

Courier Engines

2300 cc 4-CYLINDER

ENGINE CODING

ENGINE IDENTIFICATION

Vehicle identification and engine information is stamped on model plate at the right rear of the engine compartment. The last digit of the vehicle identification number indicates engine model. Engine displacement is listed below vehicle identification number.

ENGINE IDENTIFICATION

Application	Code
2300 cc	2

ENGINE, CYLINDER HEAD & MANIFOLDS

ENGINE

Removal

1) Mark location of hinges and remove hood. Disconnect battery cables from battery. Drain cooling system and crankcase. Remove air cleaner and heat stove assembly.

2) Disconnect radiator hoses and remove radiator and shroud. Disconnect air hoses at air pump. Disconnect heater hoses, choke cable and accelerator linkage. Disconnect brake vacuum booster hose and vacuum amplifier.

3) Disconnect primary wire coupler at distributor and high tension lead from coil. Disconnect wiring from alternator, oil pressure and water temperature sensors, water thermo-switch and slow fuel cut valve solenoid.

4) Disconnect ground cable from right side of engine. Disconnect fuel line from carburetor. Label and disconnect all vacuum hoses from engine-to-chassis connections.

5) Disconnect all heater hoses from engine. Disconnect exhaust pipe from manifold and hanger on transmission. Remove wiring from starter, then remove starter.

6) Support transmission and remove transmission-to-engine attaching bolts. Attach lifting chain and engine hoist to engine. Ensure all chassis-to-engine electrical wiring, vacuum and fuel hoses, coolant hoses, linkages and cables have been removed from engine.

7) Remove motor mount nuts and bolts. Pull engine forward until it clears transmission shaft and lift engine from vehicle.

Installation

To install engine, reverse removal procedure. Ensure all wiring, vacuum and fuel hoses, coolant hoses, linkages and cables are restored to their original connections.

INTAKE MANIFOLD

Removal

1) Remove air cleaner and disconnect fuel lines from carburetor. Disconnect vacuum and crankcase ventilation hoses from intake manifold and carburetor.

2) Disconnect accelerator cable from carburetor. Disconnect heat tube at EGR valve. Remove dipstick, then remove dipstick tube retaining bolt from intake manifold.

3) Remove distributor cap and set aside. Remove intake manifold and carburetor as an assembly from engine.

Installation

Clean gasket mating surfaces. Using new gaskets, install intake manifold and remaining components in reverse order of removal. Tighten manifold in 2 steps.

EXHAUST MANIFOLD

Removal

Remove air cleaner. Remove pipe from air pump check valve. Disconnect exhaust pipe from exhaust manifold. Remove exhaust manifold.

Installation

To install manifold, reverse removal procedures. Apply coat of graphite grease to manifold-to-cylinder head mounting surface. Tighten exhaust manifold. Install remaining components.

CYLINDER HEAD

Removal

1) Drain cooling system. Remove air cleaner and cam cover. Remove intake manifold and carburetor as an assembly. Remove exhaust manifold.

2) Disconnect spark plug wires from plugs and high-tension lead from coil, then remove cap assembly. Loosen alternator retaining bolts and remove drive belt. Remove alternator and mounting bracket. Remove upper radiator hose.

3) Remove timing belt cover. Loosen cam idler retaining bolts. Position cam idler in unloaded position, then tighten bolts. Remove timing belt from cam pulley and auxiliary pulley.

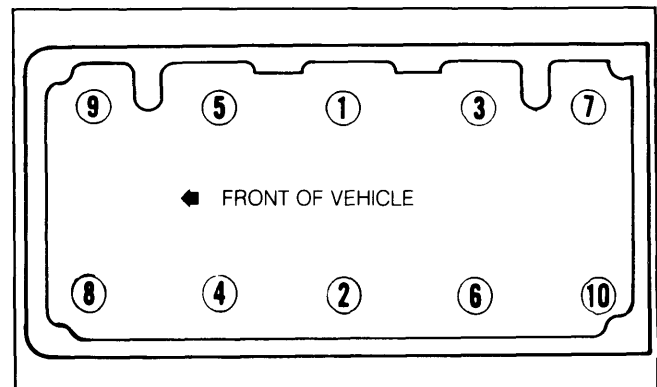
4) Remove cam belt idler and 2 bracket bolts. Remove cam belt idler spring stop from cylinder head. Disconnect wire to oil sending unit. Remove cylinder head.

