2000 CC 4 CYLINDER

GENERAL SPECIFICATIONS										
Year	Displ.		Carburetor	HP at RPM	Torque (Ft. Lbs. at RPM)	Compr. Ratio	Bore		Stroke	
	cu. ins.	cc					in.	mm	in.	mm
1974	122	1999	2-Bbl.	.....	.....	.....	3.575	90.795	3.029	76.936

ENGINE IDENTIFICATION

The second series of digits of vehicle identification number, located on a plate riveted to top of right fender apron, indicates engine type.

Capri Engine	Engine Code
2000 cc	NB

ENGINE REMOVAL

1) Remove radiator lower splash shield and hood. Drain radiator and crankcase fluids. Remove air cleaner and carburetor air cleaner adaptor. Disconnect battery ground cable. Remove radiator upper shield, hoses, and radiator. Disconnect heater hoses and electrical lead from alternator.

2) Disconnect accelerator cable and shaft swivel from bellcrank. Remove screws mounting bellcrank and position out-of-way. On vehicles equipped with air conditioning, remove compressor from mounting bracket and move aside.

3) Disconnect coil primary wire, coil high tension wire, oil pressure and water temperature sending units, and fuel feed line. Raise vehicle and remove starter. Disconnect head pipe at exhaust manifold.

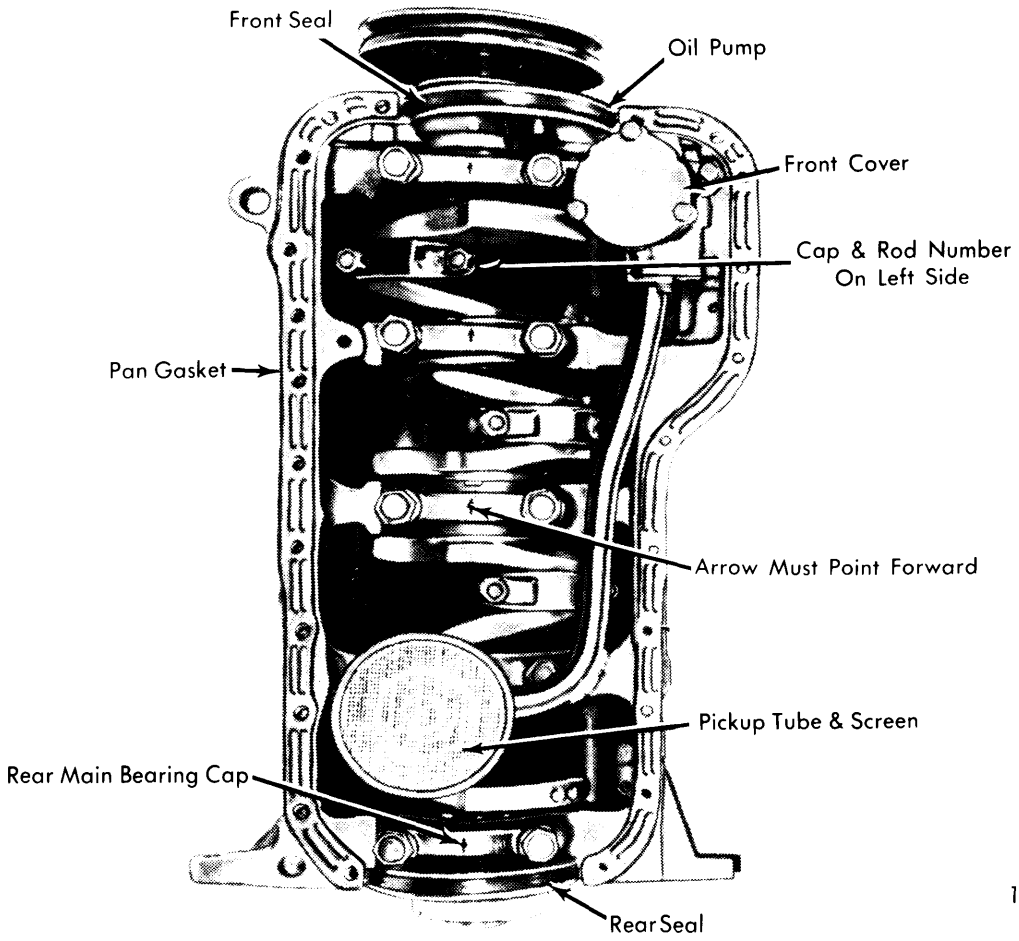
4) Remove flywheel or converter housing lower front cover. Remove flywheel lower mounting bolts on manual transmission models. On automatic transmission models, disconnect converter from flex plate and remove connecting housing-to-cylinder block lower mounting screws.

