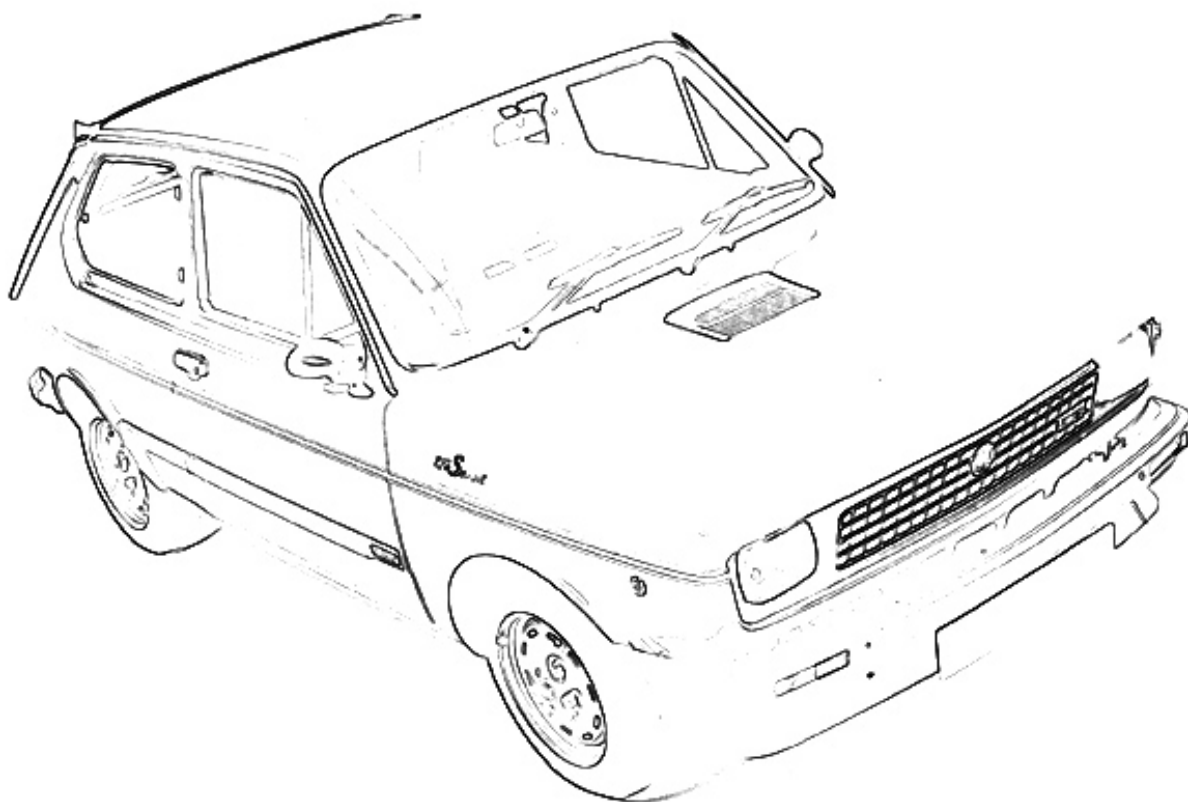


Fiat 127

1049 cm³



opis části servisního manuálu

Supplement

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1. Introduction

Since its first introduction in 1971 the FIAT 127 has undergone a continuing programme of improvements concerned mainly with styling and trim alterations. However, in 1977 a new model range was introduced which included the option of a larger engine of 1049 cc capacity with a single overhead camshaft. In appearance, cars in the new range are broadly similar to the earlier models but they have a lower bonnet line, larger glass area and redesigned bumpers.

In October 1978, the FIAT 127-Sport was launched. This is a high performance version of the three door hatchback having the 1049 cc

engine with a twin choke carburettor. Apart from minor body styling changes, the Sport is equipped with a larger capacity sump, twin exhaust tailpipes, servo braking, additional instrumentation and a laminated windscreen.

This supplement has been added to cater for some of the production changes which have been made, but principally to cover the 1049 cc engine. The material given in Chapters 1 to 12 still applies unless superseded by information contained in this Supplement. Therefore, always read this Chapter in conjunction with the rest of the book.

2. Specifications

Capacities (1049 cc models)

Engine oil (including filter change)		
L, C and CL	...	5.5 pints (3.1 litres)
Sport	...	7.7 pints (4.4 litres)
Coolant	...	9.7 pints (5.5 litres)
Fuel	...	6.7 gallons (30.5 litres) including 6.2 pints (3.5 litres) reserve
Transmission oil	...	4.2 pints (2.4 litres)

1049 cc OHC engine

General

Type number	...	127 A 000 (C, L and CL); 127 A1.000 (Sport)
Bore	...	2.992 in (76 mm)
Stroke	...	2.276 in (57.8 mm)
Capacity	...	64 cu in (1049 cc)
Compression ratio	...	9,3 : 1 (C, L and CL); 9,8 : 1 (Sport)
Maximum horsepower (DIN)	...	50 HP at 5600 rpm (C, L and CL); 70 HP at 5600 rpm (Sport)

Valve mechanism	C, L and CL	Sport
Inlet :		
Opens	2° BTDC	6° BTDC
Closes	42° ABDC	46° ABDC
Exhaust :		
Opens	42° BBDC	47° BBDC
Closes	2° ATDC	7° ATDC
Valve clearances (cold) :		
For checking valve timing:		
Inlet	0.028 in (0.70 mm)	0.032 in (0.80 mm)
Exhaust	0.028 in (0.70 mm)	0.032 in (0.80 mm)
Adjustment for running (engine cold) :		
Inlet	0.012 in (0.30 mm)	0.016 in (0.40 mm)
Exhaust	0.016 in (0.40 mm)	0.020 in (0.50 mm)

Cylinder block and connecting rods	inches	mm
Cylinder bore diameter *	2.992 to 2.994	76.00 to 76.05
* Cylinder bores are graded and have a variation of 0.0004 inch (0.01 mm) between each grade		
Main bearing housing bore diameter	2.044 to 2.045	51.921 to 51.934
Width of centre main bearing cap between thrust washers	1.088 to 1.091	27.64 to 27.70
Connecting rod big-end diameter	1.85 to 1.8560	47.130 to 47.142
Connecting rod small-end diameter	0.8638 to 0.8646	21.94 to 21.96
Big-end bearing shell thickness	0.0606 to 0.8646	1.539 to 1.55

Big-end bearing shell undersize range	0.01; 0.02; 0.03; 0.04	0.254; 0.508; 0.762; 1.016
Gudgeon pin interference fit in small-end:		
C, L and CL	0.0004 to 0.0017	0.01 to 0.042
Sport	0.0004 to 0.0006	0.01 to 0.016
Crankpin to bearing fit clearance	0.0009 to 0.003	0.022 to 0.076
Maximum misalignment between big and small-end axes measured 4.92 in (125 mm) from		
Connecting rod	± 0.004	± 0.10

Pistons, rings and pins**inches****mm**

Standard piston diameter, measured 0.925 inch (23.5 mm) from piston skirt base :		
Grade A	2.989 to 2.9894	75.92 to 75.93
Grade C	2.9898 to 2.9902	75.94 to 75.95
Grade E	2.9906 to 2.9909	75.96 to 75.97
Range of oversize pistons	0.0079; 0.0157; 0.0236	0.2; 0.4; 0.6
Piston boss diameter (C, L and CL):		
Grade 1	0.8654 to 0.8656	21.982 to 21.986
Grade 2	0.8655 to 0.8657	21.986 to 21.990
Grade 3	0.8657 to 0.8659	21.990 to 21.994
Piston boss diameter (Sport):		
Grade 1	0.7874 to 0.7875	19.999 to 20.002
Grade 2	0.7875 to 0.7876	20.002 to 20.005
Ring groove width (C,L and CL) :		
Top groove	0.0604 to 0.0612	1.535 to 1.555
Centre groove	0.0799 to 0.0807	2.030 to 2.050
Bottom groove	0.1562 to 0.1570	3.967 to 3.987
Ring groove width (Sport) :		
Top groove	0.0604 to 0.0612	1.535 to 1.555
Centre groove	0.0793 to 0.0801	2.015 to 2.035
Bottom groove	0.1558 to 0.1566	3.957 to 3.977
Standard gudgeon pin diameter (C, L and CL):		
Grade 1	0.8650 to 0.8651	21.970 to 21.974
Grade 2	0.8651 to 0.8652	21.974 to 21.978
Grade 3	0.8652 to 0.8654	21.978 to 21.982
Standard dudgeon pin diameter (Sport) :		
Grade 1	0.7872 to 0.7873	19.994 to 19.997
Grade 2	0.7873 to 0.7874	19.997 to 20.000
Oversize gudgeon pin diameter	0.0079; 0.0157; 0.0236	0.2; 0.4; 0.6
Piston ring thickness :		
Top compression ring	0.0582 to 0.0587	1.478 to 1.490
2nd oil control ring	0.0779 to 0.0783	1.978 to 1.990
3rd oil scraper ring	0.1545 to 0.1550	3.925 to 3.937
Piston to bore fit clearance	0.0028 to 0.0035	0.070 to 0.090
Gudgeon pin fit clearance in piston	0.0003 to 0.0006	0.008 to 0.016
Piston ring side clearance in groove:		
1st compression ring	0.0018 to 0.003	0.045 to 0.077
2nd oil control ring	0.0010 to 0.0022	0.025 to 0.057
3rd oil scraper ring	0.0008 to 0.002	0.020 to 0.052
Piston ring end gap:		
1st compression ring (C, L and CL)	0.0079 to 0.0157	0.20 to 0.40
1st compression ring (Sport)	0.0118 to 0.0197	0.30 to 0.50
2nd oil control ring	0.0118 to 0.0197	0.30 to 0.50
3rd oil scraper ring	0.0079 to 0.0138	0.20 to 0.35
Piston rings oversize range	0.0079; 0.0157; 0.0236	0.2; 0.4; 0.6

Crankshaft

	inches	mm
Main bearing journal diameter	1.8972 to 1.898	48.189 to 48.209
Standard main bearing shell thickness	0.0721 to 0.0726	1.831 to 1.845
Main bearing shell undersize range	0.01; 0.02; 0.03; 0.04	0.254; 0.508; 0.762; 1.016
Standard crankpin diameter	1.7318 to 1.7326	43.988 to 44.008
Main bearing journal fit clearance	0.0009 to 0.033	0.022 to 0.083
Width of centre main bearing cap between thrust washers	1.2785 to 1.2805	32.475 to 32.525
Standard thrust washers thickness	0.0909 to 0.0929	2.31 to 2.36
Thrust washers oversize range	0.0959 to 0.0979	2.437 to 2.487
Crankshaft endfloat	0.0022 to 0.0104	0.055 to 0.265
Maximum misalignment of main bearing journals	0.0012	0.030
Maximum misalignment of main bearing journals to crankpins	0.0138	0.350
Maximum ovality of crankpins and main bearing journals after grinding	0.0002	0.005
Maximum taper of crankpins and main bearing journals after grinding	0.0002	0.005
Maximum run-out of crankshaft flange with dial gauge stylus 31 mm (1.22 ins) from crankshaft rotational axis	0.001	0.025
Maximum run-out between flywheel face and crankshaft flange, and between flywheel face and crankshaft axis	0.0039	0.10

Cylinder head

	inches	mm
Standard valve guide housing bore	0.5886 to 0.5896	14.950 to 14.977
Standard valve outside diameter	0.5921 to 0.5928	15.040 to 15.058
Oversize valve guide	0.002; 0.0039; 0.0098	0.05; 0.10; 0.25
Valve guide interference fit	0.0025 to 0.0043	0.063 to 0.108
Fitted valve guide internal diameter	0.3158 to 0.3165	8.022 to 8.040
Valve stem diameter	0.3139 to 0.3146	7.974 to 7.992
Valve stem fit clearance in guide	0.0012 to 0.0026	0.030 to 0.066
Valve head diameter:		
Inlet (C, L and CL)	1.3327 to 1.3445	33.85 to 34.15
Inlet (Sport)	1.4311 to 1.4429	36.35 to 36.65
Exhaust	1.1358 to 1.1476	28.85 to 29.15
Valve seat width	0.0787 to 0.0866	2.0 to 2.2
Valve seat internal diameter:		
Inlet (C, L and CL)	1.1063 to 1.1142	28.1 to 28.3
Inlet (Sport)	1.2244 to 1.2323	31.1 to 31.3
Exhaust (C, L and CL)	0.9882 to 0.9961	25.1 to 25.3
Inlet (Sport)	1.0276 to 1.0354	26.1 to 26.3
Angle of valve seat	45° ± 5'	
Angle of valve face	45° 30' ± 5'	
Valve springs:		
Inner spring part no.	4134900	
Outer spring part no.	4170458	

Valve gear

	inches	mm
Camshaft journal diameter:		
Valve gear end	1.1789 to 1.1795	29.945 to 29.960
Centre	1.0630 to 1.0636	27.000 to 27.015
Flywheel end	0.9843 to 0.9848	25.000 to 25.015

Camshaft bearing bore diameter in head:

Valve gear end	1.1807 to 1.1817	29.990 to 30.015
Centre	1.0648 to 1.0657	27.045 to 27.070
Flywheel end	0.9860 to 0.9870	25.045 to 25.070
Camshaft journals fit clearance	0.0012 to 0.0028	0.030 to 0.070
Cam lift (C, L and CL)	0.3425	8.700
Cam lift (Sport):		
Inlet	0.3622	9.200
Exhaust	0.3642	9.250
Standard tappet bore diameter	1.4567 to 1.4577	37.000 to 37.025
Standard tappet outside diameter	1.4557 to 1.4565	36.975 to 36.995
Tappet fit clearance	0.0002 to 0.0020	0.005 to 0.050
Shim thickness	0.1279; 0.1299; then 0.0039 steps to 0.1850	3.2b; 3.30; then 0.10 steps to 4.70

Auxiliary shaft

Diameter of bush bores in crankcase:

	inches	mm
Front	1.6339 to 1.6350	41.500 to 41.530
Rear	1.5733 to 1.5745	39.962 to 39.992
Fitted bush internal diameter:		
Front	1.5143 to 1.5151	38.464 to 38.484
Rear	1.4553 to 1.4561	36.964 to 36.984
Diameter of shaft journals:		
Front	1.5115 to 1.5125	38.393 to 38.418
Rear	1.4525 to 1.4535	36.893 to 36.918
Bush fit	There must always be an interference fit	
Shaft/bush fit clearance (front and rear)	0.0018 to 0.0036	0.046 to 0.091

Lubrication system

Oil pump	Four lobe rotor type	
Pump drive	Through auxiliary shaft	
Oil pressure relief valve	Incorporated in pump	
Pump rotors endfloat	0.0018 to 0.0047	0.045 to 0.120
Outer rotor to body clearance	0.0006 to 0.0022	0.016 to 0.055
Inner to outer rotor clearance	0.0010 to 0.0039	0.025 to 0.100
Oil pressure at 212°F (100°C)	50 to 70 lbf/in ²	(3.5 to 5 kgf/cm ²)

Cooling system**Radiator fan thermal switch**

Cuts in .	194° to 201°F (90° to 94°C)
Cuts out	185° to 192°F (85° to 89°C)

Engine coolant thermostat

Starts to open	176° to 183°F (80° to 84°C)
Fully open	205°F (96°C)

Impellor vanes to pump body fit clearance 0.0315 to 0.0512 in (0.8 to 1.3 mm)

Radiator cap relief pressure 11.4 lbf/in² (0.8 kgf/cm²)

Fuel system**Weber 32 ICEV 16/150 carburettor (C, L and CL models)**

Venturi diameter	0.8465 in (21.5 mm)
Main jet .	0.0453 in (1.15 mm)

Air correction jet	0.0728 in (1.85 mm)
Slow running jet	0.0177 in (0.45 mm)
Emulsion tube type	F74
Accelerator pump jet	0.0157 in (0.40 mm)
Needle valve seat	0.0591 in (1.50 mm)
Accelerator pump output (10 strokes)	2 to 3 cm ³
Cold starting device	Automatic choke
Float level	1.4016 to 1.4213 in (35.6 to 36.1 mm)
CO level	2.5%

