

2.5L 4-CYL - VIN [H]

1988 Jeep Cherokee

1988 CHRYSLER MOTORS ENGINES
2.5L 4-Cylinder

Jeep: Cherokee, Comanche, Wagoneer, Wrangler

ENGINE CODING

ENGINE IDENTIFICATION

NOTE: For engine repair procedures not covered in this article, see ENGINE OVERHAUL PROCEDURES - GENERAL INFORMATION article in the GENERAL INFORMATION section.

The Vehicle Identification Number (VIN) is located on the upper left side of dash, visible through windshield. The fourth character of the VIN identifies the engine size. The tenth character identifies the model year.

ENGINE IDENTIFICATION CODES TABLE

Application	VIN Code
2.5L 4-Cylinder TBI	H

SPECIAL ENGINE MARKS

Some engines are produced at the factory with oversize or undersize components. These engines are identified by a letter code stamped between ignition coil and distributor. Letters are decoded as follows:

- * "B" indicates all cylinder bores .010" (.25 mm) oversize.
- * "C" indicates all camshaft bearing bores .010" (.25 mm) oversize.
- * "M" indicates all main bearing journals .010" (.25 mm) undersize.
- * "P" indicates all connecting rod journals .010" (.25 mm) undersize.

REMOVAL & INSTALLATION

ENGINE REMOVAL

See ENGINE REMOVAL article.

INTAKE & EXHAUST MANIFOLDS

NOTE: Throttle body removal is necessary prior to manifold removal. Throttle body can be separated from the manifold and secured in a designated area with vacuum hoses attached.

Removal

1) Disconnect negative battery cable. Remove air cleaner, EGR pipe and PCV hose. Disconnect and mark all vacuum hoses and electrical connections. Drain cooling system.

2) Remove coolant hoses from intake manifold. Remove A/C compressor and power steering pump and mounting bracket (if equipped).

Disconnect throttle valve linkage on A/T models.

3) Remove coolant temperature sensor wire. Disconnect throttle cable at bellcrank. Remove intake manifold bolts. Remove intake manifold.

4) If exhaust manifold requires removal, raise and support vehicle. Disconnect exhaust pipe. Remove oxygen sensor wire and remove sensor. Remove manifold-to-cylinder head bolts. Remove exhaust manifold.

Installation

1) Ensure all gasket surfaces are clean. Install manifolds and gasket on cylinder head. Start all bolts and finger tighten. Tighten bolts in proper sequence. See Fig. 1. Tighten bolts to specification. See TORQUE SPECIFICATIONS table.

2) Clean oxygen sensor threads. Apply anti-seize on oxygen sensor threads prior to installation. Install sensor and tighten to specification. Reverse removal procedures to complete installation. Fill and purge cooling system. See COOLING SYSTEM AIR PURGE under ENGINE COOLING.

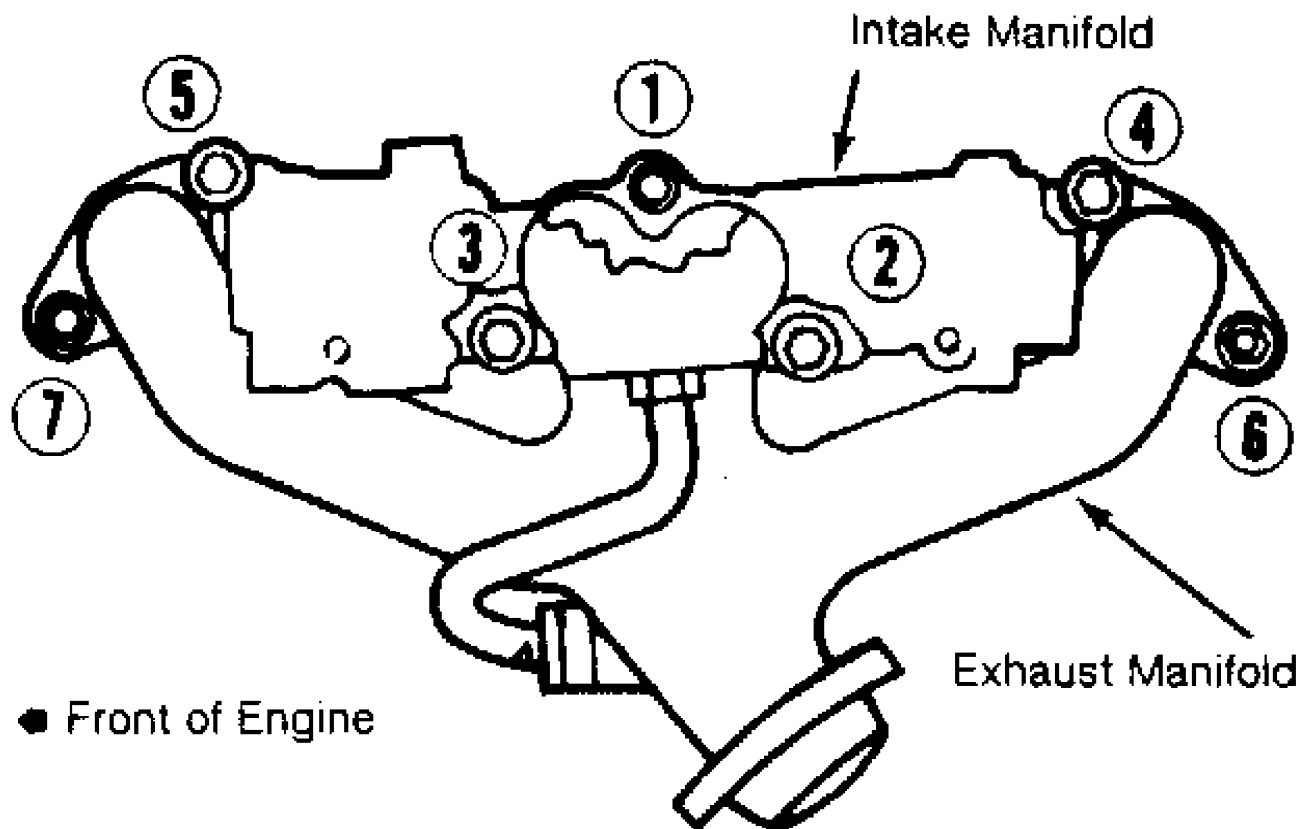


Fig. 1: Manifold Bolt Tightening Sequence

CYLINDER HEAD

Removal

1) Disconnect negative battery cable. Drain cooling system. Remove air cleaner. Remove intake and exhaust manifolds. See INTAKE & EXHAUST MANIFOLDS.

