## 4.3 LITER V6 DIESEL

### IDENTIFICATION CODING

#### ENGINE IDENTIFICATION

Engine may be identified from the Vehicle Identification Number (VIN) stamped on a metal tab located on top of instrument panel at lower left of windshield. VIN number code also appears as part of a production or unit number stamped on pad on left front of engine, below cylinder head on all models except Oldsmobile models, where a code tape is found on front of left side valve cover. The VIN number contains 17 digits. The 8th digit identifies the engine and the 10th digit establishes the model year.

**Engine Code**

| Engine | Code |
|---|---|
| 4.3L (262") Diesel RWD | V |
| 4.3L (262") Diesel FWD | T |

#### SPECIAL ENGINE MARKS

Information identifying oversize and undersize components are stamped in the following locations.

**O** – On side of lifter bore indicates .010" (.25 mm) oversize lifters.

**Letter Code** – The original cylinder size is stamped with a code letter on the block near each cylinder on the oil pan rail.

**.010"** – Stamped on number 4 counterweight indicates .010" (.25 mm) undersize crankshaft rod journals.

**3, 5, 10 or 13** – Stamped on inboard side of cylinder head above intake manifold indicates oversize valve guides are used in .003", .005", .010" or .013" (.08, .25, or .33 mm) oversize. Standard valve guides have no stamping.

#### ENGINE REMOVAL

See *Engine Removal at end of Engine Section.*

### CYLINDER HEAD & MANIFOLDS

#### INTAKE MANIFOLD

**Removal** – **1)** Remove air cleaner assembly and drain radiator. Disconnect upper radiator hose and thermostat by-pass hose from water outlet. Disconnect heater inlet hose and if equipped with air conditioning, remove vacuum line to water valve. Remove ventilation pipe from air crossover. Remove fuel pump and cap all pump and line openings. Disconnect wiring and remove cruise control servo.

**2)** Remove fuel lines, filter and brackets. Cap all openings. Remove vacuum lines as necessary. Remove intake manifold drain tube and intermediate pump adapter. Remove intake manifold and adapter seal. Clean the machined surfaces of cylinder head and intake manifold with putty knife. Do not gouge or scratch surfaces.

CAUTION – *Do not bend injection pump lines.*

**Installation** – **1)** Clean machined surfaces of manifold and head. Use suitable sealer to coat both sides of gaskets and position on head. Install end seals and intake manifold making sure that ends are positioned under cylinder heads.

NOTE – *Do not use sealer of any type on end seals or mating surfaces. Any liquid will cause seals to move during assembly.*

**2)** Dip manifold bolts in oil and install. Tighten bolts first to 15 ft. lbs. (20 N·m), then tighten to specifications. See *Fig. 1.* Reconnect thermostat by-pass hose to water pump. Apply RTV sealer to cone shaped surface of drain tube and on chamfered hole of manifold. Apply suitable sealer to threads of drain tube clamp bolt and install drain tube.

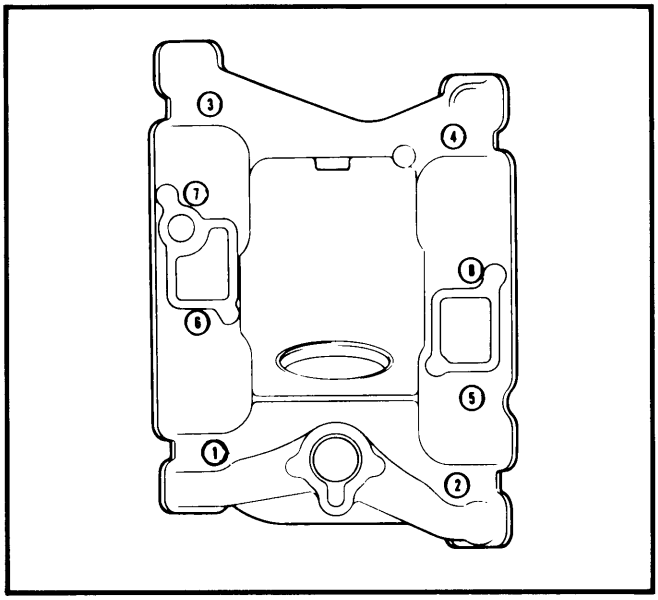


***Fig. 1 Intake Manifold Tightening Sequence***

**3)** Apply chassis lube to seal area on adapter, taper edge and seal area of manifold. Apply chassis lube to inside and outside of adapter seal and seal installer tool (J-28425). Install seal on tool. Using tool, push seal on injection pump adapter. Remove tool and inspect seal for proper seating.

**4)** Align offset tang on pump drive shaft with offset in pump driven gear and install injection pump. Connect lines to pump and nozzles. Align marks on injection pump with mark on adapter. Reverse removal procedure to complete installation.

CAUTION – *Do not operate engine without vacuum pump assembly, as this is the drive for the oil pump.*

#### EXHAUST MANIFOLD

**Removal & Installation (Left Side)** – Remove air cleaner and install air crossover cover (J-26996-1). Holes can be drilled in cover to let air cleaner studs come through. Remove lower generator bracket and hoist vehicle. Remove exhaust crossover pipe and lower vehicle. Remove exhaust manifold from above. To install, reverse removal procedure.

**Removal & Installation (Right Side)** – Raise vehicle on hoist. Remove crossover pipe and disconnect exhaust pipe. Remove right front wheel and exhaust manifold from under vehicle. To install, reverse removal procedure.

