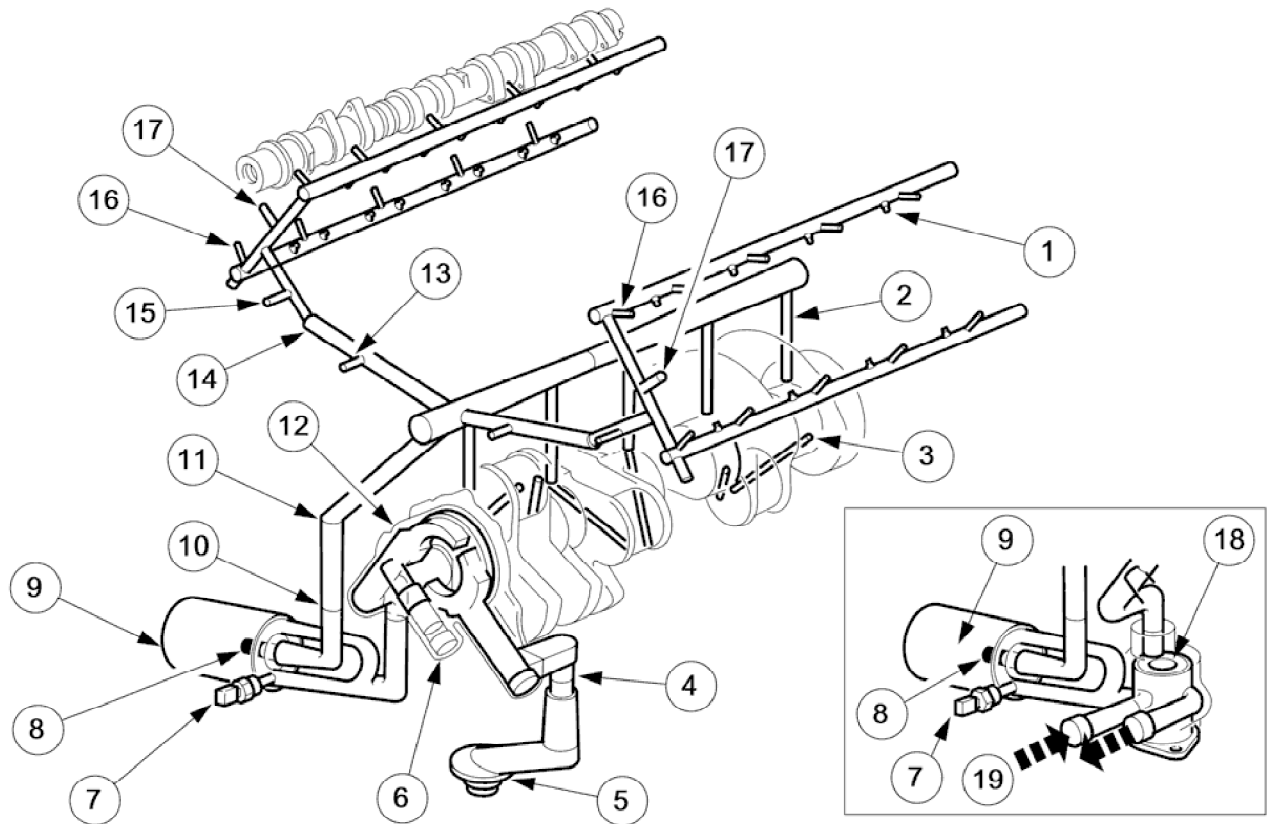


1999 XJ RANGE - Engine - 303-01

Engine Lubrication



E33951

Parts List

| Item | Description |
|------|----------------------------------------|
| 1 | Valve Lifter Supply |
| 2 | Main Bearing Supply |
| 3 | Connecting Rod Bearing Supply |
| 4 | Bedplate/Cylinder Block Interface |
| 5 | Oil Pick-Up |
| 6 | Pressure Relief Valve |
| 7 | Oil Pressure Switch |
| 8 | Oil Temperature Switch |
| 9 | Oil Filter |
| 10 | Structural Sump/Bedplate Interface |
| 11 | Bedplate/Cylinder Block Interface |
| 12 | Oil Pump |
| 13 | Primary Chain Tensioner Supply |
| 14 | Cylinder Block/Cylinder Head Interface |
| 15 | Variable Valve Timing Supply |
| 16 | Camshaft Bearing Supply |
| 17 | Secondary Chain Tensioner Supply |
| 18 | Oil Diverter (Where fitted) |
| 19 | Oil Supply and Return |

Oil is drawn from the reservoir in the oil pan and pressurized by the oil pump. The output from the oil pump is then filtered and distributed through the internal oil passages.

Where an oil cooler is fitted, the oil is cooled before entering the filter.

All moving parts are lubricated either by pressure or splash oil. Pressurized oil is also provided for operation of the variable valve timing units and the timing gear chain tensioners.