2) Disconnect and mark all hoses and electrical connections at cylinder head. Disconnect and mark spark plug wires. Remove spark plugs. Remove valve cover bolts.

3) Remove rocker arms and push rods. See **ROCKER ARMS & BRIDGE** under **VALVES**. Remove cylinder head bolts. Remove cylinder head.

Inspection

Inspect cylinder head for cracks or damage. Using straightedge, check cylinder head for warpage in several areas. Repair or replace cylinder head if warpage exceeds .002" (.05 mm) per each 6" (152 mm) or damage exists.

Installation

1) Ensure all gasket surfaces are clean. Clean carbon from combustion chambers and tops of pistons. Apply sealant to both sides of new cylinder head gasket. Install new gasket with the word "TOP" upward. Ensure all holes are aligned.

2) Install cylinder head. Apply sealing compound to threads of cylinder head bolt No. 8 prior to installation. See Fig. 2. Install head bolts. Tighten all bolts in sequence (except No. 8) to 110 ft. lbs. (149 N.m). Tighten No. 8 head bolt to 100 ft. lbs. (136 N.m). See Fig. 2.

3) Reverse removal procedures for remaining components. When installing valve cover, use RTV sealant between cover and head. Tighten bolts to specification.

4) Fill cooling system with temperature sending unit removed. Allow trapped air to escape, then install sending unit. Refill and purge cooling system. See **COOLING SYSTEM AIR PURGE** under **ENGINE COOLING**.

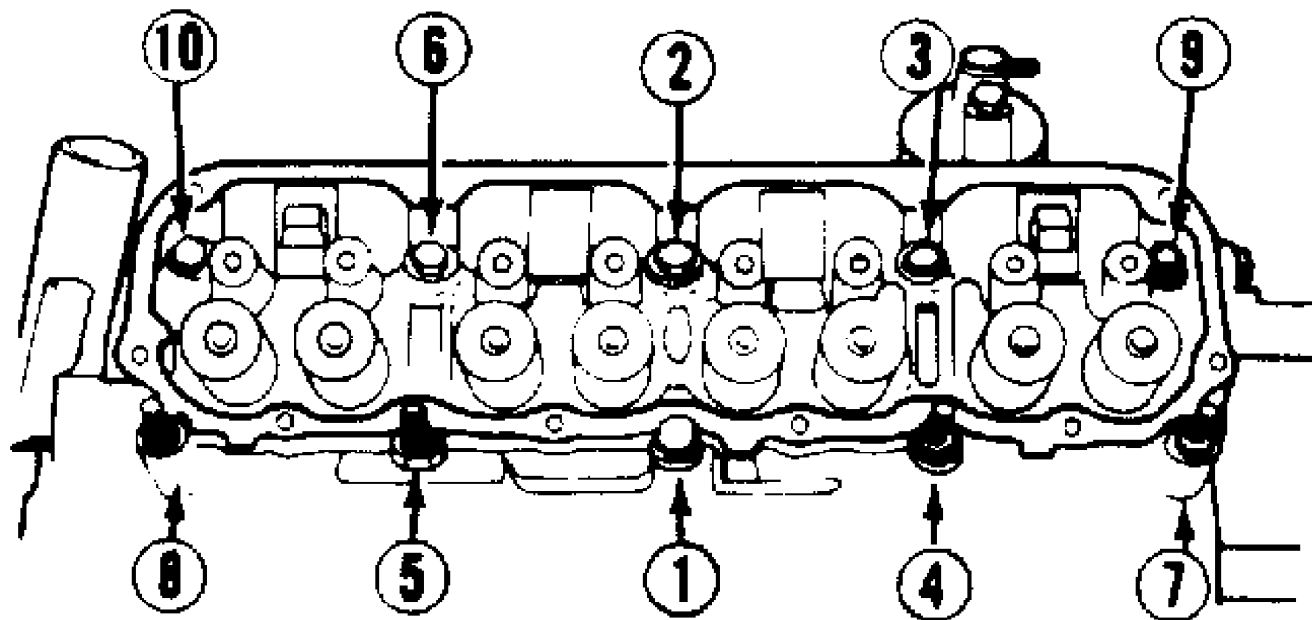


Fig. 2: Cylinder Head Bolt Tightening Sequence

VALVES

Valve Arrangement

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

Valve Guides

Valve guides are not replaceable. If clearance is excessive, valve guides must be reamed to accommodate oversized stem valves.

ROCKER ARMS & BRIDGE

Removal

1) Remove PCV valve hose at valve cover. Remove valve cover bolts. Using a razor knife, cut RTV sealant along valve cover. Pry upward on valve cover in areas marked "PRY HERE" near bolt hole areas.

2) Remove valve cover. Alternately loosen each rocker arm bolt one turn at a time. Remove rocker arm assemblies and push rods. Mark components for reassembly. Components must be installed in original location.

Installation

Reverse removal procedures. Install rocker arm components in original location. Tighten bolts to specification. Apply RTV sealant on valve cover prior to installation.

VALVE SPRINGS

Valve springs can be removed without removing cylinder head.

Valve Spring Installed Height

Information not available from manufacturer.

HYDRAULIC VALVE LIFTERS

Removal

Remove rocker arms and push rods. See **ROCKER ARMS & BRIDGE**. Using Lifter Remover/Installer (J-21884), remove lifter through push rod openings of cylinder head. Mark lifter location for reassembly reference. Replace lifters as an assembly if damaged. Internal components cannot be interchanged.

Inspection

Inspect lifter and camshaft mating surfaces for wear. Check cylinder block lifter bore diameter. Lifter bore diameter should be within .9055-.9065" (22.999-23.025 mm). Replace parts as necessary.

Installation

Soak lifter assembly in engine oil supplement prior to installation. Reverse removal procedures for installation. Install lifter in original location.

ENGINE FRONT COVER

Removal

1) Disconnect negative battery cable. Remove drive belts, fan and hub assembly. Remove pulley from vibration damper. Remove vibration damper retaining bolt and washer.

