504 GASOLINE 4 CYLINDER

ENGINE CODING

ENGINE IDENTIFICATION

Engine serial number is stamped on left side engine mounting face and is also located on identification plate attached to right inner fender panel.

Engine identification number is stamped on camshaft tunnel near the starter. The first letter and five digits designate production number. The last letter is an identification letter and is decoded as follows:

Application	Transmission	Engine Code
XN1 Engine	Manual	UA
XN1 Engine	Automatic	XA

ENGINE & CYLINDER HEAD

ENGINE

Removal – 1) Remove battery, battery tray and hood. Remove radiator, ignition coil, starter and windshield bottle. Disconnect heater hoses, fuel feed lines, carburetor controls, power brake vacuum lines and electrical wiring. On automatic transmission models, drain transmission, disconnect transmission dipstick bracket from cylinder head and remove air cleaner.

2) Lower steering rack housing (steering wheel turned to left). Disconnect exhaust pipe from manifold. Remove flywheel covering and clutch housing bolts. Attach suitable hoist to engine and take up weight.

3) Remove 4 bolts attaching engine mounts to crossmember. Left brake line MUST be against crossmember. Raise engine until transmission meets tunnel. Suitably support transmission. On automatic transmission models, remove 4 bolts connecting converter to flywheel. On all models, remove engine from vehicle.

NOTE – *Never remove engine with converter. Converter must remain attached to transmission.*

Installation – To install, reverse removal procedure and ensure fan blade-to-radiator clearance is .6-.8" (15-20 mm).

CYLINDER HEAD

CAUTION – *Cylinder head removal must be performed only when engine is cold to prevent cylinder head distortion.*

Removal – 1) Drain cooling system. Remove air cleaner and support, carburetor and linkage. Remove distributor cap and wires, and remove spark plugs. Remove upper radiator hose and water pump drive belt. Disconnect alternator bracket from cylinder head.

2) Disconnect heater hose from water pump and hose bracket from cylinder head. Disconnect oil supply line at rear of head. Disconnect remaining electrical leads and water hoses. Remove exhaust pipe from manifold.

3) Remove spark plug tube seals and their cups. Remove two cylinder head bolts from position number eight and nine and replace with guide studs. Remove remaining cylinder head bolts and remove rocker arm assembly. Remove push rods and place in order for proper installation.

4) Remove the forward guide stud (number eight) and pivot cylinder head on remaining guide to loosen cylinder head from gasket.

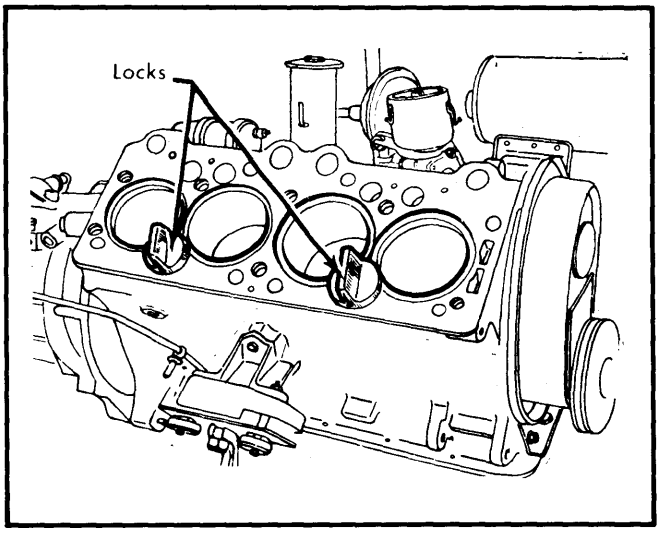

Fig. 1 Cylinder Liner Locks Installed in Position

5) Install cylinder liner locks and lift cylinder head off block. Remove gasket and remaining guide stud.

Installation – 1) Remove liner locks and ensure inner flats of liners are parallel on liners 1-2 and 3-4. Install cylinder head guide studs. Install new gasket dry with word "DESSUS" facing up. Place cylinder head in position and replace push rods.