Solex C32 TDI/4 carburettor (C, L and CL models)

Venturi diameter	0.8465 in (21.5 mm)
Main jet	0.0453 in (1.15 mm)
Air correction jet	0.0768 in (1.95 mm)
Slow running jet	0.0177 in (0.45 mm)
Emulsion tube type	71
Accelerator pump jet	0.0177 in (0.45 mm)
Needle valve seat	0.0630 in (1.60 mm)
Accelerator pump output 110 strokes)	3 to 5 cm ³
Cold starting device	Automatic choke
Float level	0.8661 to 0.9449 in (22.0 to 24.0 mm)
CO level	2.5%

Weber 34 DMTR 47/250 carburettor (Sport models)

	Primary venturi	Secondary venturi
Venturi diameter	0.8661 in (22.0 mm)	0.9449 in (24.0 mm)
Main jet	0.0421 in (1.07 mm)	0.0500 in (1.27 mm)
Air correction jet	0.0728 in (1.85 mm)	0.0866 in (2.20 mm)
Slow running jet	0.0177 in (0.45 mm)	0.0276 in (0.70 mm)
Slow running air bleed	0.0413 in (1.05 mm)	0.0276 in (0.70 mm)
Accelerator pump jet	0.0157 in (0.40 mm)	---
Needle valve seat	0.0689 in (1.75 mm)	
Accelerator pump output (10 strokes)	8.55 cm ³	
Cold starting device	Manually operated strangler choke	
Float level	0.2657 to 0.2854 in (6.75 to 7.25 mm)	

Fuel pump

Output	75 litres/hr (16.5 gal/hr)
Actuating lever stroke (C, L and CL)	2.4 to 2.6 mm (0.0949 to 0.1024 in)
Actuating lever stroke (Sport)	2.4 to 2.9 mm (0.0949 to 0.1142 in)
Delivery pressure at 4000 engine rpm and fuel temp 30 °C (86 °F)	0.17 kgf/cm ² (2.55 lbf/in ²)

Ignition system**Distributor**

Type and code	Magneti Marelli S155HX
Automatic centrifugal advance	25° ± 2° at 4500 rpm
Condenser capacity (50 to 1000 Hz)	0.20 to 0.25 µF

Clutch

Lining outer diameter	181.5 mm (7.146 in)
Lining inner diameter	127.0 mm (5.0 in)

Maximum run-out of driven plate linings 0.2 mm (0.008 in)

Travel of release flange, corresponding to a pressure plate displacement of not less than 0.067 in ~1.7 mm) 8.5 mm (0.3346 in)

Transmission

Synchromesh 1st and 2nd, Borg-Warner baulk ring type, 3rd and 4th, Porsche spring ring type

Gear ratios

First	3.910 : 1
Second	2.055 : 1
Third	1.348 : 1
Fourth	0.963 : 1
Reverse	3.615 : 1

Final drive ratio (C,L and CL) 4.071 : 1 (14/57)

Final drive ratio (Sport) 4.462 : 1 (13/58)

Overall ratios

Gears	1st	2nd	3rd	4th	Reverse
C, L and CL	15.92	8.7	5.49	3.92	14.72
Sport	17.45	9.17	6.01	4.30	16.13

Electrical system

Alternator

Type (C, L and CL)	Magneti Marelli AA 108-14V-33A
Type (Sport)	Lucas 18ACR-A4V-45A
Maximum output (approx)	570 watts
Maximum current (approx)	40 amps (C, L and CL) 50 amps (Sport)
Cut-in speed at 12V and 20°C (68°F)	1050 to 1150 rpm (C, L and CL) 1100 to 1200 rpm (Sport)
Field winding resistance across slip rings at 20°C (68°F)	3.4 to 3.8 ohms (C, L and CL) 3.18 to 3.22 ohms (Sport)
Direction of rotation (drive end)	Clockwise
Engine/alternator drive ratio	1.8 : 1

Alternator regulator (C, L and CL models)

Type	Magneti Marelli RTT 110 AB
Alternator speed for adjustment	6000 rpm
Current for thermal balance	20 amps
Regulating voltage	14.2 ^{+0.3} _{-0.2} volts

Lamps

Headlamps (C, L and CL)	40/45 watts
Headlamps (Sport)	55/60 watts (Halogen)
Brake and rear light	5/21 watts
Turn indicators	21 watts
Reversing lights	21 watts
Parking lights	5 watts
Number plate	5 watts
Courtesy light	5 watts
Boot light	5 watts
Turn repeaters	4 watts
Cigar lighter light	4 watts
Instrument panel	3 watts
Ignition warning	3 watts
Turn indicator warning	1.2 watts
Headlamp warning	1.2 watts
Coolant temperature warning (L models)	1.2 watts
Oil pressure warning	1.2 watts
Fuel warning	1.2 watts
Hazard warning	1.2 watts
Sidelamp (out) warning (Sport only)	3 watts
Brake warning (Sport only)	1.2 watts
Heated rear window warning (Sport only)	1.2 watts

Fuses

For fuse details (127 Special, L, C, CL and Sport) see Sections 23 or 24

Steering and suspension (Sport only)**Steering angles**

Inner wheel	34° 50'
Outer wheel	32° 10'

Front wheel alignment (toe setting)

Laden	0.079 in (2.0 mm) toe-in to 0.079 in (2.0 mm) toe-out
Unladen	0.138 in (3.5 mm) to 0.217 in (5.5 mm) toe-in

Roadwheels

Size	4½ B x 13
Tyres	135 SR-13 or 155/70 SR-13

All 1049 cc models

	lbf ft	kgf m
Main bearing cap bolts	59	8.2
Engine mounting securing bolts	43	6
Cylinder head to block bolts and nuts:		
1 st stage	30	4.1
2nd stage	45	6.2
Final stage	61	8.5
Manifold to head nuts	20	2.8
Connecting rod big-end nuts	38	5.2
Flywheel to crankshaft bolts	61	8.5
Driven gear (Plastic) to camshaft retaining bolt	87	12
Driven gear (steel) to camshaft retaining bolt	87	12
Camshaft cap nuts	14	2

Ignition distributor clamp nut	11	1.5
Oil pump to crankcase bolts	13	1.8
Cylinder head outlet pipe bolt	16	2.2
Water pump/alternator drive pulley nut	101	14
Alternator bracket to crankcase bolt	20	2.8
Alternator to lower bracket bolt	36	5
Cylinder head upper bracket bolt	20	2.8
Alternator to upper bracket nut	36	5
Upper bracket securing bolt	13	1.8
Oil pressure switch	24	3.3
Coolant temperature switch	36	5
Spark plug	27	3.8

Sport models only**Engine**

Flexible mounting to body (engine side)	65	9.0
Flexible mounting support (engine side to body)	18	2.5
Flexible mounting upper support to gearbox	18	2.5
Engine crossmember to body	18	2.5
Flexible mounting support nut (gearbox side)	18	2.5
Flexible mounting support bolt to body (gearbox LH side)	65	9.0

Steering and suspension

Steering wheel retaining nut	22	3.0
Front wheel bearing ring nut	44	6.0
Front wheel hub nut	160	22.0
Roadwheel bolts	64	8.8
Front suspension track control arm to body	20	2.7
Front suspension balljoint to hub carrier	40	5.5
Rear wheel hub nut	160	22

Transmission

Starter motor bolt to bellhousing lower support	18	2.5
Gear selector shaft nut	18	2.5
Upper gear lever relay lever	22	3.0
Idler support securing nut	18	2.5
Differential case flange to gearbox housing	18	2.5

3. Engine

1049 cc engine - general

1 This engine is of overhead camshaft design, using shims for valve clearance adjustment. The crankshaft is supported in five main bearings, the centre one incorporating the thrust washers which control crankshaft endfloat.

2 An auxiliary shaft, driven by the toothed camshaft belt, is used to drive the distributor and the fuel pump. 3 Most major engine components can be removed while the engine is in the car, but operations on the crankshaft, main bearings and flywheel can only be carried out after the engine has been removed.

4 Engine removal and subsequent dismantling follows closely the information given for the overhead valve engine in Chapter 1, but the following sequence for complete engine dismantling is recommended:

- (a) Engine ancillaries (alternator, fuel pump, distributor)
- (b) Timing belt cover
- (c) Water pump
- (d) Timing belt tensioner and belt
- (e) Manifolds
- (f) Cylinder head complete with camshaft
- (g) Crankshaft pulley
- (h) Auxiliary shaft sprocket
- (i) Sump
- (j) Oil pump and auxiliary shaft
- (k) Connecting rods and pistons
- (l) Flywheel and crankshaft oil seal carriers
- (m) Crankshaft and main bearings

5 If the cylinder head is to be dismantled, before withdrawing the camshaft, have a suitably divided container ready so that the valve clearance adjusting shims can be extracted and kept in strict original order together with their appropriate valves, springs etc.

6 All engine parts must be thoroughly cleaned and examined as explained in Chapter 1. Where required, all defective parts should be renewed before reassembly starts.

Crankshaft – refitting

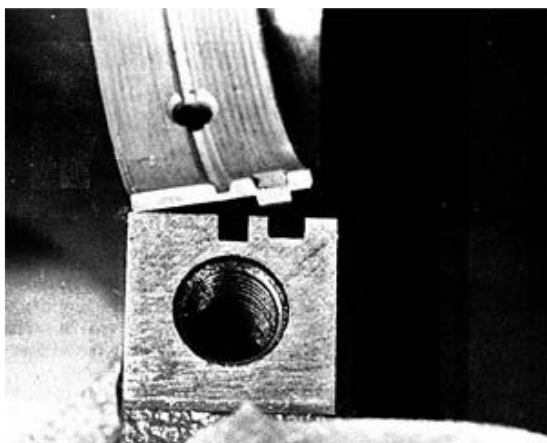
7 Fit the main bearing shells to their seats in the crankcase after making sure that both shells and seats are spotlessly clean and dry (photos).

8 With a light smear of grease, fit the two half thrust washers each side of the centre bearing with the oil grooves in each washer facing away from the bearing shell (photo).

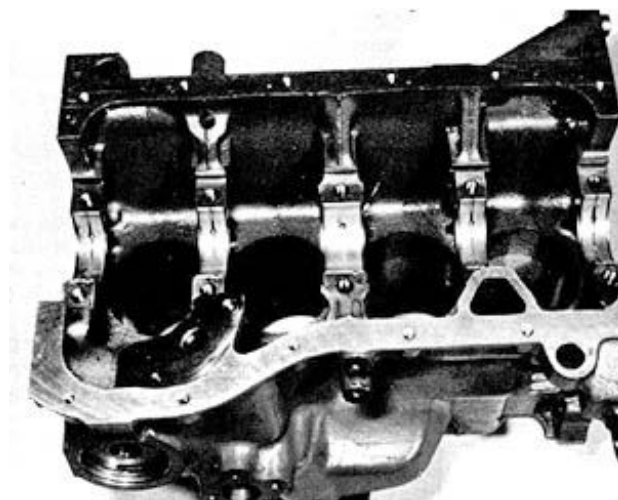
9 Using clean engine oil lubricate the bearing shells and crankshaft main bearing journals (photo).

10 Carefully lower the crankshaft into its bearings in the crankcase after making sure that it is the right way round. Spin the shaft to distribute the oil (photo).

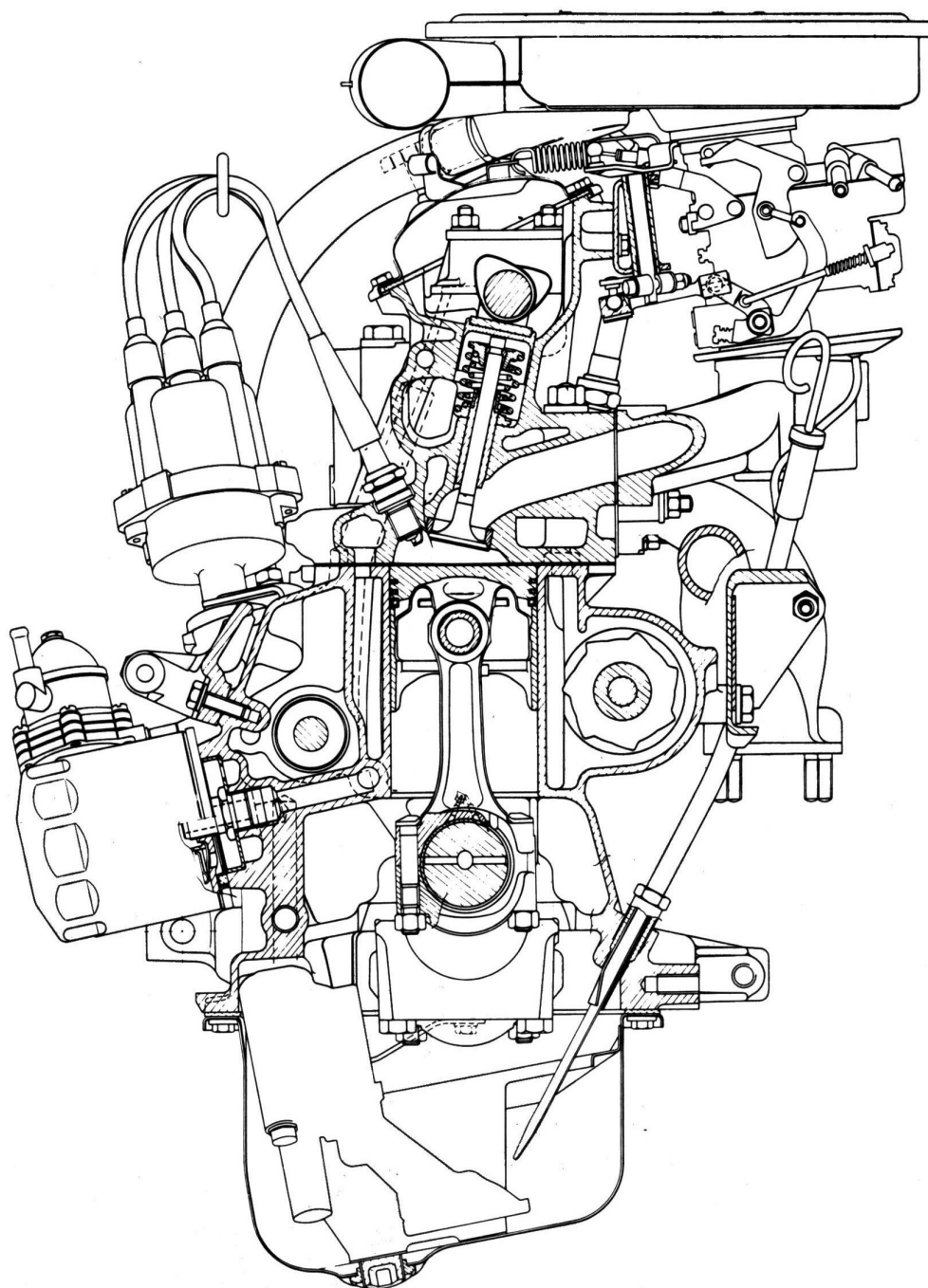
11 Fit the clean and dry bearing shells to the main bearing caps. Oil the bearing face and fit the bearing caps to the crankcase. Make sure that each cap is fitted to its own location by checking the groove marks in the base, and that each cap is the right way round. This is achieved when the axial locating tags in each half bearing shell butt on the same side (photos).