2) Using Puller (J-21719-01), remove vibration damper and key. Remove oil pan-to-front cover bolts. Remove cover-to-block retaining bolts. Remove front cover.

3) Cut oil pan gasket even with face of cylinder block. Remove gasket from oil pan. Pry crankshaft oil seal from cover.

Installation

1) Ensure all gasket surfaces are clean. Ensure oil slinger is installed on crankshaft. Apply sealing compound on both sides of front cover gasket. Install gasket on cylinder block. Replace front section of oil pan seal with similar section fabricated from new seal.

2) Coat seal with RTV sealant and place in position. Apply sealant to the joint area of oil pan and cylinder block. Place front cover on cylinder block. Place Front Cover Seal Installer (J-22248) in front cover seal area.

3) Install all retaining bolts. Tighten bolts to

specification. Install front cover oil seal. See FRONT COVER OIL SEAL Remove front cover seal installer.

4) Reverse removal procedures. Lubricate vibration damper retaining bolt with oil prior to installation. Tighten bolts to specification.

FRONT COVER OIL SEAL

Removal & Installation

1) Remove vibration damper. Using Seal Remover (J-9256), remove seal from front cover. Position new seal on Front Cover Seal Installer (J-22248) with lip facing outward.

2) Apply sealant to seal outer diameter. Lightly coat crankshaft with oil. Place front cover seal installer on front of crankshaft. Tap seal into front cover. Remove seal installer. Lightly coat seal contact area of vibration damper with oil.

3) Install key in crankshaft (if removed). Install vibration damper. Lubricate vibration damper bolt with oil. Install retaining bolt and washer. Tighten to specification.

CAMSHAFT & TIMING GEAR

Removal

1) Drain cooling system. Remove radiator. Remove engine front cover. See ENGINE FRONT COVER. Remove distributor. Remove fuel pump (if equipped with mechanical pump). Remove rocker arms and pushrods. See ROCKER ARMS & BRIDGE under VALVES.

2) Remove valve lifters. Mark lifters for location. Remove crankshaft oil slinger. Pull chain tensioner block toward tensioner lever to compress spring. Hold block and move tensioner lever to lock position. See Fig. 3.

3) Rotate crankshaft and align timing marks on crankshaft and camshaft gears. Remove camshaft gear retaining bolt. Remove gears and timing chain. Remove camshaft.

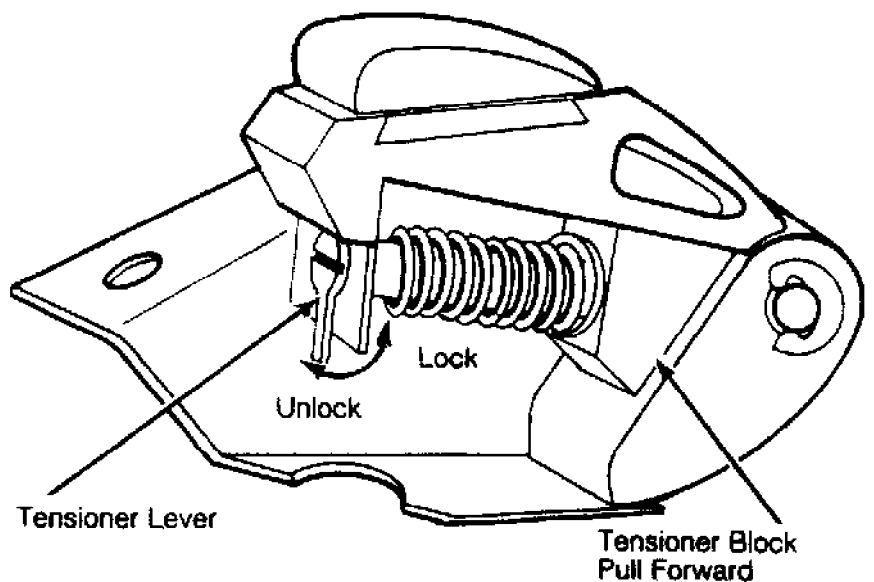


Fig. 3: Location of Chain Tensioner Lock
Courtesy of Chrysler Motors.

Inspection

Inspect camshaft for flaking, lobe wear or worn bearing

journals. Replace if not within specification. See ENGINE SPECIFICATIONS tables.

Installation

1) Lubricate camshaft and install. Avoid damage to camshaft bearings. Install timing gears and timing chain. Rotate crankshaft and camshaft so timing marks are aligned. See Fig. 4.

2) Install camshaft gear retaining bolt. Tighten to specification. Install crankshaft oil slinger. Position chain tensioner lever to the unlock (down) position. Reverse removal procedures to complete installation.

CAUTION: Ensure chain tensioner is released prior to front cover installation.