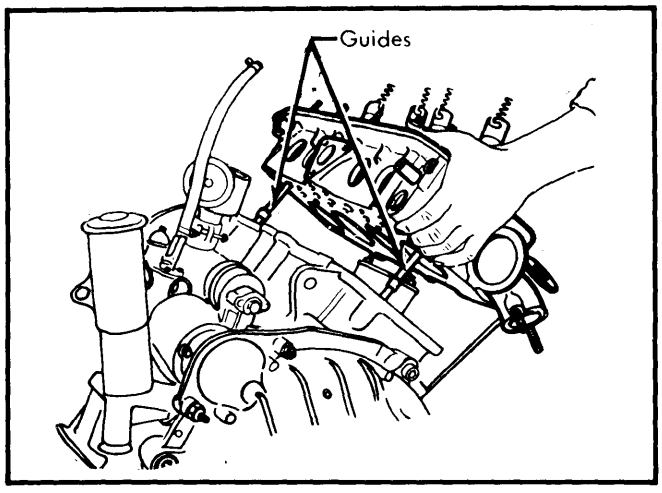

Fig. 2 Fitting Cylinder Head to Engine Block

2) Replace rocker arm assembly on studs, do not tighten nuts. Lubricate cylinder head bolts and install in position, tightening slightly. Tighten cylinder head bolts in sequence to 36 ft. lbs. (5 mkg), then tighten rocker arm assembly nuts to 11 ft. lbs. (1.5 mkg).

504 GASOLINE 4 CYLINDER (Cont.)

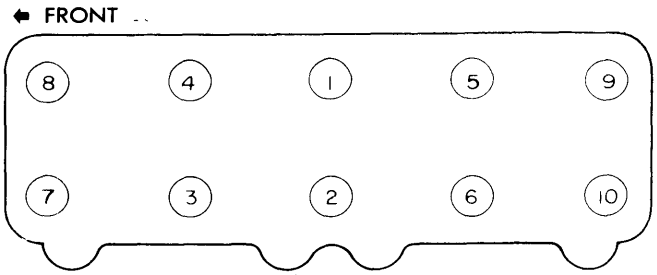

Fig. 3 Cylinder Head Bolt Tightening Sequence

3) Loosen number one cylinder head bolt and retighten to 14.5 ft. lbs. (2 mkg), then continue to tighten the bolt for an additional 90° (one quarter turn). Using same procedure, loosen and tighten remaining head bolts in sequence.

NOTE – *If in doubt about the tightening of any one bolt, loosen completely and repeat all above operations.*

4) Adjust valves to .006" (.15) for intake and .012" (.30) for exhaust. See *Valve Clearance Adjustment*. After 600 miles, adjust valves to standard clearances.

NOTE – *Cylinder head bolts must be retightened after 600 miles.*

5) To retighten cylinder head bolts, loosen bolt number one completely and retighten according to instructions previously outlined. Follow same procedure for remaining bolts, working in sequence. Retighten rocker arm assembly nuts.

SPARK PLUG TUBE REPLACEMENT

Removal – With cylinder head supported, screw in plugs without springs to prevent dirt from falling into cylinder. Remove tubes using mallet or suitable extractor.

NOTE – *If tubes are removed, new tubes MUST be inserted.*

Installation – To install tubes, coat with suitable sealing compound and insert so plug caps are facing as shown in illustration. When tube is fully seated, it will protrude 2.835" (72 mm) upward from cylinder head.