5) Disconnect engine mounts and support transmission clutch or converter housing with a suitable floor jack. Lift engine clear of vehicle and place on a suitable stand.

INTAKE MANIFOLD REMOVAL

1) Remove air cleaner. Disconnect fuel line from carburetor.

2) Disconnect two distributor vacuum and crankcase ventilation hoses at intake manifold.



BOTTOM VIEW OF ENGINE

2000 CC 4 CYLINDER (Cont.)

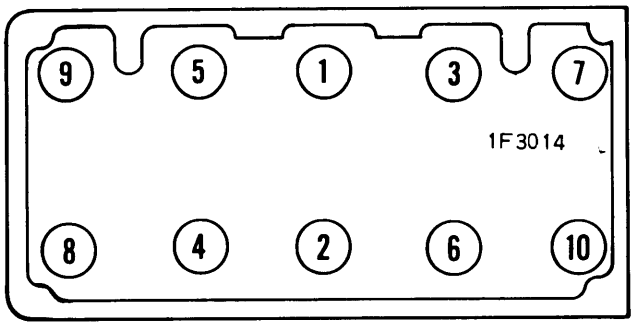
3) Remove intake manifold nuts and lift manifold, carburetor, and decel valve off studs as an assembly.

CYLINDER HEAD REMOVAL

1) Drain cooling system, remove air cleaner and rocker arm cover.

2) Remove exhaust manifold. Remove intake manifold, carburetor and decel valve as an assembly. Remove camshaft drive belt cover.

3) Loosen drive belt tensioner and remove belt. Remove water outlet elbow from head. Remove 10 head bolts using suitable tool (T71P-6065A). Lift head and camshaft assembly from engine.



CYLINDER HEAD TIGHTENING SEQUENCE

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)
2000 cc							
Int.	1.646-1.661 (41.808-42.189)	44°	45°	.060-.079 (1.524-2.006)	.3159-.3167 (8.024-8.044)	.0008-.0025 (.020-.064)	.....
Exh.	1.409-1.425 (35.789-36.195)	44°	45°	.060-.079 (1.524-2.006)	.3149-.3156 (7.998-8.016)	.0018-.0035 (.046-.089)	.....

VALVE ARRANGEMENT

E-I-E-I-E-I-E-I (front to rear).

VALVE GUIDES

If valve guides become worn they may be reamed to install a new valve with oversize stem. When going from a standard size stem to oversize, always use reamers in sequence to obtain final desired bore. The valve seat must be refaced after a guide has been reamed, and a suitable tool used to break sharp corner (ID) of guide.

VALVE STEM OIL SEALS

With valve in head, place plastic installation cap over end of valve stem. Start stem seal carefully over cap and push seal down until jacket touches top of valve guide. Remove plastic cap and bottom seal on valve guide.

VALVE SPRINGS			
Engine	Free Length In. (mm)	PRESSURE Lbs. @ In. (kg @ mm)	
		Valve Closed	Valve Open
2000 cc	1.73 (43.94)	64-73@1.418 (29-33 kg@36.02)	170-183@102 (77-83 kg@25.9)

VALVE SPRING INSTALLED HEIGHT

Measure assembled height of valve spring from surface of spring pad to underside of spring retainer. If height is greater than 1.422", install .030" spacer(s) between spring and pad to obtain recommended dimension.