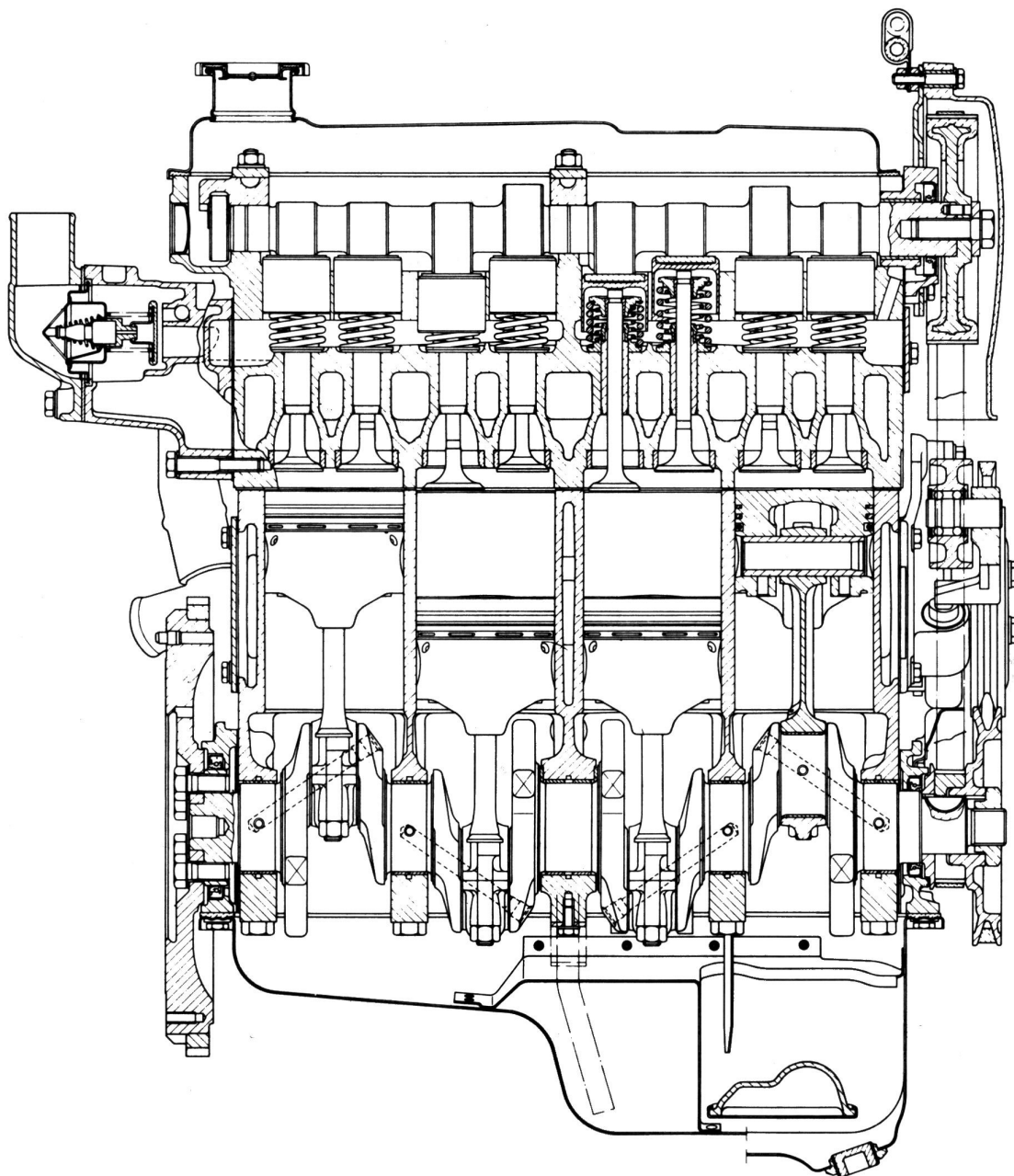
3.7A Thoroughly clean the bearing shells and seats before assembly



3.7B Note that central bearing shell has no oil groove but all shell are axially located by an offset tag

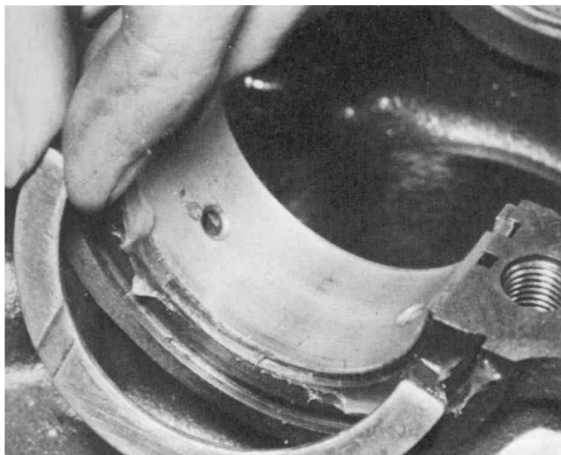


13.1. 1049 cc engine, longitudinal section (Sec.3)

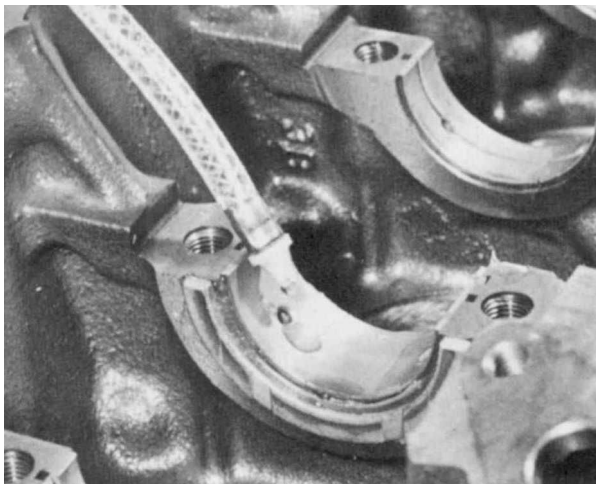


13.2. 1049 cc engine, cross section (Sec.3)

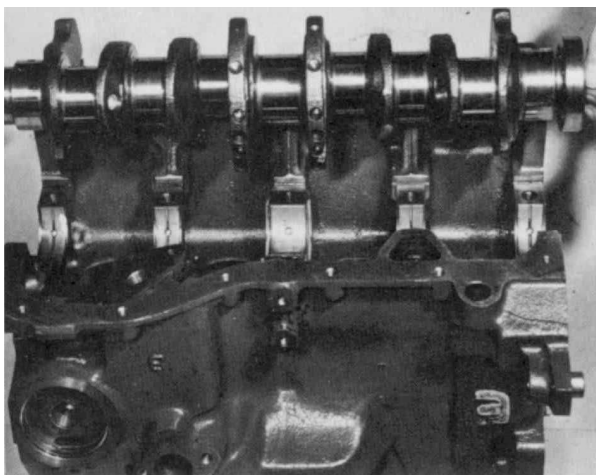
(The engine is installed inclined 6° rearwards)



3.8 The half thrust washers are fitted each side of the centre bearing



3.9 Oil the bearings and crankshaft journals...



3.10 ... and then fit the crankshaft into the crankcase

12 Refit the main bearing cap bolts and screw them up fingertight. Spin the crankshaft and, if all is well, tighten the bolts to the specified torque load and turn the crankshaft again to check freedom of rotation (photo).

13 Measure the crankshaft endfloat with feeler gauges. If this exceeds the specified tolerance, oversize thrust washers will have to be fitted.

Piston rings - refitting

14 Follow the procedure given in Chapter 1, Section 42.

Pistons and connecting rods-reassembly

15 Follow the procedure given in Chapter 1, Section 43 (photo).

Pistons – refitting

16 Follow the procedure given in Chapter 1, Section 44.

17 Note that the connecting rods in the 1049 cc engine have two oil jet holes leading from the big-end bearing (photo).

18 When the piston is correctly fitted it will have the valve depressions adjacent to the side of the block with the cylinder head studs in (photo).

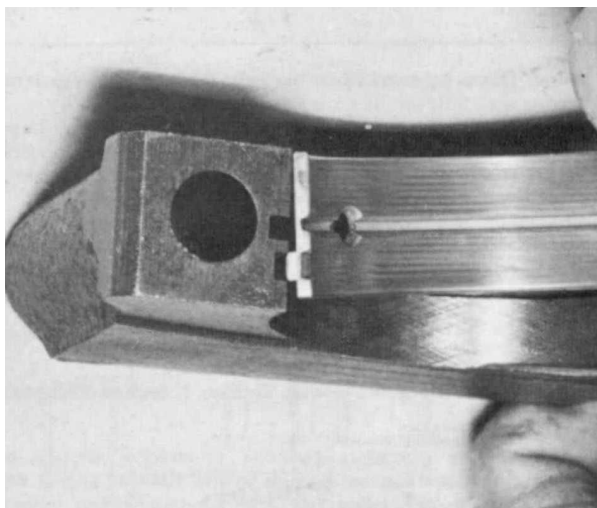
Connecting rods to crankshaft-reassembly

19 Follow the procedure given in Chapter 1, Section 45.

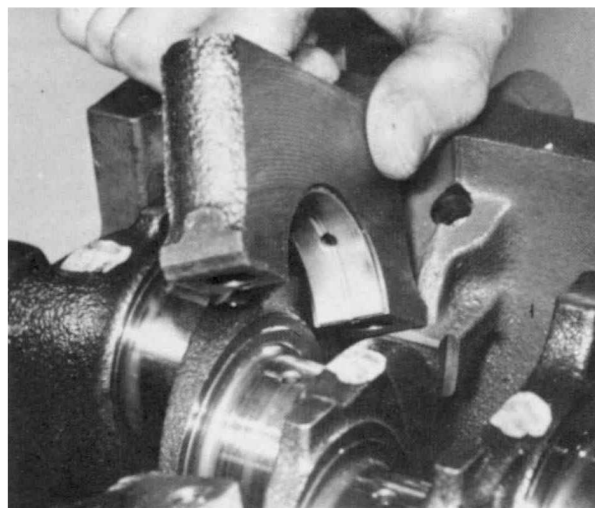
20 Torque load the big-end cap nuts to the reading quoted in the Specifications of this Chapter 13 - it is different from the value quoted for the 903 cc engine (photo).

Oil pump - reassembly

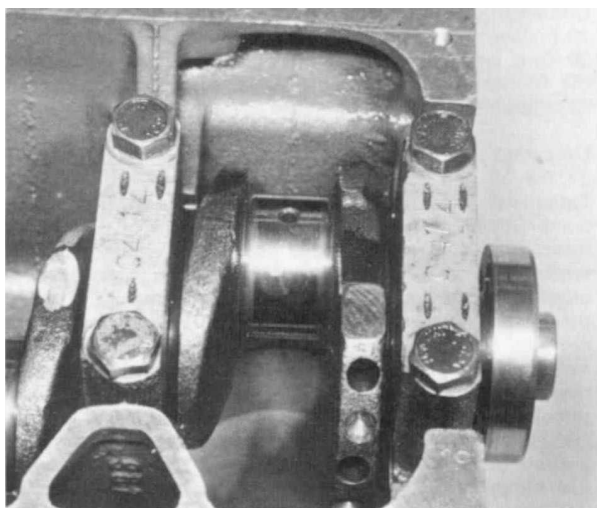
21 The oil pump fitted to the 1049 cc engine is a Hobourn-Eaton rotor type of pump which is quite different from the gear pump fitted to the 903 cc engine. It consists of a four lobed rotor rotating in a five slotted outer rotor which is mounted eccentrically to the inner rotor. As the inner rotor rotates the outer rotor is driven round, and the spaces between the lobes on the inner rotor and the slots in the outer rotor increase and decrease once per revolution. The increasing spaces are connected to the pump inlet and cause oil to be drawn into the pump. The decreasing spaces connect with the pump outlet through which the oil is forced to feed the engine. A springloaded relief valve in the outlet of the pump vents excessive oil pressure into the sump. The efficiency of the pump depends



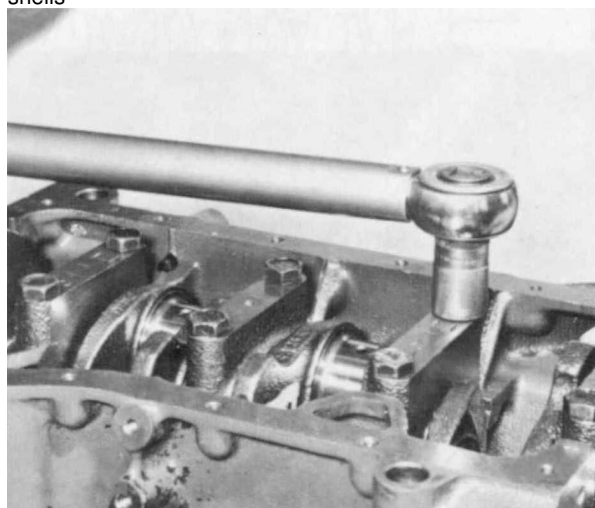
3.11A Fit the bearing shell to the main bearing caps...



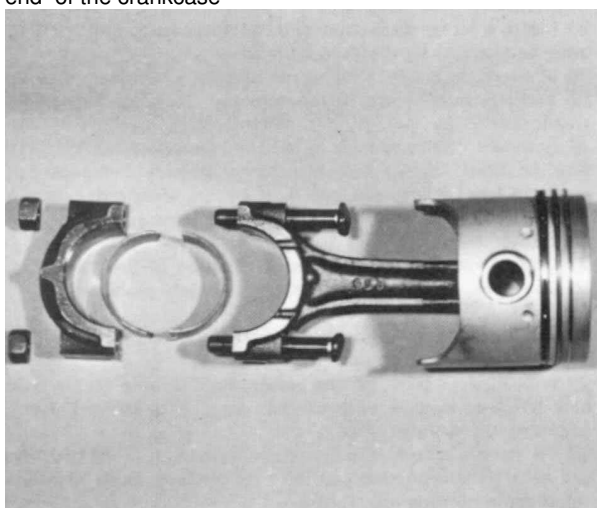
3.11B ...and then fit caps to the crankcase after oiling the shells



3.11C Ensure that each cap is the right way round in its own location with the one with four marks at the flywheel end of the crankcase



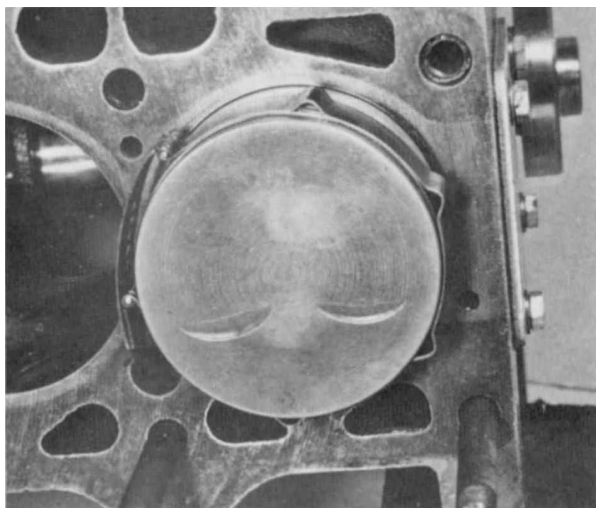
3.12 Tighten main bearing cap bolts with a torque wrench



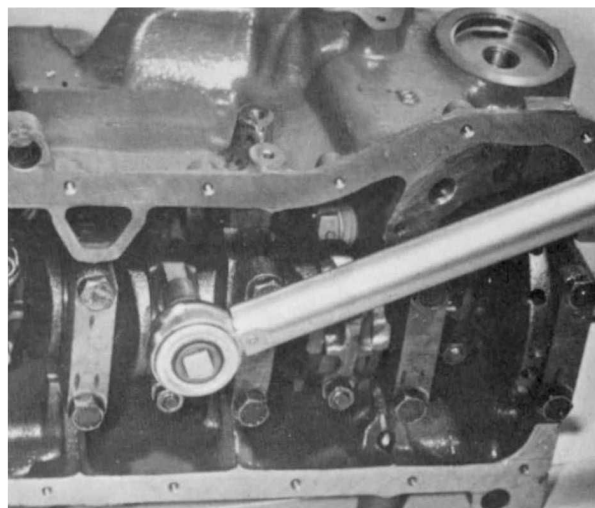
3.15 Piston and connecting rod assembly



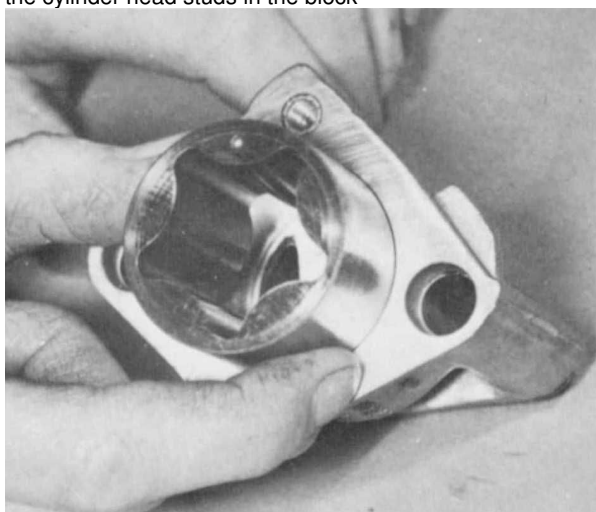
3.17 One of the oil jet holes in the big-end – the other is on the other side of the rod