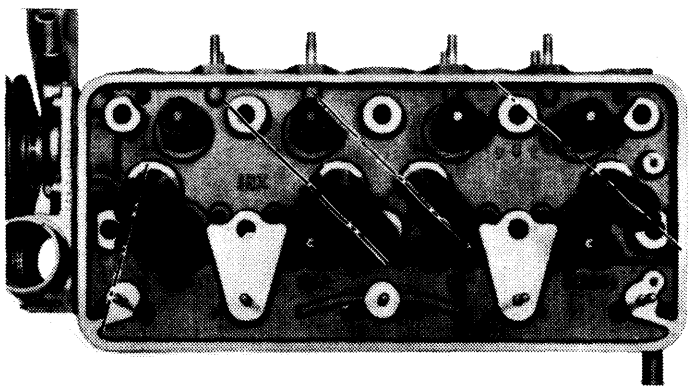

Fig. 4 Position of Spark Plug Tubes for Installation

VALVES

VALVE ARRANGEMENT

Left Side – Intake valves.
Right Side – Exhaust valves.

NOTE – Cylinders and valves are numbered with number one at flywheel end.

VALVE SPRING REPLACEMENT

Intake Valve – Turn crankshaft in direction of engine rotation and position where exhaust valve just begins to open. Slide rocker arm off intake valve then bring piston to TDC of compression stroke. Using suitable spring compressor, compress spring and remove keepers, spring retainer and spring.

Exhaust Valve – **1)** Remove spark plug from cylinder requiring attention. Rotate crankshaft in direction of engine rotation and bring intake valve to fully closed position. Slide rocker arm off exhaust valve.

2) Insert suitable hinged tool (0 0136) into spark plug hole and bring piston to TDC without forcing as tool is between piston and valve. Using suitable spring compressor, compress spring and remove keepers, spring retainer and spring.

VALVE CLEARANCE ADJUSTMENT

NOTE – *Engine must be allowed to cool at least six hours before adjusting valves.*

Rotate engine until exhaust valve number one is fully opened, then adjust intake valve number three and exhaust valve number four. Rotate engine one half turn until next number valve is fully opened and adjust corresponding valves. See *table*. Continue until all valves have been adjusted.

Valve Adjustment Sequence

Valve Open	Adjust Valves
E 1	I 3 & E 4
E 3	I 4 & E 2
E 4	I 2 & E 1
E 2	I 1 & E 3

Valve Clearance Adjustment

Application	Intake In. (mm)	Exhaust In. (mm)
All Models	①.004	.010
	(.10)	(.25)

① – Set No. 1 and No. 4 Intake to .008" (.20 mm).

504 GASOLINE 4 CYLINDER (Cont.)

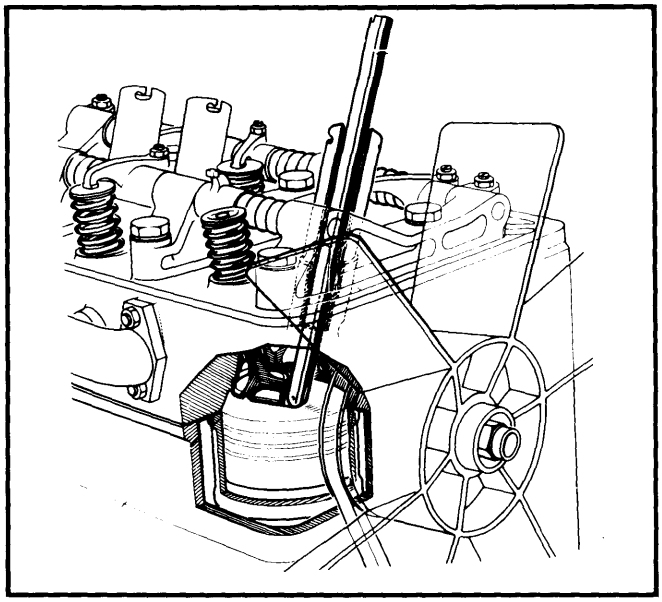

Fig. 5 Removing Valve Spring with Valve Held in Place

PISTONS, PINS & RINGS

PISTON & ROD ASSEMBLY

NOTE – *Engine must be removed to replace liners and pistons.*

Removal – 1) Drain crankcase. With engine mounted on suitable engine stand, remove intake and exhaust manifolds. Remove all auxiliary equipment as shown in *Fig. 6*. Remove fuel pump plunger.