NOTE — Do not install spacers unless necessary. Excess use of spacers will result in overstressing valve springs and overloading camshaft, causing breakage of springs and worn camshaft lobes.

VALVE CLEARANCE ADJUSTMENT

1) Remove air cleaner and rocker arm cover.

2) Rotate crankshaft clockwise until high point of number one cam lobe is pointing down.

3) Check clearance between cam lobe and rocker arm on valves six and seven. Remove rocker retaining springs before inserting feeler gauge. Clearance is .008" intake valves; .010" exhaust valves, with engine cold.

4) Rotate engine until number two cam lobe is pointing down and adjust valves three and eight.

5) Rotate engine until number three cam lobe is pointing down and adjust valves two and five.

6) Rotate engine until number six cam lobe is pointing down and adjust valves one and four.

2000 CC 4 CYLINDER (Cont.)

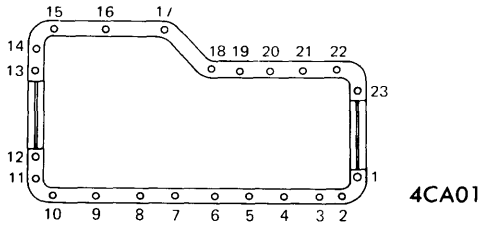
PISTONS, PINS, RINGS						
Engine	PISTONS	PINS		RINGS		
	Clearance In. (mm) ①	Piston Fit In. (mm)	Rod Fit In. (mm)	Rings	End Gap In. (mm)	Side Clearance In. (mm)
2000 cc	.001-.002 (.025-.051)	.0002-.0004 (.005-.010)	②	Comp. Oil	.015-.022 (.381-.559) .016-.055 (.406-1.397)	.0019-.0038 (.048-.097) Snug

① — Measure at piston pin bore centerline @ 90° to pin bore.

② — Interference Fit.

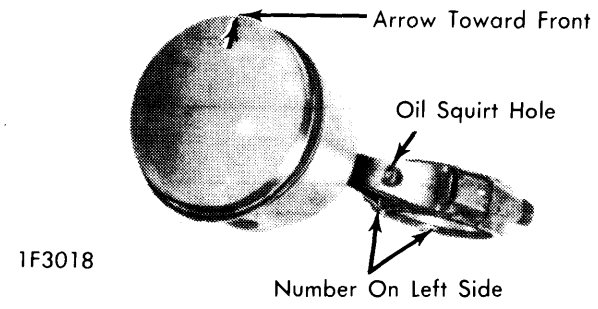
OIL PAN REMOVAL

Removal — Remove dipstick and flywheel housing cover, then drain crankcase. Disconnect steering coupling from rack and pinion and unbolt rack and pinion from crossmember; move assembly forward for clearance. Withdraw oil pan mounting bolts and maneuver pan from vehicle.



OIL PAN TIGHTENING SEQUENCE

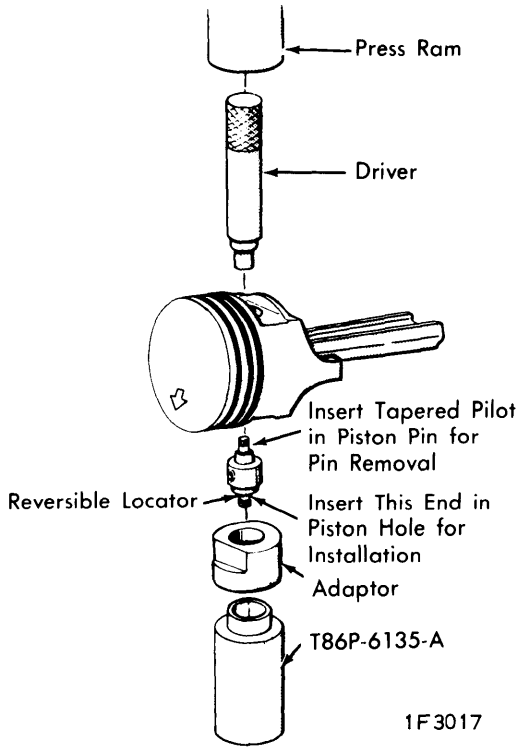
Installation — To install oil pan, reverse removal procedure refering to tightening sequence illustration.