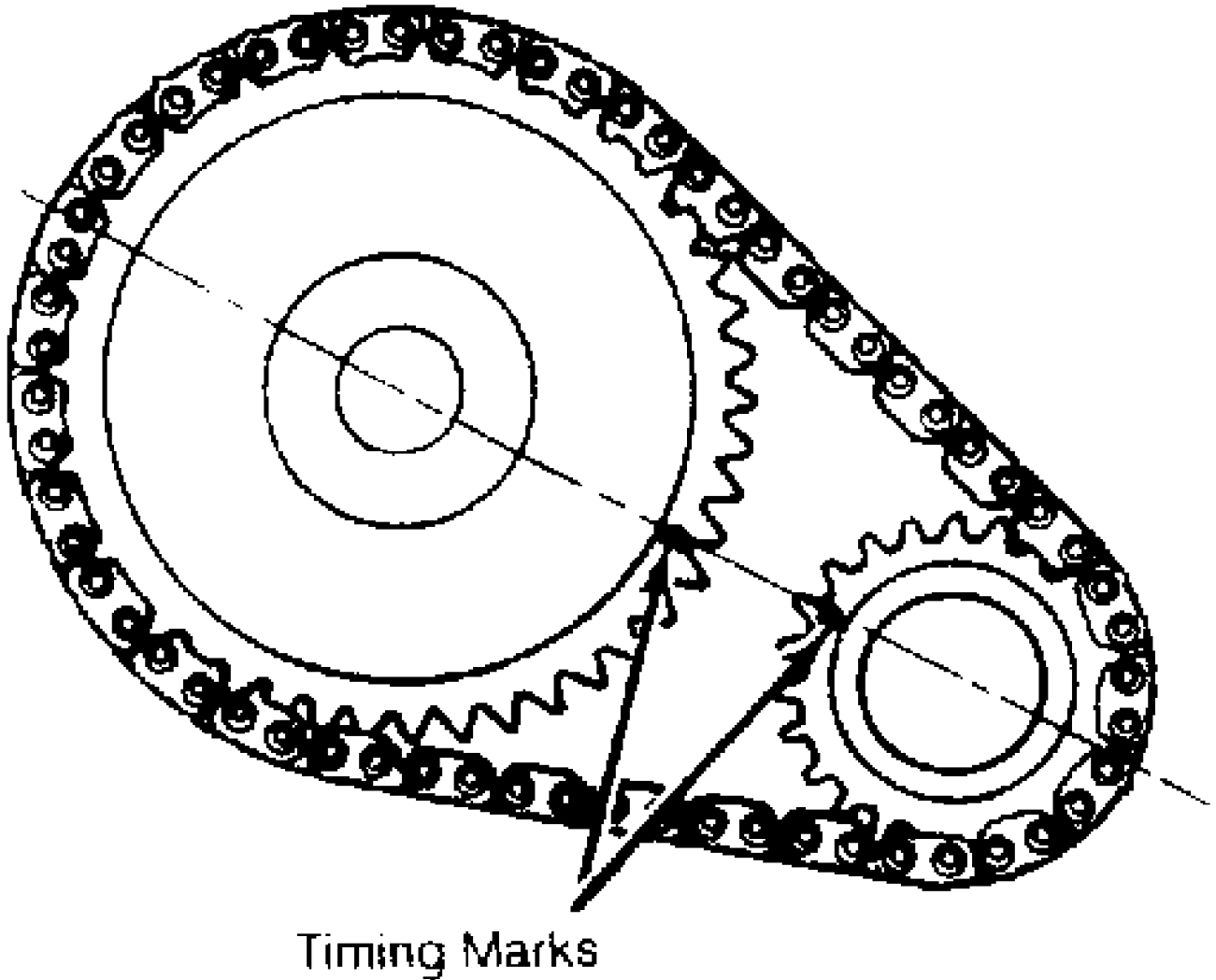


Fig. 4: Aligning Timing Marks

CAMSHAFT BEARINGS

Removal & Installation

Replace camshaft bearings using camshaft bearing remover/installer. Ensure oil holes are aligned after installation.

OIL PAN

See OIL PAN REMOVAL article.

PISTON & ROD ASSEMBLY

NOTE: Mark piston cylinder location for reassembly reference.
Install pistons in original cylinder location.

Removal

1) Remove cylinder head. See CYLINDER HEAD under MANIFOLDS & CYLINDER HEAD. Remove oil pan. See OIL PAN REMOVAL article. Remove ridge or deposits from cylinder bore.

2) Mark connecting rod and piston for cylinder ID. Remove bearing cap. Remove piston and rod assembly.

CAUTION: Arrow on top of piston must point toward front of engine.
Oil squirt holes in connecting rod must face camshaft when installed.

Installation

1) Ensure ring end gap and side clearance are within specification. See ENGINE SPECIFICATIONS tables. Install rings on piston. Position ring end gaps at specified areas. See Fig. 5.

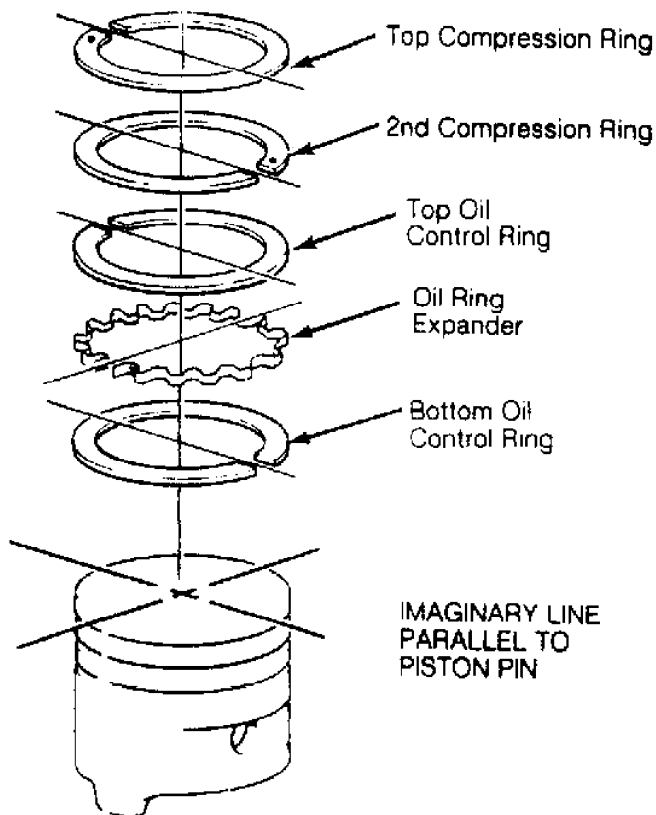


Fig. 5: Positioning Piston Ring Gaps
Ring gaps may vary 20 degrees from positions illustrated.

2) Lubricate piston assembly and cylinder block. Install piston assembly. Arrow on top of piston must face toward front of

engine and connecting rod oil squirt hole should face camshaft side of engine.

3) Install bearings. Check oil clearance and connecting rod side play clearance. Reverse removal procedures for remaining components. Tighten bolts to specification.

Fitting Pistons

1) Determine cylinder taper, wear and out-of-roundness and piston clearance. For cylinder specifications, see CYLINDER, PISTON & CONNECTING ROD SPECIFICATIONS table. If taper or out-of-roundness are not within specification, hone or bore cylinders for installation of new pistons.

2) Measure piston at right angle of the piston pin at the center line of the pin. Compare reading to cylinder bore to determine clearance. Mark fitted piston for cylinder location.

CYLINDER, PISTON & CONNECTING ROD SPECIFICATIONS TABLE

Application	In. (mm)
Connecting Rod	
Crankshaft Bore	2.2080-2.2085 (56.083-56.095)
Pin Bore .....	.9288-.9298 (23.591-23.616)
Cylinder Bore	
Diameter	3.8751-3.8775 (98.427-98.488)
Out-of-Round .....	.001 (.02)
Taper .....	.001 (.02)
Piston Pin Bore Diameter .....	.9308-.9313 (23.642-23.655)
Piston Pin Diameter .....	.9304-.9309 (23.632-23.644)
Piston-to-Cylinder Clearance .....	.0009-.0017 (.022-.043)

PISTON PIN REPLACEMENT

NOTE: Note direction of arrow on piston and oil squirt hole in connecting rod prior to removal.