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## 4.3 LITER V6 DIESEL (Cont.)

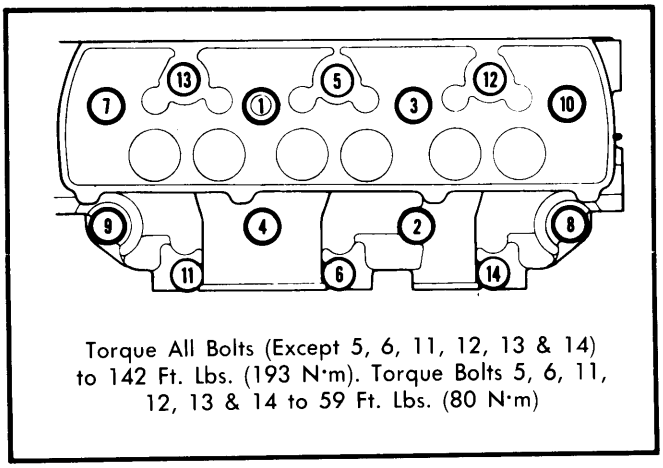
### CYLINDER HEAD

**Removal** – 1) Remove intake manifold as previously described. Remove rocker arm cover(s). Loosen or remove any accessory brackets which interfere with cylinder head removal. Disconnect glow plug wiring and ground strap from right head. Remove rocker arm bolts, pivots, rocker arms and push rods. Keep removed parts separate for installation in original location.

2) Disconnect exhaust manifold(s) from cylinder head(s), leaving manifold attached to crossover pipe. Remove engine block drain plug from same side as cylinder head being removed. Remove head bolts and remove cylinder head. If necessary to remove prechamber, remove glow plug and injection nozzle, then tap out with small drift punch.

**Installation** – 1) Install head gasket without sealer and with prechamber shield facing cylinder head. Install prechamber flush with cylinder head (it must not protrude or be recessed more than .003" (.08 mm).

2) Install glow plug, injection nozzle and cylinder head. Clean and dip cylinder head bolts in engine oil and install. Tighten in 2 steps, following sequence *shown in Fig. 2*. Reverse removal procedure to complete installation.




Torque All Bolts (Except 5, 6, 11, 12, 13 & 14) to 142 Ft. Lbs. (193 N·m). Torque Bolts 5, 6, 11, 12, 13 & 14 to 59 Ft. Lbs. (80 N·m)

***Fig. 2 Cylinder Head Tightening Sequence***

## VALVES

### VALVE ARRANGEMENT

I-E-I-E-E-I (Each bank, front to rear)

### VALVE GUIDE SERVICING

Intake and exhaust valve guides are integral with cylinder head. Service valves are available in standard, .003", .005", .010" and .013" (.08, .13, .25 and .33 mm) oversize.

NOTE – *Use .003" (.08 mm) oversize reamer for standard and .003" (.08 mm) oversize valves. Use .005" (.13 mm) oversize reamer for .005" (.13 mm) oversize valves and a .013" (.33 mm) oversize reamer for .010" (.25 mm) and .013" (.33 mm) oversize valves.*

### VALVE STEM OIL SEALS

Use valve seal installer tool (BT-68041 or equivalent) to install oil seal down as far as possible on valve stem. Seals will correctly position when engine is started. The valve stem oil seals are color coded as follows:

- Intake – Gray: Standard to .005" (.13 mm) oversize. Orange: .010" to .013" (.25 to .33 mm) oversize.
- Exhaust – Ivory: Standard to .005" (.13 mm) oversize. Blue: .010" to .013" (.25 to .33 mm) oversize.

### VALVE SPRINGS

**Removal** – With cylinder head removed, remove valve keepers using spring compressor tool (BT-6413-2 or equivalent). Remove rotator, spring and seal. Keep removed parts separate for reinstallation.

**Installation** – 1) Install valve stem seals. Position valve spring and rotator on head. Using spring compressor tool (BT-6413-2 or equivalent), compress valve spring and install valve keepers. Check spring and keepers to make sure they are properly seated.

2) Measure valve stem height whenever new valve is installed or after grinding valves. Use stem height gauge (J-25289-A) as shown in *Fig. 3*. There should be at least .015" (.38 mm) clearance between gauge and valve stem. If clearance is less than .015" (.38 mm) grind tip as required, make sure end is ground 90° to stem.

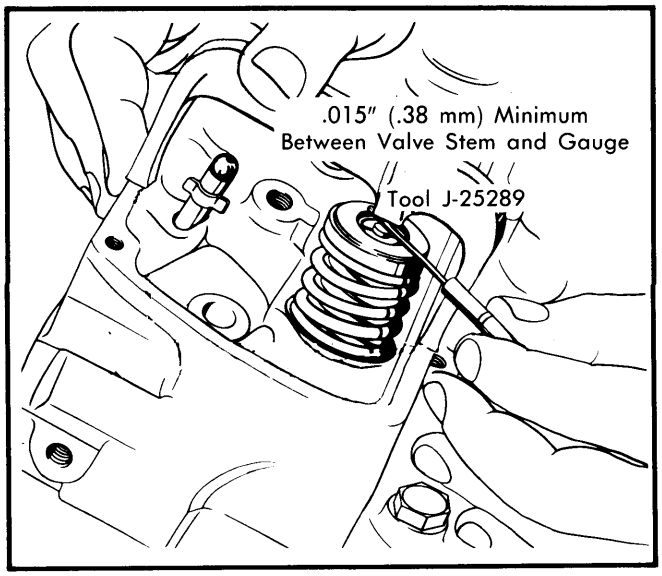



***Fig. 3 Measuring Valve Stem Height***

3) Measure clearance between gauge and valve rotator. Clearance must be .030" (.76 mm) minimum. If any valve is less than .005" (.13 mm) above rotator, valve is too short and must be replaced. *See Fig. 4.*

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## 4.3 LITER V6 DIESEL (Cont.)