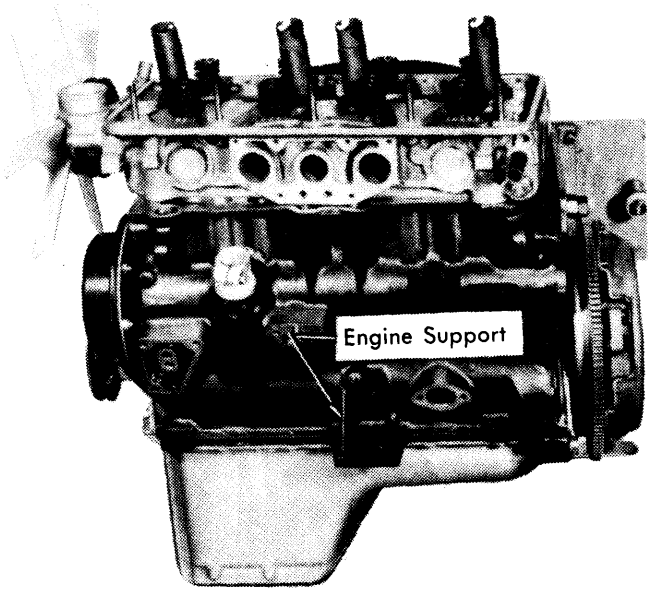

Fig. 6 View of Engine with Auxiliary Equipment Removed

2) Remove cylinder head. See *Cylinder Head Removal in this article*. Remove camshaft hydraulic lifters, keeping them in original order. Remove distributor support drive shaft.

3) Remove oil pan and oil pump. Remove timing cover. Remove bearing caps, keeping them in original order. Remove pistons and connecting rods. Attach connecting rods to matching cap, mark rod assemblies 1-4.

Installation – 1) To install, fit piston ring clamp on piston. Insert piston and rod assembly, without twisting it. Index arrow must face front of engine.

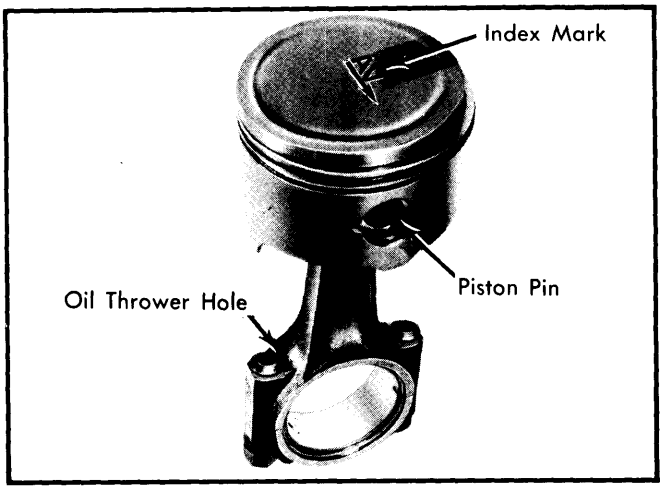

Fig. 7 Piston and Rod Assembly with Index Marks Noted

2) Push piston down cylinder and guide connecting rod with bearing over crankshaft journal. Install bearing cap and tighten.

NOTE – *Marks on rods and caps must be on same side.*

PISTON PIN REPLACEMENT

Remove snap rings and piston pin. Fit piston to rod with index mark "AV" at right angle to oil thrower. If necessary heat piston pin in boiling water and insert pin. Install snap rings.

