350" DIESEL ENGINES

IDENTIFICATION CODING

ENGINE IDENTIFICATION

Engines may be identified by codes found in various locations on engine. On Cadillac (Seville), the unit number is stamped front, left side of block below cylinder head. Oldsmobile is identified by red code tape on left front valve cover. Both vehicles use VIN code "N" for the 350" diesel engine.

SPECIAL ENGINE MARKS

Information identifying oversize and undersize components are stamped in following locations:

Oversize lifters – On side of lifter bore.
Oversize cylinders – Adjacent to cylinder bore.
Undersize crankshaft journals – On pad top left side of block in front.
Oversize valve guides – Inboard side of cylinder head above intake manifold.

0 – Indicates .010" oversize lifters.
X – Indicates .010" undersize crankshaft journals.
Letter – Indicates original cylinder size.
3,5,10 or 13 – Indicates oversize valve guides in .003", .005", .010" and .013".

ENGINE REMOVAL

See Engine Removal at end of ENGINE Section.

CYLINDER HEAD & MANIFOLDS

INTAKE MANIFOLDS

Removal – 1) Drain cooling system, remove air cleaner and disconnect all hoses and wiring as necessary. Remove breather pipes and air crossover. Cap intake manifold with cover screens J-26996-2.

2) Disconnect throttle rod, spring and remove servo (if equipped with cruise control). Remove retaining clip from bellcrank. Remove throttle cable from bracket and position away from engine. Remove alternator and A/C brackets as necessary.

3) Disconnect fuel lines to fuel pump, filter, nozzles and injection pump. Remove injection pump, fuel filter and brackets. Cap all open fuel lines and fittings.

4) If A/C equipped, remove vacuum pump. Non A/C remove oil pump drive assembly. Remove drain tube, intake manifold and injection pump adapter.

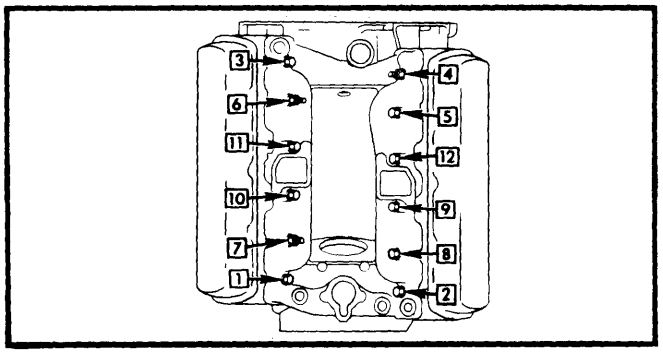

Fig. 1 Intake Manifold Tightening Sequence

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

2) Dip manifold bolts in oil and tighten in two steps. *See Fig. 1.*

3) Install drain tube and apply chassis lube to seal area on adapter, taper edge and seal area of manifold. Use seal installing tool J-28425 to properly position seal on adapter, then tighten bolts.

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.

5) Install vacuum pump, oil pump drive assembly, injection pump and fuel filter and bracket. Install alternator and A/C bracket (if removed).

6) Connect all wiring and hoses. Install air crossover and breather pipes. Fill cooling system.

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

EXHAUST MANIFOLDS

Removal & Installation – The right hand manifold must be removed from the bottom of engine. The left hand manifold comes out the top. The oil cooler lines must be removed from base of filter in order to get crossover pipe out. Also the right front wheel may have to be removed. To install reverse procedure.

CYLINDER HEAD

Removal – 1) Drain cooling system and remove or disconnect all necessary lines, hoses, brackets and linkage.

2) Remove intake and exhaust manifolds. Remove engine block drain plug on same side as cylinder head being removed.

3) Remove ground strap, rocker arm bolts, pivots, rocker arms and push rods. Keep all removed parts separate for installation in original locations.

4) If necessary to remove pre-chamber, remove glow plug and injection nozzle, then tap out with a small drift punch.