CORRECT PISTON & ROD ASSEMBLY

PISTON PIN REPLACEMENT

Piston pin bore and OD of piston pin must be within specifications. Remove old pin using an arbor press and suitable piston support and driver tool. Assemble piston to rod with the oil squirt hole in rod on right hand side of piston with arrow pointing forward (See Illustration). Use arbor press to press pin into piston and connecting rod.



REMOVING AND INSTALLING PISTON PIN

FITTING PISTONS

Check piston-to-cylinder bore clearance by measuring piston and bore diameters. Measure outside diameter of piston at centerline of piston pin bore and at 90° to pin axis. Refer to specifications for proper clearance. Oversize pistons are available in .020", .030", and .040" oversizes.

2000 CC 4 CYLINDER (Cont.)

CRANKSHAFT MAIN & CONNECTING ROD BEARINGS							
	MAIN BEARINGS				CONNECTING ROD BEARINGS		
Engine	Journal Diam. In. (mm)	Clearance In. (mm)	Thrust Bearing	Crankshaft End Play In. (mm)	Journal Diam. In. (mm)	Clearance In. (mm)	Side Play In. (mm)
2000 cc	2.2432-2.2440 (56.977-56.998)	.0006-.0016 (.015-.041)	No. 3	.003-.011 (.076-.279)	2.0464-2.0472 (51.979-51.999)	.0006-.0015 (.015-.038)	.004-.011 (.102-.279)

CRANKSHAFT MAIN & CONNECTING ROD BEARINGS

1) Using Plastigage method, determine crankshaft journal bearing clearance. Place a jack under counterweight adjoining bearing being checked so weight of crankshaft will not aid in compressing Plastigage and provide an erroneous reading.

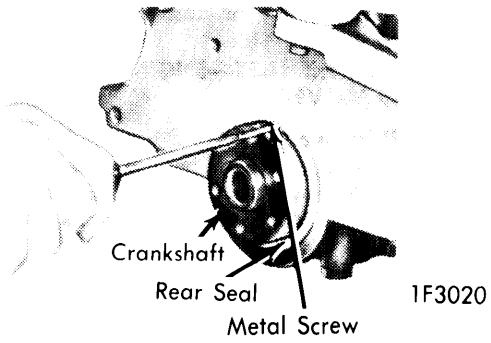
2) If bearing clearance using standard size bearing inserts is excessive, a .002" (.051 mm) undersize bearing half may be used in combination with a standard size bearing half. If .002" (.051 mm) undersized bearings are used on more than one journal, they must be positioned in the cylinder block rather than in the bearing cap. If standard and .002" (.051 mm) undersize combinations do not bring bearing within specified limits (see specifications), crankshaft will have to be refinished and undersize bearings installed. Undersize bearings are available as follows: .010", .020", .030", and .040".

THRUST BEARING ALIGNMENT

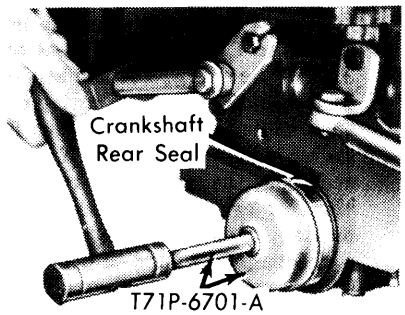
Check crankshaft end play. If not within specifications, remove center main bearing cap and install new thrust washers. *NOTE — Always install thrust washers in pairs, (upper and lower), on rear side of main bearing.*

REAR MAIN BEARING OIL SEAL

Removal & Installation — Remove transmission, clutch and flywheel or, on automatic transmission models, converter and flywheel. Remove rear seal using two sheet metal screws as shown in illustration. Install new seal using suitable installer tool (T71P-6701-A).



