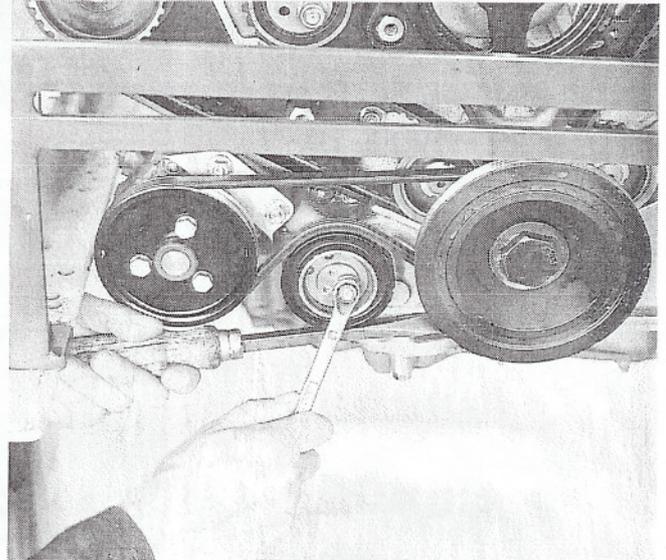


Fixing power assisted steering pump to mounting



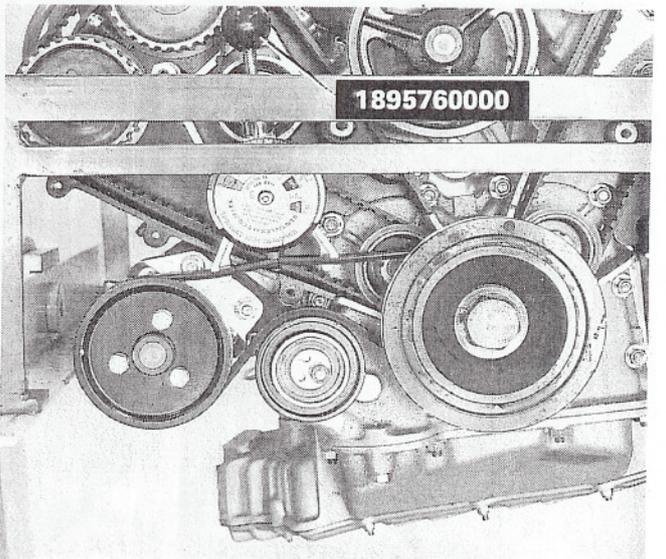
Fitting power assisted steering pump belt and belt tensioner

Tensioning power assisted steering pump drive belt

Checking power assisted steering pump belt tension

Check that the tension of the **new** belt is between 30 and 35 daN measured using tool 1895760000.

Let the engine run for 15 minutes at 3000 rpm. Then let the engine cool down and recheck that the belt tension is still between 30 and 35 daN. If it is not, reset the belt tension.

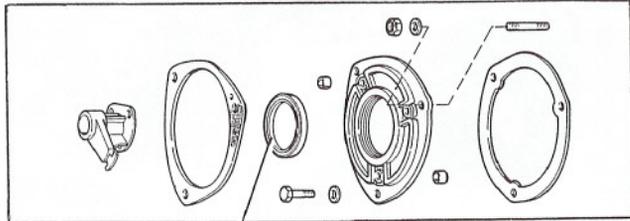
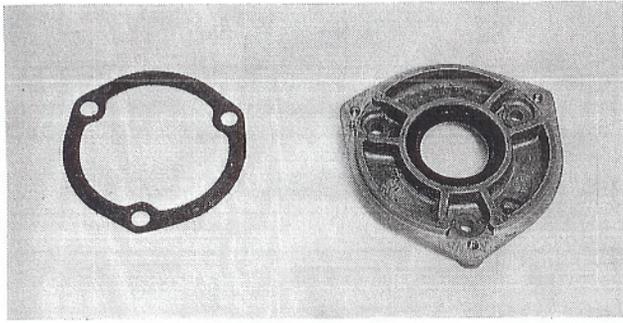


Periodic check of belt tension

The periodic check of the belt tension should be carried out with the engine cold using tool 1895760000. If the load is 15 daN or less, reset the tension at between 20 and 25 daN. **If the load is 10 daN or less, the belt has to be replaced.**

NOTE Check the condition and tension of the belt every 10,000 km and replace it every 30,000 km.

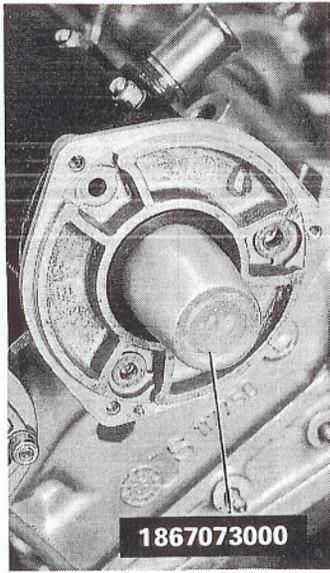
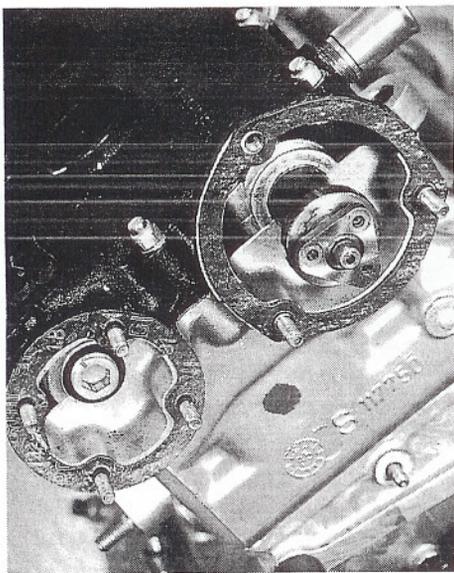
10.



Lubricate the seal

Ignition distributor cap mounting

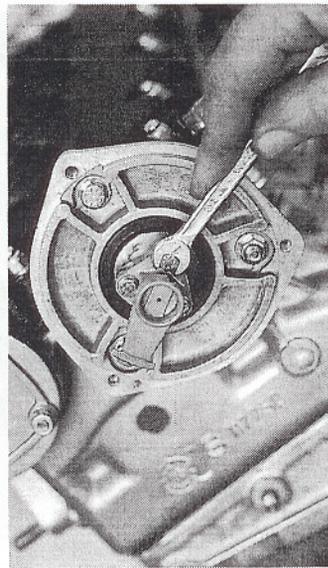
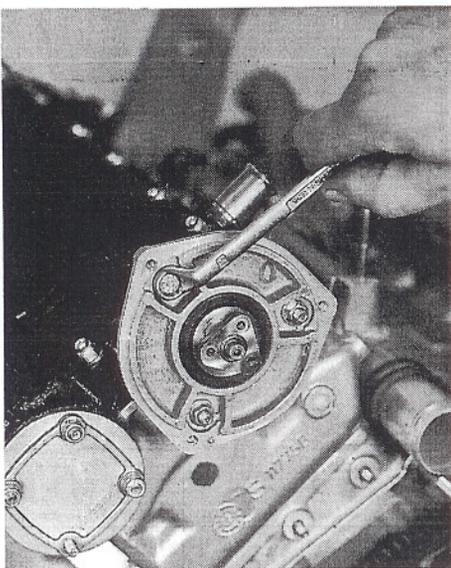
The seal on the distributor cap mounting is removed using an ordinary drift.
The seal on the distributor cap mounting is fitted using a flat plate.



Fitting gaskets for rear cover and distributor cap mounting (left cylinder head).

Fitting distributor cap mounting on left cylinder head

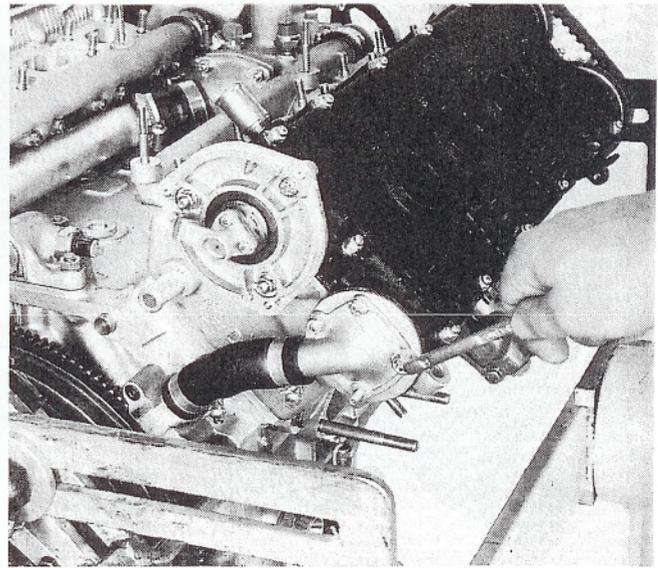
When fitting the distributor cap mounting it is necessary to use drift 1867073000 in order not to ruin the seal.