Installation – 1) Install head gasket WITHOUT sealer.

2) Install pre-chamber (if removed), glow plug and injection nozzle, then head.

3) Clean and dip cylinder head bolts in engine oil and tighten in two steps. *See Fig. 2.*

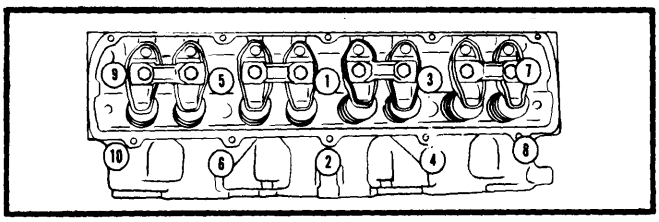

Fig. 2 Cylinder Head Tightening Sequence

350" DIESEL ENGINES (Cont.)

VALVES

VALVE ARRANGEMENT

I-E-I-E-E-I-E-I

VALVE GUIDE SERVICING

Intake and exhaust valve guides are integral with cylinder head. Oversize valves are available in Standard, .003", .005", .010" and .013" oversize.

NOTE – *Use .003" oversize reamer for Standard and .003" oversize valves. Use .005" oversize reamer for .005" oversize and .013" oversize reamer for.010" and .013" oversize valves.*

VALVE STEM OIL SEALS

Removal – Use valve seal installer tool BT-6804 (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" oversize.
Orange: .010" to .013" oversize.
Exhaust – Ivory: Standard to .005" oversize.
Blue: .010" to .013" oversize.

VALVE SPRINGS

Removal – With cylinder head removed, remove valve keys using valve spring compressing tool BT-6413 (or equivalent) to compress spring. Remove retainers, spring and seal. Keep components separate for reinstallation in original location.

Inspection – Check for squareness of valve spring as shown in *Fig. 3*. Spring must be within 1/16" square in free position.

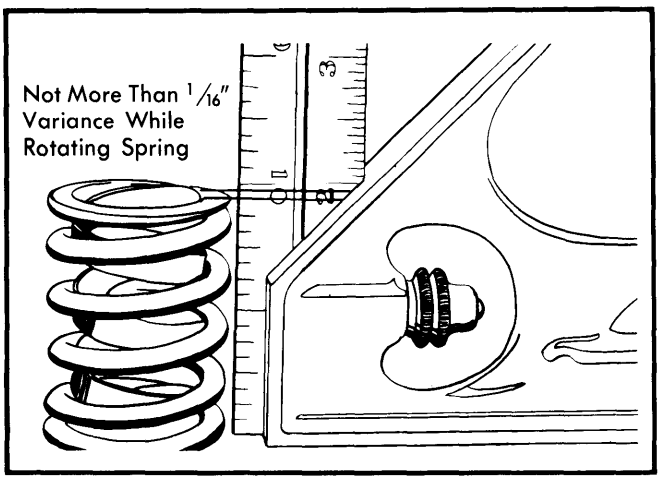

Fig. 3 Checking Valve Spring

Installation – Use suitable tool to install retainer, spring and valve stem keys. Check spring and keys to be sure they are properly seated.

2) Measure valve stem height whenever new valve is installed or after grinding valve. Use valve stem height gauge BT-6428 as shown in *Fig. 4*. There should be at least .015" clearance between gauge and valve stem. If clearance is less than .015", grind tip as required.