REMOVING REAR MAIN OIL SEAL

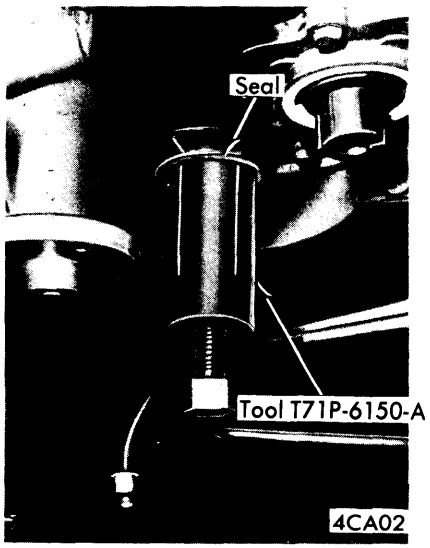


INSTALLING REAR MAIN OIL SEAL

FRONT CRANKSHAFT OIL SEAL REPLACEMENT

Removal & Installation — Remove alternator drive belt and crankshaft pulley. Remove camshaft drive belt. *See Camshaft Drive Belt Replacement.* Slide camshaft drive belt sprocket and belt off crankshaft. *NOTE — It may be necessary to utilize a puller to withdraw sprocket.* Fit a suitable tool (T71P-6150-A) over end of crankshaft and remove seal. To install new seal, reverse removal procedure.

NOTE — Cylinder front cover and auxiliary shaft seals are replaced using procedure outlined above.



REMOVING FRONT CRANKSHAFT OIL SEAL

2000 CC 4 CYLINDER (Cont.)

CRANKSHAFT IDENTIFICATION

Crankshafts found in new cars may be either standard or .010" undersize. A white dot on front counterweight indicates all rod journals are .010" undersize, a white slash indicates all main journals are .010" undersize. If both a dot and a slash are found then all rod and main journals are undersize.

CAMSHAFT

Engine	Journal Diam. In. (mm)	Clearance In. (mm)	Lobe Lift In. (mm)
2000 cc			
No. 1	1.6531-1.6538 (41.989-42.009)	.002-.003 (.051-.076)	.....
No. 2	1.7563-1.7571 (44.610-44.630)		
No. 3	1.7713-1.7720 (44.991-45.009)		

CAMSHAFT & BEARING

Removal – Remove rocker arms. Remove camshaft gear and belt guide plate from camshaft. Remove thrust plate from rear of cylinder head and carefully slide camshaft out from rear of cylinder head.

Installation – Pull new bearings into place with a suitable tool, making sure lube hole in bearing is aligned with one in journal. Carefully slide camshaft into place and attach thrust plate. Check camshaft for proper endplay (See Specifications). If endplay is excessive, replace thrust plate.

CAMSHAFT LOBE LIFT

Measure distance between major and minor diameters of each cam lobe with a micrometer. Difference in readings is lobe lift. If readings vary or do not meet specifications, replace camshaft.

CAMSHAFT DRIVE BELT REPLACEMENT

Removal – Place crankshaft on TDC. Remove camshaft drive belt cover and using suitable tool (T71P-6603-A), unbolt belt tensioner. Remove pivot bolt and ensure crankshaft and camshaft remain stationary. *If either crankshaft or camshaft are moved, valve (camshaft) timing will be altered.*

Installation – Install belt tensioner with one end of spring engaging groove in anchor stud. Rotate tensioner clockwise as far as possible, then tighten adjustment bolt snugly. Ensure timing marks are aligned, then position drive belt on sprockets. Loosen tensioner bolt and rotate engine two complete turns. Make sure slack is removed from belt and let tensioner move closer to belt. Torque tensioner adjustment and pivot bolts.

AUXILIARY SHAFT SPROCKET REPLACEMENT

Removal – Remove camshaft drive belt. Remove tensioner adjustment bolt, pivot bolt and spring. Do not pry tensioner spring free from stud. Remove sprocket bolt and washer and slide sprocket off shaft.