Fitting rear cover and distributor cap mounting on left cylinder head.

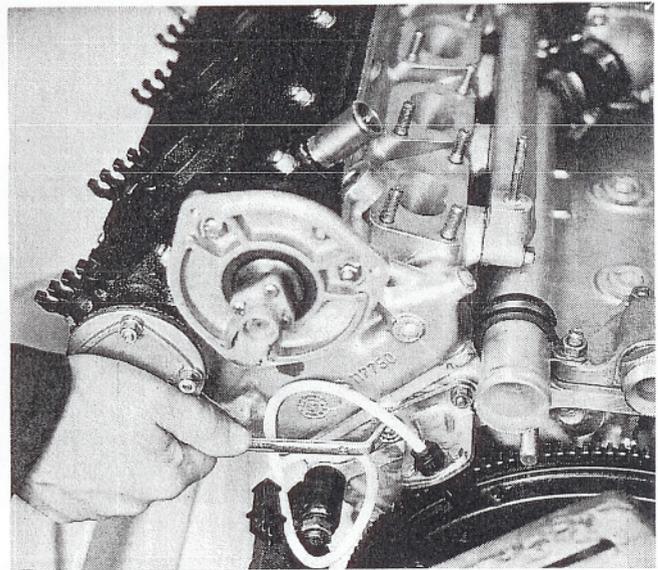
Fitting distributor rotor arm on inlet valve control shaft (left cylinder head).

LANCIA



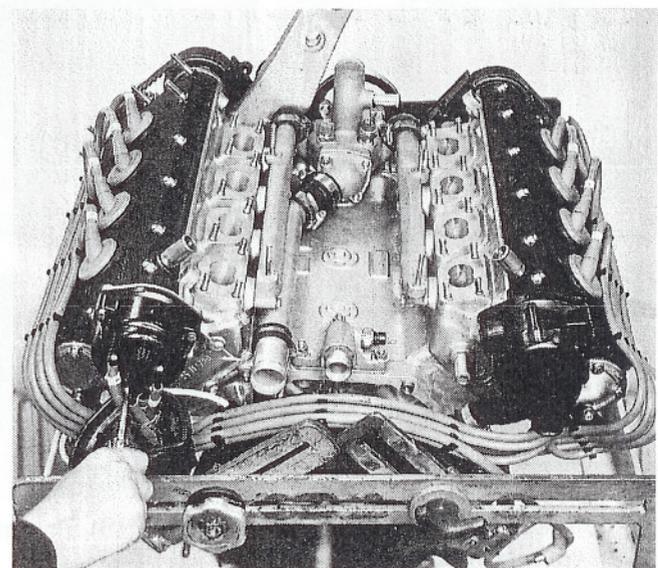
Fitting oil breather cover on right cylinder head.

Fitting distributor cap mounting seal and rotor arm on right cylinder head.



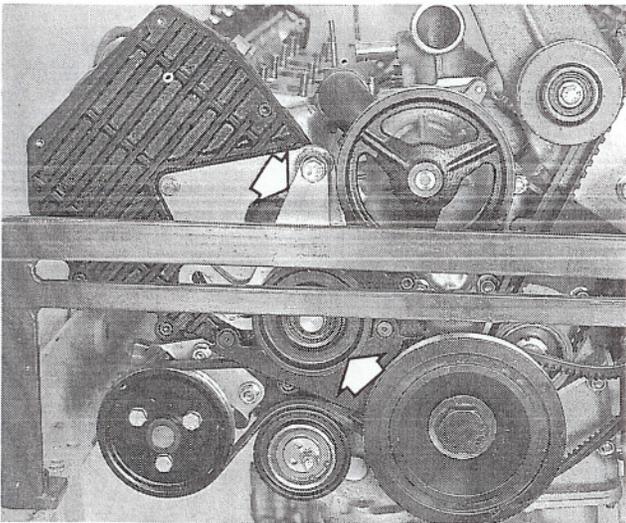
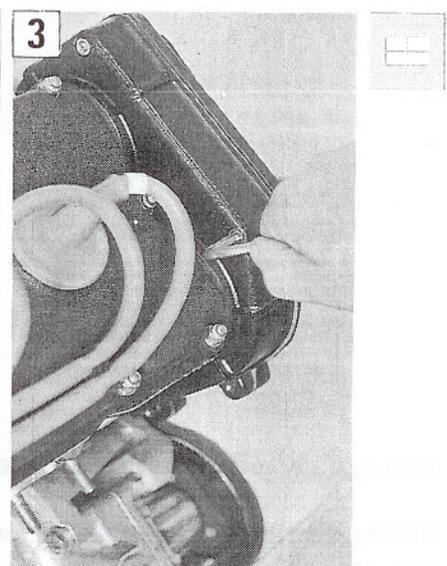
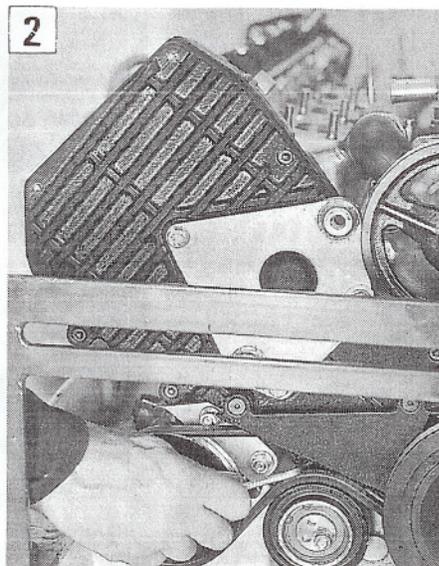
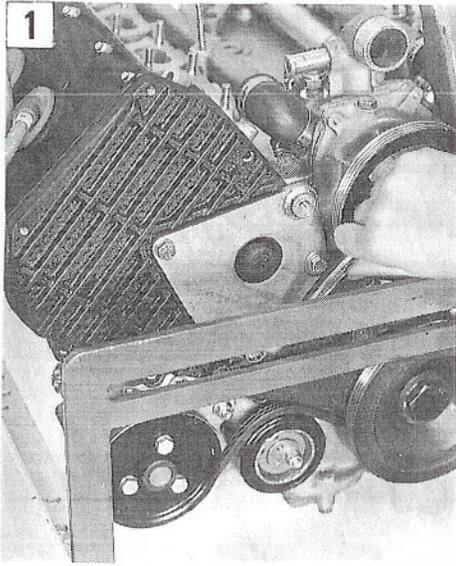
Fitting sensor carrier plate and TDC sensor on cylinder block/crankcase

NOTE *With pistons 1 and 7 at top dead centre, the TDC sensor is delayed 10° in relation to the reference mark on the engine flywheel; however, when fitting the sensor it is not necessary to check the position given its special location and the strength of the sensor carrier plate.*



