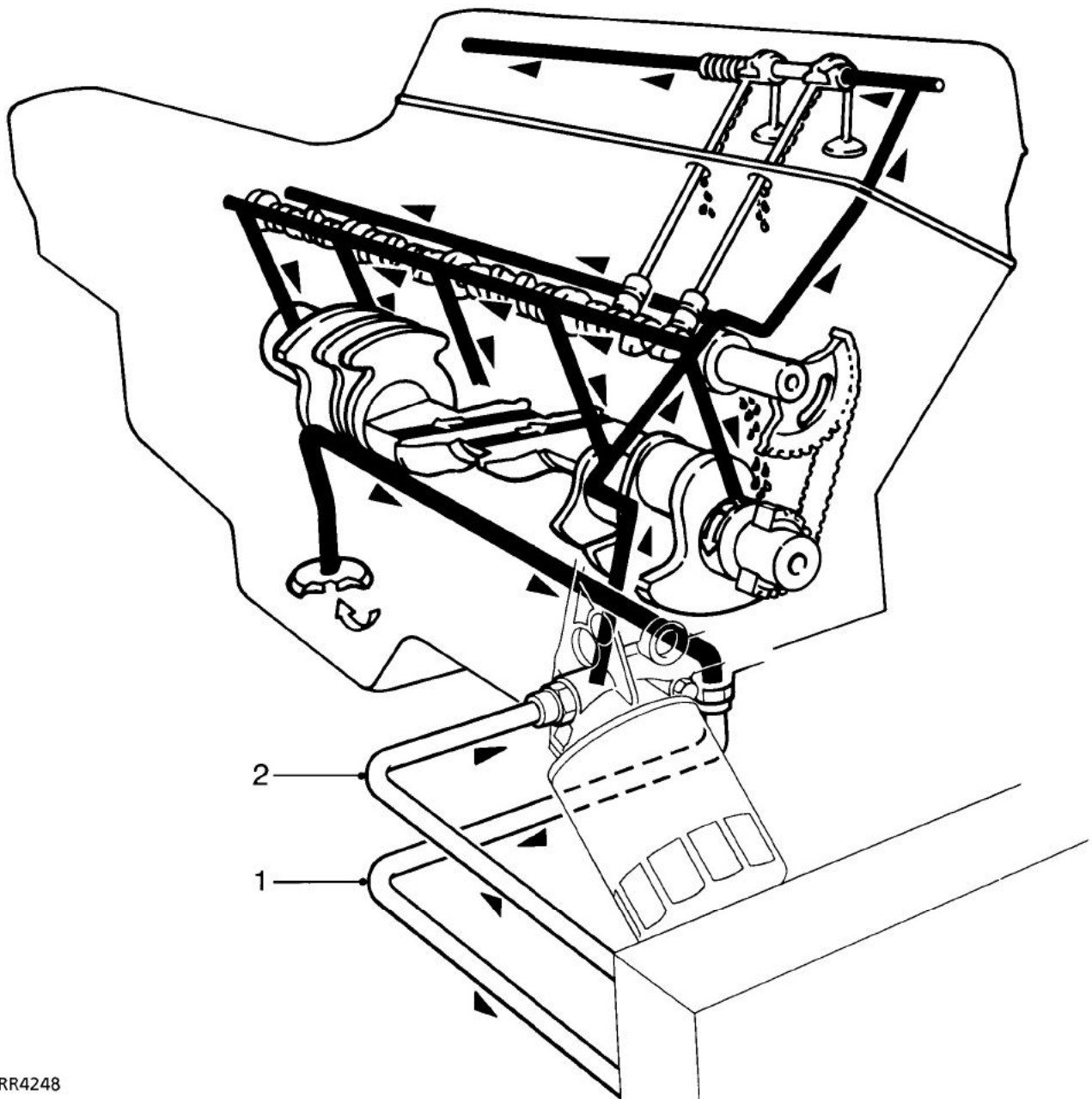


Lubrication system

The V8i full flow lubrication system uses a gear type oil pump which is driven from the front of the crankshaft. The oil pump gears are housed in the front cover and the pressure relief valve, warning light switch and filter are also fitted to the front cover.

Oil drawn through the centrally located steel gauze strainer in the sump, is pumped under pressure through oil cooler located in the lower half of the main coolant radiator. The cooled oil then passes through the filter, before being distributed from the main gallery via drillings, to the various components in the engine.