Removal

Position piston on Support (J-21872-1), Pin Pilot (J-21872-2) and Driver (J-21872-3) on an arbor press. See Fig. 6. Press piston pin from piston.

NOTE: Piston and pin must be at standard room temperature when measuring fit. Piston pin should gravity-fall through the piston at room temperature. Piston pin cannot be reused after removal.

Inspection

Measure piston pin diameter, piston bore and connecting rod bores. Replace components if not within specification. See CYLINDER, PISTON & CONNECTING ROD SPECIFICATIONS table.

NOTE: Connecting rod must be positioned on the piston so the oil squirt hole faces the camshaft side of the engine with piston installed with arrow toward the front of the engine.

Installation

1) Insert pin pilot through piston and connecting rod. Place assembly on support. Insert piston pin through the upper piston pin bore and into connecting rod pin bore. See Fig. 6.

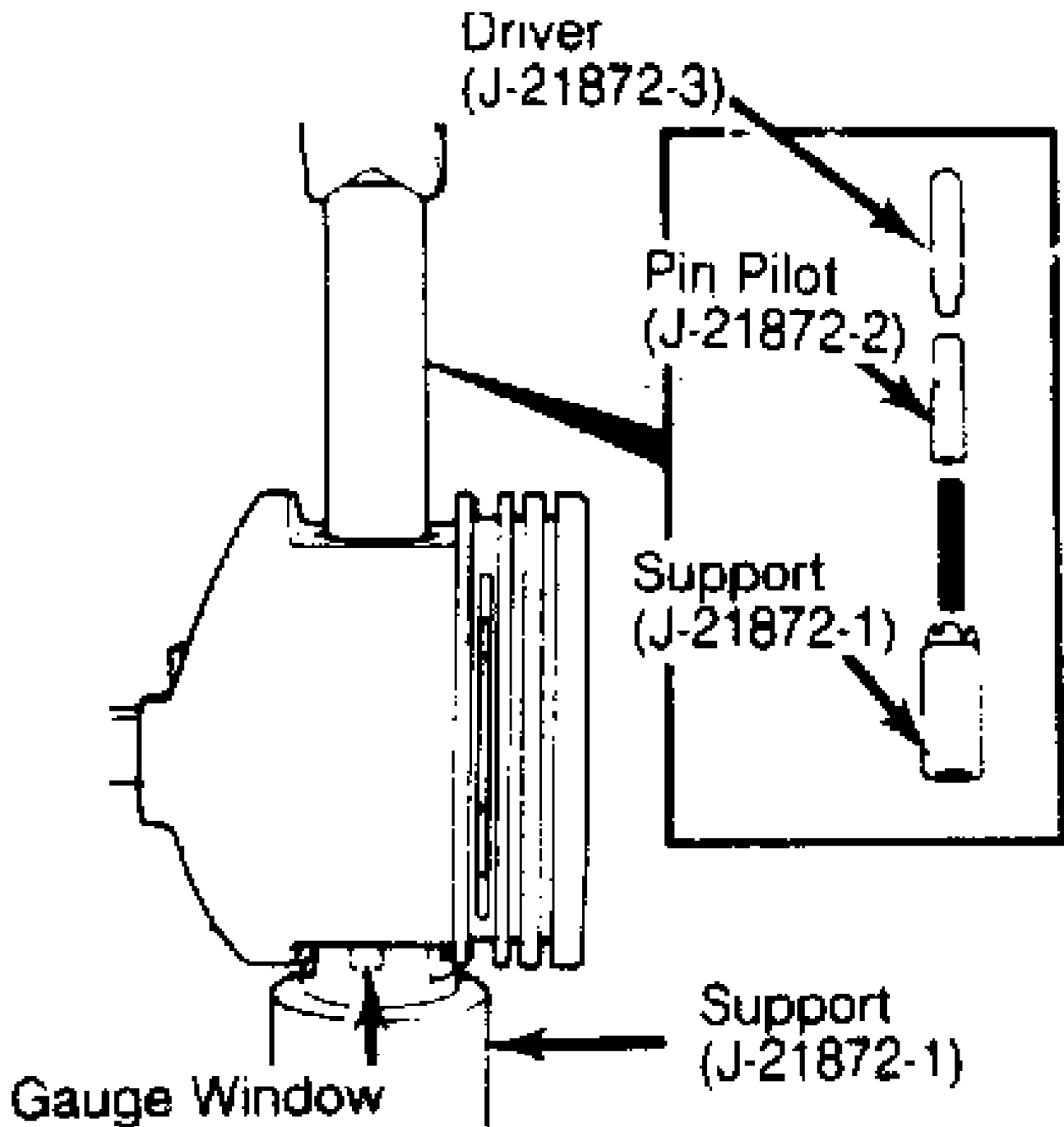


Fig. 6: Piston Pin Removal & Installation

2) Position driver inside pin. Using arbor press, press pin through rod and piston bores until pilot indexes with mark on support. Remove piston and connecting rod. Pin should be centered in rod \pm .0312" (.792 mm).

3) Piston pin installation requires a 2000 lb. (906 kg) press fit. Replace connecting rod if noticeably less effort is encountered.

CONNECTING ROD BEARINGS

NOTE: Crankshaft journal diameters are indicated by a color coded mark placed on the adjacent counterweight or cheek toward the flanged (rear) end of crankshaft. Note color code to determine proper bearing usage. Check oil clearance after bearing installation.

Removal

1) Remove oil pan. See OIL PAN REMOVAL at end of ENGINE section. See oil pump. See OIL PUMP under ENGINE OILING. Remove main bearing cap.

2) Rotate crankshaft to position rod to be serviced at bottom of stroke. Mark bearing cap and connecting rod. Remove bearing cap with bearing. Push piston and rod assembly up to remove upper bearing.

Installation

1) Note color code on edge of bearings removed. Install bearings. Using Plastigage method, check bearing clearances. Replace bearings as necessary to obtain correct clearance. Bearings are available in standard and undersize application.