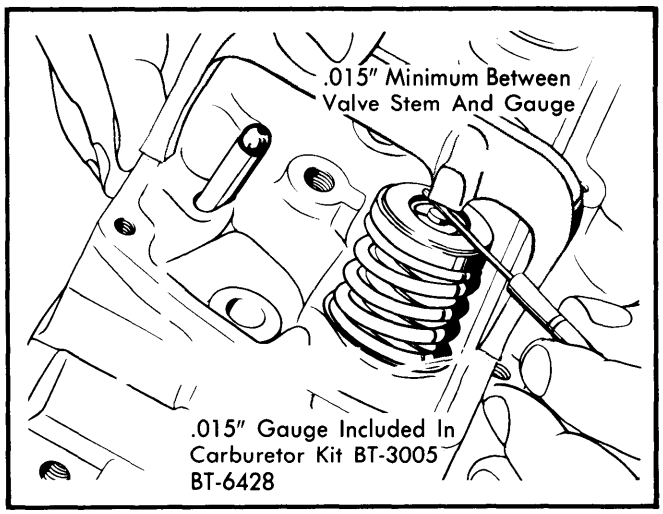

Fig. 4 Measuring Valve Stem Height

3) Measure clearance between gauge and valve rotator. Clearance must be .030" minimum. If any valve is less than .005" above rotator, valve is too short and must be replaced. See *Fig. 5*.

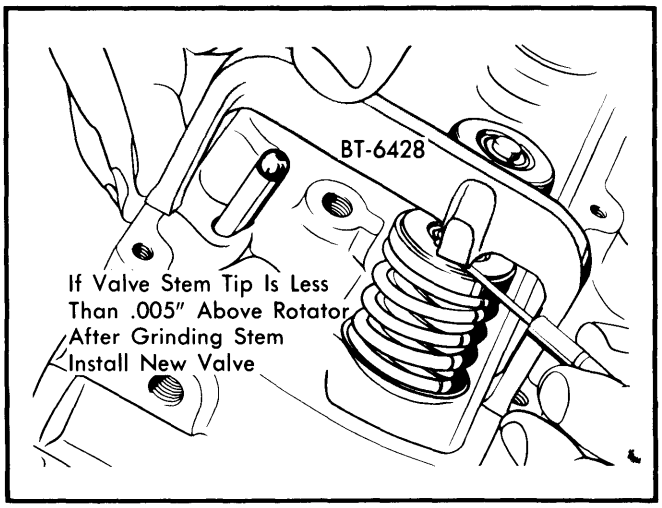

Fig. 5 Measuring Rotator Height

ROCKER ARM ASSEMBLY

Removal & Installation – Remove valve cover, rocker arm flanged bolts, pivot and rocker arms. Remove each set (one set per cylinder) as a unit. To install, position one 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.

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

350" DIESEL ENGINES (Cont.)

HYDRAULIC VALVE LIFTER ASSEMBLY

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

Removal – 1) With head removed, remove valve lifter being sure to keep separate for installation in same location.

2) Whenever lifters are removed, check lifter foot for abnormal wear as follows: Place a straightedge across foot of lifter while holding lifter at eye level. Check for light between foot and straightedge. If light indicates a concave surface, lifter must be replaced and camshaft inspected.

Disassembly – With small screwdriver, remove retainer ring. Remove push rod seal and oil metering valve. Remove plunger and spring. Remove check valve retainer from plunger, then remove valve and spring. See *Fig. 6*.

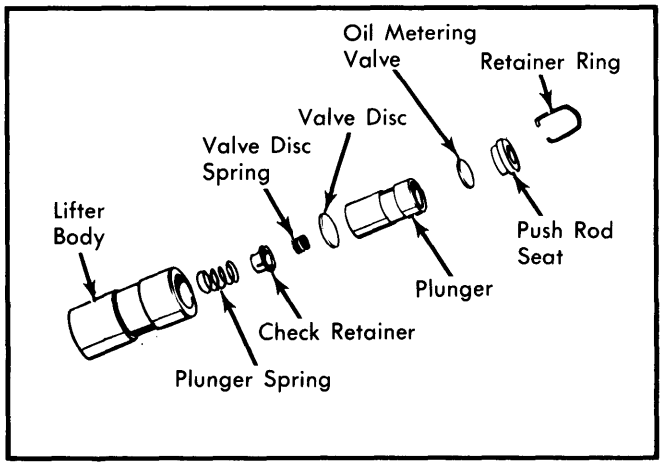

Fig. 6 Valve Lifter

Assembly – Assemble lifter while submerged in Hydraulic Test Fluid BT-59, and leak-down test before being put into service. Follow manufacturers instructions for leak-down test.