Installation

1) Clean oil from head bolt holes in cylinder block. Clean all gasket mating surfaces. Install new head gasket on block. Ensure crankshaft and camshaft are in correct valve timing positions.

2) Place cylinder head assembly on block and install head bolts. Tighten bolts in 2 steps. See Fig. 1. Reverse removal procedure to install remaining components and adjust timing belt tension.

Fig. 1: Cylinder Head Tightening Sequence



Tighten to 50-60 ft. lbs (68-81 N.m), then tighten to 80-90 ft. lbs. (108-122 N.m).

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CAMSHAFT

TIMING BELT COVER

Removal & Installation

To remove timing belt cover, remove 4 attaching bolts. Reverse removal procedure to install.

TIMING BELT

NOTE: If camshaft sprocket removal is necessary, use new center bolt upon installation, or use Teflon sealing tape on old bolt threads.

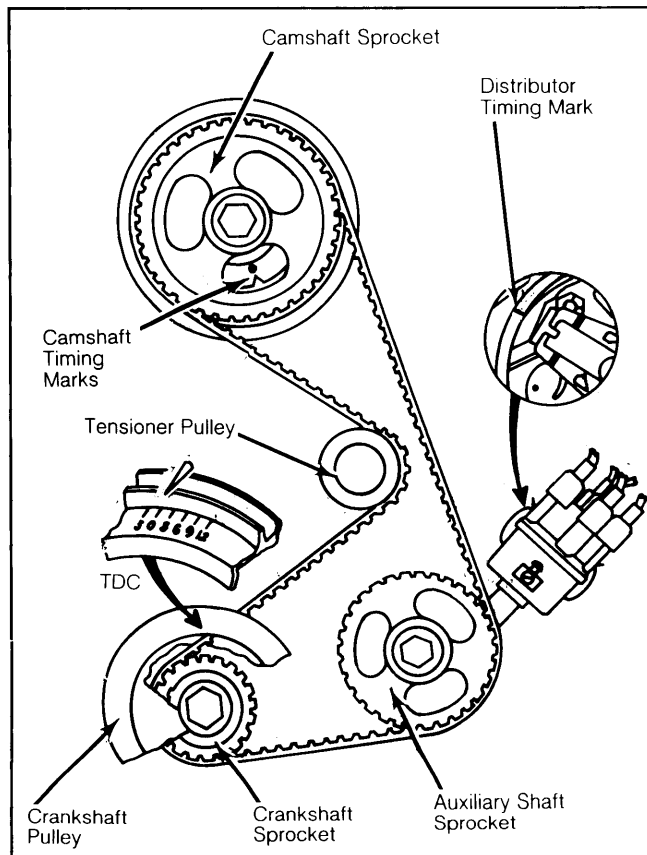
Removal

- 1) Remove timing belt cover. Loosen timing belt tensioner adjustment bolt.
- 2) Push tensioner against spring tension and tighten adjustment bolt to hold tensioner away from belt.
- 3) Remove crankshaft damper, belt guide and timing belt.

Installation

- 1) Position crankshaft sprocket and camshaft sprocket at TDC. See Fig. 2. Remove distributor cap and set rotor to No. 1 firing position by turning auxiliary shaft.
- 2) Install drive belt over crankshaft sprocket and then counterclockwise over auxiliary and camshaft sprockets.
- 3) Align belt fore and aft on sprockets. Loosen tensioner adjustment bolt and allow tensioner to move against drive belt.

Fig. 2: Positions of Valve Timing Marks



Never turn crankshaft in opposite direction of normal rotation.