2) If required, different sized upper and lower bearings may be installed to obtain correct oil clearance. Tighten bolts to specification. Check rod side play. Rotate crankshaft to ensure freedom of movement. Reverse removal procedures for remaining components. Tighten bolts to specification.

NOTE: Avoid combining bearing inserts in excess of .001" (.02 mm) difference in size. Odd size inserts must be on bottom (rod cap) side.

MAIN BEARINGS

Removal

1) Remove oil pan. See OIL PAN REMOVAL at end of ENGINE section. Remove oil pump. See OIL PUMP under ENGINE OILING.

2) Ensure main bearing caps are marked for location. Rotate crankshaft to remove bearings. Note color code on edge of bearing.

NOTE: Crankshaft journal diameters are indicated by a color coded mark placed on the adjacent counterweight or cheek toward the flanged (rear) end of crankshaft. Note color code to determine proper bearing usage. Check oil clearance after bearing installation.

Installation

1) Note color code on edge of bearings removed. Install bearings. Ensure caps are installed in original location. Using Plastigage method, check bearing clearances.

2) Replace bearings as necessary to obtain correct clearance. Bearings are available in standard and undersize applications. If required, different sized upper and lower bearings may be installed to obtain correct oil clearance.

NOTE: If different sized bearings are used, the odd sized bearings must all be uniform in location (upper or lower). DO NOT use bearings with a thickness difference exceeding .001" (.02 mm).

3) Apply Loctite to corners of rear main bearing cap prior to final installation. Tighten bolts to specification. Check crankshaft end play. See CRANKSHAFT END PLAY. Rotate crankshaft to ensure freedom of movement. Reverse removal procedures for remaining components. Tighten bolts to specification.

Crankshaft End Play

1) Using dial indicator, check crankshaft end play. Inspect crankshaft thrust surfaces or thrust bearing for wear if not within specification. See ENGINE SPECIFICATIONS table.

2) Replace thrust bearing if required. When replacing thrust bearing, pry crankshaft forward then reward prior to tightening main bearing cap to specification. Recheck end play. Replace crankshaft if not within specification.

REAR MAIN BEARING OIL SEAL

Removal

Remove transmission, clutch housing and flywheel or drive plate. Using screwdriver, pry oil seal from housing. Avoid damage to surrounding area.

NOTE: Shim must be used when installing old type oil seal Part No. (324 1669) only. DO NOT use shim when installing new type oil seal Part. No. (8933 004 143).

Installation

1) Position wing nut on Seal Installer (J-36306) until it contacts the shaft nut. See Fig. 7. Install shim if old type seal Part No. (324 1669) is used.

2) Lubricate inner and outer edges of seal. Install seal on seal installer with seal dust shield toward the wing nut. Install seal installer on crankshaft so pilot and dowel are positioned on the crankshaft.

3) Thread the seal installer attaching screws into the crankshaft and tighten. Rotate wing nut until it bottoms. This will properly position the seal.

4) Remove seal installer. Ensure dust shield is not curled under. Reverse removal procedures for remaining components.

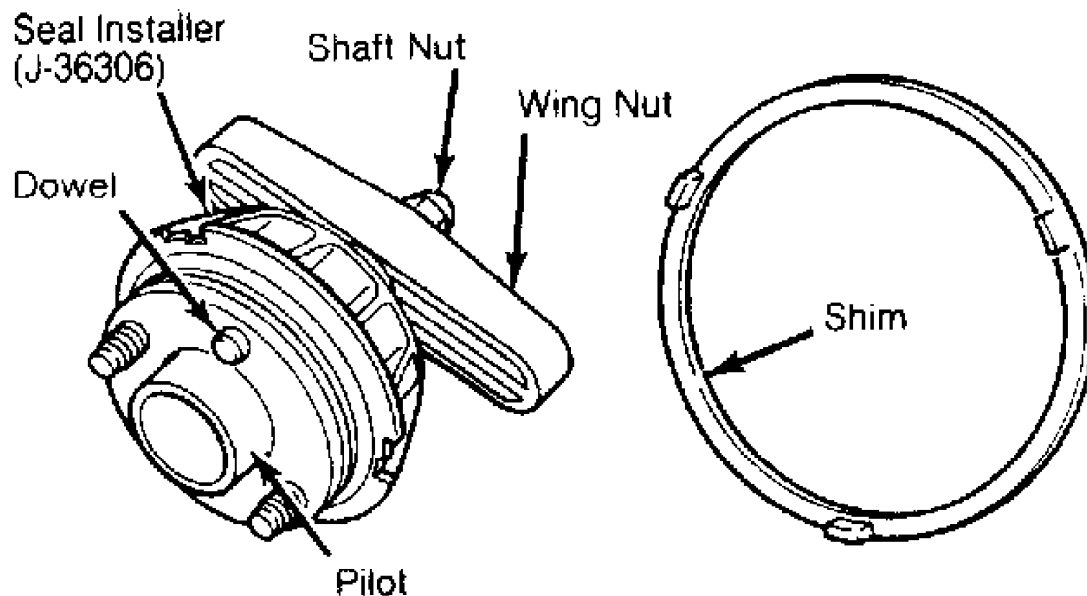


Fig. 7: Installing Rear Main Bearing Oil Seal

WATER PUMP

Removal

1) Drain cooling system. Remove fan shroud and drive belts. Remove fan assembly.

2) Disconnect heater hoses and lower radiator hose at water pump. Remove water pump retaining bolts. Remove water pump.

Installation

Clean all gasket surfaces. Install water pump. Tighten bolts to specification. Ensure pump turns freely. Reverse removal procedures. Fill and purge air from cooling system.

NOTE: It may be necessary to remove heater hose to remove trapped air if system cannot be purged using following procedures.

Cooling System Air Purge (Vehicles With Coolant Recovery)

Fill system to proper level. Place heater control to "HEAT" position and temperature control to "WARM" or "HIGH" position. Install coolant caps. Operate engine to normal operating temperature. Shut off engine and allow system to cool. Add coolant to recovery bottle. Repeat procedure to obtain correct coolant level.

Cooling System Air Purge (Vehicles Without Coolant Recovery)

Fill system to proper level. Place heater control to "HEAT" position and temperature control to "WARM" or "HIGH" position. Operate engine to normal operating temperature with radiator cap removed. Add necessary coolant and install radiator cap.