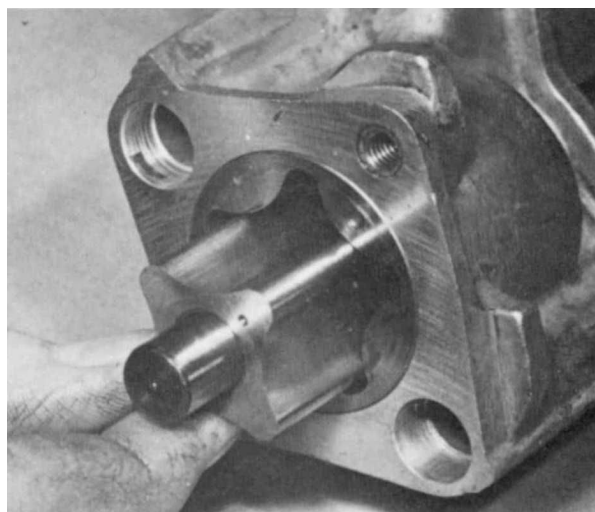
3.18 The valve depressions in the piston are adjacent to the cylinder head studs in the block



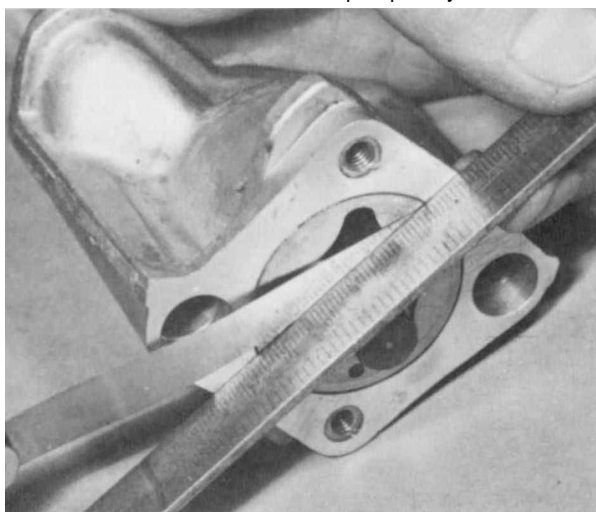
3.20 Torque tighten the big-end cap nuts



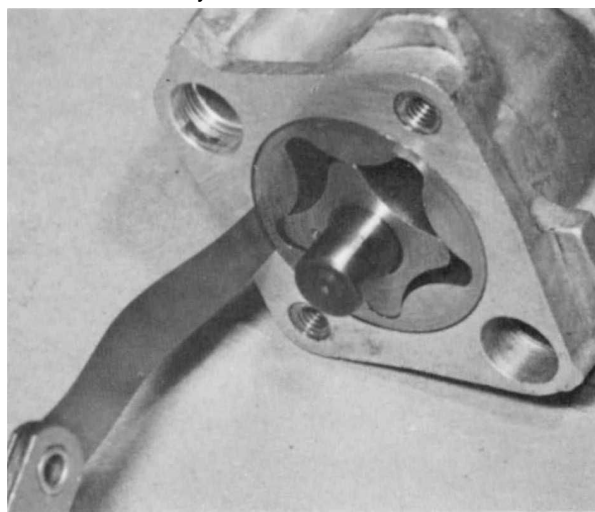
3.22A Fits fit outer rotor to the oil pump body...



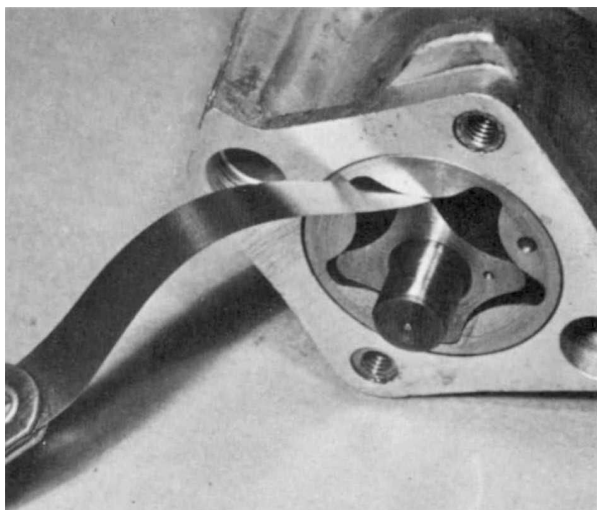
3.22B ...followed by the inner rotor



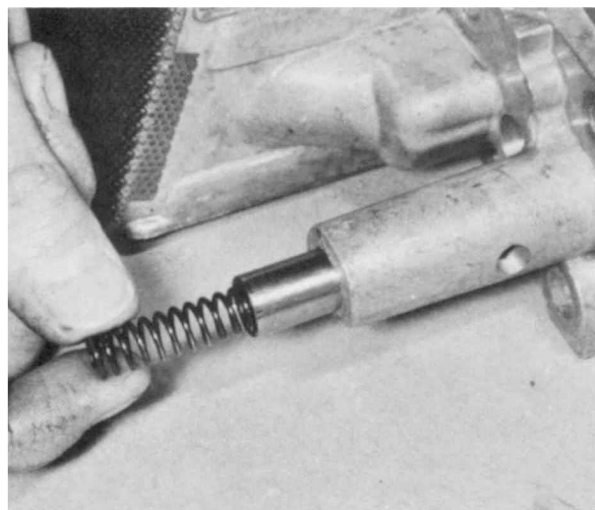
3.23 Measure the end clearance of the rotors with the pump face



3.24 Measure the outer rotor to body clearance...



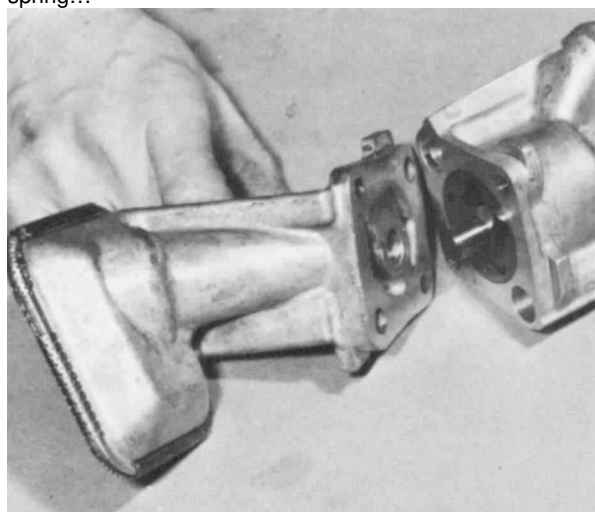
3.25 ...and the inner to outer rotor clearance



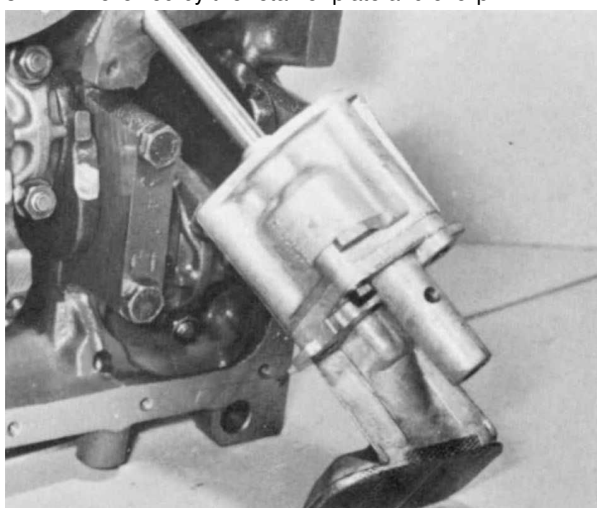
3.27A Fit the oil pump pressure relief valve plunger and spring...



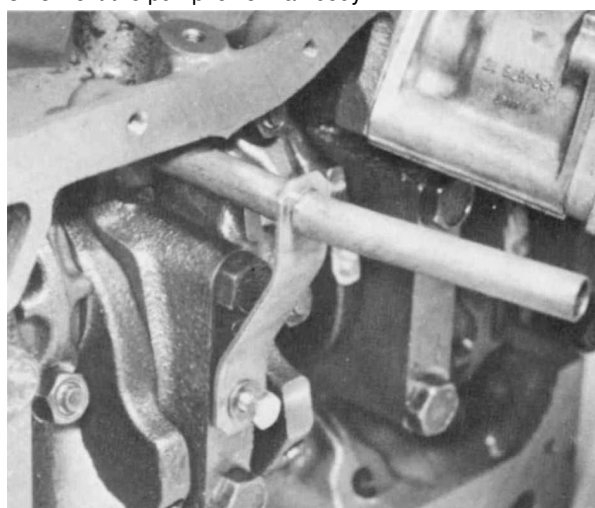
3.27B ...followed by the retainer plate and circlip



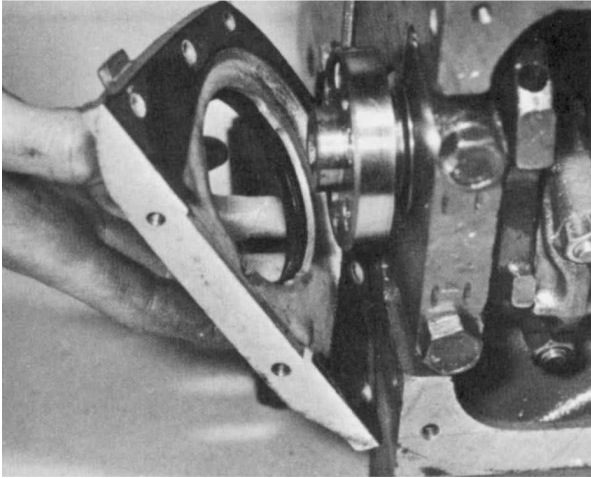
3.28 Refit the pump lower half body



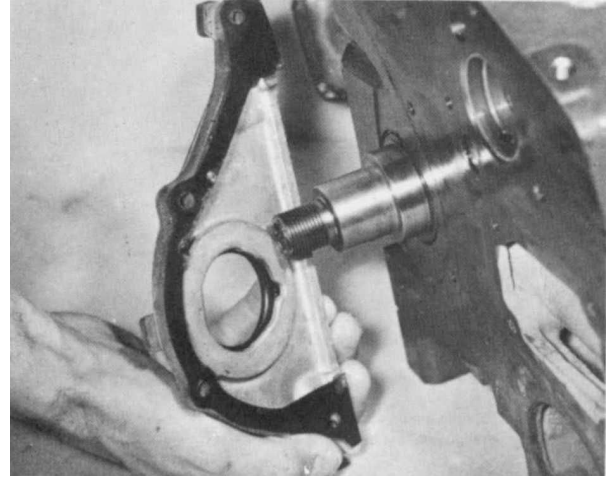
3.29 Fit the oil pump to the crankcase



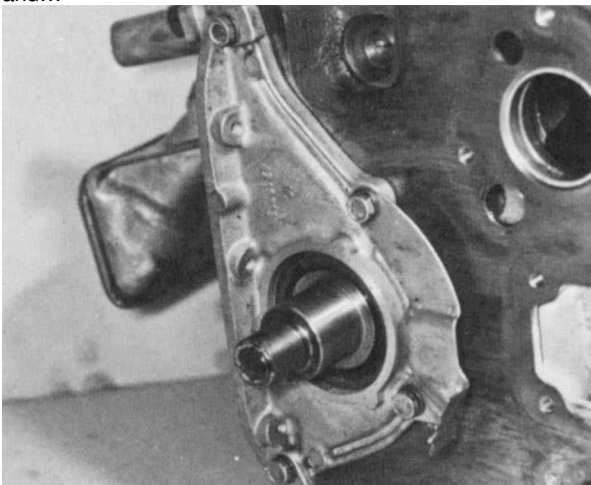
3.30 The oil tube is secured by a bracket to the centre main bearing cap with a bolt and washer



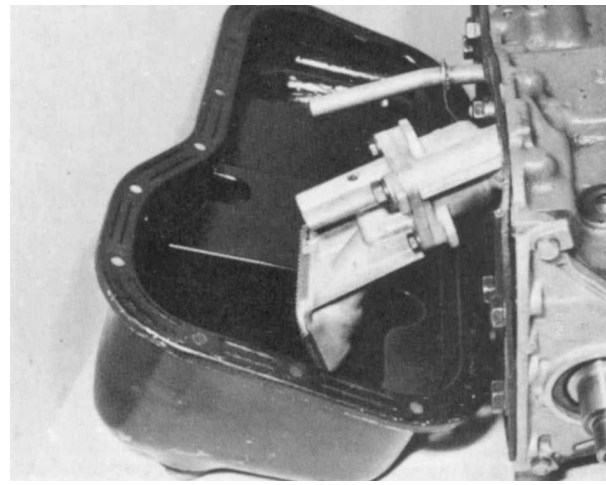
3.32 Fitting the crankshaft seal and carrier at flywheel and...



3.33 ...and at the timing cover end



3.34 The timing indicator bracket is located behind the two top bolts of the seal carrier



3.36 Fit the sump to the crankcase

on fine clearances and these should be checked during assembly.

22 Fit the outer rotor to the pump body and then fit the inner rotor (photos).

23 Lay an accurate straight edge across the faces of the rotors and pump body and measure the clearance with feeler gauges (photo).

24 Insert a feeler gauge between the outer rotor and the pump body to measure the clearance (photo).

25 Similarly insert a feeler gauge between the inner rotor lobe tip and the outer rotor to measure the clearance between the two (photo).

26 Compare the clearances with the tolerances quoted in the Specifications to this Chapter. Any excessive clearance could result in low oil pressure, and as the inner and outer rotors are matched pairs the only solution is a new or reconditioned pump assembly.

27 Fit the oil pressure relief valve plunger to the pump body followed in turn by the spring, retainer plate and circlip (photos).

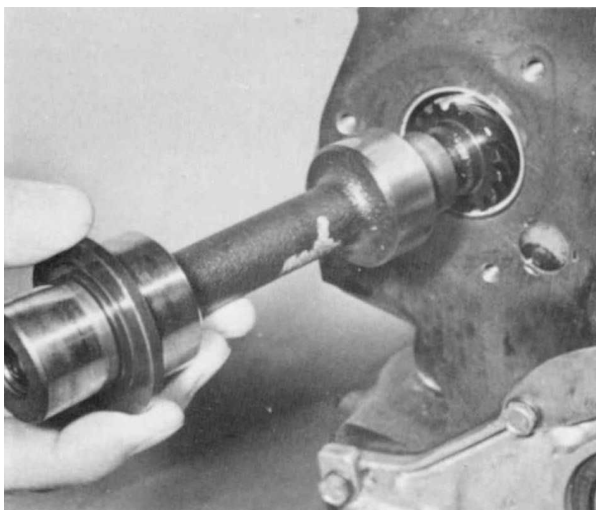
28 Lubricate the rotors with clean engine oil and refit the pump lower half body and strainer (photo).

29 With a new gasket, fit the assembled oil pump to the crankcase block and secure with the two long bolts (photo). Tighten to the specified torque load.