VALVE LIFTER BLEED DOWN

1) If intake manifold has been removed and if any rocker arms have been loosened or removed, disassemble and drain engine oil completely, then reassemble lifters while submerged in clean fuel oil.

2) If intake manifold has not been removed, but rocker arms have been loosened or removed, valve lifters can be bled down by the following procedure:

- For cylinders 3,5,7,2,4 & 8, turn crankshaft so slot on harmonic balancer is at 0° on timing indicator.
- For cylinders 1,3,7,2,4 & 6, turn crankshaft so slot is at 4 o'clock position.
- Tighten rocker arm pivot bolts to 25 ft. lbs.

NOTE – *It will take up to 45 minutes for the valve lifters to bleed down completely.*

PISTONS, PINS & RINGS

OIL PAN

See Oil Pan Removal at end of ENGINE Section.

PISTONS & ROD ASSEMBLY

Removal – 1) Remove intake manifold, heads, oil pan and oil pump. Mark rod and caps 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.*

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

Installation – 1) Lightly coat pistons, rings and cylinder walls with engine oil. Position rings as shown in *Fig. 7*. 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.

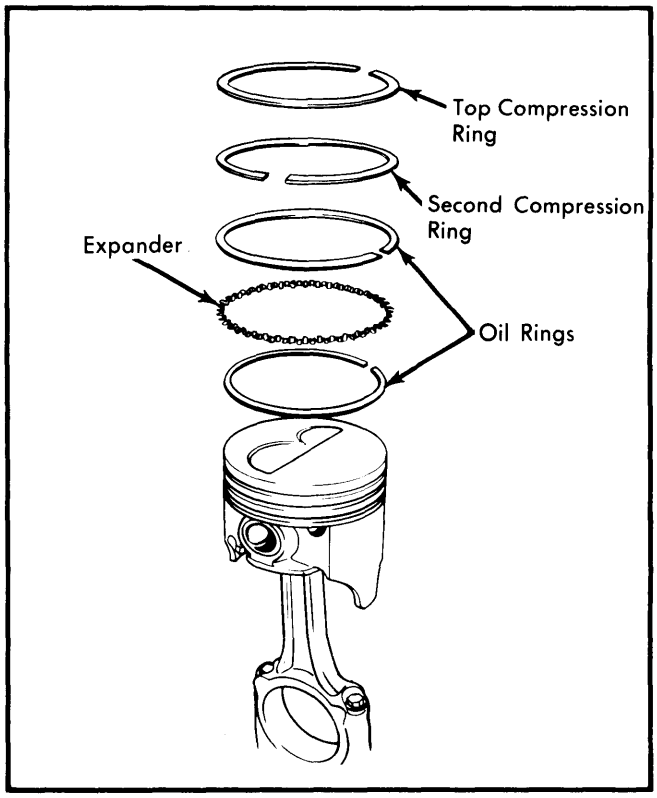

Fig. 7 Piston Rings

2) On cylinders 1,2,3 & 4, the larger valve depression goes toward the front of engine. Cylinders 5,6,7 & 8, the larger depression goes toward rear of engine. See *Fig. 8*.

350" DIESEL ENGINES (Cont.)