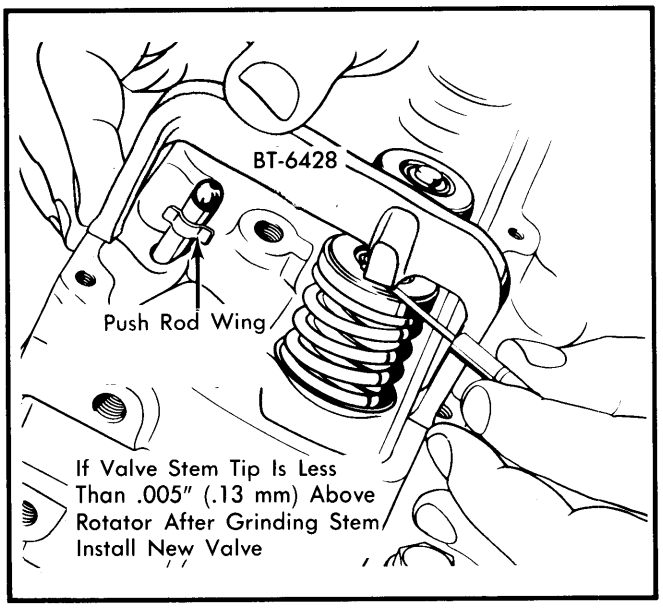


*Fig. 4 Measuring Rotator Height*

### ROCKER ARM ASSEMBLY

NOTE – *Push rods have a "wing" at upper end so push rod can be installed only one way. This is because the ball hardness is not the same on both ends.*

**Removal & Installation** – Remove valve covers. Remove rocker arm flanged bolts, pivot and rocker arms. Remove each set (one per cylinder) as a unit. To install, position 1 set of rocker arms in proper location, lubricate wear points with suitable lubricant and install pivots. Install flanged bolts and tighten alternately to proper torque, performing Valve Lifter Bleed Down procedure. Reverse removal procedure to complete installation.

NOTE – *Valve Lifter Bleed Down procedure must be performed as lifters must be bled down to prevent piston from hitting valves.*

### HYDRAULIC VALVE LIFTER ASSEMBLY

NOTE – *Hydraulic valve lifters installed in this engine are not the same as used in gasoline engines.*

If hydraulic valve lifters are being removed, mark or identify lifters to ensure that they are installed in original position. Lifters are serviced as complete assemblies only. Parts are not interchangeable between lifters. If lifter is damaged or worn, check cam mating surface for wear and if present, replace camshaft and lifters. Inspect lifter roller for missing or broken needle bearings. Roller should rotate freely, without excessive drag and should be free of pits and/or roughness.

NOTE – *A new hydraulic roller lifter is being used in which a guide fits over top of lifter to keep lifter from rotating, and a spring steel retainer fastened inside cylinder block, holds guide in place.*

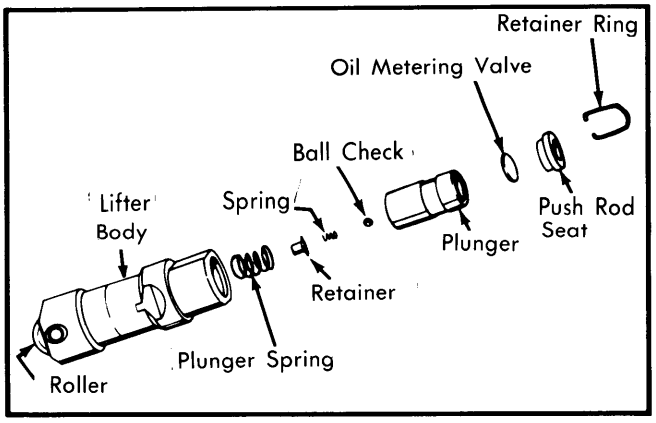


*Fig. 5 Hydraulic Roller Lifter Assembly*

### VALVE LIFTER BLEED DOWN

1) Before installing any rocker arm assemblies, rotate crankshaft to position No. 1, cylinder at 32° BTDC. This is ½" (12.7 mm) beyond end of timing indicator. If necessary, remove No. 1 glow plug to determine correct piston position.

CAUTION – *Use only hand tools to torque rocker arm pivot bolts to avoid engine damage.*

2) Install No. 5 cylinder rocker arms, pivot and bolts. Torque bolts alternately between intake and exhaust valves until exhaust valve begins to open, then stop. Install remaining rocker arms, pivots and bolts. Torque the bolts slowly, allowing lifters to bleed down.

3) Watch No. 3 and No. 8 intake valves as pivot bolts are being torqued. Do not torque No. 3 and No. 8 intake valve pivots beyond point that valve would be fully open (indicated by strong resistance while torquing pivot bolts). Going beyond this will bend the push rod.

4) Finish torquing No. 5 cylinder pivot bolts slowly. Do not torque pivot bolts beyond point that valve would be fully open (indicated by strong resistance while torquing pivot bolts). Torque pivot bolts to 25 ft. lbs. (34 N·m).