Installation – Place sprocket on shaft and install tensioner pivot bolt with spring and adjustment bolt. Snug up adjustment bolt to hold tensioner out of the way. Make sure timing marks are aligned and install drive belt on sprockets. Loosen tensioner bolt and rotate crankshaft two complete turns to place timing marks in position again and take slack from belt. If timing marks are correct, locate tension spring under anchor. Then torque adjustment and pivot bolts to specification.

AUXILIARY SHAFT & BEARING REPLACEMENT

Removal – Remove camshaft drive belt and auxiliary shaft sprocket. Remove distributor, fuel pump and three shaft cover bolts and remove cover. Remove thrust plate screws and plate, and remove auxiliary shaft. Remove bearing from block with suitable tool, if worn.

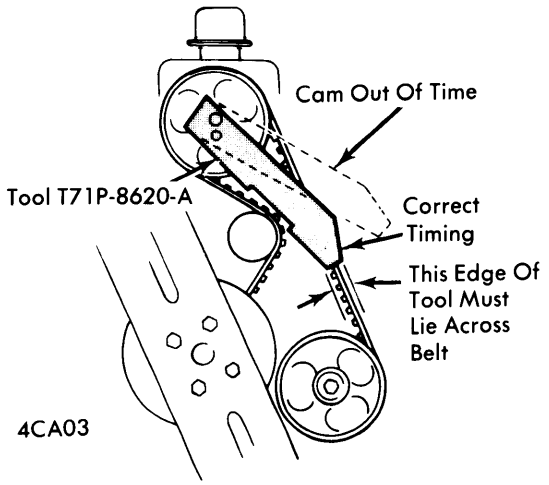
Installation – Align oil holes in bearing with those in block and drive bearing in position using suitable tool (T57T-7003-AF). Slide auxiliary shaft into place and fit thrust plate to retain it. Install new gasket and cover. Reverse removal procedure to install remaining components.

CAMSHAFT TIMING

1) Remove camshaft belt shield and remove camshaft sprocket attaching bolt. Set crankshaft to TDC by aligning timing mark on engine front cover with "O" mark on crankshaft damper. *NOTE – Only rotate engine clockwise.* Install suitable tool (T71P-8620-A) on engine with large pin inserted in camshaft sprocket bolt hole. Tool must be to left of thermostat housing.

2) Rotate tool in clockwise direction until small pin can be fitted into large keyway near bottom of gear. *NOTE – It may be necessary to rotate crankshaft one revolution to bring large keyway to bottom edge of sprocket.*

3) Check that tool bottom edge lies across belt. Remove belt after indexing sprocket and belt. Slighily turn sprocket and install belt so sprocket teeth engage belt one tooth away from original position.



CHECKING CAMSHAFT TIMING

2000 CC 4 CYLINDER (Cont.)

ENGINE OILING

ENGINE OILING SYSTEM

Oiling system is force feed type using a full flow oil filter. Oil enters main oil gallery from oil filter and flows to main bearings and camshaft bearings. Connecting rod bearings are supplied from front and rear main bearings via inclined passages. A squirt hole in each rod bearing end supplies oil to piston thrust side of cylinder. Auxiliary shaft is connected with main oil gallery. Distributor shaft receives oil from passage drilled in auxiliary shaft. Cams and cam follower arms are supplied from center camshaft bearing (which is provided with a groove 180° around its periphery) via an oil line.

Crankcase Capacity – 3.5 qts. Add .5 qt. with filter change.

Oil Filter Type – Full flow.

Oil Pressure – 34 psi (min.) @ 2000 RPM.