4) Remove spark plugs and rotate crankshaft 2 turns in direction of normal rotation to remove slack from belt. Tighten tensioner adjustment and pivot bolts.

5) Recheck valve timing marks for alignment. Install crankshaft damper, belt guide, timing belt cover and spark plugs. Check ignition timing.

VALVE TIMING

Checking Timing

- 1) Remove access plug from belt cover and position crankshaft to TDC by aligning pointer on cover with "O" mark on crankshaft damper. Turn engine in normal rotation direction only.
- 2) Look through access hole and check that timing mark on camshaft sprocket is aligned with pointer on inner belt cover. Remove distributor cap and check that rotor is aligned with No. 1 tower on cap.

CAMSHAFT

Removal

- 1) Drain cooling system. Remove air cleaner assembly. Disconnect spark plug wires from cam cover bracket and spark plugs. Position wires aside. Disconnect necessary vacuum hoses, then remove cam cover.
- 2) Remove drive belt from alternator, then remove alternator and mounting bracket from engine. Remove upper radiator hose from radiator and engine. Remove fan shroud.
- 3) Remove timing belt cover. Loosen tensioner pulley retaining bolts, position tensioner in unloaded position to release tension on timing belt, then tighten retaining bolts.
- 4) Remove timing belt from camshaft sprocket and auxiliary sprocket. Raise vehicle on hoist. Remove right and left engine support bolts and nuts.
- 5) Position transmission jack under engine. Use a block of wood between transmission jack and engine. Raise engine as high as it will go. Place blocks of wood between engine mounts and chassis bracket, then lower engine onto blocks.
- 6) Remove transmission jack. Lower vehicle. Using depressor tool (T74P-6565-A or equivalent), depress valve springs and remove cam followers (rockers). Using a puller, remove camshaft sprocket.
- 7) Remove camshaft oil seal. Remove camshaft thrust plate (rear retainer). Remove camshaft.

Installation

- 1) Coat camshaft lobes with Lubriplate and lubricate camshaft journals and bearings with engine oil.
- 2) Install camshaft and remaining components in reverse order of removal. Use new camshaft center bolt, or seal old bolt threads with teflon tape before installing. Ensure valve timing is correct. Adjust valves.

CAMSHAFT BEARINGS

- 1) Use camshaft bearing remover/installer tool (71P-6520-A) for bearing removal and installation. Ensure oil holes are aligned when installing bearings.
- 2) Install front camshaft bearing .010" (.25 mm) maximum, below front face of bearing tower.

CAMSHAFT OIL SEAL

For on vehicle seal removal, use seal removing tool T74P-6700-B to remove seal. Seal installing tool (T74-6150-A) is used for seal installation.

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CAMSHAFT END THRUST

1) Remove timing belt cover. Push camshaft toward rear of engine. Install dial indicator so indicator point contacts camshaft sprocket attaching bolt. Zero dial indicator.

2) Using a large screwdriver between camshaft sprocket and cylinder head, pull camshaft forward and release it. Record dial indicator reading. If end thrust exceeds .009" (.29 mm), 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 lobe lift loss on any cam lobe exceeds .005" (.13 mm), replace camshaft.

AUXILIARY SHAFT

Removal

1) Remove timing belt cover, timing belt and auxiliary sprocket. Remove distributor. Remove auxiliary shaft cover. It may be necessary to cut gasket for separate removal of shaft cover.

2) Remove thrust plate and carefully remove shaft from cylinder block. Use care not to allow gear and fuel pump eccentric of auxiliary shaft to contact shaft bearings.

3) If bearings are being replaced, use slide hammer tool (T58L-101-A) to remove bearings.

Installation

1) If bearing was removed, use bearing installer tool (T57T-7003-A) to install bearings. Be sure to align oil holes in bearings and block.

2) Dip shaft in engine oil, then install into block. Do not allow auxiliary shaft gear and fuel pump eccentric to contact bearings during installation.