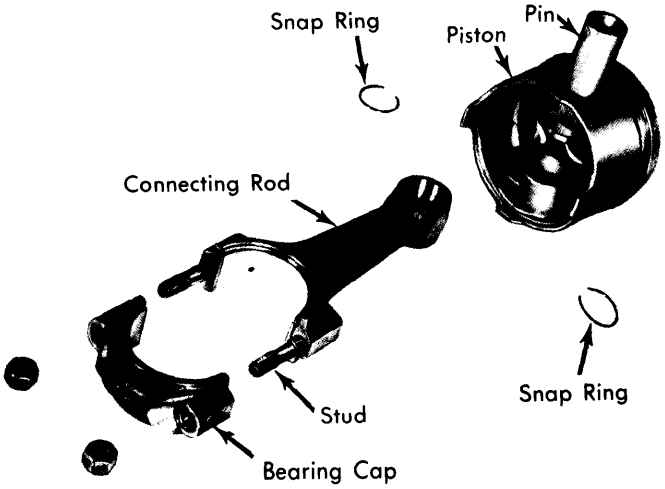

Fig. 8 Exploded View of Piston and Connecting Rod

504 GASOLINE 4 CYLINDER (Cont.)

CYLINDER LINER REPLACEMENT

1) Remove cylinder liners, using suitable extractor if required. Before installing liners, clean and inspect for burrs and dirt. Insert liners, without base gaskets, with flats on shoulder of liners 1-2 and 3-4 parallel.

NOTE – *Do not alter piston/liner pairings.*

2) Place a suitable dial gauge and support on block face. Synchronize dial at 0 and 5. Check each liner at 4 different points, noting the highest reading. Maximum allowable difference between two diametrically opposed points must be less than .003" (.07 mm). If specification is exceeded, it may be necessary to change position of liners.

NOTE – *Liners must be identified by position.*

3) Select a base gasket for each liner which will give a protusion of approximately .005" (.12 mm). Gaskets are available in 4 different sizes. Use only 1 gasket on each liner.

4) Fit gasket on liner. Engage gasket inner tabs in liner grooves *(See illustration)*. Position tab with reference mark at right angles to flat. Position liners with outer tabs in position. Install suitable liner compressor tools to block. Seat liners and ensure protrusion is correct. Remove compressor tools and install liner locks.

NOTE – *Difference in protrusion of adjoining cylinders must not exceed .016" (.04 mm).*