Fitting protective boots for distributors and spark plug supply cables

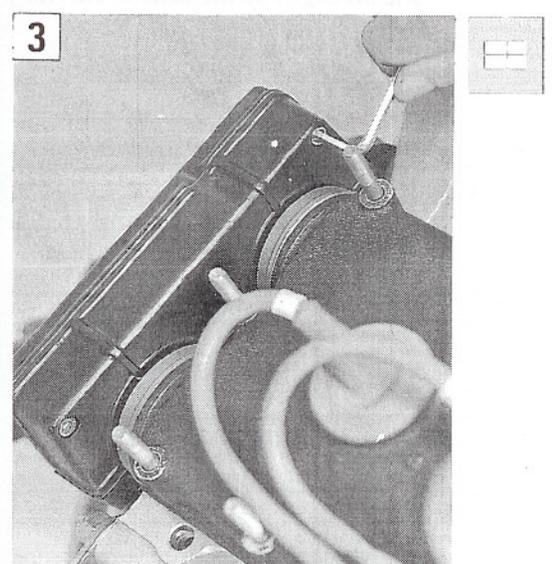
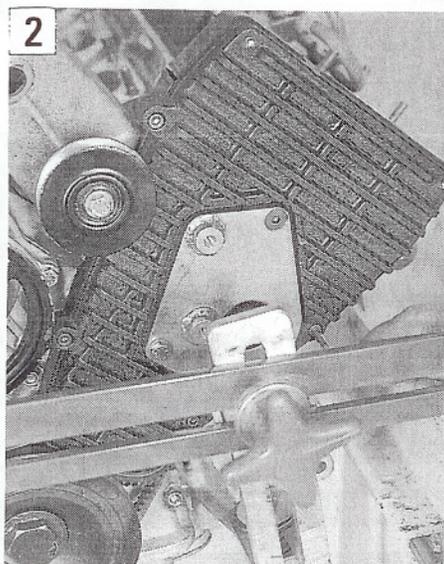
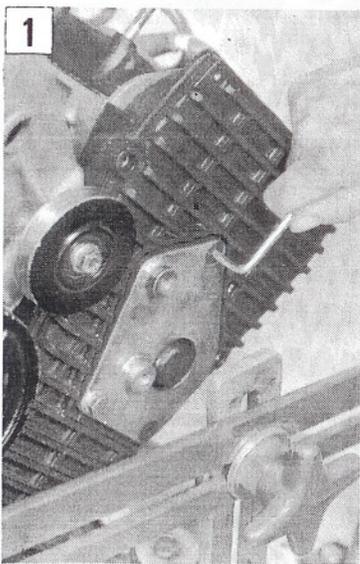
10.



Fitting front shield (2), upper rear shield (3) for timing belt (right cylinder head) and mounting for bracket fixing belt tensioner (1) (crankshaft)

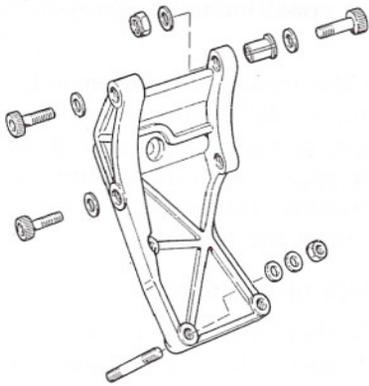
NOTE Before carrying out the above operations it is necessary to fit the air conditioning compressor drive belt.

Fitting bracket and belt tensioner for crankshaft pulley

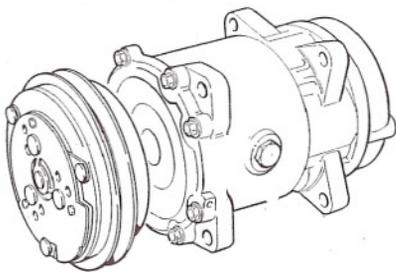


Fitting front shield (2), upper rear shield (3) for timing belt (left cylinder head) and mounting for belt tensioner (air conditioning compressor).

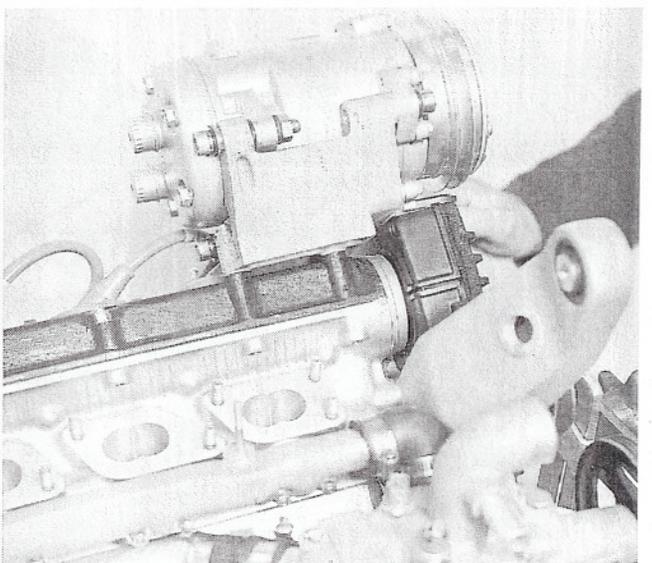
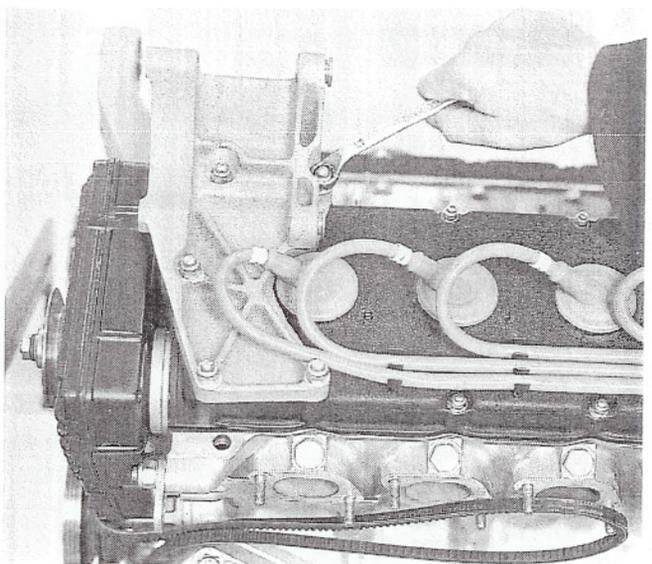
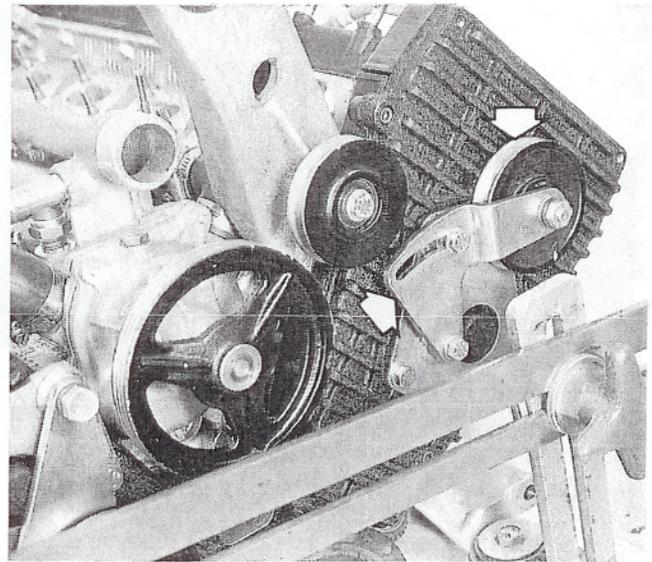
Fitting bracket and belt tensioner for air conditioning compressor belt



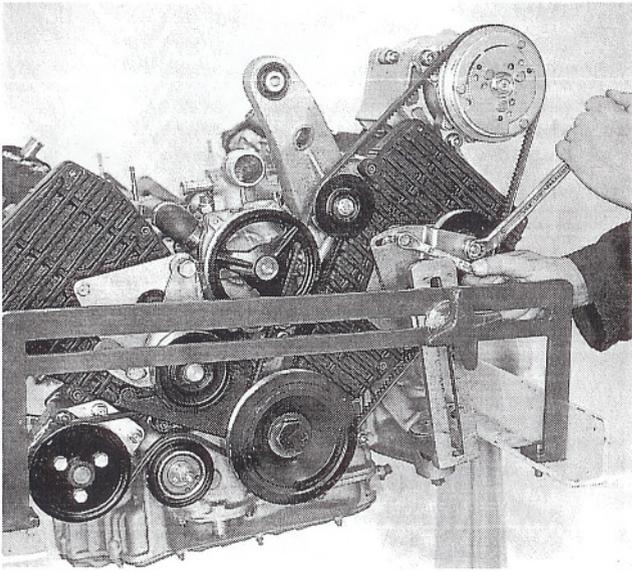
Fitting mounting for air conditioning compressor



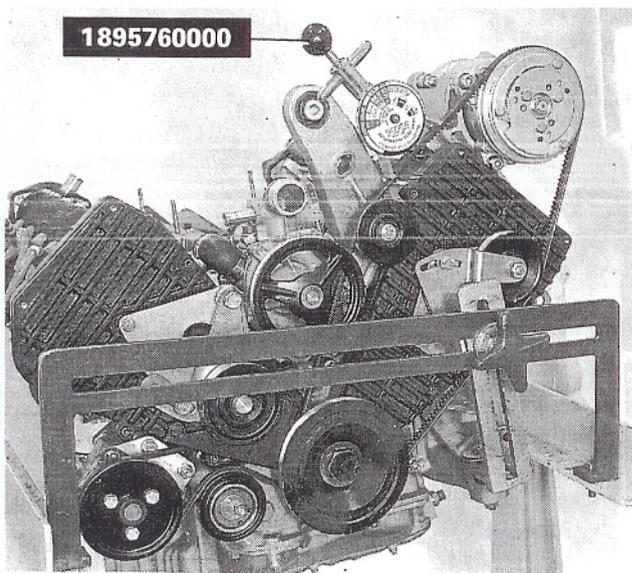
Fitting air conditioning compressor



10.