3) Install remaining components in reverse order of removal procedures. Adjust timing belt tension.

VALVES

VALVE ARRANGEMENT

Intake Valves (Left side)
Exhaust Valves (Right side)

CAM FOLLOWER & HYDRAULIC LASH ADJUSTER

Removal

Remove cam cover. Rotate camshaft so base circle of applicable cam lobe is on cam follower. Using compressor tool (T74P-6565-B), collapse lash adjuster and/or depress valve and slide follower out. Lift out hydraulic lash adjuster.

Installation

Install lash adjuster and cam follower in reverse order of removal. Fully compress lash adjuster then release, prior to rotating camshaft to service another assembly.

VALVE GUIDES

1) If valve guide clearance is excessive, ream guides for installation of new valve with oversize stem. When reaming guides, always use reamers in proper size sequence until final clearance is obtained.

2) Use a scraper to break sharp corner at top (ID) of valve guide bore. Reface valve seat after guide has been reamed.

VALVE STEM OIL SEALS

Removal

1) Remove cam cover. Position piston of cylinder concerned on TDC at end of compression stroke. Remove spark plug from cylinder, and install air line and adapter.

2) Apply a minimum air pressure of 140 psi. DO NOT remove air pressure until valve components have been reassembled.

3) Remove cam follower of valve to be serviced. Using compressor tool (T74P-6565-B or equivalent), compress valve spring and remove keepers. Release pressure and remove retainer, spring and valve stem seal.

Installation

1) Using protective plastic sleeve over valve stem, install new stem seal onto valve guide. Install valve spring, retainer and locks. Shut off air pressure and remove air line and adapter from cylinder.

2) Lubricate all contact surfaces of cam follower and install in position. Ensure that lash adjuster has been collapsed and released before rotating camshaft.

VALVE SPRINGS

Removal & Installation

To remove and install valve springs with cylinder head installed on vehicle, use procedures set forth in Valve Stem Oil Seals.

Inspection

1) Using a steel square and flat surface, check valve springs for out-of-square condition. If out-of-square exceeds 5/64", replace valve spring.

2) Measure valve spring free length. Using valve spring tension tester, check valve spring for proper tension. Replace springs that fail tests.

VALVE SPRING INSTALLED HEIGHT

CAUTION: DO NOT install valve spring spacers (adjusting shims) unless necessary. Excess use of spacers will overstress valve springs and overload camshaft.

Measure assembled height of valve spring from surface of spring pad to underside of retainer. If measurement is not within limits, install .030" spacer(s) between spring and pad to bring within limits.

VALVE SPRING INSTALLED HEIGHT SPECIFICATIONS

Engine	Measurement In. (mm)
2300 cc	1.53-1.59 (39.0-40.5)

HYDRAULIC VALVE LASH ADJUSTMENT

1) Position camshaft so base circle of cam lobe is on cam follower of valve to be checked. Using compressor tool (T74P-6565-B), slowly collapse adjuster until completely collapsed, and hold in this position.

2) Using a feeler gauge, check clearance between cam follower and base circle of cam. Clearance should be as specified.

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HYDRAULIC VALVE LASH ADJUSTMENT

Application	Measurement In. (mm)
Desired Clearance040-.050 (1.02-1.27)
Allowable Clearance035-.055 (.89-1.40)

3) If clearance is excessive, remove cam follower and inspect for wear and damage. If follower is okay, check valve spring installed height to ensure valve is not sticking in guide.

4) If spring installed height is correct, check camshaft lobe lift. If lobe lift is correct, remove lash adjuster and inspect for wear or damage.

5) Test lash adjuster in leak-down tester. Leak down rate is 2-8 seconds, when plunger is compressed to 1/8" of travel under a 50 lb. load.

PISTONS, PINS & RINGS

OIL PAN

Removal

1) Raise vehicle and remove front lower engine shield. Remove wiring from starter. Drain crankcase.