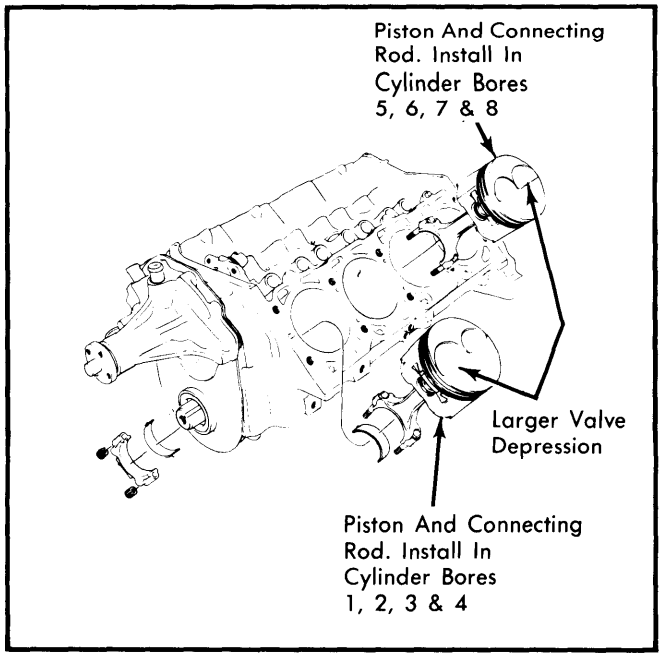

Fig. 8 Piston Location

FITTING PISTONS

With pin removed, measure for taper at pin centerline and bottom of skirt. Measure for size 3/4" below centerline on skirt. Allowable taper is .000-.002". Measure cylinder bore with inside micrometer. Maximum allowable taper is .001"

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 .0035". Use Plastigage method to check bearing clearance. Coat bearings with engine oil before installation.

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

Measure connecting rod side clearance by spreading rods with screwdriver and inserting feeler gauge. Clearance should be .006-.020".

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. Determine bearing clearance by removing cap and check flattened Plastigage with graduations on container. If clearance is greater than .0035", 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 rollout pin in oil passage hole of crankshaft. Rotate crankshaft in opposite direction of cranking rotation.

4) Check journals for roughness and wear. Out-of-round may be measured by inside micrometer or crankshaft caliper. Upper half must be removed when measuring journals. Maximum allowable out-of-round is .0015". Apply suitable lubricant to thrust flanges of No. 3 bearing. Reverse procedure to install new bearing halves.

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 1/4" to 3/4", 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", then cut this length from old seal removed from bearing cap. Repeat on other side, again adding 1/16", then cut this length off. Place a drop of suitable sealer on each end of seal and cap. Using two small screwdrivers, work these two pieces (one on each side) into block seal groove.

3) Use packing tool to force the short pieces into block. Use seal trimming tool BT-6436 to 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 hammer seal into groove.

NOTE – *Seal is fully seated if undercut area of tool slides over seal. If tool butts against seal, drive seal further into groove.* Rotate tool before cutting off excessive packing. Reinstall cap.

CAMSHAFT

ENGINE FRONT COVER

Removal – 1) 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" from

350" DIESEL ENGINES (Cont.)

each end of new pan seal. Install new front cover gasket on block and new seal on front cover. Apply suitable sealer to gasket around coolant holes and place on block.

2) Apply suitable sealer at junction of block, pan and front cover. See *Fig. 9*. Install front cover pressing downward to compress seal. Rotate cover left and right to guide pan seal into cavity using a small screwdriver. See *Fig. 10*. Install dowel pins (chamfered end first), timing indicator and water pump. Lube seal surface and install harmonic balancer. Install brackets, all pulleys, fan and belts. Install radiator and by-pass hoses. Fill cooling system.