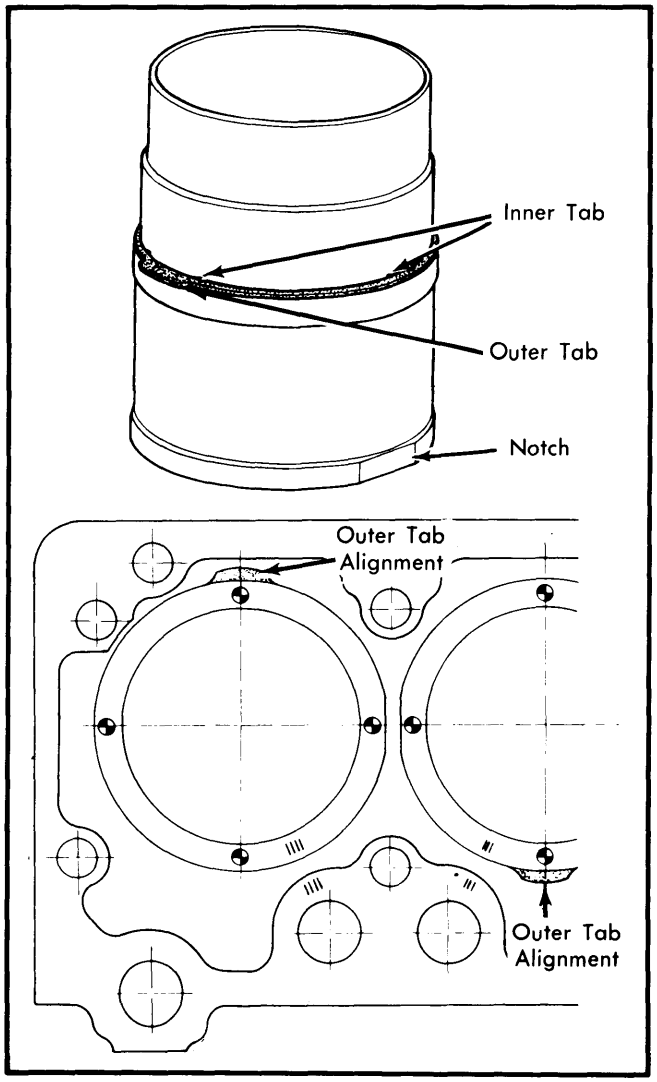

Fig. 9 Cylinder Liner Gasket Installation

CRANKSHAFT MAIN & CONNECTING ROD BEARINGS

THRUST BEARING WASHERS

After installing crankshaft, check end play. Play must not exceed .008" (.20 mm). If specification is exceeded, oversize thrust washers are available in .094" (2.40 mm), .096" (2.45 mm), and .098" (2.50 mm) sizes.

CAMSHAFT

TIMING CHAIN

Removal – 1) Remove radiator, fan belt and spark plugs. Remove crankshaft pulley, timing chain cover and oil thrower. Disengage chain tensioner by removing plug and turn 3 mm Allen wrench clockwise. It is possible to further disassemble chain tensioners.

NOTE – *Position camshaft as shown in illustration to avoid any possible contact of valves and pistons when rotating crankshaft with timing chain removed.*

2) Remove camshaft sprocket, timing chain, crankshaft sprocket and Woodruff key.

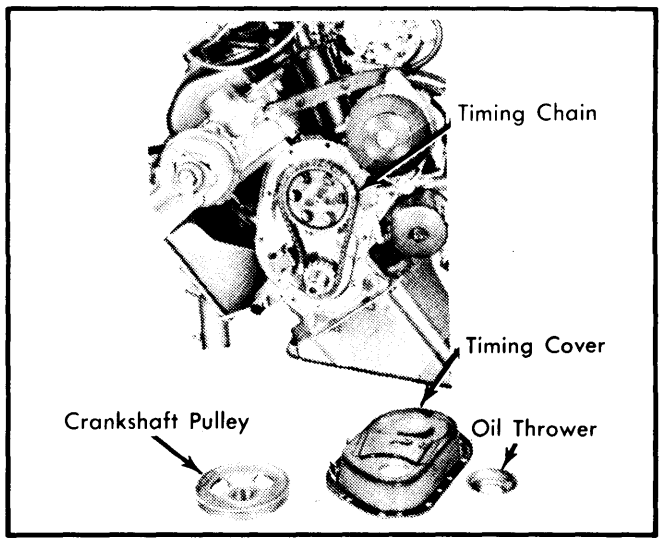

Fig. 10 Timing Cover Removed with Related Components

Installation – 1) Hold crankshaft in original position and install Woodruff key and sprocket. Position camshaft and then crankshaft as shown in illustration.

2) Install timing chain first on camshaft sprocket, then on crankshaft sprocket. Ensure timing marks are in correct align-

504 GASOLINE 4 CYLINDER (Cont.)

ment. Fit camshaft with a new washer and tighten bolts. Bend up tabs.

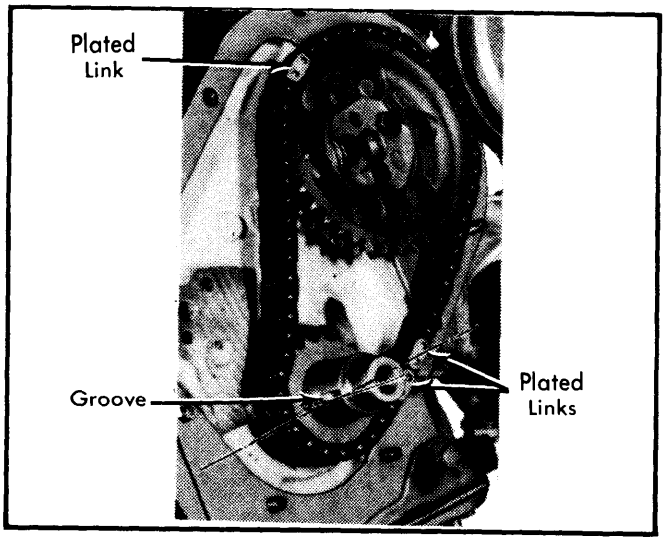

Fig. 11 Proper Alignment of Camshaft and Crankshaft for Removing Timing Chain

3) Engage chain tensioner by adjusting Allen wrench in a clockwise manner. Install a new tab washer on plug and bend tab. Withdraw tool after installing tensioner.