Tensioning air conditioning compressor belt



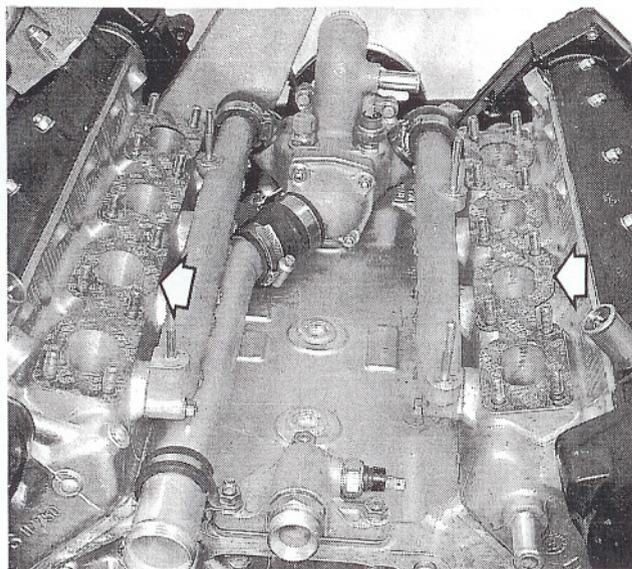
Checking air conditioning compressor belt tension

Check that the tension for the **new** belt is between 40 and 45 daN using tool 1895760000. Let the engine run for 15 minutes at 3000 rpm. Then let the engine cool down and check that the belt tension is still between 40 and 45 daN. If it is not, reset the tension.

Periodic check of belt tension

The periodic check of the belt tension should be carried out with the engine cold using tool 1895760000. If the load is 18 daN or less, reset the tension at 25 - 30 daN. **If the load is 15 daN or less, the belt must be replaced.**

NOTE *Check the condition and tension of the belt every 10,000 km and **replace it every 30,000 km.***



Fitting gaskets for 2 inlet manifolds

The two arrows show the gaskets

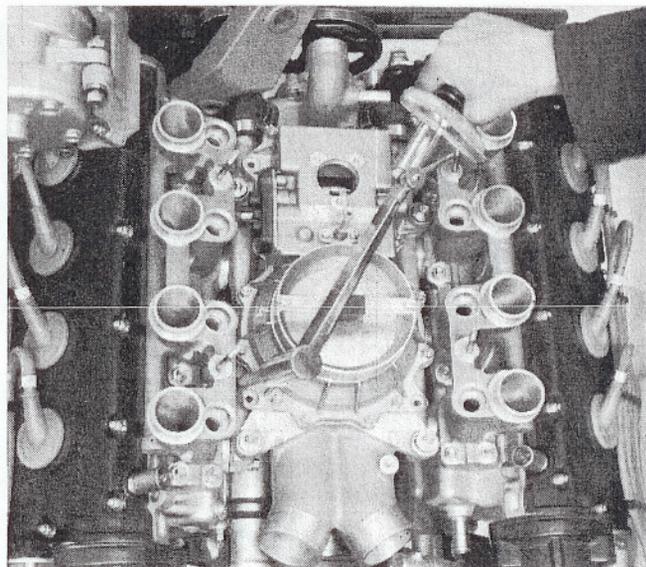
2,5 daNm



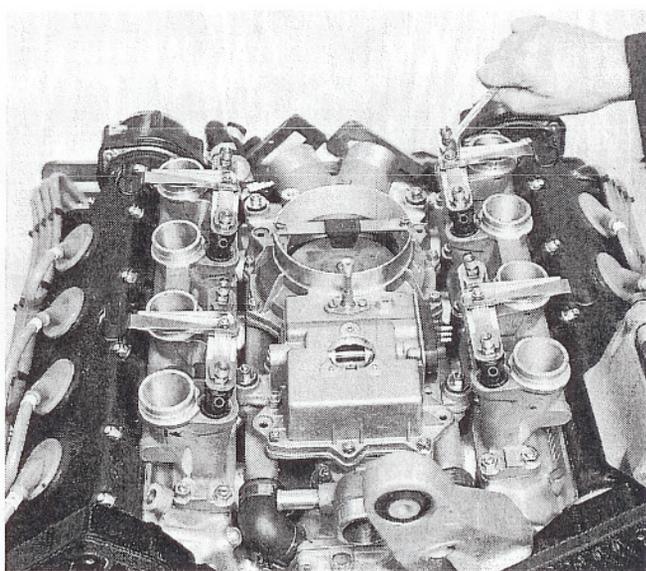
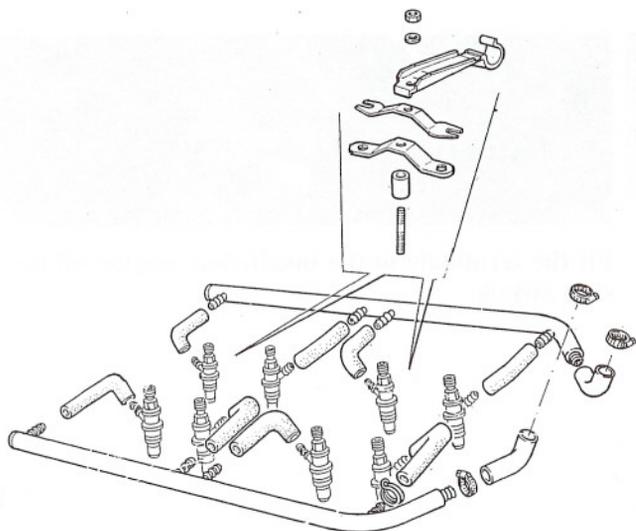
Fitting inlet manifolds and air flow meter



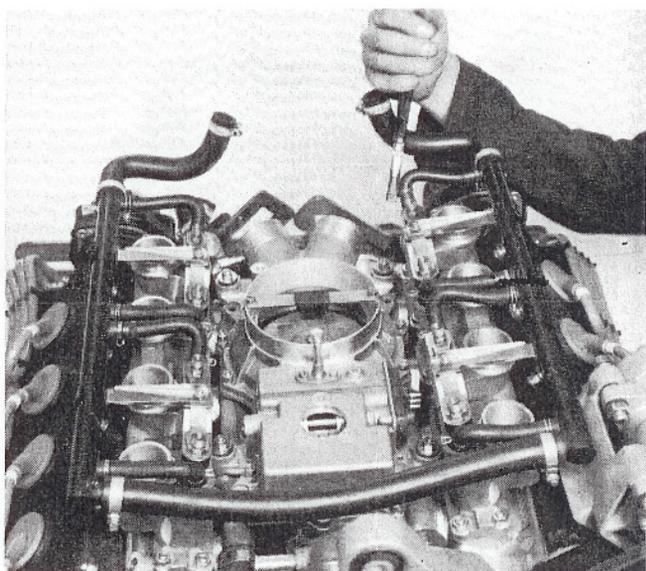
Both inlet manifolds and the air flow meter must be fitted at the same time otherwise there will be problems with interference



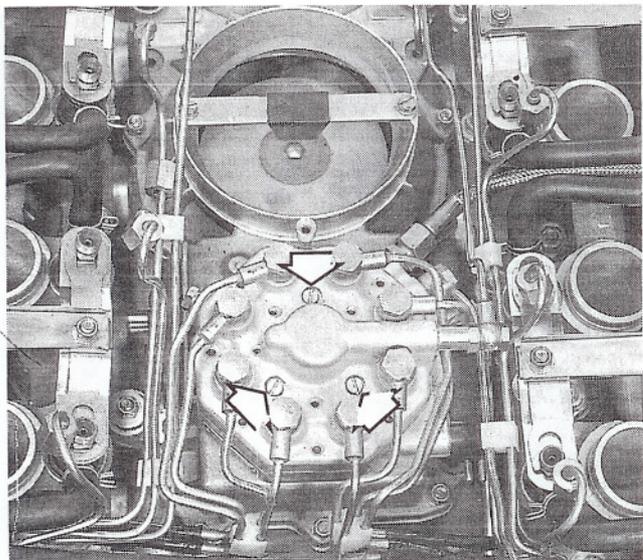
Fitting injectors and fixing brackets



Fitting idle and cold start fuel pipes

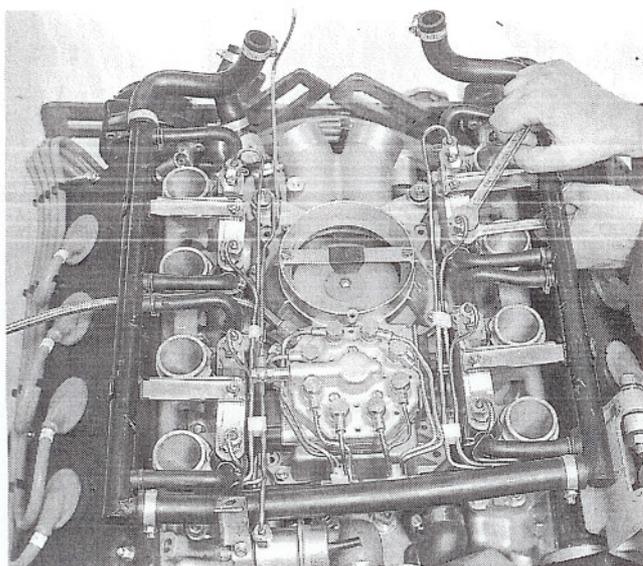


10.