NOTE: For further information on cooling system capacities and other cooling system components, see ENGINE COOLING SYSTEMS article.

ENGINE OILING

CRANKCASE CAPACITY

Crankcase capacity is 4 qts. (3.8 L) with oil filter change.

NORMAL OIL PRESSURE

Normal oil pressure should be 13 psi (.91 kg/cm²) at 600 RPM or 37-75 psi (2.6-5.3 kg/cm²) at 1600 RPM.

OIL PRESSURE REGULATOR VALVE

Oil pressure regulator valve is located in oil pump body and is nonadjustable.

OILING SYSTEM

Engine lubrication is provided by the distributor driven gear-type oil pump. Oil is supplied through the full-flow oil filter and into an internal oil passage. Internal passage runs along right side of block and intersects lifter bores.

Oil is then routed to camshaft and crankshaft bearings. Oil is supplied to rocker arms from the hydraulic lifters and through the push rods. By-pass valves are located in oil filter mounting and oil pump.

OIL PUMP

Removal

Remove oil pan. See OIL PAN REMOVAL article. Remove oil pump

retaining bolts.

CAUTION: DO NOT move oil pick-up pipe in pump body. If oil pick-up pipe is moved, pick-up pipe must be replaced to ensure an airtight seal.

Disassembly & Inspection

Disassemble pump. See Fig. 8. Inspect for wear or damage. Using straightedge and feeler gauge, measure gear end clearance. See Fig. 9. Replace assembly if gear end clearance exceeds specification. Measure gear-to-body clearance. Replace components as necessary if not within specification. See OIL PUMP SPECIFICATIONS table.

CAUTION: If relief valve is replaced, ensure replacement valve is the same diameter as that removed. Different diameter valves may be used.

Reassembly & Installation

1) Reverse disassembly procedures. Apply Permatex No. 2 to pick-up pipe prior to installation. Using Pipe Installer (J-21882), install pick-up pipe. Ensure pick-up pipe support bracket is aligned with pump cover bolt.

2) Fill pump cavity with petroleum jelly prior to installing pump cover. Apply Loctite on pump cover area. Install cover and bolts. Tighten bolts to specification. Check pump gears for freedom of rotation.

3) Install oil pump and new gasket. Tighten retaining bolts to specification.

OIL PUMP SPECIFICATIONS

OIL PUMP SPECIFICATIONS TABLE

Application	In.	(mm)
Gear End Clearance .....	.002-.006	(.05-.15)
Gear-to-Body Clearance .....	.002-.004	(.05-.10)