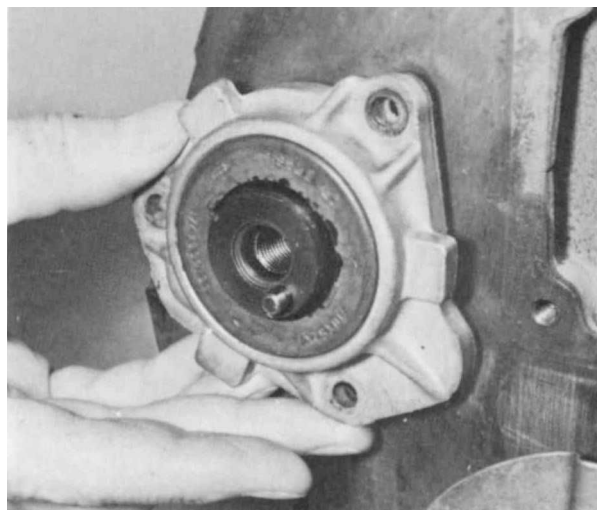
30 Fit the oil tube to the crankcase securing it by its bracket to the centre main bearing cap with its retaining bolt. Tighten to the specified torque load (photo).

Crankshaft oil seals and carriers-refitting

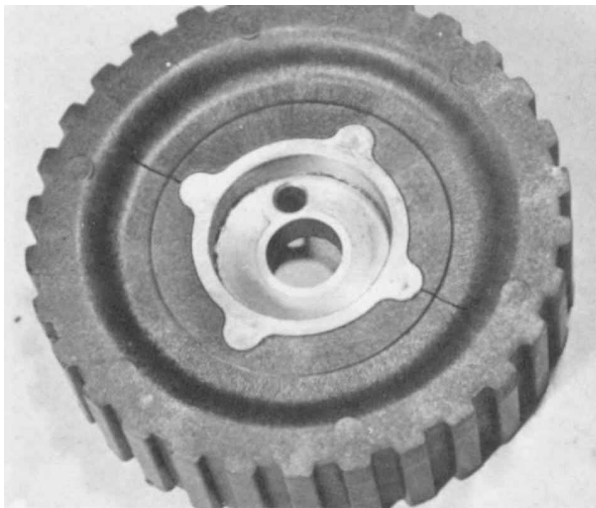
31 Clean the flywheel mounting spigot on the end of the crankshaft and lubricate the crankshaft seal with clean engine oil. Fit a new gasket.



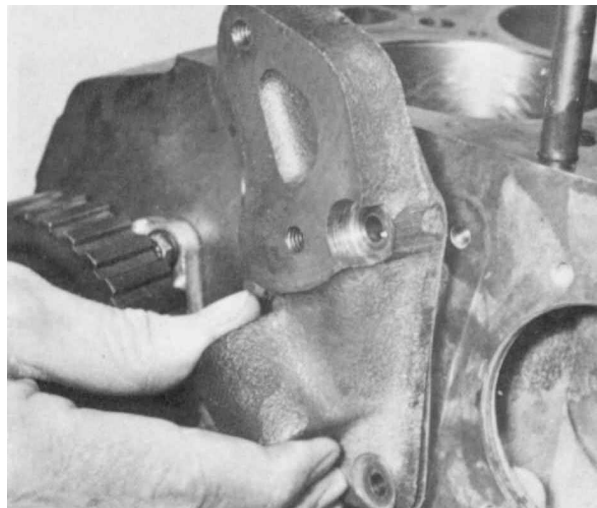
3.39 Fitting the auxiliary shaft...



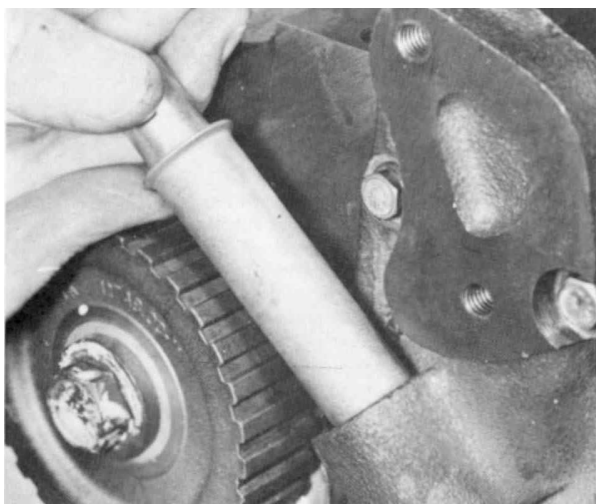
3.40 ...and its seal and carrier



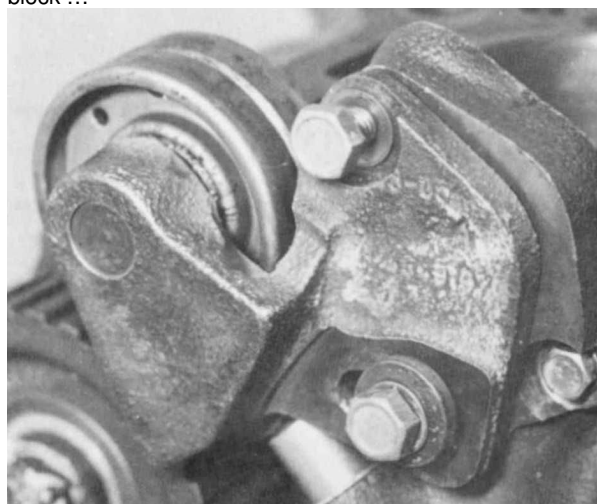
3.42 This face of the pulley fits towards the shaft



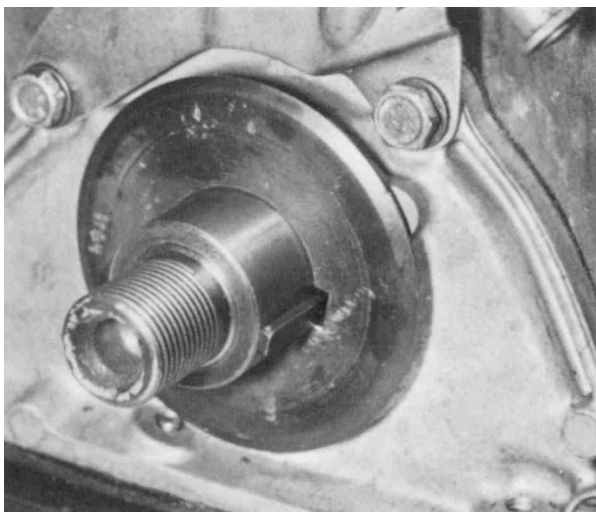
3.43 Fit the belt tensioner bracket a new gasket to the block ...



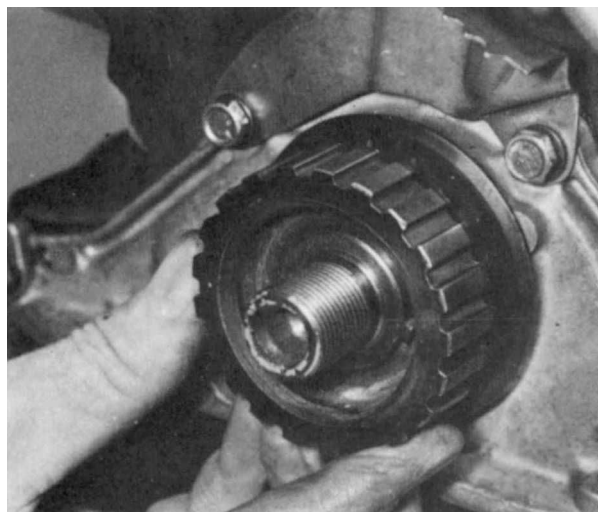
3.44 ...followed by the spring-loaded plunger...



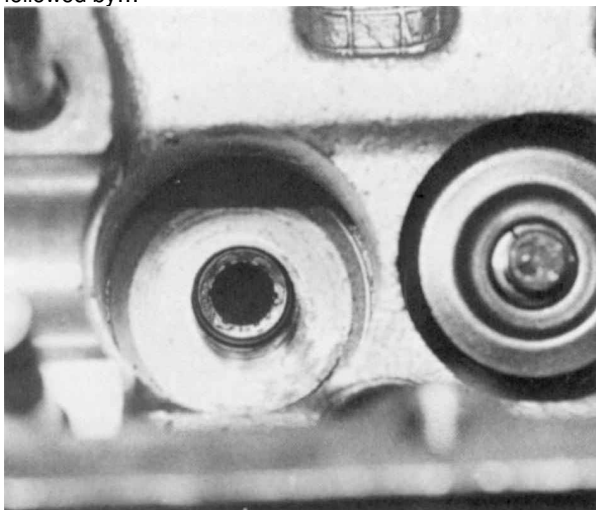
3.45 ...and then the tensioning wheel



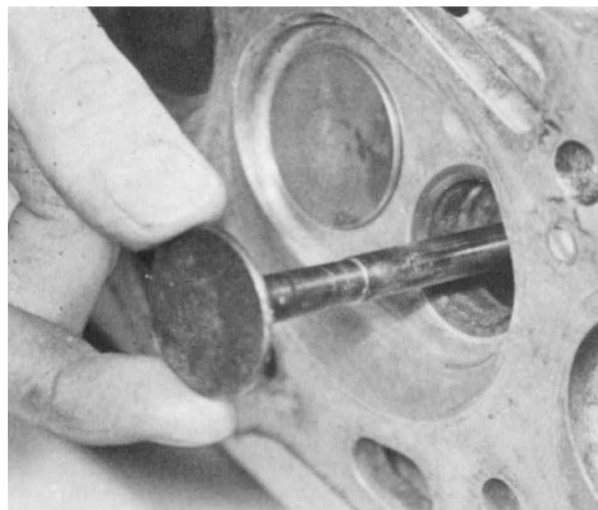
3.46 The bevelled washer is fitted bevel outwards and is followed by...



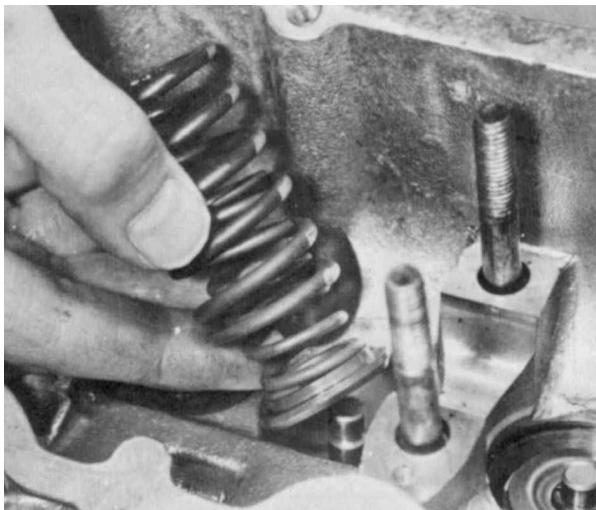
3.47 ...the crankshaft toothed pulley



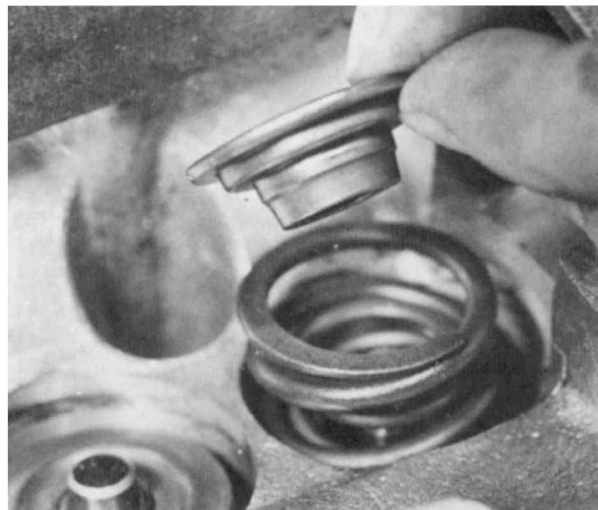
3.48A Valve guide oil seal



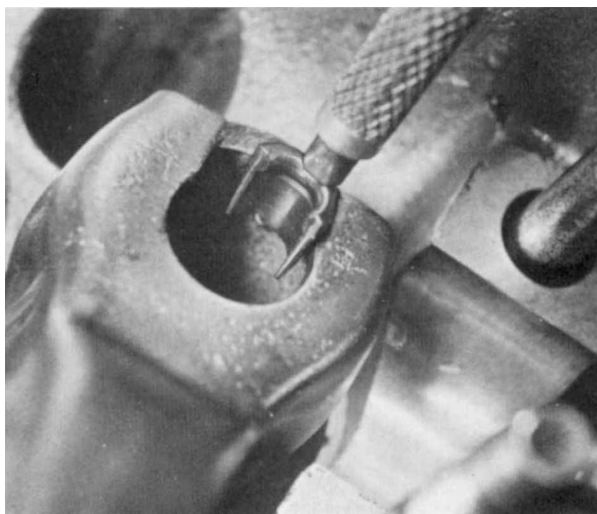
3.48B Inserting a valve followed by...



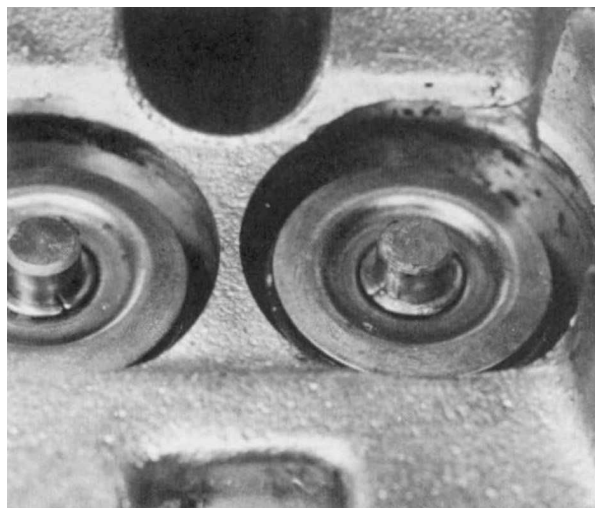
3.48C ...the lower spring seat and springs...



3.48D ...and upper spring seat



3.48E A magnet is useful for refitting the split collets



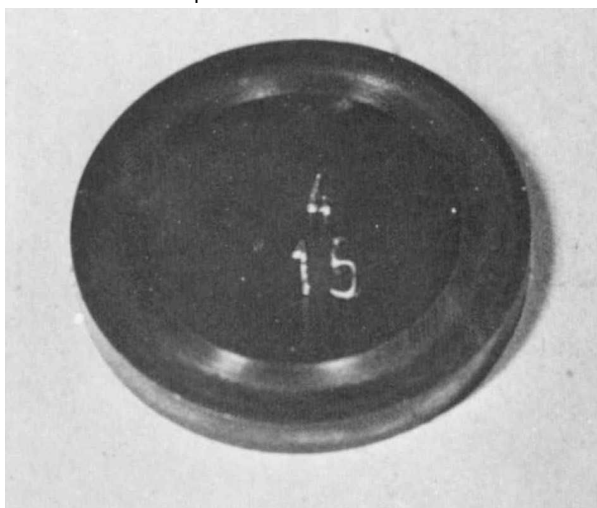
3.48F After assembly a sharp tap on the valve stem will help to bed the parts in



3.49A Use a small pointed tool to ...



3.49B ...prise out the valve clearance adjusting shim



3.49C This shim is 4,15mm thick



3.49D Refit each tappet bucket with its shim to its valve

32 Carefully ease the lip of the seal onto the spigot and secure the carrier with the bolts and washers (photo).

33 Similarly clean the crankshaft at the timing belt end and fit the seal and carrier. Retain by the two bottom bolts (photo). 34 Put the timing indicator bracket over the two top bolt holes in the seal carrier and fit the two top bolts (photo).

Sump - refitting

35 Make sure that there are no remnants of the old gasket on the sump flange and fit a new gasket using a little grease to hold it in position. Check that it is bedded down evenly all round the flange.

36 Fit the sump to the crankcase. Put the load spreading washers on each bolt and screw into the crankcase (photo).

37 Tighten the bolts evenly to avoid warping the flange.

Auxiliary shaft and seal - refitting

38 Clean the auxiliary shaft bearings and lubricate with clean engine oil.

39 Insert the shaft into the crankcase bushes and rotate the shaft to spread the oil (photo).

40 Lubricate the auxiliary shaft seal in its carrier and carefully ease the seal over the shaft spigot (photo).

41 Fit the seal carrier retaining bolts and washers and tighten.

Belt pulleys and tensioner - refitting

42 Fit the toothed pulley to the auxiliary shaft. The recess in the pulley fits on the auxiliary shaft with the dowel on the shaft in the hole in the pulley (photo). Fit the retaining bolt and washer and partially tighten, as it will be necessary to wait until the drivebelt has been fitted before finally tightening this bolt. Alternatively, it is possible to hold the auxiliary shaft carefully in a vice, fit the seal and carrier to the shaft, followed by the toothed pulley and its retaining bolt and washer, and then tighten the bolt fully before fitting the complete assembly to the block.