CAUTION – *Do not turn crankshaft for at least 45 minutes or damage to valve train will occur.*

## PISTON, PINS & RINGS

### OIL PAN

*See Oil Pan Removal at end of ENGINE Section.*

### PISTON & ROD ASSEMBLY

**Removal** – 1) Remove intake manifold, heads, oil pan and oil pump. Mark rod and cap for reinstallation in same cylinder. Use ridge reamer to remove any deposits or ridge on upper end of cylinder bore.

NOTE – *Pistons must be at bottom of stroke and covered with cloth to collect cuttings.*

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## 4.3 LITER V6 DIESEL (Cont.)

**2)** Remove rod cap and use guide hose over threads of rod bolts to prevent damage to journals and threads. Remove rod and piston assembly out top of block.

**Installation** – Lightly coat pistons, rings and cylinder walls with engine oil. Position rings as shown in *Fig. 6*. Make sure the marks on piston rings are toward top of piston. Using piston ring compressor, install piston with valve depression in top of piston turned toward inner side of engine. Small notch cast in top of piston must face the front of engine.

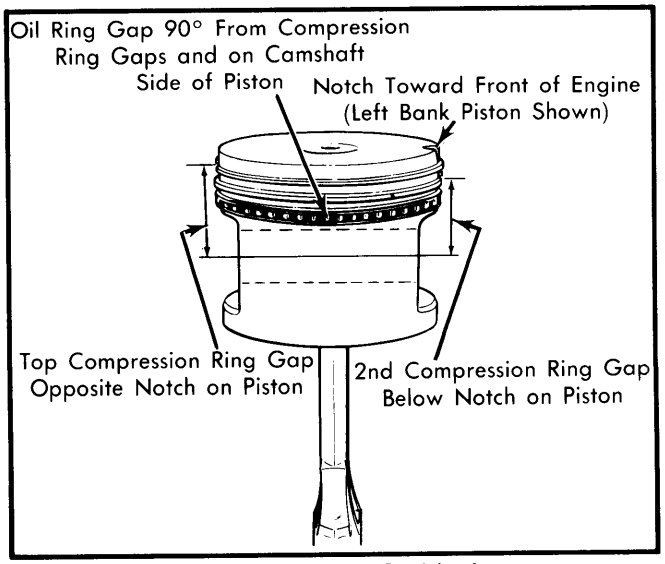


***Fig. 6 Piston Ring Positioning***

### FITTING PISTON

With pin removed, measure for taper at pin centerline and bottom of skirt. Measure for size ¾" (19.05 mm) below pin centerline on skirt. Allowable taper is 0-.002" (0-.05 mm). Measure cylinder bore with inside micrometer. Maximum allowable taper is .001" (.02 mm). Pistons are available in standard, standard high limit, .010" (.25 mm) and .030" (.76 mm) oversize.

### PISTON PINS

Piston pin is free floating and can be inserted into piston or rod with hand pressure. Be sure that piston and rod pin holes are clean and free of oil when checking pin fit. Rotate piston pin retaining snap rings until fully seated in grooves.

## CRANKSHAFT & ROD BEARINGS

### CONNECTING ROD & MAIN BEARINGS

**Connecting Rod Bearings – 1)** These bearings are designed to have slight projection above the rod and cap faces to ensure positive contact. They may be replaced without removing rod and piston assembly from engine. Measure connecting rod journals with a micrometer to check out-of-round. Maximum out-of-round must not exceed .0015" (.038 mm). Use Plastigage method to check bearing clearance. Maximum clearance must not exceed .0035" (.089 mm). Coat bearing with engine oil before installation.

NOTE – *All rods must be connected to journals before rotating crankshaft to prevent damage to engine.*

**2)** Measure connecting rod side clearance by spreading rods with screwdriver and inserting feeler gauge. Clearance should be .006-.020" (.15-.51 mm).

**Main Bearings – 1)** Check bearing clearance. Use floor jack or other support to hold crankshaft against upper bearing half.

**2)** Use Plastigage across full width of bearing. Install cap with bearing and tighten to 120 ft. lbs. (163 N·m). Determine bearing clearance by removing cap and check flattened Plastigage with graduations on container. If clearance is greater than .0035" (.089 mm), replace both bearing halves as a set.

NOTE – *Do not use shims.*

**3)** To replace main bearing halves, remove caps and lower shell. Insert a flattened cotter pin or rolllout pin in oil passage hole of crankshaft. Rotate crankshaft in opposite direction of cranking rotation.

**4)** Check journals for roughness or wear. Out-of-round may be measured with crankshaft installed using a crankshaft caliper and inside micrometer. Upper bearing half must be removed when measuring journals. Maximum out-of-round is .0015" (.038 mm).

**5)** Apply suitable lubricant to thrust flanges of No. 3 main bearing. Reverse removal procedure to install new bearing halves. Measure crankshaft end play. End play should be .0035-.0135" (.089-.343 mm) using dial indicator.

### REAR MAIN BEARING OIL SEAL

Rear main bearing oil seal can be installed without removing crankshaft. The procedure for seal leak correction is as follows:

**1)** Drain oil, remove oil pan and rear main bearing cap. Use packing tool (BT-6433) against end of seal and drive old seal into groove until it is packed tight. This may vary from ¼" (6.35 mm) to ¾" (19.05 mm), depending on amount of pack required. Repeat on other end of seal.