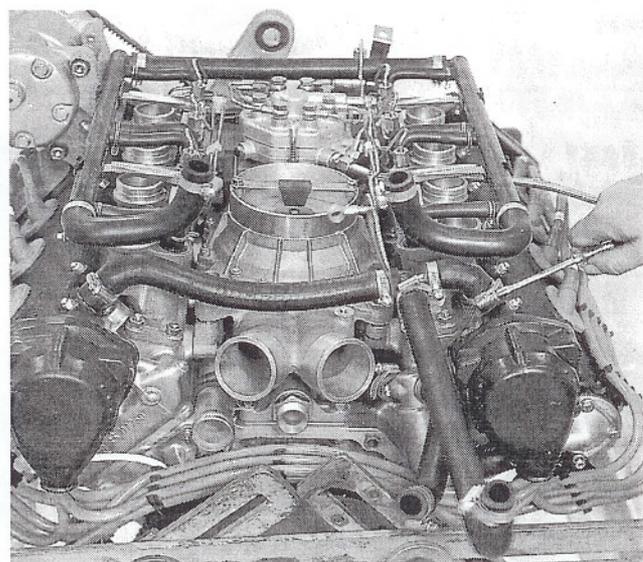


Fitting fuel distribution-metering device

The arrows show the bolts fixing the device to the air flow meter

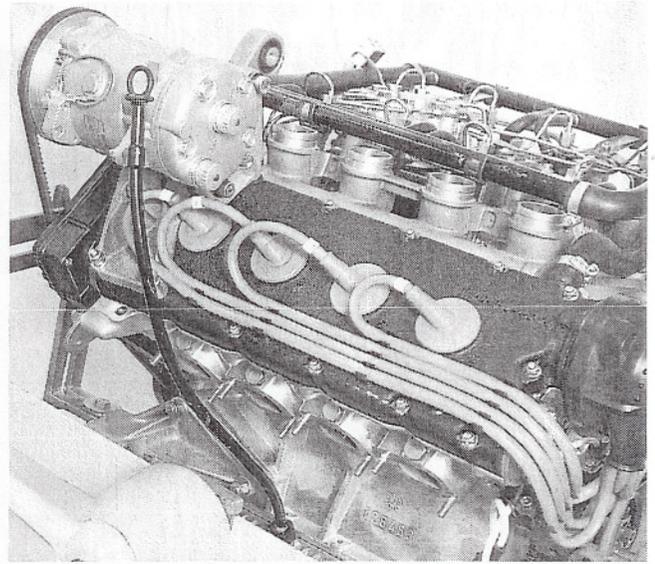


Fixing fuel supply pipes to each individual injector

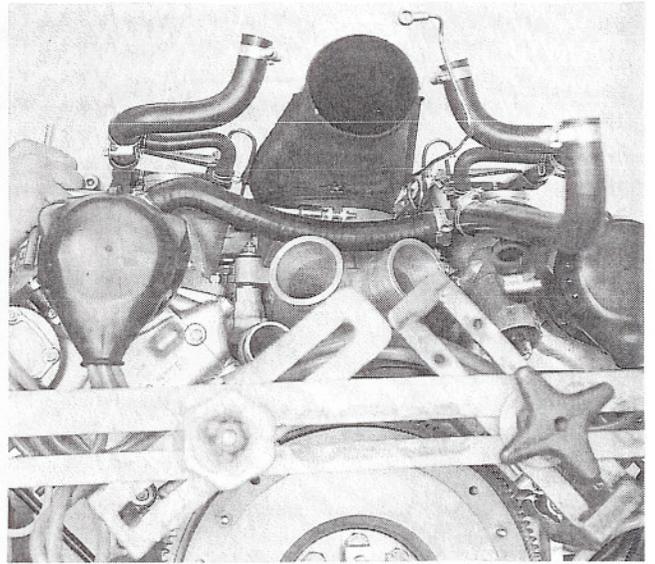


Fit the terminals to the insufficient engine oil pressure switch

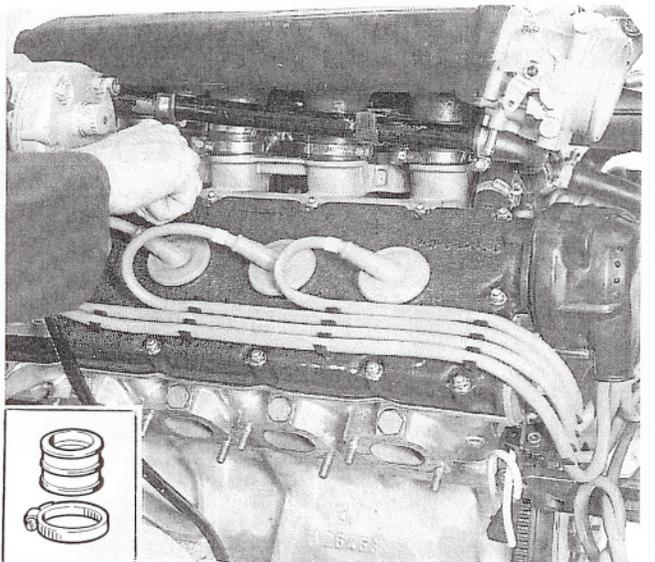
Fitting engine oil return pipe



Fitting oil dip stick guide and dip stick

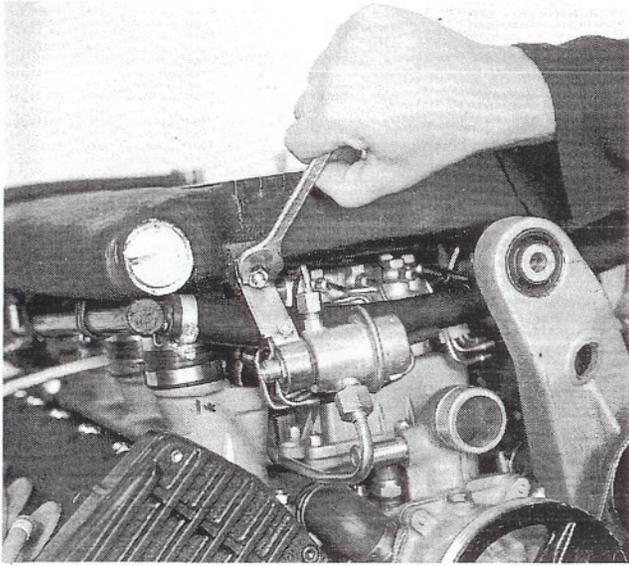


Fitting sleeve (duct) supplying air to flow meter

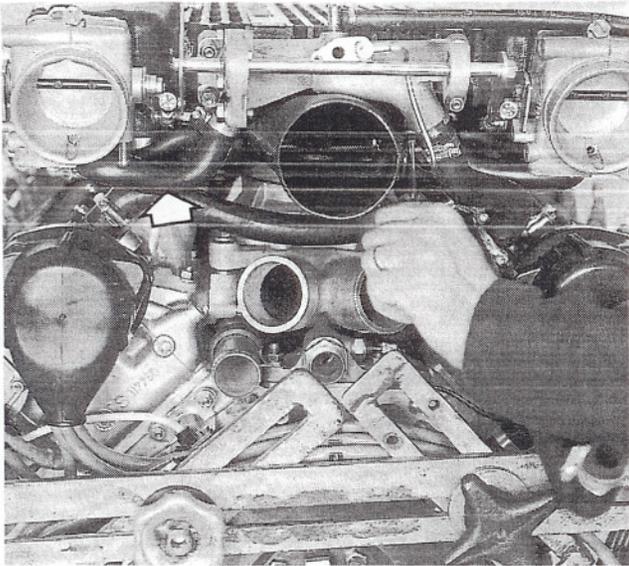


Fitting inlet manifold to 2 inlet duct covers

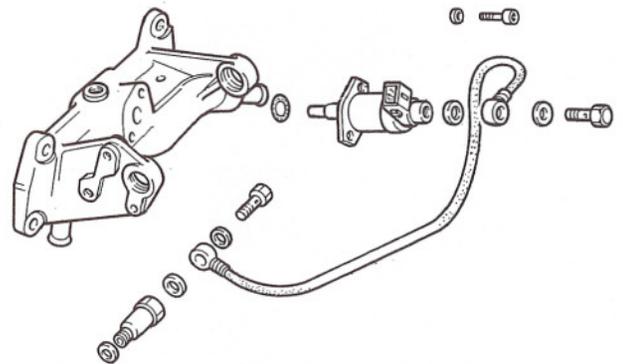
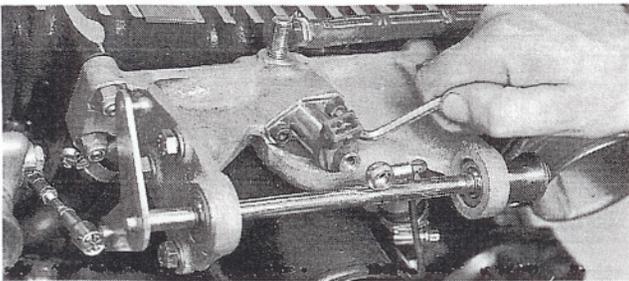
10.