2) Using a transmission jack, raise engine as high as it will go. Place wood blocks between engine mounts and chassis brackets. Lower engine onto blocks, then remove jack. Remove rear engine brace. Remove oil pan.

Installation

1) Use gasket contact adhesive to secure oil pan side gaskets to oil pan. Apply gasket sealer to joint of cylinder block and crankshaft cover.

2) Install end seals on crankshaft cover and rear bearing cap and press seal tabs firmly into place. Using 2 guide pins to align pan, install the 4 larger (8 mm) bolts.

3) Remove guide pins. Install remaining (6 mm) bolts. Evenly tighten all bolts. To complete installation, reverse removal procedure.

PISTON & ROD ASSEMBLY

Removal

1) Remove cylinder head, oil pan and oil pump. Remove ridge at top of cylinder bores prior to removing pistons. Ensure that connecting rods and caps are marked for cylinder identification, then remove caps.

2) Push piston and rod assembly out of block, using caution not to nick crankshaft journals. Install rod caps on mating rods.

Installation

1) Oil piston rings and cylinder walls with engine oil. Install bearings in rod and cap. Install ring compressor and insert piston and rod assembly into corresponding cylinder.

2) With notch on piston head pointing toward front of engine, carefully install piston into cylinder bore while guiding rod over crankshaft journal. See Fig. 3. Install and tighten rod bearing cap.

FITTING PISTONS

1) Measure diameter of piston in line with centerline of pin bore. Measure piston skirt 90° to pin bore.

2) Measure diameter of cylinder bore 90° to and in line with crankshaft centerline, at top, middle and bottom.

3) Difference between corresponding bore measurements is out-of-round, and must not exceed .0015" (.038 mm). Difference between top and bottom bore measurements is taper, and must not exceed .010" (.25 mm).

4) Use difference between piston skirt diameter and maximum cylinder bore measurement taken at 90° to crankshaft centerline, to determine piston-to-cylinder bore clearance.

5) Standard size pistons are color coded red or blue, or have marking ".003 OS" stamped on the dome. Select the correct piston to ensure proper fit.

OVERSIZE PISTON SIZES

Piston Code	Diameter In. (mm)
Red	3.7780-3.7786 (95.961-95.976)
Blue	3.7792-3.7798 (95.991-96.006)
.003 OS	3.7804-3.7810 (96.022-96.037)

FITTING RINGS

1) Place rings in cylinder near bottom of bore and measure end gaps. Make sure ring is square in bore.

2) Place rings on piston and measure side clearance between ring and its lower land. If lower lands have high steps, replace piston.

3) Install oil ring expander on piston so its ends gap at front of piston (at notch). Install oil ring rails on either side of expander. Install oil ring rail end gaps 80° on either side of expander gap.

4) Install compression rings on piston, so their end gaps are positioned approximately 180° from notch in piston head (front of piston). Using ring compressor, install piston with notch toward front of engine.

PISTON PINS

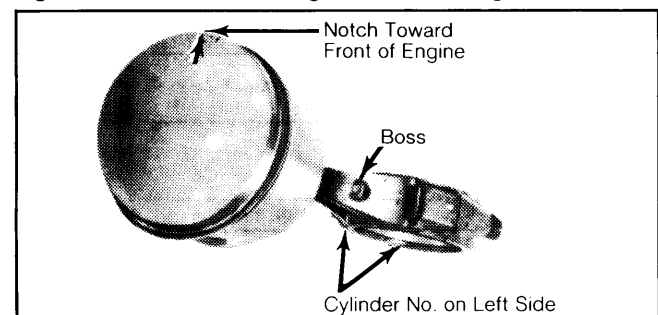
Removal

Remove bearing inserts from connecting rod and cap. Mark pistons and pins to assure assembly with same rod. Press piston pin from piston and connecting rod.

Installation

1) Coat all parts with engine oil. Assemble piston to connecting rod so boss on connecting rod will be on right side and notch on piston head will be toward front, when assembly is installed in engine. See Fig. 3.