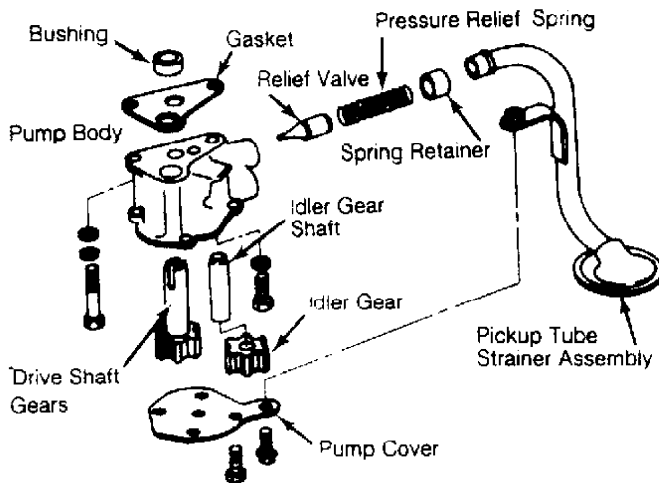


Fig. 8: Exploded View of Oil Pump Assembly

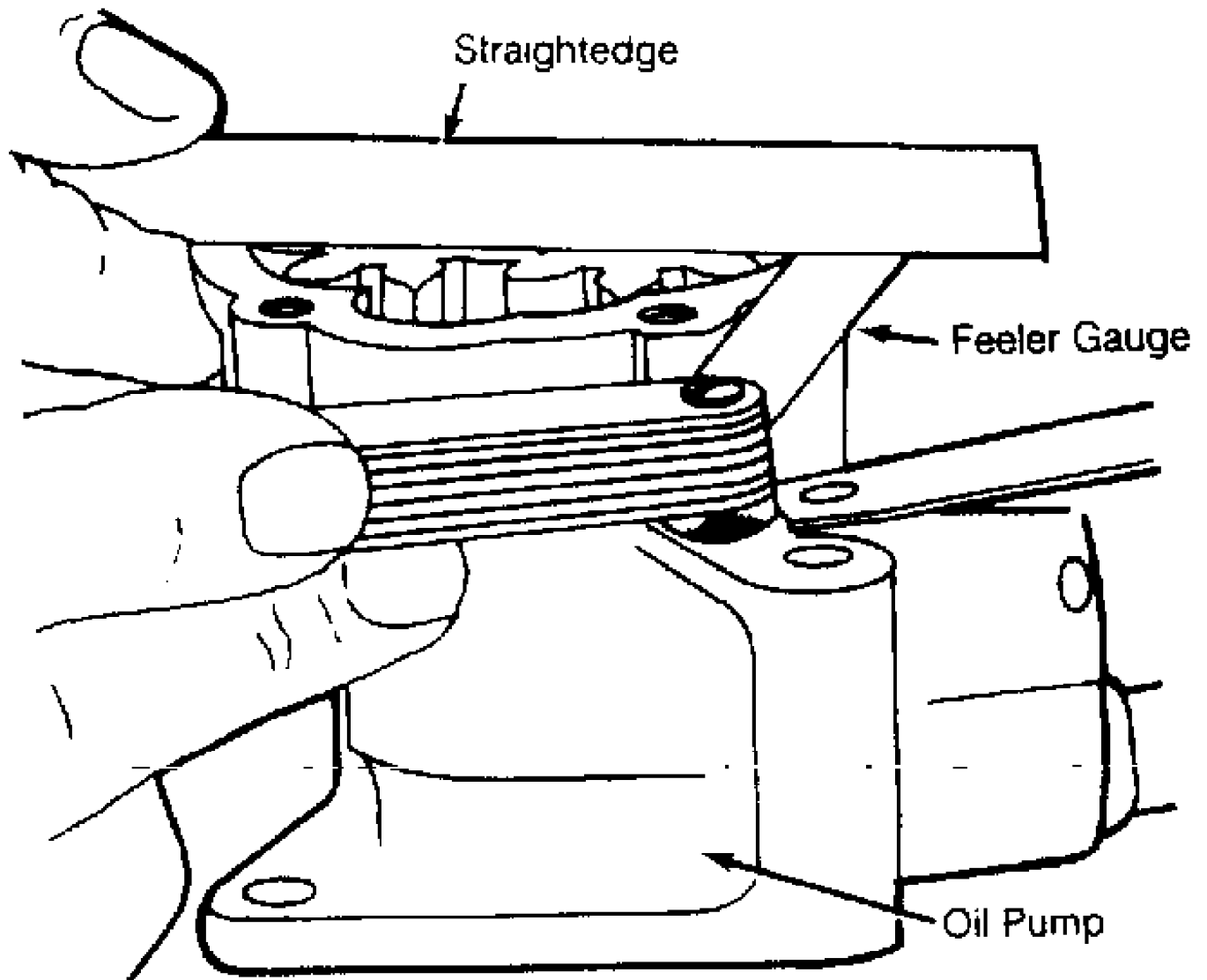


Fig. 9: Measuring Oil Pump Gear End Clearance

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Camshaft Sprocket Bolt	80 (109)
Connecting Rod Cap Nut	33 (45)
Cylinder Head Bolt	
No. 8	100 (136)
All Others	110 (149)
Drive Plate-to-Converter Bolt	22 (30)
EGR Valve Pipe Nut	30 (41)
Exhaust Manifold Bolt	23 (31)
Fan Bolt	18 (24)
Flywheel-to-Crankshaft Bolt	(1) 50 (68)
Intake Manifold Bolt	23 (31)
Main Bearing Cap Bolt	

Step 1	40 (54)
Step 2	70 (95)
Step 3	80 (109)
Oil Pump Retaining Bolt	
Short	10 (14)
Long	17 (23)
Oxygen Sensor	35 (47)
Pulley-to-Vibration Damper Bolt	20 (27)
Rocker Arm Bolt	19 (26)
Throttle Body-to-Intake Bolt	16 (22)
Torque Converter Drive	
Plate-to-Crankshaft Bolt	(1) 40 (54)
Vibration Damper Bolt	(2) 80 (109)
Water Pump Bolt	13 (18)

INCH Lbs. (N.m)

Front Cover-to-Block	
Bolt	60 (7)
Stud	192 (22)
Oil Pan Bolt	
1/4" X 20	84 (9)
5/16" X 18	132 (15)
Oil Pump Cover Bolt	70 (8)
Valve Cover Bolt	55 (5)

- (1) - Tighten to specification and an additional 60 degrees.
(2) - With bolt cleaned and threads lubricated with oil.

ENGINE SPECIFICATIONS

GENERAL ENGINE SPECIFICATIONS

GENERAL ENGINE SPECIFICATIONS TABLE

Application	In. (mm)
Displacement	
Cu. In.	150
Liters	2.5
Fuel System	TBI
HP @ RPM	117 @ 5000
Torque Ft. Lbs. @ RPM	135 @ 3500
Compression Ratio	9.2:1
Bore	3.88 (98.5)
Stroke	3.19 (81.0)

VALVE SPECIFICATIONS

VALVE SPECIFICATIONS TABLE

Application	In. (mm)
Intake (1)	
Head Diameter	1.905-1.915 (48.38-48.60)
Face Angle	44°
Seat Angle	44° 30'
Seat Width	(2) .040-.060 (1.02-1.52)
Stem Diameter .....	.311-.312 (7.89-7.98)
Stem Clearance .....	.001-.003 (.02-.08)
Valve Lift .....	.424 (10.76)

Exhaust (1)	
Head Diameter	1.495-1.505 (37.97-38.60)
Face Angle	44°
Seat Angle	44° 30'
Seat Width	(2) .040-.060 (1.02-1.52)
Stem Diameter	.311-.312 (7.89-7.98)
Stem Clearance	.001-.003 (.02-.08)
Valve Lift	.424 (10.76)

- (1) - Minimum valve margin is 1/32" (.78 mm).
(2) - Maximum seal runout is .0025" (.084 mm).

PISTON/PIN/RING SPECIFICATIONS

PISTONS, PINS & RINGS SPECIFICATIONS TABLE

Application	In. (mm)
Piston Clearance	.0009-.0017 (.023-.043)
Pins	
Piston Fit	.0003-.0005 (.008-.013)
Rod Fit	Press Fit
Rings	
Ring No. 1 & 2	
End Gap	.010-.020 (.25-.51)
Side Clearance	.0017-.0032 (.043-.081)
Ring No. 3	
End Gap	.010-.025 (.25-.64)
Side Clearance	.001-.008 (.03-.020)

BEARING SPECIFICATIONS

CRANKSHAFT MAIN & CONNECTING ROD BEARINGS SPECS TABLE

Application	In. (mm)
Main Bearings	
Journal Diameter	2.4996-2.5001 (63.489-63.502)
Clearance	.0010-.0025 (.02-.063)
Thrust Bearing	No. 2
Crankshaft End Play	.0015-.0065 (.038-.165)
Connecting Rod Bearings	
Journal Diameter	2.0934-2.0955 (53.172-53.225)
Clearance	.001-.003 (.02-.08)
Side Play	.010-.019 (.02-.48)

VALVE SPRING SPECIFICATIONS

VALVE SPRINGS SPECIFICATIONS TABLE

Application	In. (mm)
Free Length	1.82 (46.2)
Pressure (1)	
Valve Closed	66-74 @ 1.63 (30-34 @ 41.3)
Valve Open	205-220 @ 1.20 (91-100 @ 30.5)

- (1) - Lbs. @ In. (Kg @ mm).

CAMSHAFT SPECIFICATIONS

CAMSHAFT SPECIFICATIONS TABLE

Application	In. (mm)
Clearance .....	.001-.003 (.02-.08)
Lobe Lift .....	.265 (6.73)
No. 1	2.029-2.030 (51.54-51.56)
No. 2	2.019-2.020 (51.28-51.30)
No. 3	2.009-2.010 (51.03-51.05)
No. 4	1.999-2.000 (50.77-50.80)