**2)** Measure amount seal was driven up on one side; add 1/16" (1.58 mm), then cut this length from old seal removed from bearing cap. Repeat on other side, again adding 1/16" (1.58 mm), and cut from old seal. Place a drop of sealer on each end of seal and cap. Using 2 small screwdrivers, work both pieces (on on each side) into block seal groove.

**3)** Use packing tool to force the short pieces into block and cut seal flush with block. Place a piece of shim stock between seal and crankshaft to protect bearing surfaces before trimming.

**4)** Form a new rope seal in cap, packing it by hand. Use rear main seal installing tool (BT-23-18) and a hammer to push seal into groove. Rotate tool before cutting off excessive packing. Reinstall cap.

NOTE – *Seal is fully seated if undercut area of tool slides over seal. If tool butts against seal, drive seal further into groove.*

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## 4.3 LITER V6 DIESEL (Cont.)

### CAMSHAFT

#### ENGINE FRONT COVER

**Removal** – Drain cooling system and remove radiator and by-pass hoses. Remove belts, fan and fan pulley, crankshaft pulley, harmonic balancer and accessory brackets. Remove cover attaching bolts, cover, timing indicator and water pump. Remove both dowel pins.

**Installation** – **1)** Grind a chamfer on one end of dowel pin. Cut excessive material from end of oil pan gasket on each side of block. Clean all mating surfaces with solvent. Trim 1/8" (3.18 mm) from each end of new gasket. Install new front cover gasket on block and new seal on front cover. Apply sealer to gasket around coolant holes and place on block.

**2)** Apply sealer at junction of block, pan and front cover. See *Fig. 7*. Install front cover pressing downward to compress seal. Rotate cover left and right and guide pan seal into cavity using a small screwdriver. See *Fig. 8*.

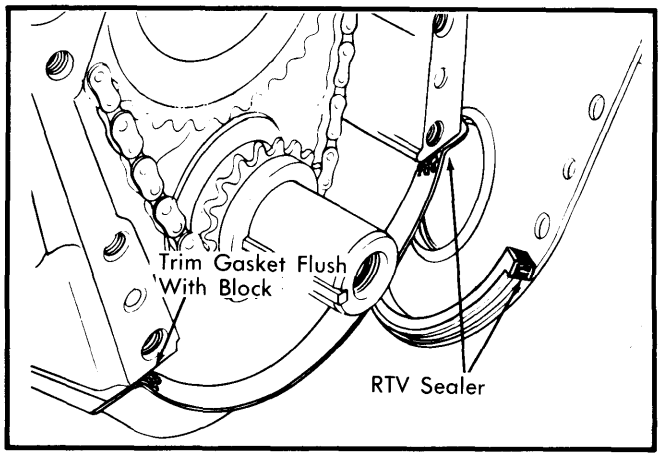


***Fig. 7 Pan and Cover Seal Installation***

**3)** Apply engine oil to bolts and install 2 bolts finger tight. Install dowel pins (chamfered end first), timing indicator and water pump. Lubricate seal surface and install harmonic balancer. Install brackets, all pulleys, fan and belts. Install radiator and by-pass hoses. Fill cooling system.

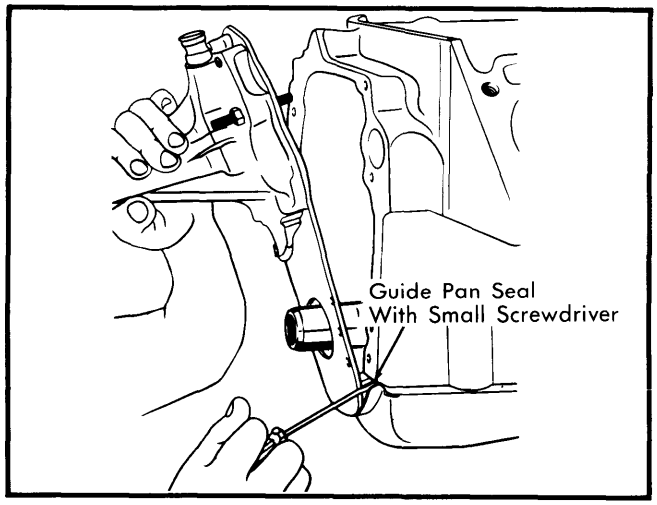


***Fig. 8 Front Cover Installation***

#### FRONT COVER OIL SEAL

**Removal & Installation** – With belts, harmonic balancer and crankshaft pulley removed, remove oil seal from front cover using removal tool (BT-6406 or equivalent). To install, apply sealer to outside diameter of seal and install seal using tool (BT-6405 and BT-6611 or equivalent). Install crankshaft pulley, harmonic balancer and belts.

#### TIMING CHAIN

**Removal** – Remove front cover, oil slinger, camshaft gear, crankshaft gear and key. Remove timing chain. Remove fuel pump eccentric only if replacement is necessary.

**Installation** – Install crankshaft key and oil slinger. Install camshaft gear, crankshaft gear and timing chain as an assembly.