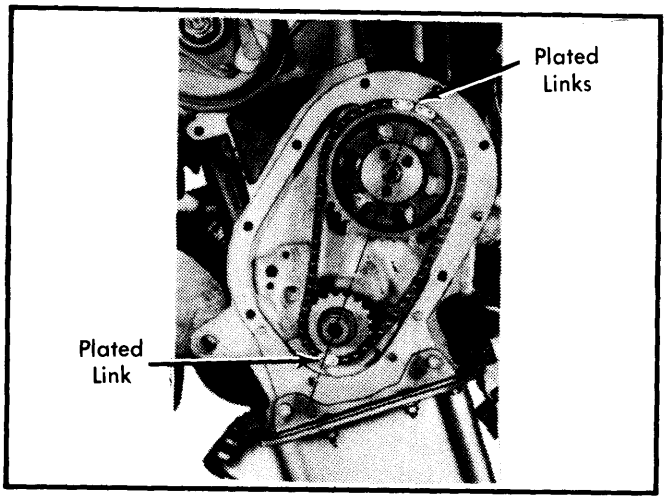

Fig. 12 Proper Alignment of Camshaft and Crankshaft

4) Install thrust washers (if required), oil slinger cap and timing chain cover. Center timing chain cover with suitable tool. Fit crankshaft pulley.

ENGINE OILING

ENGINE OILING SYSTEM

A high output, gear type oil pump is mounted to engine block lower surface and is operated by camshaft.

Crankcase Capacity – Approximately 4.2 qts.

Oil Filter – Full-flow cartridge type.

Normal Oil Pressure – 28-51 psi (2-3.6 kg/cm²) at idle; 44-67 psi (3-4.7 kg/cm²) at 4000 RPM.

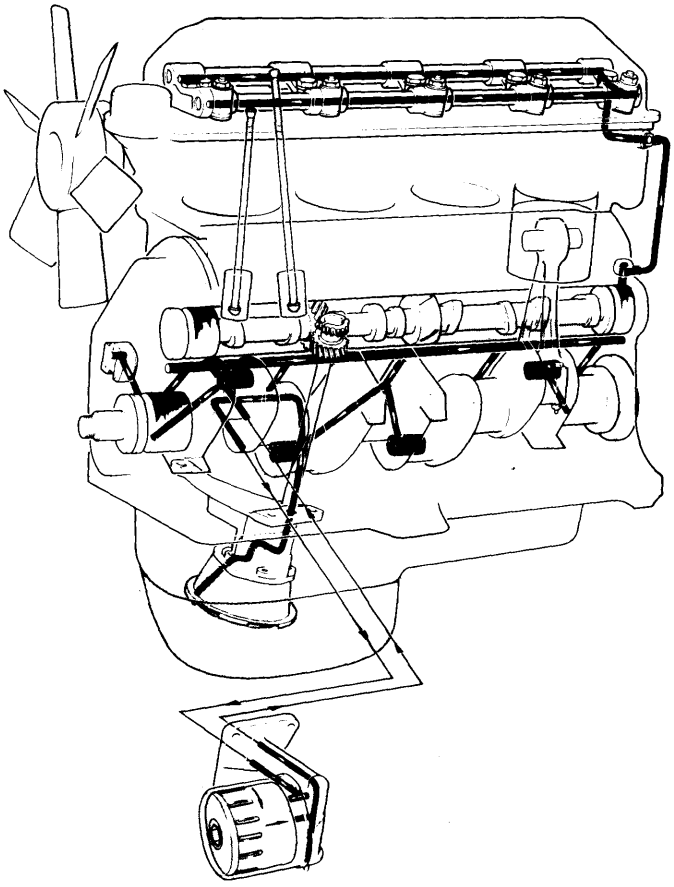

Fig. 13 Sectional View of Peugeot Engine Oiling Circuit with Detail of Components Lubricated

ENGINE COOLING

Thermostat – Opens at 167°F (75°C).