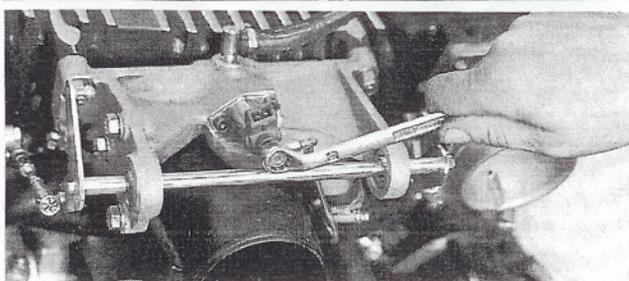
Fitting fuel pressure regulator to inlet manifold



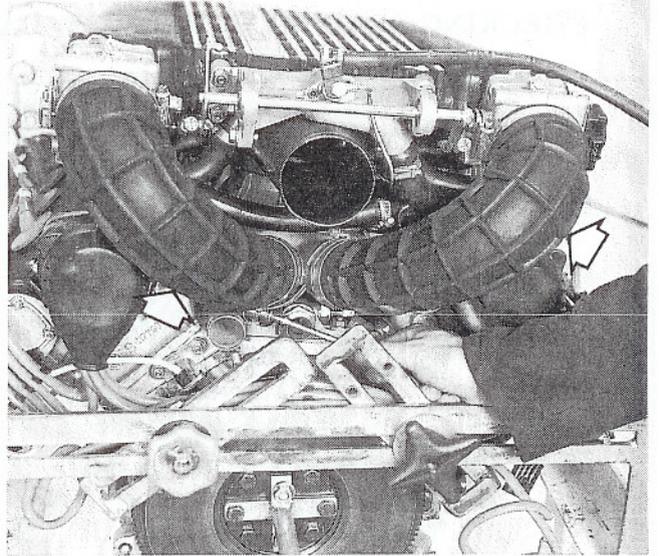
Fitting pipes for additional air during idling and cold starting



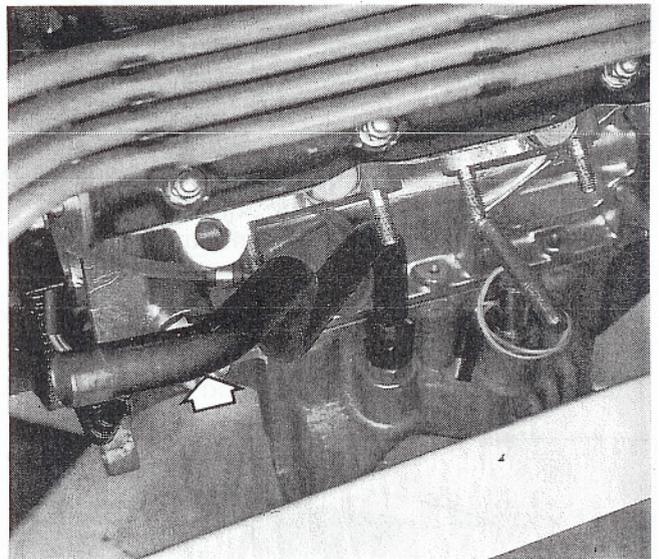
Fitting cold start injector



Fitting fuel supply pipe to cold start injector

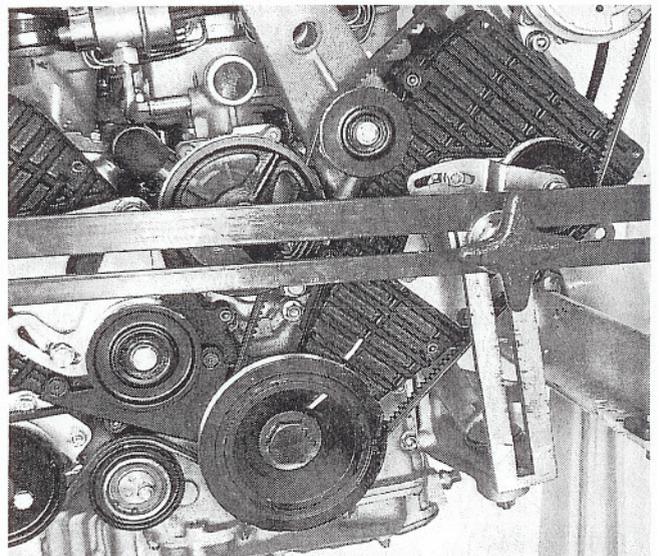


Fitting sleeves connecting butterfly casings to air flow meter



Fitting engine oil return pipe between oil sump and oil filler union

The arrow shows the pipe to be fitted on the oil sump

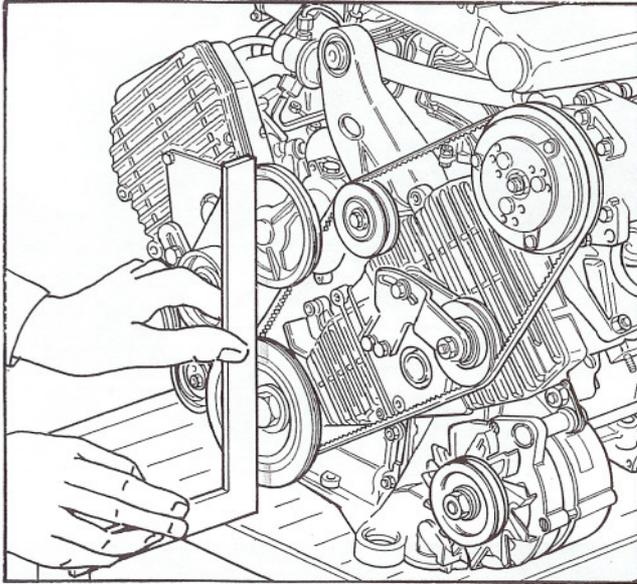


Visual inspection of timing system

Check that the reference mark on the damper pulley is in line with the reference mark on the front shield for the left main bearing

10.