NOTE – *When the two marks are in alignment, No. 6 cylinder is at TDC. To obtain TDC for No. 1 cylinder, slowly rotate crankshaft one rotation. This will bring cam mark to the top. No. 1 will then be in firing position. See Fig. 9.*

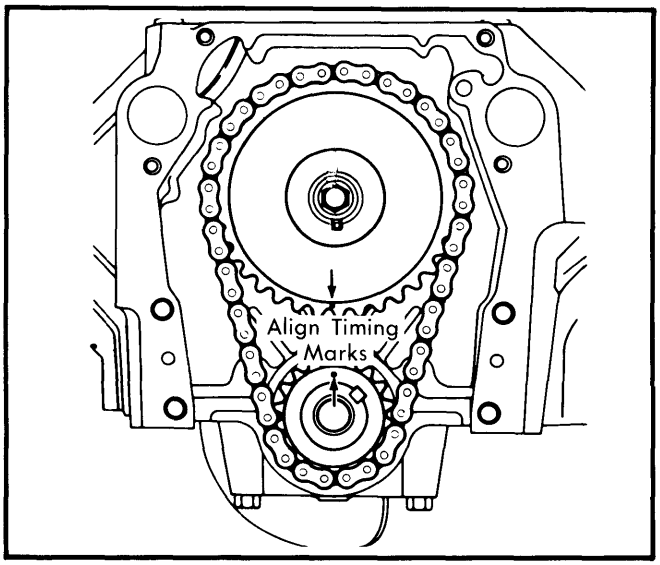


***Fig. 9 Aligning Timing Marks***

#### CAMSHAFT & INJECTON PUMP DRIVE GEARS

**Removal** – **1)** Disconnect negative battery cable at batteries. Drain cooling system. Remove upper radiator baffle. Disconnect upper radiator hose at manifold and support clamp. Disconnect oil cooler lines at radiator. Remove fan shroud and radiator. Remove intake manifold as previously described.

**2)** Remove pulleys, harmonic balancer, front cover, valve covers, rocker arms, push rods and lifters. If equipped with air conditioning, discharge system and remove condenser. Remove timing chain and gears.

**3)** Position camshaft dowel pin in the 3 o'clock position. Hold camshaft to rear and remove pump drive gear by sliding off camshaft while rocking pump driven gear. If necessary to remove pump driven gear, remove injector pump adapter and then remove snap ring and selective washer. Remove driven gear and spring. Remove camshaft by carefully sliding out from front of engine.

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## 4.3 LITER V6 DIESEL (Cont.)

NOTE – *Do not force shaft as damage can occur to bearings.*

**Installation – 1)** Coat camshaft and bearings with lubricant. Camshaft and crankshaft sprockets must be aligned as shown. Check injection pump driven gear bushing. Install injection pump driven gear, spring, shim and snap ring. If not within .002" to .006" (.05 mm to .15 mm), replace shim to obtain clearance.

**2)** Shims are available from .080" to .115" in .003" increments (2.03 mm to .08 mm in .08 mm increments). Position camshaft dowel pin at 3 o'clock, align the "O" marks on pump drive and driven gears. With camshaft held in rearward position, slide pump drive gear on the camshaft.

**3)** Timing indicator attaching stud must be installed and properly torqued before installing power steering pump bracket. Bleed valve lifters. Start engine, recharge A/C system. Check for possible leaks. Check and adjust timing.

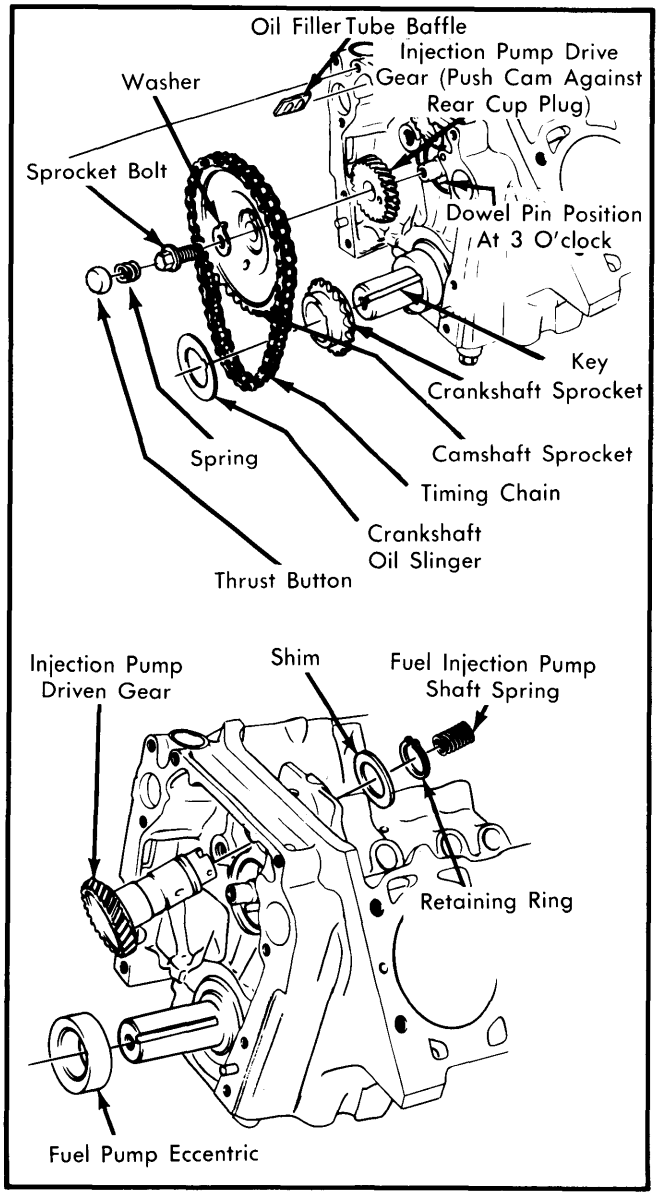


***Fig. 10 Installing Injection Pump Drive Gear***

### CAMSHAFT & INJECTION PUMP DRIVEN GEAR BEARINGS

Oil pan must be removed to replace camshaft bearings. Camshaft bearings are replaced as a complete set. All bearings must be removed before new ones can be installed. Remove bearings in sequence, No. 1. through No. 5. The No. 1 bearing must be removed first. Install No. 5 bearing first, and reverse procedure through No. 1 bearing.