With the exception of the pump and the oil level gauge (dip stick), all of the oil system components are installed on the structural sump.

Oil is returned to the oil pan under gravity through large drain holes in the cylinder heads and the engine block to ensure quick return of the oil.

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Oil Pick-Up

The plastic moulded oil pick-up is attached to the underside of the structural sump. It is immersed in the oil reservoir to provide a supply to the oil pump during all normal vehicle attitudes. A castellated inlet allows the supply to be maintained after any deformation of the sump pan (e.g. after grounding). A mesh screen in the inlet prevents debris from entering the oil system.

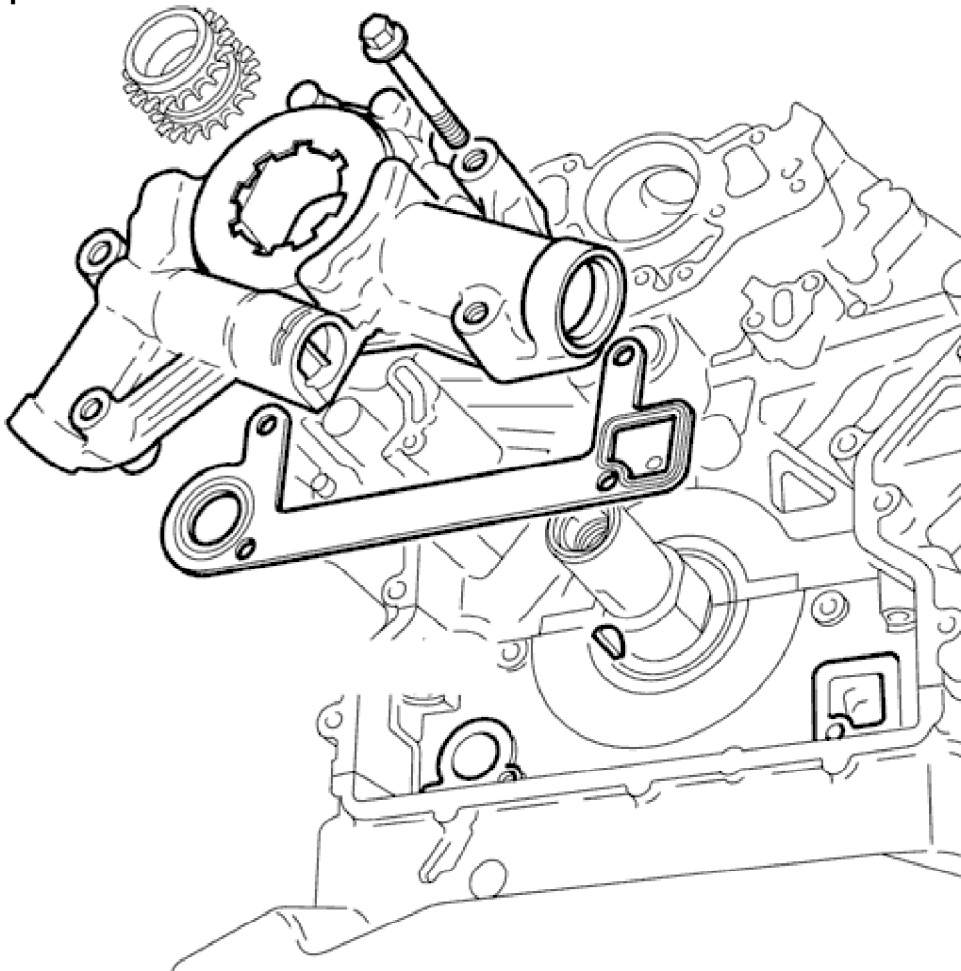
Oil Pressure Switch

Installed at the right front of the structural sump, the oil pressure switch connects a ground input to the instrument cluster when oil pressure is present. This switch operates at a pressure of 0,15 to 0,41 bar (2.2 to 5.9 lbf. in²).

Oil Temperature Switch

Installed at the right front of the structural sump adjacent to the pressure switch. Indicates to the Engine Control Module the temperature of the engine oil, for use in the variable valve timing computations.

Oil Pump



E32710

An updated (higher capacity) oil pump is fitted to cope with the increased demands of the linear VVT system. The pump is located at the front of the engine and is driven directly by the crankshaft. The inlet and outlet ports align with oil passages in the bedplate, with a rubber coated metal gasket to seal the pump to bedplate interface.

An integral pressure relief valve regulates pump outlet pressure at 4,5 bar (65.25lbf/in²).

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Oil Pan

The oil pan / sump comprises an aluminium-alloy structural sump bolted to the bedplate and a pressed steel pan with integral drain plug, bolted to the structural sump.

Oil is drawn from the oil reservoir in the oil pan, pressurized by the oil pump, cooled (on vehicles with an oil cooler), filtered and distributed through internal oil passages. Oil returns to the pan under gravity.