Fig. 3: Piston & Connecting Rod Positioning



Press in piston pin until centered in connecting rod.

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2) Start piston pin in piston and connecting rod, then press pin through piston and connecting rod until pin is centered in piston.

CRANKSHAFT MAIN & CONNECTING ROD BEARINGS

CAUTION: If bearing replacement is required, both halves must be replaced. Do not use a new bearing in combination with a used bearing.

NOTE: Following procedures are with oil pan and oil pump removed.

CRANKSHAFT MAIN BEARINGS

1) Position jack under counterweight next to bearing cap being checked, so weight of crankshaft will not compress Plastigage and provide an erroneous reading.

2) With all bearing caps tightened (except one being checked), check clearances using Plastigage method. If clearance is excessive, replace bearings.

3) A .001" and .002" undersize bearing may be used in combination with a standard bearing, if desired clearance cannot be obtained with standard bearings.

4) If .002" (.051 mm) undersize bearings are used on more than one journal, they must be installed in cylinder block rather than bearing cap.

5) If clearance cannot be brought within limits using above procedures, crankshaft must be refinished and installed with replacement bearings.

CONNECTING ROD BEARINGS

1) Fit rod bearings 1 at a time. Ensure rod caps are marked for cylinder identification before removing. Use Plastigage method to check for proper bearing clearance. If not within specification, install new bearings.

2) Bearings are available in .001" and .002" undersizes. A standard bearing may be used in combination with either undersize bearing. Coat bearing surfaces with oil prior to installing and tightening bearing cap.

REAR MAIN BEARING OIL SEAL

Removal

1) Split lip type seal is provided for service replacement. Remove oil pan and oil pump. Loosen all main bearing cap bolts, allowing crankshaft to drop not more than 1/32". Remove rear main bearing cap.

2) Remove oil seal from cap and clean oil seal groove. Remove upper seal half from block by inserting small metal screw into end of seal. Use pliers to pull seal from block.

Installation

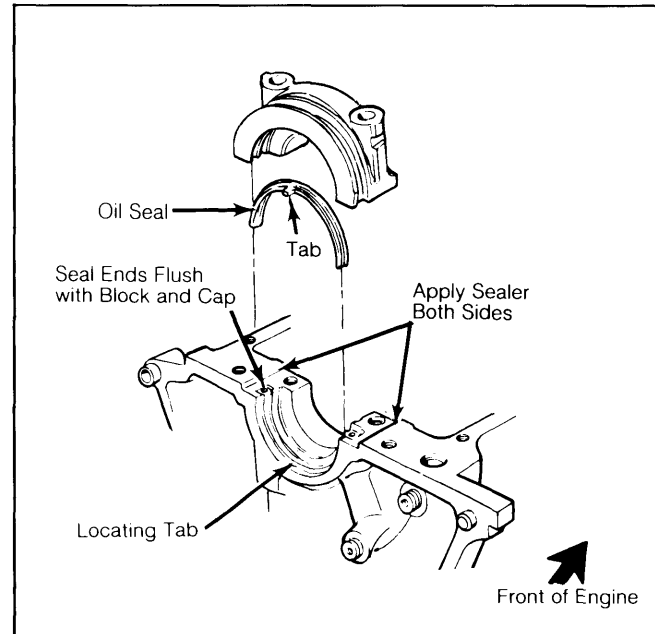
1) Dip new split lip type seal halves in clean engine oil. Seal is installed with undercut side of seal towards front of engine.

2) Install seal by rotating it into place until ends of seal are flush with block. Ensure that no rubber has been shaved from outside of seal.

3) Install lower seal into bearing cap with locating tab to rear. Seal ends should be flush with bearing cap.

4) Apply 1/16" bead of sealer to bearing cap mating surfaces. See Fig. 4. Use care that sealer does NOT contact seals. Install and tighten bearing cap before sealer sets up.

Fig. 4: Installing Rear Main Bearing Oil Seal



Install bearing cap before sealer sets up.