**Removal** – Remove camshaft. Use camshaft bearing set (B-6409 with adapters) to drive out camshaft bearings. To remove injection pump driven gear bushing, drive both bushings at the same time from rear to front of block, using pump drive shaft driving tool (J-28439-2)) and driver handle (J-8092).

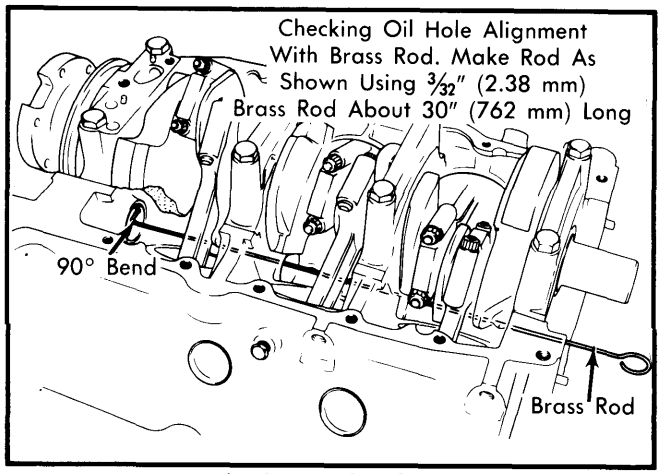


***Fig. 11 Checking Oil Hole Alignment***

**Installation** – To install bearings, reverse procedure and place each bearing in front bore with tapered edge toward block. Align oil hole in bearing with center of oil slot in bore. Mark bottom of bearing. This mark will act as a guide. Use a piece of 3/32" (2.38 mm) brass rod with a 90° bend at one end to check oil hole opening. Wire must enter hole or bearing will not receive oil. *See Fig. 11.*

### INJECTION TIMING

For the engine to be properly timed, align marks on top of injection pump adapter and flange of injection pump.

## ENGINE OILING

**Crankcase Capacity** – 5 quarts. Add 1 quart with filter change.

**Normal Oil Pressure** – 35 psi (2.46 kg/cm$^2$) at 1500-3000 RPM.

**Pressure Regulator Valve** – Located in pump cover. Not adjustable.

### ENGINE OILING SYSTEM

Oil pump is a gear-type pump, driven by camshaft gear through hexagonal drive shaft. Oil enters pump through screened inlet in oil pan, passes through oil filter to oil cooler in the radiator. It then returns to the oil filter base.

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## 4.3 LITER V6 DIESEL (Cont.)

Oil is delivered to right gallery where it is distributed to the 4 main bearings. The right bank valve lifters receive oil from this gallery through 6 feed holes that intersect gallery. Camshaft bearings are lubricated from vertical passages intersecting main bearing oil passages. Front main bearing connects right gallery to left gallery, which then feeds left bank of valve lifters.

The injection pump driven gear gets oil from passages in front camshaft bearing. Rear driven gear bearing receives oil from passage in shaft of driven gear and vacuum pump is oiled by orifice in rear gallery plug. An orifice in front of right gallery lubricates the timing chain and fuel pump eccentric.

Rocker arms and valve tips are lubricated through lifters and hollow push rods. Vacuum pump drive gear is lubricated through left rear gallery and connecting rod bearings receive oil from drilled passages in crankshaft. Grooves around each main bearing furnish oil to drilled crankshaft passages. Oil returns to oil pan reservoir through 2 passages in cylinder head.

### OIL PUMP

**Removal & Installation** – Remove oil pan. Remove oil pump-to-main bearing cap attaching bolts. Remove oil pump and driveshaft extension. To install, reverse removal procedures.

**Disassembly** – Remove oil pump drive shaft extension. Place thumb over pressure regulator valve bore, and remove cotter pin, spring and pressure regulator valve. Remove oil pump cover screws, cover and gasket. Remove drive gear and idler gear from pump body. See *Fig. 12*.

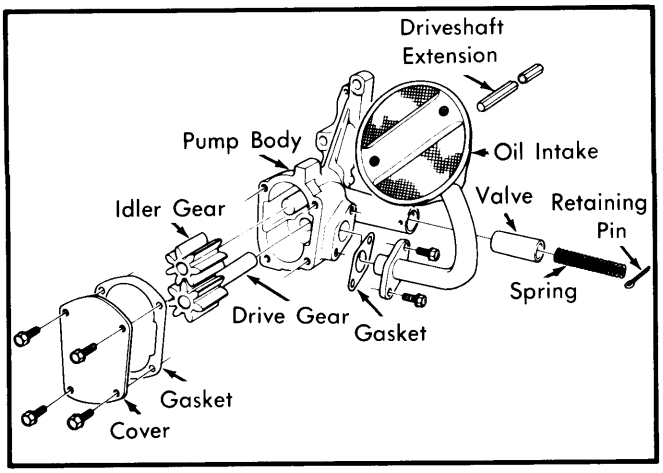


***Fig. 12 Exploded View of Oil Pump Assembly***

NOTE – *Do not remove washers from drive shaft extension. Also, use care when removing cotter pin, as spring is under pressure.*

**Reassembly** – Install idler gear and drive gear in pump body. Check gear end clearance by placing straightedge over gears and measure clearance between straightedge and gasket surface using feeler gauge. Clearance should be .0005" (.013 mm) to .0075" (.91 mm). If end clearance is near maximum reading, check for scores in cover that would bring total clearance over specified amount. Regulator valve-to-bore clearance should be .0025" (.06 mm) to .0050" (.13 mm). Install pressure regulator valve, spring and cotter pin.