43 The belt tensioner bracket can now be fitted. Clean off all traces of old gasket from the bracket and block and use a new gasket on assembly. Fit the retaining bolts and washers and tighten (photo).

44 Insert the spring-loaded plunger assembly into the tensioner bracket (photo).

45 The tensioning wheel in its carrier can now be fitted. Put the top bolt and washer in first and then bear down to compress the spring and fit

the bottom bolt through the kidney-shaped slot. Note that this latter bolt has an additional, large washer against the wheel carrier. Temporarily tighten the two bolts they will have to be retightened after the belt has been fitted (photo). 46 If the key had previously been removed from the pulley end of the crankshaft, clean the key slot and refit the key. Then slide on the bevelled washer, making sure that the bevel is on the side away from the crankcase (photo).

47 Refit the crankshaft toothed pulley (photo). Then the V-belt pulley can be refitted together with its retaining nut and washer. Final tightening of this nut can wait until the flywheel has been fitted, when a 'gag' can be fitted to the flywheel to hold the crankshaft whilst tightening the nut - see Chapter 1, photo 23.2A.

Cylinder head and valve gear-reassembly

48 It is assumed that the valves will have already been examined and renovated as described in Chapter 1, Section 31. Follow the procedure given in Chapter 1, Section 51 to reassemble the valves, but note that new oil seals should be fitted to this engine when the valves have been inserted in the guides and before the springs are fitted (photos).

49 Each tappet bucket contains a shim in the head which is used to control the valve clearance. Before assembling the buckets to their valves, prise out each shim and take a note of the thickness. This is etched on the lower face of the shim and indicates the thickness in millimetres to two decimal places. If the number has worn off, use a micrometer to check the shim thickness. Make a table showing each valve by number and the thickness of shim on assembly. Reassemble each shim to its bucket and after lubricating with clean engine oil fit the buckets to their respective valves (photos).

50 Lubricate the two camshaft bearings in the cylinder head and carefully thread the camshaft through the driving end hole and lower it onto its bearings. The cams will rest on the tappet buckets and the camshaft should now be turned so that the two cams over No. 1 cylinder (driving end) are pointing upwards (compression/firing stroke). This is to reduce the bending load on the camshaft as the two bearing halves are being tightened down (photo).

51 Lubricate the camshaft bearing halves and fit them to their respective studs in the head. Put the steel bridge plates in position and fit the washers and nuts (photo).

52 Tighten the four nuts a little at a time

progressively until the bearing halves meet.

53 Oil the camshaft seal and carefully fit it with its carrier and a new gasket to the cylinder head (photo).

54 Position the drivebelt guard backplate over the camshaft seal carrier and fit the three bolts and washers (photo). 55 Tighten the three bolts retaining the backplate and seal carrier. Torque load the four camshaft bearing securing nuts to the specified setting.

56 Fit the camshaft toothed driving pulley with its bolt and washer. Leave the final tightening until the drivebelt is fitted (photo).

57 Check the valve clearances; the camshaft can be turned by a spanner on the pulley retaining bolt. Readjust any clearance if necessary, as described later in this Section.

58 Owing to the small clearance between a piston at TDC and the open valves during exhaust/inlet overlap, it is imperative to get the crankshaft and camshaft in their correct related positions before turning the engine after fitting the cylinder head. If this relationship is out then serious damage could be done to the valves or pistons by turning the crankshaft, as the pistons will impinge on the valve heads. To avoid this the following sequence should be observed. Set the crankshaft as described in paragraph 59, and the camshaft (before assembling the cylinder head to the block) also as described in paragraph 59. Fit the head to the block taking care not to disturb the set positions and, finally, fit the toothed drivebelt. Then the crankshaft can be turned with no likelihood of damage.

59 Set the crankshaft by using a spanner on the pulley retaining nut and aligning the mark on the pulley with the long pointer on the timing indicator bracket. Then set the camshaft by aligning the hole in the camshaft pulley with the cast ridge on the top of the camshaft seal carrier just behind the toothed pulley (photo).

60 Fit a new cylinder head gasket with the word ALTO upwards (photo). Do not use grease or any other jointing compound. 61 Taking care not to disturb the crankshaft or camshaft lower the cylinder head onto the block (photo).

62 Fit the thick washers to the studs on the manifold side of the block followed by the nuts. Fit the bolts with their thick washers to the other side of the block and screw the bolts and nuts down to lightly compress the gasket. The bolts and nuts must now be torque loaded by stages (see Specifications) in sequence, to the specified load and in the order shown in Fig.13.3. This may present some difficulty as, owing to the shape of the cylinder head, it is not possible to get a socket spanner fitted to a torque wrench over the cylinder head nuts. These can be tightened using a ring or open-ended spanner as an extension to the torque wrench, but then, of course, the applied torque will be different to the torque registered or set on the torque wrench. To overcome this a simple calculation can be made so that a setting can be established for the torque wrench which, with an extension, will produce the specified torque loading. This value varies with the ratio of the

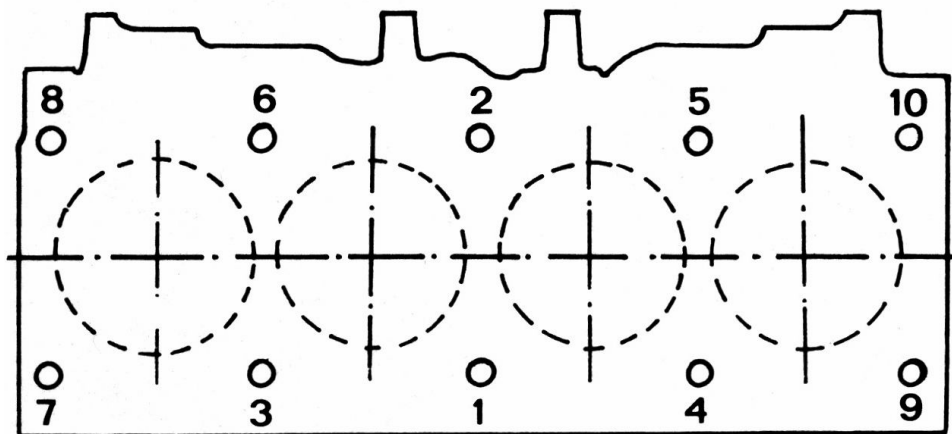
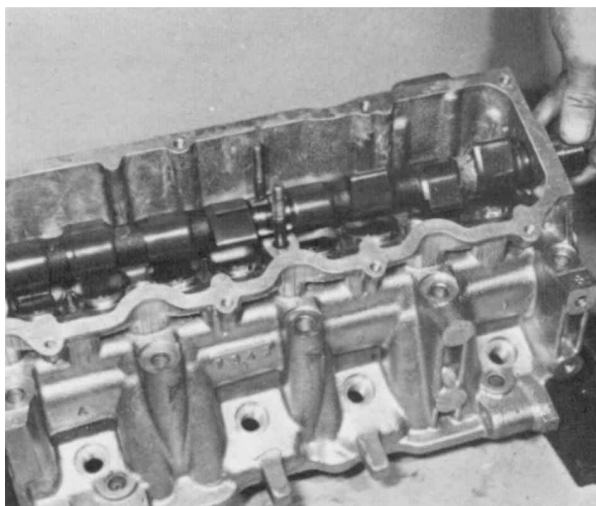
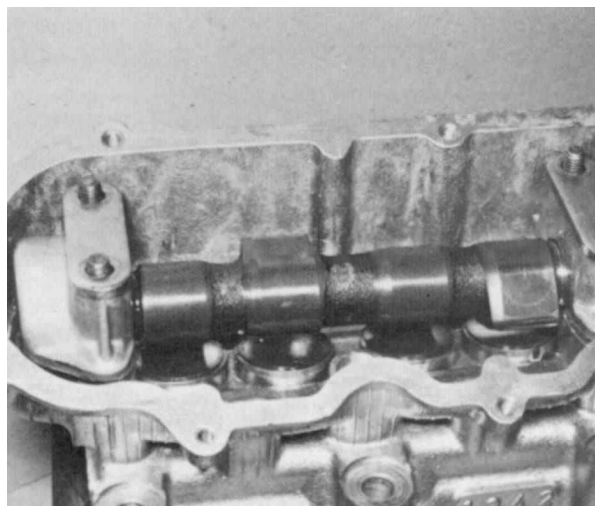


Fig. 13.3. 1049 cc engine cylinder head nut and bolt tightening sequence (Sec.3)



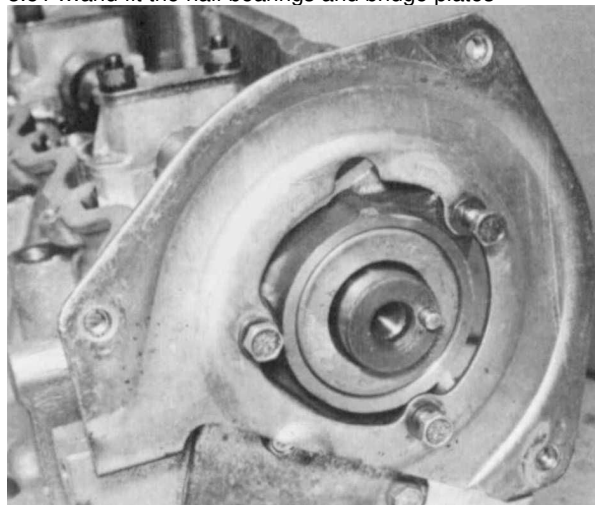
3.50 Position the camshaft in the cylinder head ...



3.51 ...and fit the half bearings and bridge plates



3.53 Fit the camshaft seal in its carrier to the cylinder head.



3.54 ...followed by the drive belt guard backplate



3.56 Fit the camshaft toothed pulley



3.59 Hole in pulley aligned with část ridge, view from behind the wheel

extension length and the torque wrench length and is calculated by using the formula:

$$B = \frac{Az}{y + z}$$

where A is the specified torque loading (lbf ft or kgf m), B is the torque to be set, or read, when using an extension (lbf ft or kgf m), y is the length of extension (ft or m), and z is the length of torque wrench (ft or m).

Example: Specified torque is 60 lbf ft, length of extension is 6 in, and length of torque wrench is 2 ft, then $B = (60 \times 2) = (6/12 + 2) = 120 = 2' / z = 48$ lbf ft; torque wrench setting or indication.

When measuring, use centres of bolts/nuts and centre of torque wrench drive square. When calculating, keep values constant, that is, don't mix inches and feet for example (photos). 63 Fit the drivebelt as described later in this Section. When fitted, the auxiliary shaft pulley bolt and the camshaft pulley bolt can be torque loaded to the specified settings if these were not done on assembly.

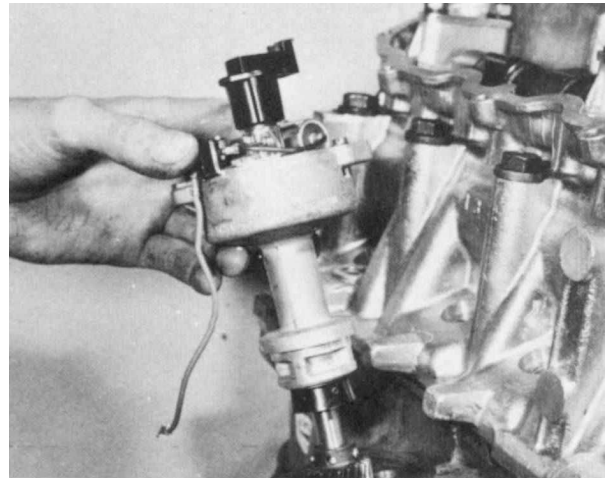
Distributor - refitting

64 The distributor is mounted nearly vertical on the oil filter side of the engine and is driven by skew gears from the auxiliary shaft. In turn the distributor shaft also drives the oil pump through a splined coupling (photo).

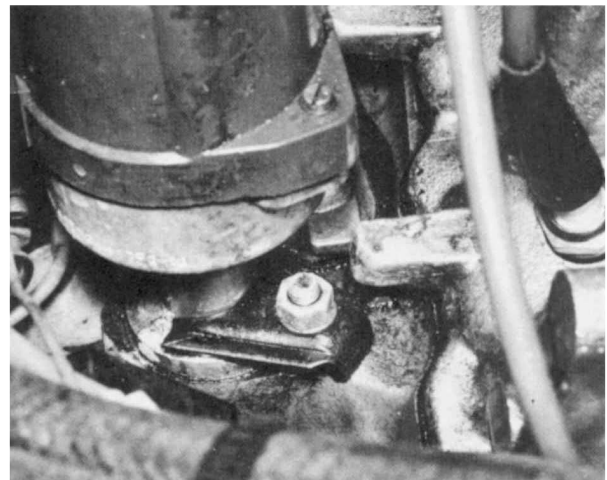
65 It is more convenient to set the contact breaker gap before fitting the distributor to the engine. Adjust to the specified clearance (photo).

66 Turn the crankshaft in the normal direction of rotation until the line on the crankshaft pulley is adjacent to the first of the three pointers on the timing bracket. This is 100 BTDC, the second pointer is 50 BTDC and the large, third pointer is TDC. Note which cylinder, either 1 or 4, is on the compression stroke. This is indicated by both of the inlet and exhaust cams pointing upwards causing their relative valves to be shut. 67 Rotate the distributor shaft until the rotor is opposite the terminal in the distributor cap serving the same cylinder number as the one which was on compression stroke and with the contact breaker points just breaking.