CRANKSHAFT FRONT OIL SEAL

Removal

1) Remove alternator drive belt and crankshaft pulley. Remove timing belt. Remove crankshaft sprocket.

2) Use seal remover tool (T74P-6700-B) over end of crankshaft to extract seal from crankshaft cover. If tool not available, remove crankshaft cover to remove and install seal.

Installation

Coat new seal lips with engine oil. Using seal installing tool (T74P-6150-A), install new seal. Reverse removal procedures to complete installation.

ENGINE OILING

CRANKCASE CAPACITY

Capacity is 4 qts. (3.8L) without filter replacement; 5 quarts (4.8L) with filter replacement.

NORMAL OIL PRESSURE

Normal oil pressure is 40-60 psi (2.8-4.2 kg/cm²) at 2000 RPM.

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.

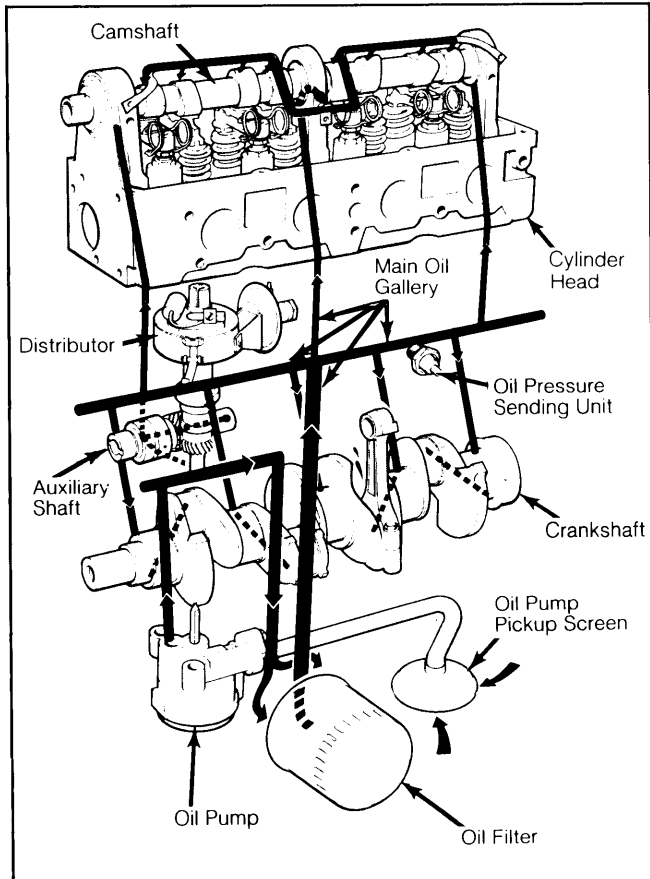
Connecting rod bearings are supplied oil from front and rear main bearings via drilled passages in crankshaft. A squirt hole in each rod bearing supplies oil to piston thrust side of cylinder.

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Auxiliary shaft is connected with main oil gallery. Distributor shaft receives oil from a drilled passage in auxiliary shaft.

Cam lobes and cam followers are supplied oil from oil holes in camshaft. Valve lash adjusters receive oil from oil gallery in cylinder head. See Fig. 5.

Fig. 5: Engine Oiling System



OIL PUMP

Removal & Disassembly

With oil pan removed, remove oil pump attaching bolts. Remove pump from engine. Remove oil pick-up screen assembly. Remove tube and gasket. Remove pump cover. Remove inner rotor and shaft assembly, and pump outer rotor.

Inspection

Clean all parts and blow dry with compressed air. Visually inspect all components and replace if worn or damaged. Check all clearances. If either outer rotor or inner rotor and shaft assembly requires replacement, replace both components as a matched set.

Reassembly & Installation

Reassemble oil pump in reverse order of disassembly. Ensure identification marks on rotors are aligned. Prime oil pump with engine oil. Install oil pump and remaining components in reverse order of removal.