NOTE – *When installing extension, the end nearest washer must be inserted into driveshaft. Make sure washer is 1 11/32" (34 mm) from end of shaft.*

## ENGINE COOLING

### WATER PUMP

**Removal** – Disconnect negative battery cable and drain cooling system. Disconnect lower radiator hose at water pump. Disconnect heater hose and by-pass at water pump (if so equipped). Remove fan assembly and all pulley belts. Remove water pump pulley. Disconnect alternator, A/C compressor and power steering brackets. Remove water pump attaching bolts and remove water pump. Clean all surfaces to ensure proper seal.

**Installation** – If installing new water pump, transfer pulley from old pump. Apply a 1/8" bead of sealant to water pump sealing surface. While sealant is wet, install water pump and tighten attaching bolts. Install all accessory drive belts and connect negative battery cable.

NOTE – *For further informaton on cooling system capacities and other cooling system components, see appropriate article in ENGINE COOLING SYSTEMS section.*

### TIGHTENING SPECIFICATIONS

| Application | Ft. Lbs. (N·m) |
|---|---|
| Camshaft Sprocket Bolt | 65 (88) |
| Connecting Rod Nut | 42 (57) |
| Crankshaft Main Bearing Cap Bolt | 107 (145) |
| Cylinder Head Bolts | |
| All Exc. Nos. 5, 6, 11, 12, 13 & 14 | 142 (193) |
| Nos. 5, 6, 11, 12, 13 & 14 | 59 (80) |
| Flywheel-to-Crankshaft | 65 (88) |
| Injection Pump Adapter | 22 (30) |
| Intake Manifold | ①15 (20) then 41 (55) |
| Oil Pump-to-Main Cap Bolt | 18 (24) |
| Rocker Arm Pivot Bolt | 28 (37) |
| Harmonic Balancer | 160-350 (217-475) |

① – Dip entire bolt in engine oil to obtain correct torque reading. Tighten in 2 steps.

## ENGINE SPECIFICATIONS

### GENERAL SPECIFICATIONS

| Engine | Cycle | Displ. Cu. Ins. | Compr. Ratio | Bore In. (mm) | Stroke In. (mm) | Firing Order | Inj. Timing ① |
|---|---|---|---|---|---|---|---|
| 4.3L | 4 | 262 | 21.6:1 | 4.057 (103.05) | 3.385 (85.98) | 1-6-5-4-3-2 | ② |

① – Unless noted otherwise, all Injection Timing is BTDC.
② – Properly timed when marks on injection pump are aligned.

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## 4.3 LITER V6 DIESEL (Cont.)

### ENGINE SPECIFICATIONS (Cont.)

**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) |
|---|---|---|---|---|---|---|---|
| 4.3L | | | | | | | |
| Int. | 1.875 (47.63) | 44° | 45° | .037-.075 (.94-1.91) | .3425-.3432 (8.69-8.72) | .0010-.0027 (.025-.069) | ..... .... |
| Exh. | 1.625 (41.28) | 30° | 31° | .046-.084 (1.16-2.13) | .3420-.3427 (8.68-8.70) | .0015-.0032 (.038-.081) | |

**PISTONS, PINS, RINGS**

| Engine | PISTONS | PINS | | RINGS | | |
|---|---|---|---|---|---|---|
| | Clearance In. (mm) | Piston Fit In. (mm) | Rod Fit In. (mm) | Rings | End Gap In. (mm) | Side Clearance In. (mm) |
| 4.3L | .003-.004 (.076-.101) | .0003-.0005 (.008-.013) | .0003-.0013 (.008-.033) | 1 | .015-.025 (.38-.64) | .005-.007 (.13-.17) |
| | | | | 2 | ..... ..... | ..... ..... |
| | | | | 3 | .015-.055 (.33-1.30) | .001-.005 (.25-.13) |

**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) |
| 4.3L | 2.9993-3.0003 (76.18-.76.21) | ①.0005-.0021 (.013-.051) | No. 3 | .0035-.0135 (.087-.3431) | 2.249-2.251 (57.12-.57.18) | .0003-.0025 (.010-.066) | .008-.021 (.210-.545) |

① — No. 4 bearing clearance is .0020-.0034" (.051-.086 mm).

**VALVE SPRINGS**

| Engine | Free Length In. (mm) | PRESSURE Lbs. @ In. (kg @ mm) | |
|---|---|---|---|
| | | Valve Closed | Valve Open |
| 4.3L | 2.09 (53.09) | 85-95@1.67 (187-209@42) | 203-217@1.22 (447-478@31) |

**CAMSHAFT**

| Engine | Journal Diam. In. (mm) | ①Clearance In. (mm) | Lobe Lift In. (mm) |
|---|---|---|---|
| 4.3L | | .0020-.0059 (.05-.15) | .0008-.0228 (.02-.58) |
| No. 2 | 2.185-2.224 (55.5-56.5) | | |
| No. 3 | 2.1653-2.2047 (55.0-56.0) | | |
| No. 4 | 2.145-2.185 (54.5-55.5) | | |

① — End play .0008-.0228" (.02-.58 mm).

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