Lubrication to the thrust side of the cylinders is by oil grooves machined in each connecting rod big end joint face, which are timed to align with holes in the big end journals on the power and exhaust strokes.



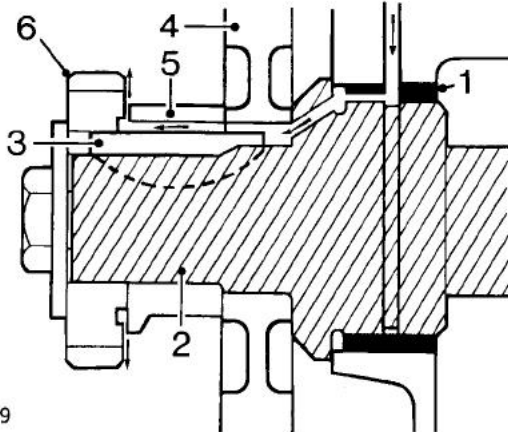
Lubrication system

1. Oil to cooler
2. Oil from cooler



Distributor and timing chain lubrication

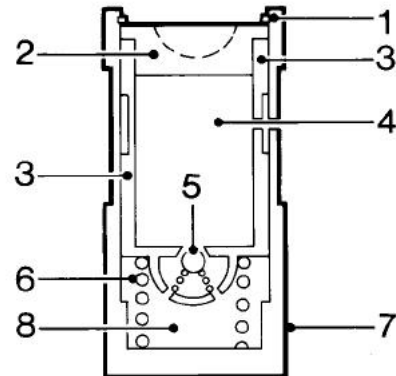
The distributor and timing chain are lubricated from the camshaft front bearing. The feed to the timing chain is channelled along the camshaft sprocket, key and spacer where it sprays onto the chain.



RR4249

1. Bearing
2. Camshaft
3. Key
4. Camshaft timing chain sprocket
5. Spacer
6. Distributor drive gear

Hydraulic tappets



RR4250

1. Clip
2. Pushrod seat
3. Inner sleeve
4. Upper chamber
5. Non-return ball valve
6. Spring
7. Outer sleeve
8. Lower chamber - high pressure

The purpose of the hydraulic tappet is to provide maintenance free and quiet operation of the inlet and exhaust valves. It achieves its designed purpose by utilizing engine oil pressure to eliminate the mechanical clearance between the rockers and the valve stems.

During normal operation, engine oil pressure present in the upper chamber 4, passes through the non-return ball valve 5 and into the lower (high pressure) chamber 8.

When the cam begins to lift the outer sleeve 7, the resistance of the cylinder valve spring felt through the pushrod seat 2, causes the inner sleeve 3, to move downwards inside the outer. This slight downward movement of the inner sleeve closes the ball valve 5 and increases the hydraulic pressure in the high pressure chamber, sufficient to ensure that the push rod opens the valve fully.

As the tappet assembly moves off the peak of the cam the ball valve 5 opens to equalize the pressure in both chambers which ensures that the valve fully closes when the tappet is on the back of the cam.



ENGINE OIL PRESSURE TEST

Service tools:

LRT-12-052: Pressure test equipment



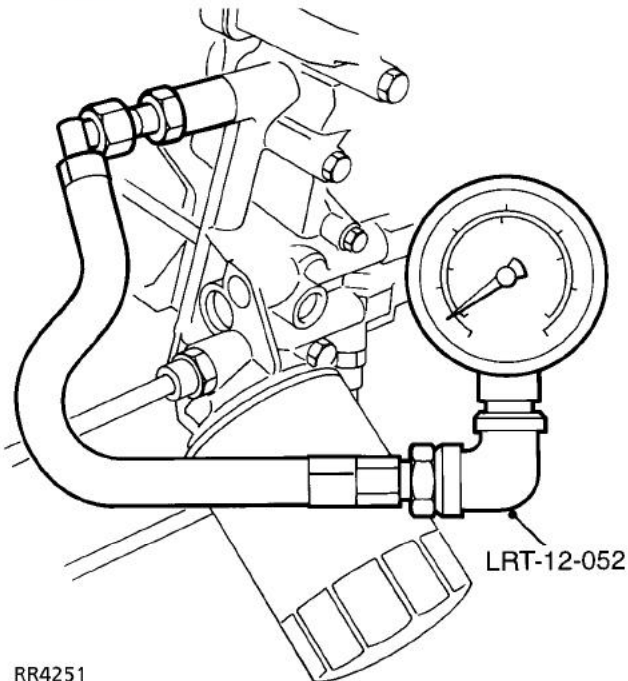
WARNING: Use suitable exhaust extraction equipment, if test is being carried out in workshop.