Oil Filter

A renewable canister type oil filter is fitted on the adapter which is located on the right-hand side of the structural sump towards the front of the engine. An internal bypass facility permits full flow bypass if the filter is blocked.

Oil Level Gauge (Dipstick)

The oil level gauge is located towards the front of the engine on the left side of the oil pan, supported in a tube fitted in the bedplate. The holes in the end of the oil gauge indicate minimum and maximum oil levels; approximately 1 liter difference.

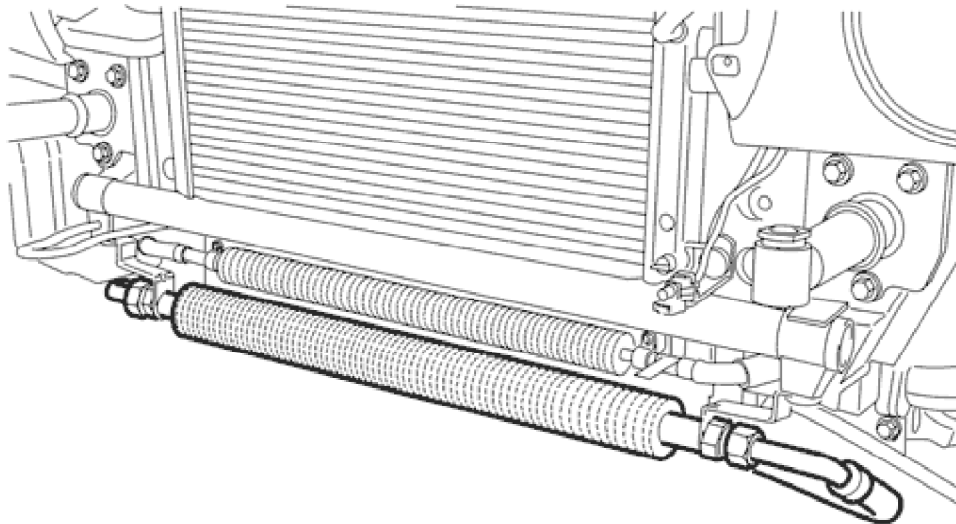
Oil Filler Cap

The oil filler cap is located on the top of the B-bank camshaft cover.

Windage Tray

A windage tray attached to the top of the structural sump isolates the oil pan from the disturbed air flow, caused by the rotation of the crankshaft; preventing oil aeration and improving oil drainage.

Engine Oil Cooler (Where Fitted)



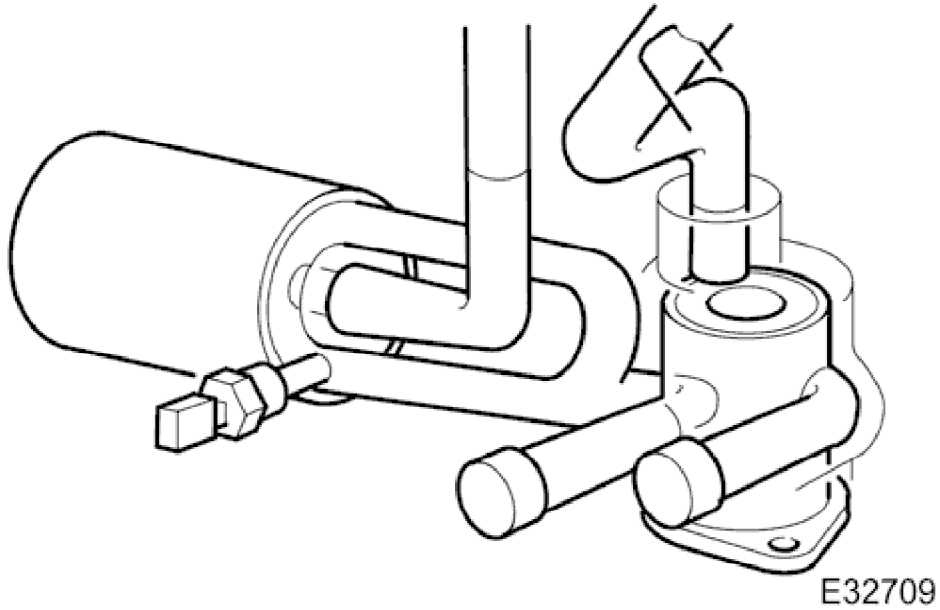
E33956

The engine oil cooler is located in front of the radiator, mounted off-center with two steady brackets bolted onto the front upper crossmember in front of the cooling module.

When an oil cooler is fitted, an oil diverter valve is also fitted onto the oil filter with supply and return piping to and from the oil cooler.

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Oil Diverter Valve (Oil-Cooler Vehicles Only)



This valve is fitted between the oil pump outlet and the oil filter inlet.

The oil diverter valve operates thermostatically and at higher temperatures diverts the oil through the oil cooler. The valve begins to open between 103°C and 107°C and is fully open, diverting 100% of the oil, at 119°C.