OIL PUMP SPECIFICATIONS

Application	Clearance In. (mm)
Drive Shaft-to-Housing0015-.0030 (.038-.076)
Rotor Assembly End Clearance001-.004 (.03-.10)
Outer Rotor-to-Housing001-.013 (.02-.33)
Relief Valve	
Spring Tension	15.2-17.2 lbs.@1.20" (6.9-7.8 kg@30.4 mm)

ENGINE COOLING

THERMOSTAT

Thermostat begins to open at 188-195°F (87-90°C), and is fully open at 212-215°F (100-102°C).

COOLING SYSTEM CAPACITY

Capacity is 8.8 quarts (8.3L).

RADIATOR CAP

Relief valve opens at 13 psi (.90 kg/cm²).

WATER PUMP

Removal

Drain cooling system. Remove timing belt cover. Remove coolant hoses from water pump. Remove water pump.

Installation

Clean gasket mating surfaces. Using new gasket, install water pump and remaining components in reverse order of removal.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Auxiliary Shaft Sprocket	28-40 (38-54)
Camshaft Sprocket	50-71 (68-96)
Connecting Rod Cap	30-36 (41-49)
Crankshaft Damper	100-120 (136-163)
Cylinder Head	
Step 1	50-60 (68-81)
Step 2	80-90 (109-122)
Exhaust Manifold	27-38 (37-52)
Flywheel	54-64 (73-87)
Intake Manifold	
Step 1	507 (7-10)
Step 2	14-21 (19-29)
Main Bearing Cap	80-90 (109-122)

ENGINE SPECIFICATIONS

GENERAL SPECIFICATIONS

Year	Displacement		Fuel System	HP@RPM	Torque Ft. Lbs.@RPM	Compr. Ratio	Bore		Stroke	
	Cu. In.	cc					In.	mm	In.	mm
1982	140	2300	2-Bbl.	8.4:1	3.78	96.0	3.13	79.4

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ENGINE SPECIFICATIONS (Cont.)

VALVES

Engine Size & 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)
2300 cc Intake	1.73-1.74 (43.9-44.2)	44°	45°	.060-.080 (1.52-2.03)	.3416-.3423 (8.676-8.694)	.0010-.0027 (.025-.069)	.3997 (10.15)
Exhaust	1.49-1.51 (37.8-38.4)	44°	45°	.070-.090 (1.78-2.29)	.3411-.3418 (8.664-8.682)	.0015-.0032 (.038-.081)	.3997 (10.15)

PISTONS, PINS, RINGS

Engine	PISTONS	PINS		RINGS		
	Clearance In. (mm)	Piston Fit In. (mm)	Rod Fit In. (mm)	Ring No.	End Gap In. (mm)	Side Clearance In. (mm)
2300 cc	.0014-.0022 (.035-.056)	.0002-.0004 (.005-.010)	Interference Fit	Comp. Oil	.010-.020 (.25-.51) .015-.055 (.38-1.40)	.002-.004 (.05-.10) Snug

CRANKSHAFT MAIN & CONNECTING ROD BEARINGS

Engine	MAIN BEARINGS				CONNECTING ROD BEARINGS		
	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)
2300 cc	2.398-2.399 (60.91-60.93)	.0008-.0015 (.020-.038)	No. 3	.004-.008 (.10-.20)	2.046-2.047 (51.98-52.00)	.0008-.0015 (.020-.038)	.0035-.0105 (.089-.267)

VALVE SPRINGS

Engine	Free Length In. (mm)	PRESSURE Lbs. @ In. (Kg @ mm)	
		Valve Closed	Valve Open
2300 cc	1.89 (46.3)	71-79@1.56 (32-35@39.6)	157-175@1.16 (82-90@29.5)

CAMSHAFT

Engine	Journal Diam. In. (mm)	Clearance In. (mm)	Lobe Lift In. (mm)
2300 cc ¹	1.7713-1.7720 (44.991-45.009)	.001-.003 (.025-.076)	.2437 (6.19)

¹ — End thrust is .001-.007" (.03-.18 mm)