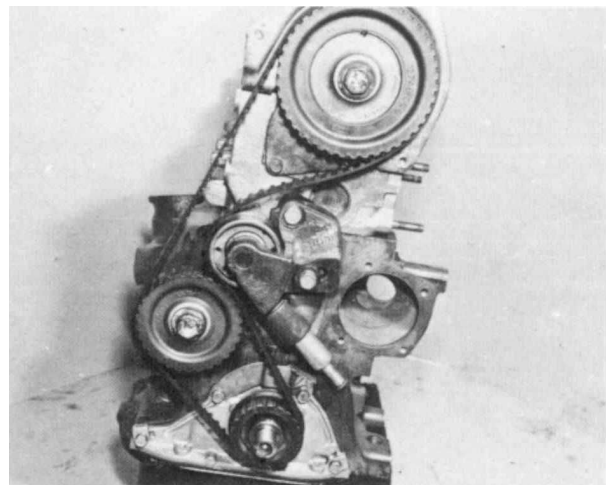
68 Lubricate the distributor skew gear with clean engine oil and insert the distributor into the engine block. Watch the rotor carefully to see how much it turns as the skew gears mesh. Then withdraw the distributor, reset the rotor and then preset it the same amount that it turned



3.68 Fitting the distributor



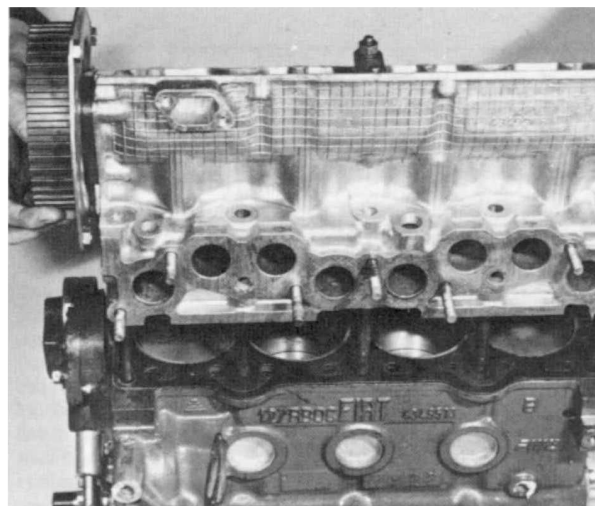
3.70 Distributor clamp bolt



3.77 Fitting the toothed drivebelt-crankshaft V-belt pulley removed for clarity



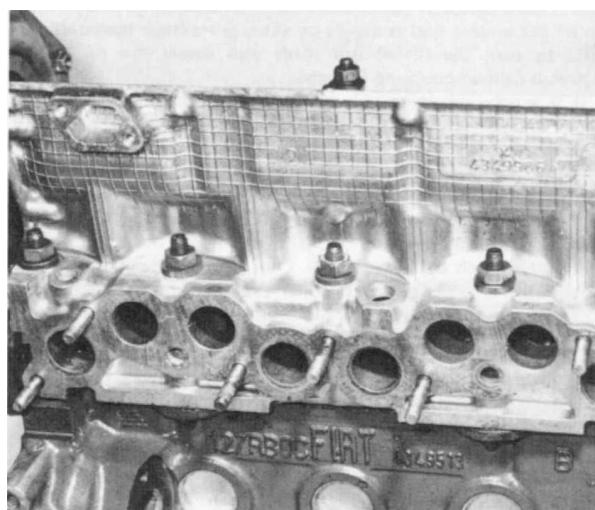
3.60 The cylinder head gasket is fitted ALTO upwards



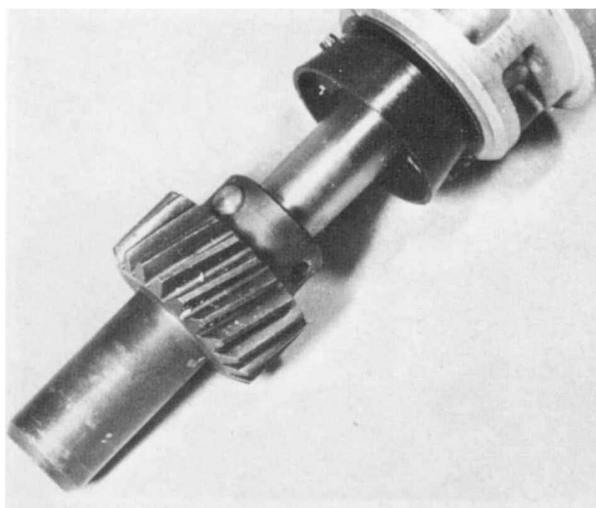
3.61 Lower the cylinder head onto the block



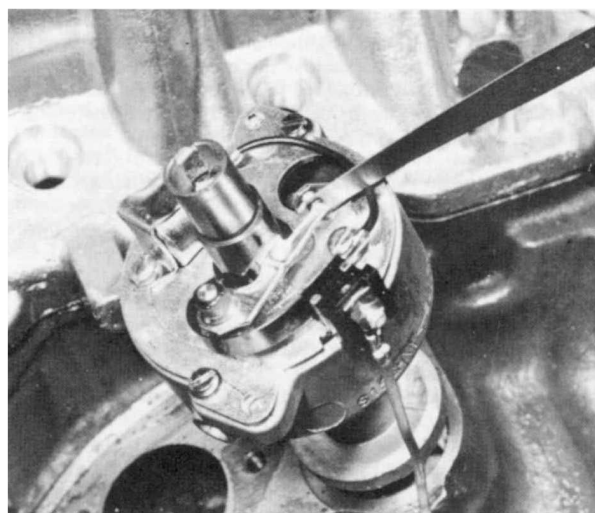
3.62A Tighten the cylinder head bolts and nuts to the specified torque



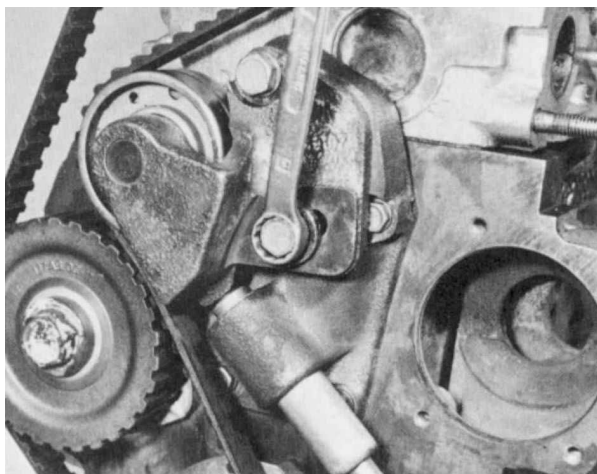
3.62B These cylinder head nuts might be difficult to torque tighten



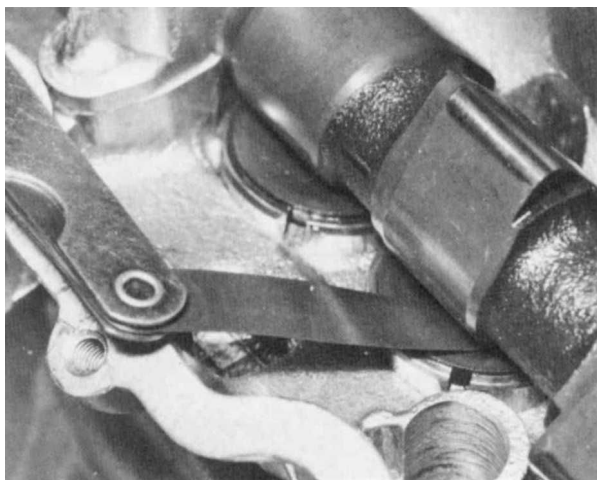
3.64 Distributor driveshaft skew gear



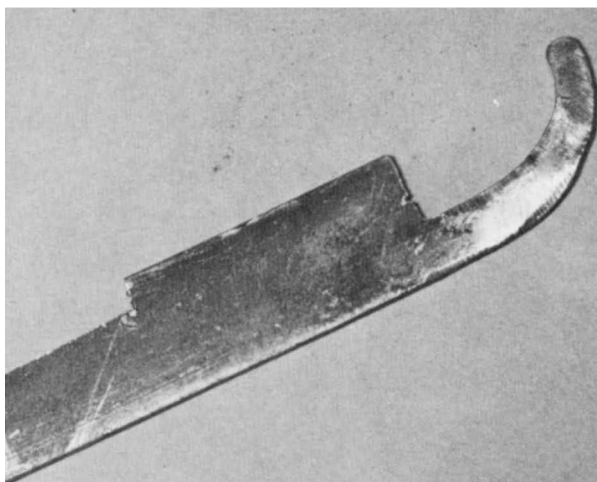
3.65 Checking the contact breaker gap



3.78 Setting the belt tensioner



3.84 Checking a valve clearance



3.87 Made-up tool for depressing tappet buckets

when initially inserted; then reinsert it into the engine. Ideally the contact points should be just breaking with the rotor opposite the correct numbered terminal in the cap. If this is not the case, repeat on a trial and error basis until this is achieved (photo).

69 Fit the clamp washer and nut and lightly tighten temporarily.

70 With a lamp and battery across the contact breaker points and the clamp nut just loosened, move the distributor body round its axis until the light just goes out. Tighten the clamp nut to the specified torque load (photo).

Toothed drivebelt - removal, refitting and adjusting

Note: If adjustment is necessary on an old belt or if the belt is removed for any reason, always change the belt for a new one, never adjust using the old belt.

71 The toothed drivebelt should be renewed at 36 000 miles (60 000 km). This can be done with the engine in the car. 72 Using a spanner on the crankshaft pulley nut turn the engine over until the timing mark on the crankshaft pulley is aligned with the TDC pointer (long one).

73 Remove the drivebelt cover and the alternator/water pump drivebelt.

74 Check that the camshaft pulley timing hole is aligned with the cast ridge on the seal housing; refer to paragraph 59 of this Section. If it isn't, turn the engine over one revolution to get it lined up.

75 Before removing the drivebelt it must be remembered that neither the camshaft nor the crankshaft must be moved with the belt off, If this precaution is not observed the pistons and valves could impact causing serious damage.

76 Release the tension on the drivebelt by slackening the bolt in the kidney-shaped slot on the tensioner bracket, loosening the other (pivot) bolt, pushing the tensioner wheel against the spring unit and tightening both bolts. Slide the drivebelt off the pulleys.

77 Fit the new belt. Start at the crankshaft drive pulley and, taking care not to kink or strain the belt, ease it into place over the auxiliary shaft pulley and the camshaft pulley. It might be necessary to slightly turn the camshaft to get the belt to mesh. This should always be done in the direction of least movement to achieve a mesh, Fit the belt on the tensioner pulley last. If this is difficult do not lever or force the belt on but recheck it and try again (photo).

78 Slacken the tensioner bolts to tension the belt and retighten the bolts (photo).

79 Turn the engine over for two complete revolutions to even out belt tension. Then again slacken the tensioner bolts to let the tensioner take up any slack and retighten the bolts. Never turn the engine backwards or rock the camshaft when tensioning the belt, as slack could develop in the belt and it might jump a tooth.

80 Refit and tension the alternator/water pump V-belt. Refit the drivebelt cover.

Valve clearances - adjustment

81 Checking the valve clearances should be done at the 6000 miles servicing, or whenever the cylinder head has been removed and refitted for any reason. It is important that the clearances are set correctly, otherwise the timing will be wrong and the engine performance will be poor. If there is no clearance at all, the valves and seats will soon get burnt. Set the clearances with the engine cold.

82 Remove the camshaft cover. The engine can be turned over by either using a spanner on the crankshaft pulley nut, or by jacking up a front wheel, engaging top gear and using the wheel to turn the engine.

83 Each tappet must be checked when its operating cam is pointing upwards, 180° away from the tappet. Check the clearances in the firing order, No. 1 cylinder first and then 3, 4 and 2. Do the exhaust of one cylinder and the inlet of the one after, at the same time to minimise the amount of engine turning. Counting from the timing belt end, exhaust valves are 1-4-5-8, inlet valves 2-3-6-7.

84 Insert the feeler gauge for the appropriate valve. See the Specifications for correct settings. The feeler should slide in readily between cam and shim, but with slight frictional drag. Try one a size thicker and one a size thinner. The thick one should not go in and the thinner one should be too loose (photo).

85 If the clearance is wrong, measure the clearance and write it down with the number of the valve. When all the clearances have been checked, it will be necessary to remove those shims which are fitted where the clearances are wrong, and renew them with different thickness shims. If a clearance is too big, use a thicker shim. If a clearance is too small use a thinner shim. Calculate by simple subtraction.

86 To change a shim, turn the engine until the relevant cam is pointing upwards, then turn the tappet in its housing so that the slot in the rim is accessible.

87 The manufacturer provides special tools for depressing tappets (Nos. A60480 and A60443). These make the job easier if they can be borrowed, but it is possible to do the job without them. The best way is to make up a tool from a piece of steel plate shaped as shown in the photograph. Alternatively use a screwdriver to lever the tappet down and another one, on edge, to hold the tappet down by positioning it between the camshaft and the rim of the tappet; then remove the lever. This is quite tricky and needs some care to avoid any damage. If in any doubt about doing this job it should be left to a FIAT agent. As well as having the right tools he will also have a stock of shims from which to choose those required to correct wrong clearances. It is expensive buying shims that are not required (photo).

88 With the tappet held down, prise the shim out with a thin screwdriver. The FIAT way is to lift the shim using compressed air, which is effective if an air line is available. The shims are held in quite strongly by the oil film and they must be lifted up square or they will jam. Remove the shim with long-nosed pliers (photos).

89 When new, shims have their thickness marked in millimetres on their undersides. This marking may wear off and then it will be necessary to measure their thickness with a micrometer. From the thickness of the shim and the error in the clearance, calculate the size of shim required to produce the correct clearance.

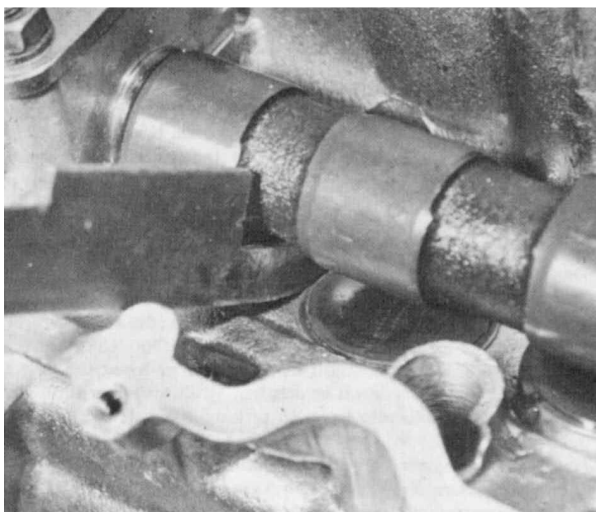
90 Insert the new shim, numbered side down towards the tappet. Remove the tools used for depressing the tappet and repeat the operation until all clearances are correct.

91 Using clean engine oil lubricate all moving and sliding parts in the camshaft/tappet assembly. Fit a new gasket and refit the camshaft cover together with the nine bolts and washers. Tighten the bolts progressively (photo).

Engine - final assembly

92 Completing assembly of the 1049 cc engine follows broadly the procedure for that of the smaller engine which is dealt with in Chapter 1, Section 56.

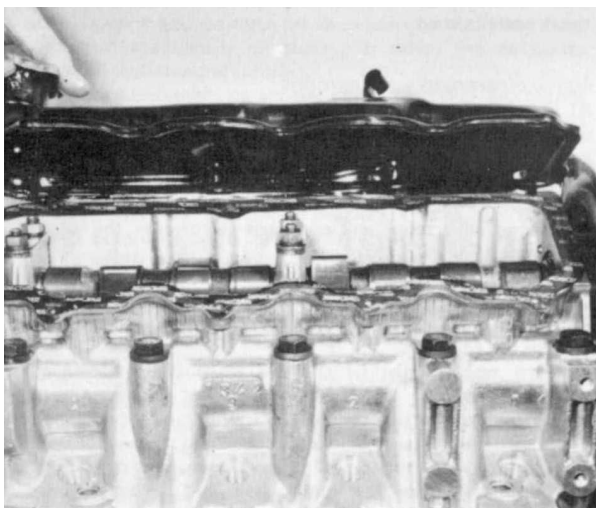
93 The manifold gasket is supplied in two parts for the 1049 cc engine (photo). These serve



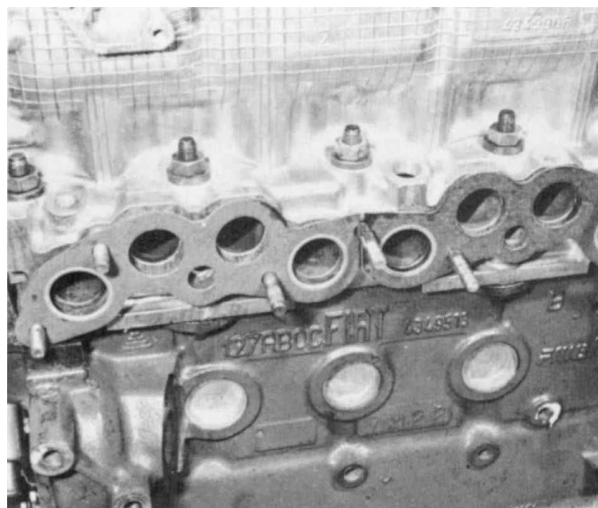
3.88A With the tappet depressed...