CHECKING ALIGNMENT BETWEEN DAMPER PULLEY AND CRANKSHAFT PULLEY



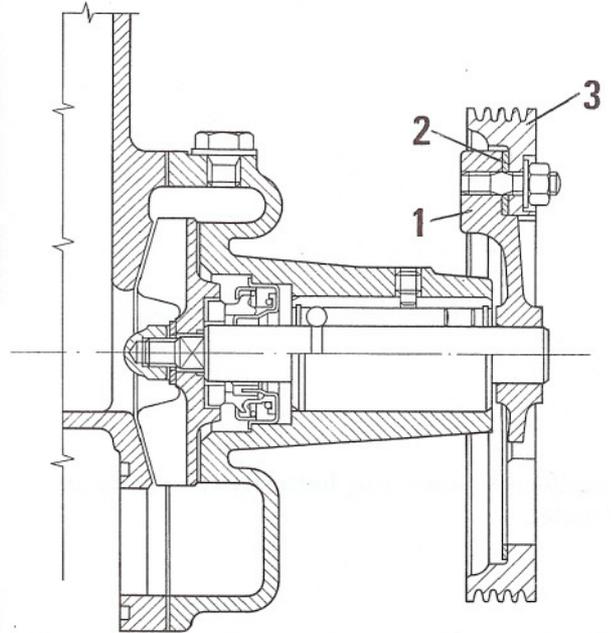
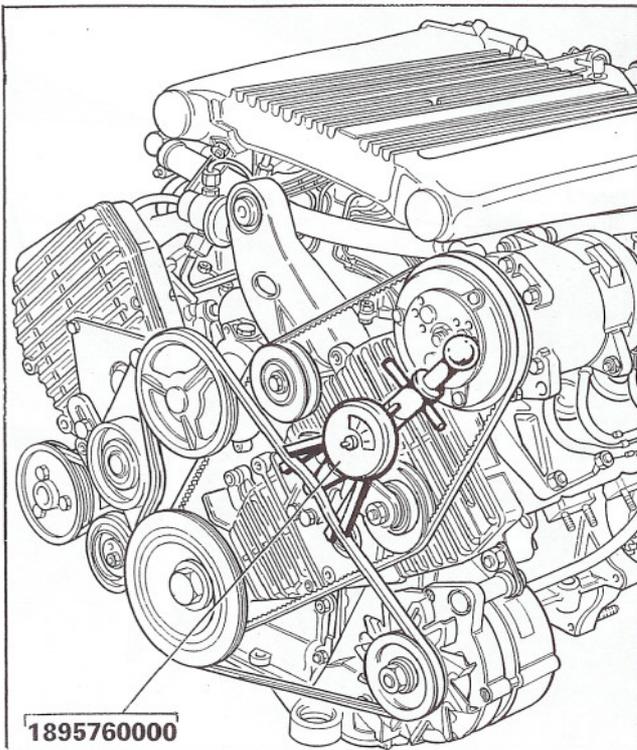
Checking alignment between damper pulley and crankshaft pulley

Rest a metal rule on the damper pulley and check the alignment with the water pump drive pulley. If necessary, add or remove some of the adjustment shims (2) between the hub (1) and the water pump drive pulley (3). A maximum of three adjustment shims can be fitted.



The adjustment shims are available as spares in sizes of 1 mm.

Then fit the crankshaft pulley and tension it.



Cross section of water pump and control pulley



Checking crankshaft drive belt tension

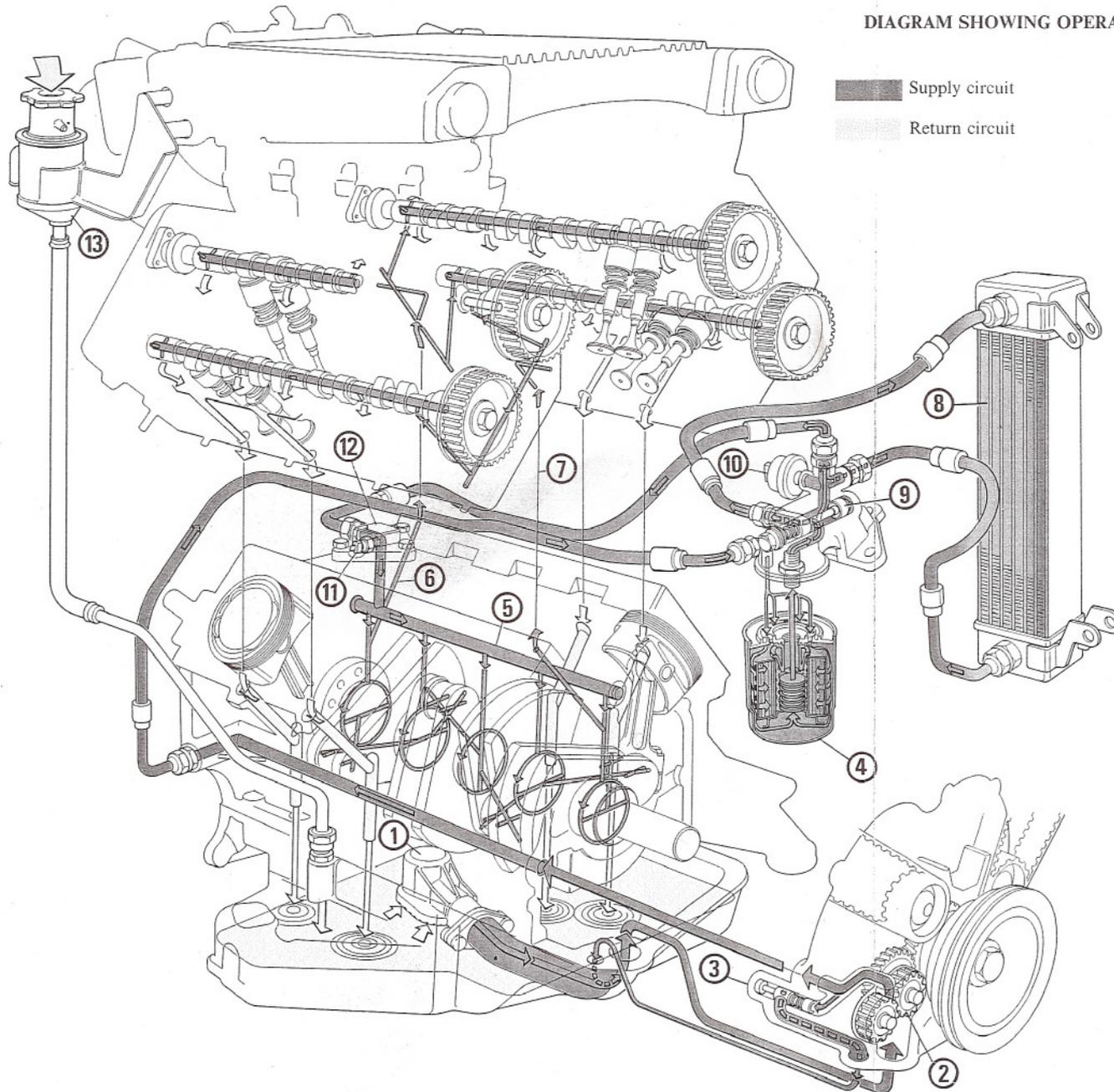
Check that the tension of the **new** belt is between 40 and 45 daN using tool 1895760000. Let the engine run for 15 minutes at 3000 rpm. Then let the engine cool down and check that the belt tension is still between 40 and 45 daN. If it is not, reset the tension.

Periodic check of belt tension

The periodic check of the belt tension should be carried out with the engine cold using tool 1895760000. If the load is 18 daN or less, reset the tension at between 25 and 30 daN. **If the load is 14 daN or less, the belt has to be replaced.**

NOTE Check the condition and tension of the belt every 10,000 km and replace it every 30,000 km.

DIAGRAM SHOWING OPERATION OF ENGINE LUBRICATION SYSTEM



Supply circuit

Return circuit

Operation

The lubricating oil is drawn from the sump by the pump and sent under pressure through a duct to the full flow cartridge oil filter.

A **thermostatic switch** located in the oil filter mounting ensures that:

- at temperatures below 73°C the oil passes directly into the cartridge filter and consequently directly into the engine;
- at temperatures above 77°C the thermostatic valve opens and allows the oil coming from the cartridge filter to pass into the oil cooling radiator lowering the temperature and guaranteeing better lubrication.

After being filtered the oil passes into the main duct (5), located longitudinally in the cylinder block/crankcase, and from there is sent through secondary duct to lubricate the crankshaft main journals and crankpins.

In addition, two vertical ducts located in the cylinder block/crankcase and in the cylinder heads ensure the lubrication of the 4 camshaft bearings and from there the oil lubricates the tappets and the shims.

The vertical duct in the flywheel side main bearing cap, takes care of the lubrication of the left cylinder head camshafts whilst the other duct, on the timing side main bearing cap, ensures the lubrication of the right cylinder head camshafts.