WARNING: If vehicle has been running, engine oil will be hot, care must be taken when fitting equipment to prevent personal injury due to scalding.

Test

1. Check lubricant is to correct level.
2. Place vehicle on a ramp [hoist].
3. Disconnect battery negative lead. Remove oil pressure switch.
4. Fit the test gauge.
5. Reconnect battery negative lead.
6. Start and run engine to normal operating temperature.
7. At a steady engine speed of 2500 rev/min - engine oil pressure reading should be - 2.75 bar (40 lbf/in²).
8. If the pressure is low - Remove and overhaul oil pump



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CYLINDER COMPRESSION - TEST

Equipment:

Compression pressure gauge

Test

1. Start and run engine until normal engine operating temperature is achieved (thermostat open).
2. Remove all spark plugs.
3. Disconnect both coil negative (WB) leads
4. Insert compression gauge, crank engine until reading stabilises.
5. Expected readings, throttle fully open, battery fully charged:
 - 8.31:1 = 10.2-10.9 bar, 150-160lbf/in²
 - 9.35:1 = 11.5-12.2 bar, 170-180lbf/in²

ENGINE NOISES

Excessive or obtrusive noise from the engine compartment originates from three main sources:

- A. The exhaust system, which makes an unmistakable and easy to diagnose noise.
- B. External components emit the greatest variety of noises, but are also easy to diagnose by simply removing the drive belt.
- C. Engine internal mechanical noises which can vary in volume and pitch and may be a combination of, tapping - knocking or rumbling, are the most difficult to diagnose. The following is therefore a guide to diagnosis of engine internal mechanical noises only.

Engine internal mechanical noises.

Single or multiple, light tapping noise, particularly when engine is cold. See Description and operation, Description

1. Is engine oil level correct?
NO - Top up to correct level. **See LUBRICANTS, FLUIDS AND CAPACITIES, Information, Recommended Lubricants and Fluids**
YES - Continue.
2. Is the lubricating pressure correct?
NO - **See Engine Oil Pressure Test**
YES - Suspect valve operating mechanism.
3. To confirm diagnosis, remove the rocker covers and with the engine idling, insert a feeler gauge of 0,015mm between each rocker and valve stem. A faulty valve operating mechanism will emit a different noise when the feeler gauge is inserted. **See Repair, Rocker Shaft Renew**

Heavy knocking noise (particularly on load and when engine is hot). See Description and operation, Description

1. Is engine oil level correct?
NO - Top up to correct level. **See LUBRICANTS, FLUIDS AND CAPACITIES, Information, Recommended Lubricants and Fluids**
YES - Continue.
2. Is the lubricating pressure correct?
NO - **See Engine Oil Pressure Test**
YES - Drain engine oil and filter, and examine for metallic contamination.
3. Is the oil contaminated with metal particles?
YES - Suspect faulty big end bearings. To confirm diagnosis, short out the ignition to each spark plug in turn. The noise will disappear or be reduced when the cylinder with the faulty big end is shorted out.
4. If noise is not conclusively diagnosed, check the security of the flywheel and crankshaft front pulley. Temporarily release the drive belt to reduce general noise level and use a stethoscope to locate source of noise.

Heavy rumbling noise (particularly during hard acceleration). See Description and operation, Description

1. Is engine oil level correct?
NO - Top up to correct level. **See LUBRICANTS, FLUIDS AND CAPACITIES, Information, Recommended Lubricants and Fluids**
YES - Continue.
2. Is the lubricating pressure correct?
NO - **See Engine Oil Pressure Test**
YES - Drain engine oil and filter, and examine for metallic contamination.
3. Is the oil contaminated with metal particles?
YES - Suspect faulty main bearings. If noise is not conclusively diagnosed, check the security of the flywheel and crankshaft front pulley. Temporarily release the drive belt to reduce general noise level and use a stethoscope to locate source of noise.