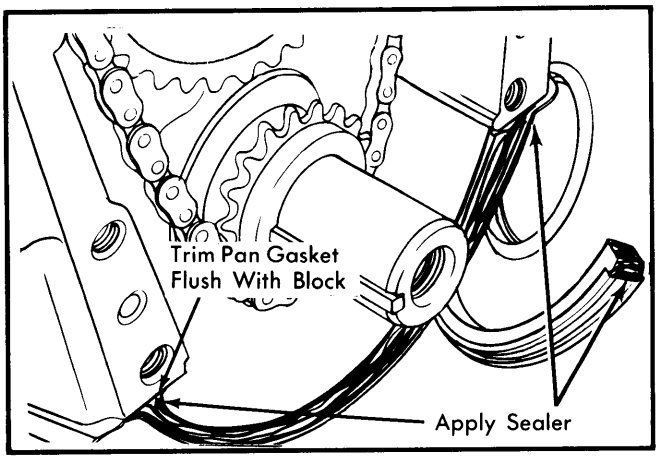

Fig. 9 Pan & Cover Seal Installation

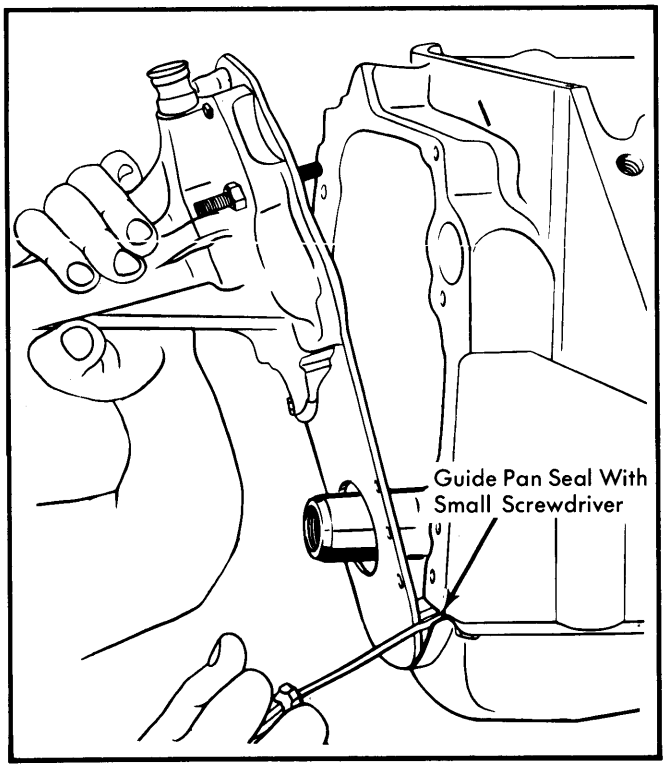

Fig. 10 Front Cover Installation

FRONT COVER OIL SEAL

Removal & Installation – With belts, harmonic balancer, crankshaft pulley and hub removed, use front cover seal remover BT-6406 (or equivalent) to remove seal. To install, apply suitable sealer to outside of seal. Use front cover seal installer tool BT-6405 and screw BT-6611 (or equivalents) to install seal. Replace pulley and hub, harmonic balancer and belts.

TIMING CHAIN

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

Installation – Install crankshaft key, oil slinger, camshaft gear, crankshaft gear and timing gear together.