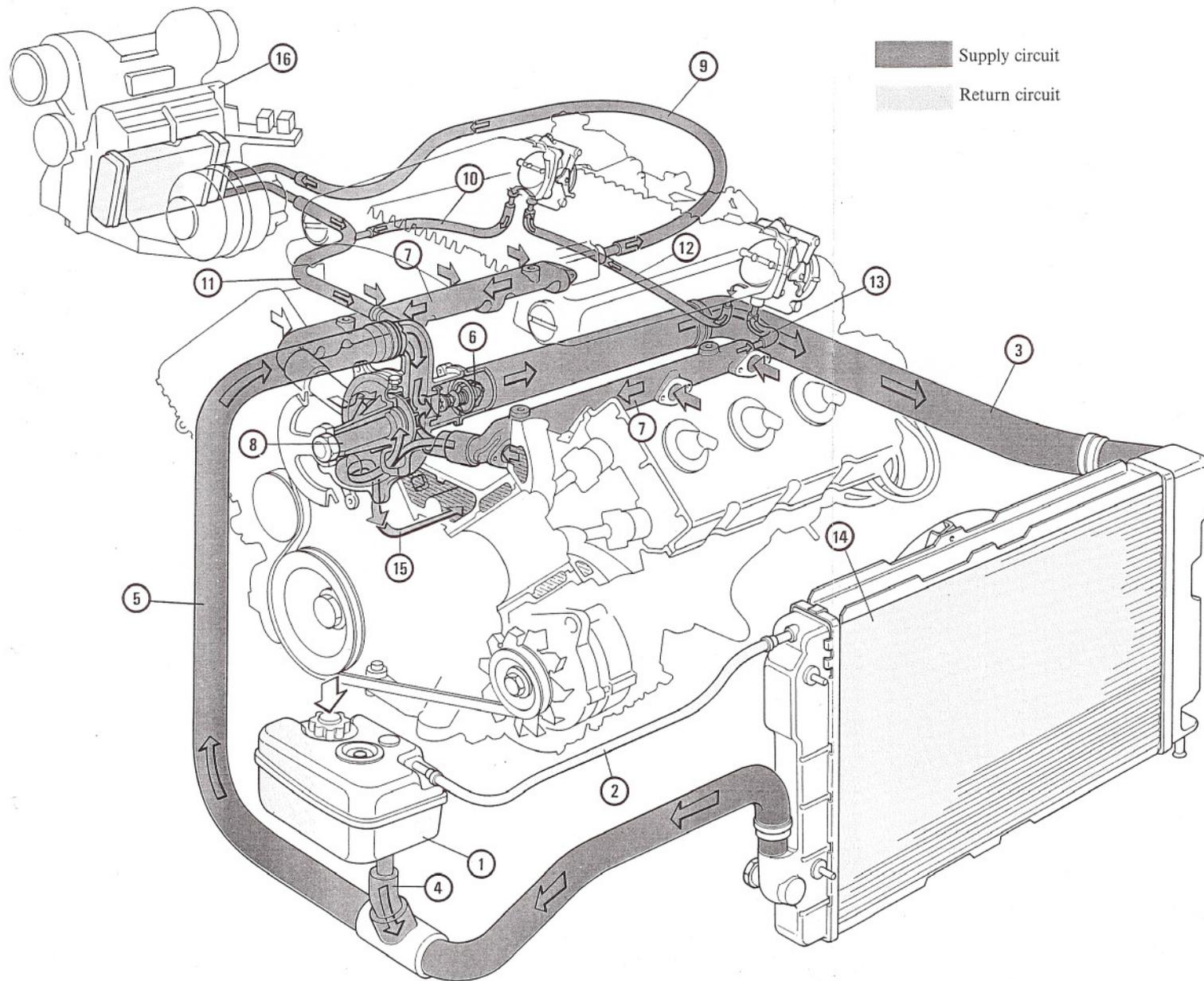
Key

1. Strainer with gauze filter
2. Geared oil pump
3. Oil pressure relief valve
4. Full flow cartridge oil filter with safety valve for cutting out filter if the filtering element is blocked
5. Main duct supplying oil to various components
6. Duct supplying oil to left cylinder head camshafts
7. Duct supplying oil to right cylinder head camshafts
8. Engine oil cooling radiator
9. Mounting for filter with thermostatic by-pass valve for oil radiator
10. Engine oil pressure sender unit
11. Insufficient engine oil pressure switch
12. Oil inlet flange in cylinder block/crankcase
13. Engine oil filler union



The thermostatic valve is not available as spares; if it is not working properly, replace the oil filter mounting.

DIAGRAM SHOWING OPERATION OF COOLING SYSTEM



Supply circuit
Return circuit

1. Expansion tank (with float for coolant level sensor – Control System)
2. Pipe connecting radiator to expansion tank
3. Coolant pipe between thermostat and radiator
4. Coolant pipe between expansion tank and pump
5. Coolant pipe between radiator and thermostat
6. By-pass thermostat for coolant mixture
7. Coolant inlet ducts between the cylinder heads (left and right) and the pump
8. Centrifugal coolant pump
9. Coolant pipe between the engine and the heater radiator (the circulation in the heater radiator is continuous because there is no closing device)
10. Coolant pipe between butterfly casing and pipe 11
11. Coolant pipe between heater radiator and pump
12. Coolant pipe between butterfly casings
13. Coolant pipe between duct 7 of the butterfly casing and the butterfly casing on the left cylinder head
14. Radiator
15. Coolant duct between the pump and the cylinder block/crankcase
16. Heater radiator

NOTE *The cooling system should be refilled via the expansion tank. The air bleed screw at the top edge of the radiator has to be opened during this operation. When the refilling is completed, thoroughly bleed the air with the engine warm, i.e. when the thermostat is already open.*



The coolant can be drained via the threaded plug in the cylinder block/crankcase, right main bearing side

1840206000	Percussion extractor	1861001037	Tool for fixing engine, flywheel side, to rotating stand(to be used with 1861001034)
1840207821	Tool for removing camshaft drive gear support bearings (on cylinder block/crankcase) (to be used with 1840206000)	1867029000	Flywheel lock
1850132000	Spanner for adjusting nuts fixing timing cover (13 mm)	1867056000	Support for checking cylinder bore projection (to be used with 1895884000)
1850188000	Spanner (11/16" - 18 mm) for spark plugs	1867063000	Tool for replacing tappet shims
1850189000	Spanner (15 mm) with 1/2" socket for cylinder head fixing nuts	1867064000	Tool for retaining camshafts in reference position
1850191000	Spanner for CO adjustment screw	1867065000	Tool for retaining cylinder bores in place
1850192000	Spanner (19 mm) for bolts fixing timing pulleys to relevant shafts (only on vehicle)	1867066000	Drift for fitting engine valve guides
1852150000	Spanner for adjusting bolts fixing timing belt and crankshaft rear cover shields	1867067000	Support for dial gauge for checking valve seat wear in cylinder head (to be used with 1895881000)
1860183000	Pliers for removing-refitting piston rings on pistons	1867068000	Drift for fitting seal on cylinder head front cover
1860395000	Drift for removing engine valve guides	1867069000	Drift for fitting seal on crankshaft front cover
1860480000	Cylinder head support	1867070000	Drift for fitting seals for camshaft drive gears on crankshaft front cover
1860490000	Tool for retaining valve leakage test equipment 1895868000	1867071000	Drift for fitting seal on crankshaft rear cover
1860592000	Universal hook for raising and moving engine	1867072000	Drift for removing-refitting small end bush
1860592010	Component to be used with 1860592000	1867073000	Drift for fitting distributor cap mounting on cylinder head
1860605000	Tool for fitting pistons in cylinders	1867074000	Tool for retaining timing belt pulleys
1860644000	Tool for removing and refitting engine valves	1867075000	Tool for measuring TDC when checking timing
1860644020	Tool for removing-refitting engine valves (to be used with 1860644000)	1867076000	Spanner for removing-refitting ring nuts fixing timing drive gears
1860662000	Tool for removing cartridge oil filter	1870007000	Grip for various tools
1860744000	Crank for rotating crankshaft	1890385000	Reamer (Ø 7 mm) for valve guide openings
1860744010	Tool for rotating crankshaft (to be used with 1860744000)	1895113000	Gauge for checking engine valve clearance
1860756000	Tool for tensioning timing belts	1895362000	Cooling system leakage test equipment
1861000001	Pair of tools for rotating stand 1861000000	1895433000	Gauge for checking diameter and ovality of valve guide openings
1861001032	Brackets for fixing engine, timing side, to rotating stand	1895760000	Dynamometer for checking belt tension
1861001034	Brackets for fixing engine, flywheel side, to rotating stand		

10.A

- 1895868000** Valve leakage test equipment
- 1895881000** Dial gauge (to be used with specific tools)
- 1895884000** Dial gauge (to be used with specific tools)
- 1895897000** Spanner for checking cylinder head nut tightening angle

(*) General tool