Cooling System Capacity – Approximately 8.25 qts.

WATER PUMP

Removal & Installation – Remove radiator, top hose and fan belt. Disconnect heater hose from pump and self-engaging fan brush holder. Remove water pump. To install, reverse removal procedure and ensure contact surfaces are clean before installing new gasket.

SELF-DISENGAGING FAN

Driven by water pump shaft and controlled by a thermal contact-breaker. Fan engages at 183-194°F (84-90°C) and disengages at 169-180°F (76-82°C).

504 GASOLINE 4 CYLINDER (Cont.)
ENGINE SPECIFICATIONS

GENERAL SPECIFICATIONS

Year	Displ. cu. ins.	Displ. cc	Carburetor	HP at RPM	Torque (Ft. Lbs. at RPM)	Compr. Ratio	Bore in.	Bore mm	Stroke in.	Stroke mm
1979	120.2	1970	2x1-Bbl.	.....	.....	8.0:1	3.464	88	3.189	81

VALVES

Engine & Valve	Head Diam. In. (mm)	Face Angle	Seat Angle	Seat Width In. (mm)	Stem Diameter In. (mm)	Stem Clearance In. (mm)	Valve Lift In. (mm)
1970 cc							
Int.	1.673 (42.49)	...	30°	...	.3157 (8.019)	...	...
Exh.	1.398 (35.51)	45°	45°	...	.3150 (8.001)	...	...

VALVE SPRINGS

Engine	Free Length In. (mm)	PRESSURE Lbs. @ In. (kg @ mm) Valve Closed	PRESSURE Lbs. @ In. (kg @ mm) Valve Open
1970 cc			
Outer	...	137@1.213 (62.1@30.8)	35@1.566 (15.9@39.8)
Inner	...	69@1.055 (31.3@26.8)	18@1.409 (8.16@35.7)

VALVE TIMING

Engine	INTAKE Open (ATDC)	INTAKE Close (ABDC)	EXHAUST Open (BBDC)	EXHAUST Close (ATDC)
1970 cc	2°	39°	30°	8° 30′

CRANKSHAFT MAIN & CONNECTING ROD BEARINGS

Engine	MAIN BEARINGS Journal Diam. In. (mm)	MAIN BEARINGS Clearance In. (mm)	MAIN BEARINGS Thrust Bearing	MAIN BEARINGS Crankshaft End Play In. (mm)	CONNECTING ROD BEARINGS Journal Diam. In. (mm)	CONNECTING ROD BEARINGS Clearance In. (mm)	CONNECTING ROD BEARINGS Side Play In. (mm)
1970 cc							
No. 1 (Rear)	2.1616-2.1646 (54.905-54.980)	...	Rear	.003-.008 (.08-.20)	2.1123-2.1131 (53.652-53.673)	.0006-.003 (.016-.076)	.....
No. 2	2.2102-2.2112 (56.140-56.165)						
No. 3	2.2509-2.2515 (57.174-57.189)						
No. 4	2.3050-2.3060 (58.548-58.573)						
No. 5 (Front)	2.3386-2.3392 (59.401-59.416)						

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (mkg)
Cylinder Head	See Text
Crankshaft Main Bearing Bolts	54 (7.5)
Connecting Rod Nuts	29 (4.0)
Camshaft Retaining Plate Bolts	12 (1.7)
Camshaft Sprocket Bolts	16 (2.25)
Crankshaft Pulley Bolt	123 (17)
Oil Pan Bolts	7 (1.0)
Engine-to-Converter Housing	16 (2.25)
Oil Pump Mounting Bolts	7 (1.0)
Rocker Arm Support Nuts	11 (1.5)