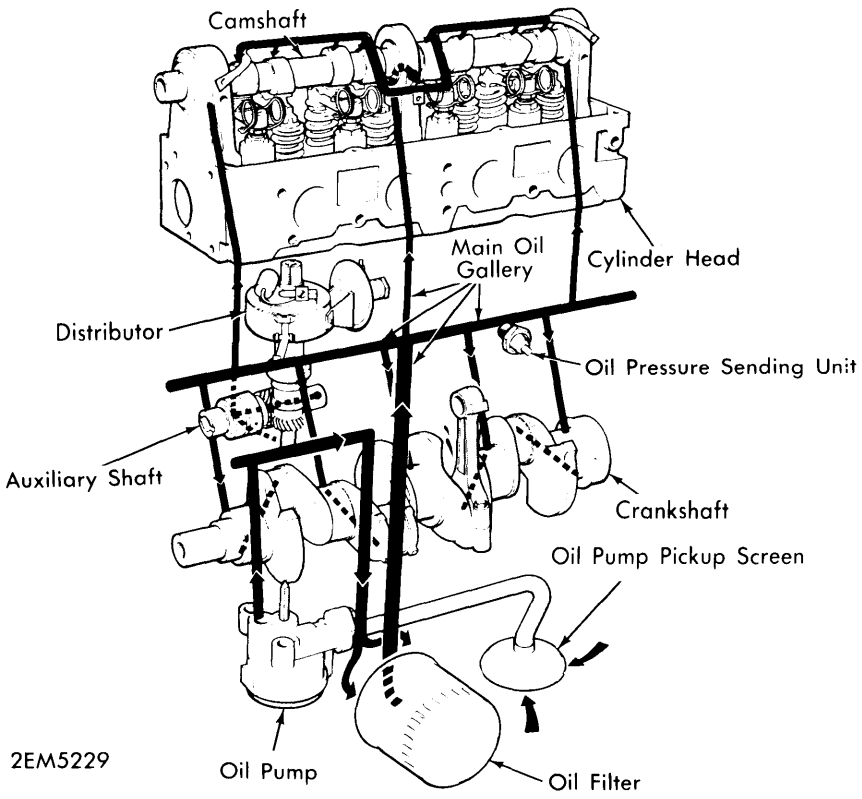
Pressure Relief Valve – Not adjustable.

OIL PUMP

If oil pump has been disassembled for cleaning and inspection, be sure identification mark on rotor and on outer race both face to bottom of pump when reassembling. Inner rotor and shaft and outer race are serviced as an assembly only. See following table for oil pump unit clearances.

Oil Pump Specifications

Application	Specifications In. (mm)
Relief Valve Spring Tension	13.6-14.7 Lbs. @ 1.39 (6.17-6.67 kg @ 35.3)
Drive Shaft-to-Bearing Clearance	.001-.002 (.025-.051)
Relief Valve Clearance	.001-.002 (.025-.051)
Rotor Assembly End Clearance	.001-.004 (.025-.102)
Outer Race-to-Housing (Radial)	.005-.011 (.127-.279)



ENGINE OILING SYSTEM

ENGINE COOLING

Thermostat – Opens at 185-192°F. (New).
Opens at 178-199°F. (Used).

Cooling System Capacity – 8 qts. (with heater).
Pressure Radiator Cap – Opens at 13 psi.

2000 CC 4 CYLINDER (Cont.)

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (mkg)
Auxiliary Shaft Gear	32-36 (4.4-5.0)
Auxiliary Shaft Thrust Plate	5-8 (.69-1.1)
Belt Tensioner	32-36 (4.4-5.0)
Camshaft Gear	32-36 (4.4-5.0)
Camshaft Thrust Plate	5-8 (.69-1.1)
Connecting Rod	29-34 (4.0-4.7)
Crankshaft Pulley	39-43 (5.4-6.0)
Cylinder Head	
Step One	14-29 (1.9-4.0)
Step Two	36-50 (5.0-6.9)
Step Three	65-80 (9.0-11.1)
Exhaust Manifold-to-Cylinder Head	12-15 (1.7-2.1)
Flywheel-to-Crankshaft	47-51 (6.5-7.1)
Front Cover	6-9 (.83-1.2)
Intake Manifold-to-Cylinder Head	12-15 (1.7-2.1)
Main Bearing Cap	65-75 (9.0-10.4)
Oil Pan-to-Block	4-6 (.55-.83)
Rocker Arm Ball Stud	32-36 (4.4-5.0)
Timing Belt Cover	5-7 (.69-.97)
Water Pump-to-Cylinder Block	12-15 (1.7-2.1)
Water Pump-to-Cylinder Block (M10)	26-31 (3.6-4.3)