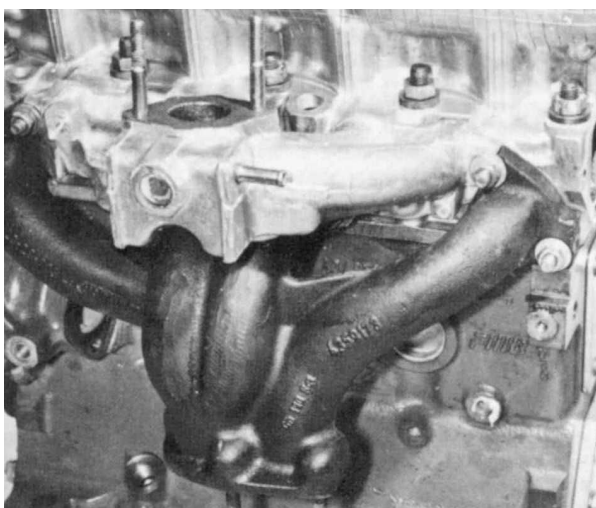
3.88B ...the shim can be removed



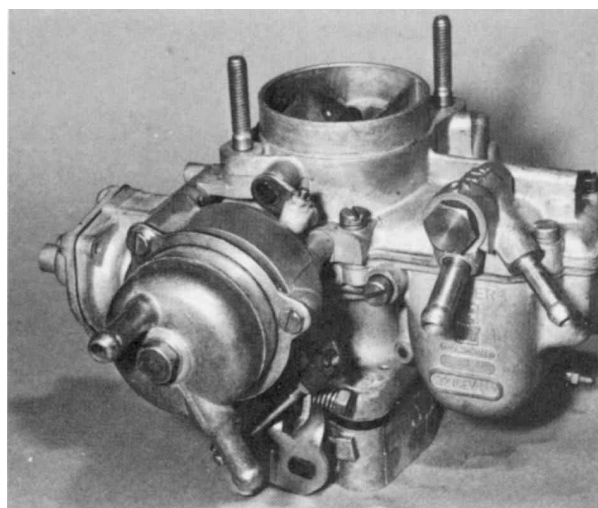
3.91 Fit the camshaft cover with a new gasket



3.93A The two-pieces gasket for manifold joint...



3.93B ...and the manifolds fitted



4.1 Weber 32 ICEV carburettor

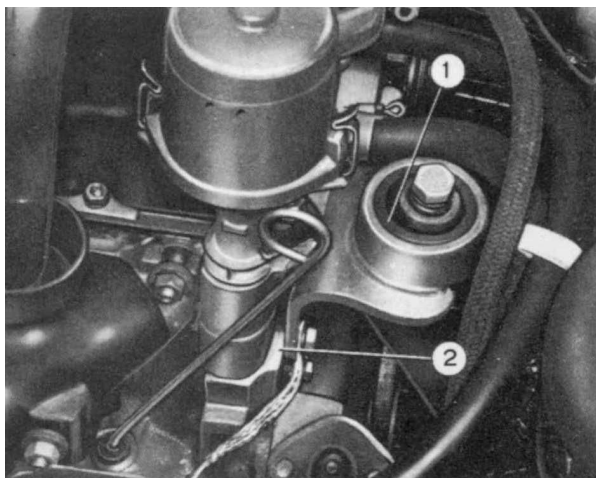


Fig. 13.4 Engine mounting (right-hand side) (Sec.3)

- 1 – Mounting
2 – Crankcase

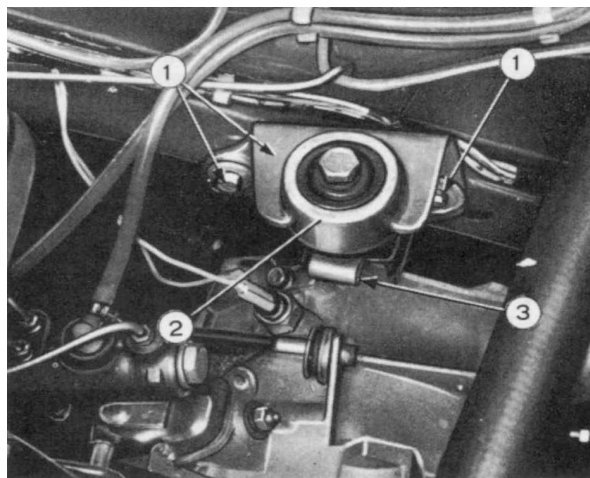


Fig. 13.5. Engine mounting (left-hand side) (Sec.3)

- 1 – Mounting to chassis bolts
2 – Mounting
3 – Mounting to transmission bracket

both the inlet and exhaust manifolds which are on the same side of the engine.

Engine removal - 127 Special and 127 from chassis number 1104290 onwards

94 The removal of the engine assembly from these models is slightly different from that described in Chapter 1, owing to redesigned engine mountings.

95 For the later type of mountings, disconnection of the engine is achieved by removal of the engine suspension mounting securing bolts after taking the weight of the assembly on a hoist.

96 On refitting the assembly tighten the securing bolts to the specified torque load.

4. Fuel system

Carburettors - general

1 On L, C and CL models the 1049 cc engine is fitted with either a Weber 32 ICEV 161150 or a Solex C32 TDI/4 carburettor with a downdraught single venturi and automatic coolant heated choke (photos).

2 On Sport versions, a dual venturi Weber carburettor is fitted with manual choke.

Weber or Solex single venturi carburettors

Removal and refitting

- 3 Remove the air cleaner
- 4 Disconnect the throttle cable (photo).

5 Disconnect the distributor vacuum pipe (photo). 6 Disconnect the fuel flow and return hoses

7 Disconnect the coolant hoses from the automatic choke housing and tie the pipes as high as possible to prevent coolant loss (photo).

8 Unbolt the carburettor flange mounting bolts and lift the carburettor from the manifold.

9 Refitting is a reversal of removal, but use a new flange mounting gasket

Dismantling and adjustment

10 Clean the outside of the carburettor, remove the top cover screws and lift off the cover.

11 Clean out the float bowl.

12 Any jets or bleed screws if removed, should only be cleaned by blowing air through them. Never probe with wire or their calibration will be ruined.

13 Check the float level by holding the carburettor cover vertically so that the float hangs down, and then measure between the casting flange and the nearest point of the float. Adjust if necessary by bending the float arm tab until the clearance conforms with the Specifications according to carburettor.

14 The automatic choke will not normally require dismantling, but if the cover is removed, make sure that the centre index marks on the cover and housing are in alignment before tightening the choke cover screws.

15 On later carburettors, the mixture screw is fitted with a tamperproof cap and adjustment to the slow-running should therefore be limited to

altering the throttle speed screw.

16 On earlier carburettors, or if new components have been fitted to carburettors having a tamperproof screw, then the slow-running and mixture can be altered, but only if an exhaust gas analyser is available in the case of later carburettors, after the tamperproof cap has been broken off.

17 On earlier units, use a device such as a mixture adjustment aid or a vacuum gauge fitted in accordance with the manufacturers' instructions to obtain the correct slow-running adjustment.

18 On later units, an exhaust gas analyser, again used in accordance with the maker's instructions, will ensure that the CO level is within the limits specified. Fit a new tamperproof cap on completion.

Weber dual venturi carburettor

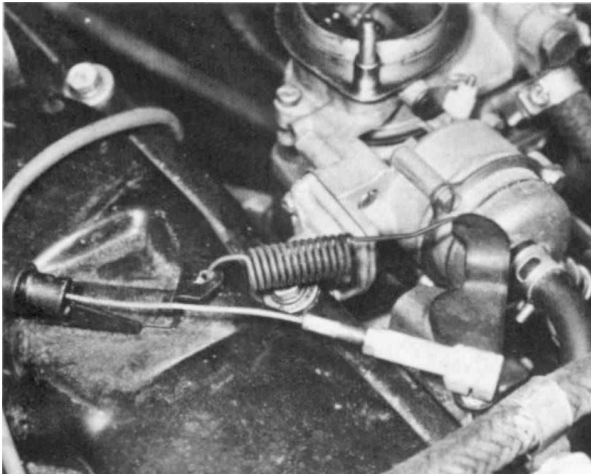
Removal and refitting

19 These operations are similar to the operations described in paragraphs 3 to 9 of this Section, but the unit is of manually operated choke design and will therefore not have coolant hose attachments. A choke cable is fitted instead.

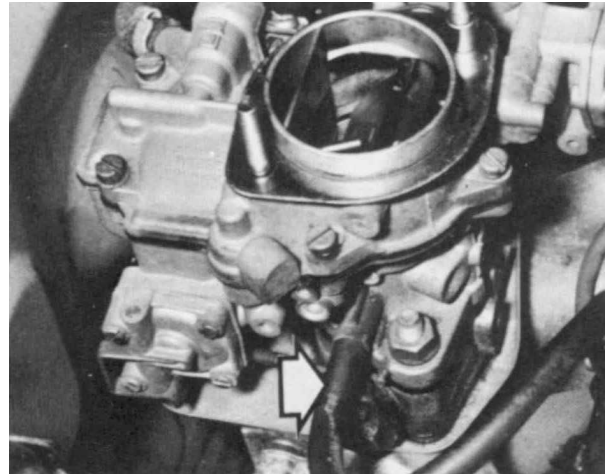
Dismantling and adjustment

20 The operations are similar to those described for the single venturi type carburettor, once the upper body has been removed (six screws).

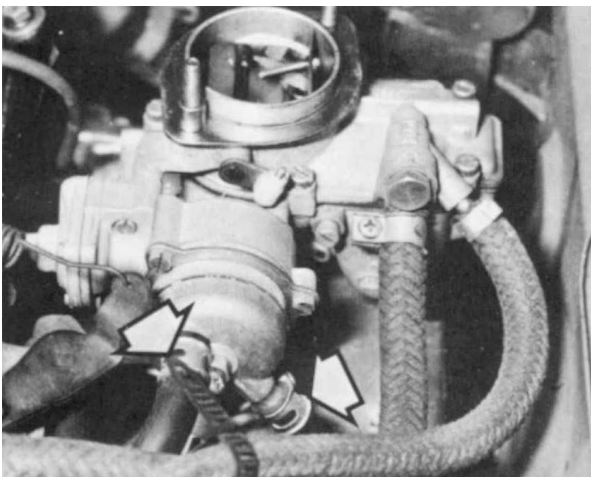
21 If jets are extracted, identify them as to which side of the carburettor (primary or secondary) they came from.



4.4 Throttle cable connection to Weber single venturi carburettor



4.5 Weber single venturi carburettor installed (vacuum pipe arrowed)



4.7 Weber single venturi carburettor showing coolant hoses (arrowed) to automatic choke housing. Note fuel hoses connected to top right of carburettor



7.6 Location of fuse block - 1049 cc engine models

22 To check the float setting, hold the carburettor cover vertically with the float hanging down. The distance 'a' (see Fig. 13.8) measured between the float and the cover (with gasket fitted) should be $7 \text{ mm} \pm 0.25 \text{ mm}$. Where necessary, bend the float tongue.

23 This type of carburettor is fitted with a tamperproof cap on the mixture screw, and unless an exhaust gas analyser is available, restrict any adjustment to the slow-running to turning the throttle speed screw.

Carburettor overhaul – general

24 Whenever it is decided to overhaul a carburettor, always obtain the appropriate repair kit in advance. If throttle or choke valve plates or their spindles are worn, do not dismantle them but obtain a new carburettor. A new carburettor

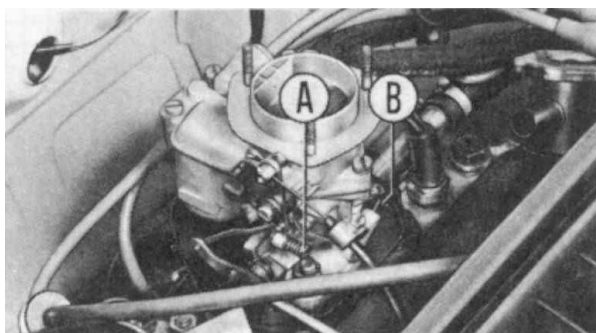


Fig. 13.6. Solex carburetor adjustment screw (Sec.4)
A – Throttle speed screw B – Sealed mixture screw

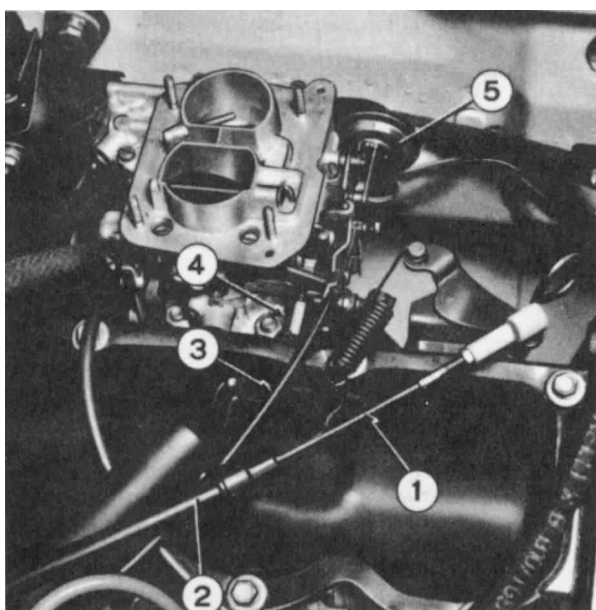


Fig. 13.8. Weber dual venturi carburettor (Sec.4)

- | | |
|--------------------|--------------------------------|
| 1 – Throttle cable | 4 – Throttle speed screw |
| 2 – Cable conduit | 5 – Throttle control diaphragm |
| 3 – Choke cable | |

is an economical proposition if the original one has seen service to a high mileage. Very often a generous allowance is made for the old unit.

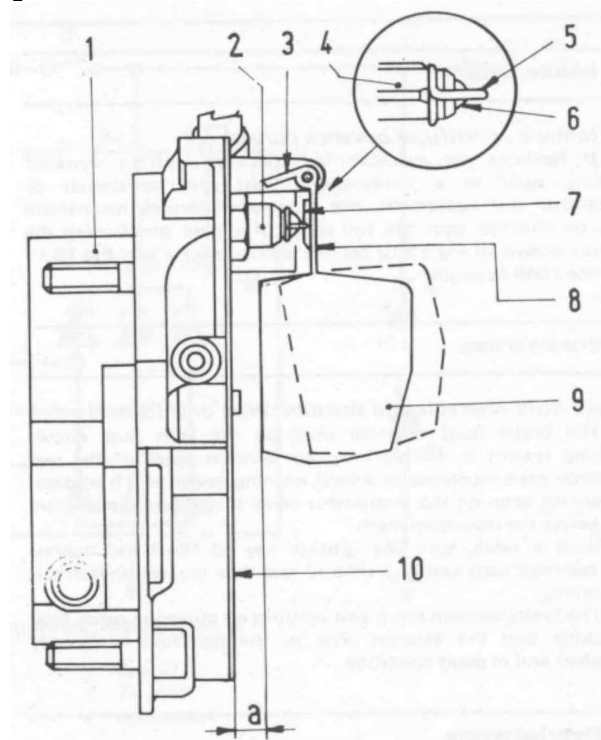


Fig. 13.7. Weber dual venturi carburettor float setting diagram (Sec.4)

- | | |
|-----------------------------|-----------------------------|
| 1 – Carburettor top cover | 7 – Float arm tab |
| 2 – Fuel inlet needle valve | 8 – Float arm |
| 3 – Float stop | 9 – Float |
| 4 – Needle | 10 – Gasket |
| 5 – Return hook | $a = 7 \pm 0.25 \text{ mm}$ |
| 6 – Ball | |

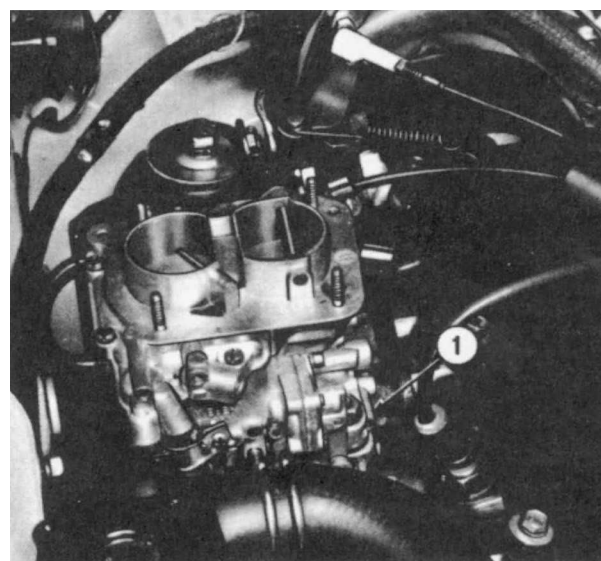


Fig. 13.9. Location of mixture control screw (1) (Weber dual venturi carburettor) (Sec.4)

..... nedokončeno