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. 11.*

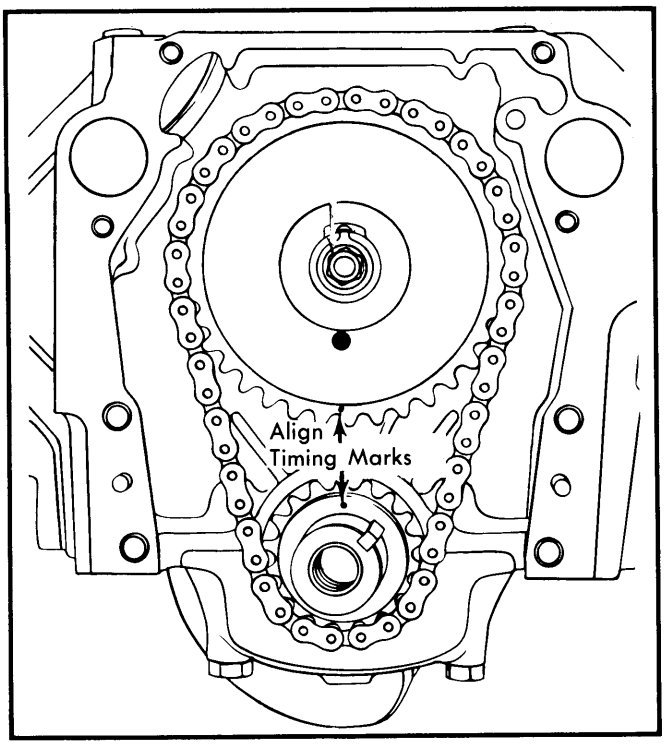

Fig. 11 Align Timing Marks

CAMSHAFT

Removal – **1)** Drain cooling system, disconnect radiator hoses, cooler lines and remove radiator. Remove air crossover, all hoses, lines, wiring and linkage to intake manifold and remove manifold.

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.

350" DIESEL ENGINES (Cont.)

3) Position camshaft dowel to 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 injection pump adapter, then remove snap ring and selective washer. Remove driven gear and spring. Remove camshaft by carefully sliding out front of engine. NOTE – *Do not force shaft as damage can occur to bearings.*

Installation – To install camshaft, reverse removal procedure. Apply suitable lubricant to camshaft and bearings prior to installation.

CAMSHAFT 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 1 thru 5. No. 1 must be removed first. On installation install No. 5 first, then reverse procedure.

Removal – Remove camshaft. Use camshaft bearing set B.-6409 with adapters (or equivalent) 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 and drive handle J-80921 (or equivalent).

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" 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. 12.*

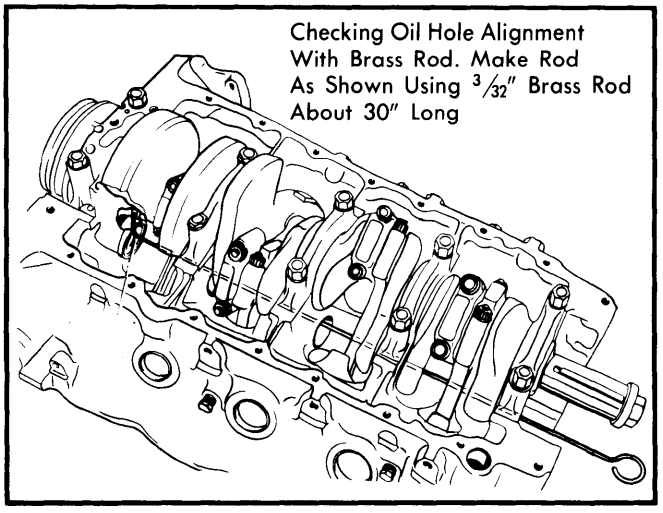

Fig. 12 Checking Oil Holes

ENGINE 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 – 6 qts. Add 1 qt. with filter change.

Normal Oil Pressure – 35 psi minimum at 1500-3000 RPM

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

ENGINE OILING SYSTEM

Oil pump is gear type driven by camshaft gear through hexagonal drive shaft. Oil is delivered to right gallery where it is distributed to the five main bearings. The right bank valve lifters receive oil from this gallery through eight feed holes that intersect gallery. Camshaft bearings are lubricated from vertical passages intersecting main bearing oil passages and the left bank lifters receive oil through connecting passages from right gallery. 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 oil 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 driven gear is oiled 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 PUMP

Disassembly – Remove oil pump drive shaft extension and pump cover.

NOTE – *Do not remove washer from extension.*

Remove cotter pin, spring and pressure regulator valve.

NOTE – *Spring is under pressure, be careful when removing cotter pin.*

Remove drive gear and idler gear from pump body. *See Fig. 13.*

Assembly – Install idler and drive gear in pump body. Check gear end clearance by placing straightedge over gears and measuring clearance between straightedge and gasket surface. Clearance must be .0005-.0075". If end clearance is near top reading, check for scores in cover that would bring total clearance over specified amount. Reinstall pressure regulator valve, spring and cotter pin.

NOTE – *When installing extension, the end nearest washer must be inserted into drive shaft.*

350" DIESEL ENGINES (Cont.)

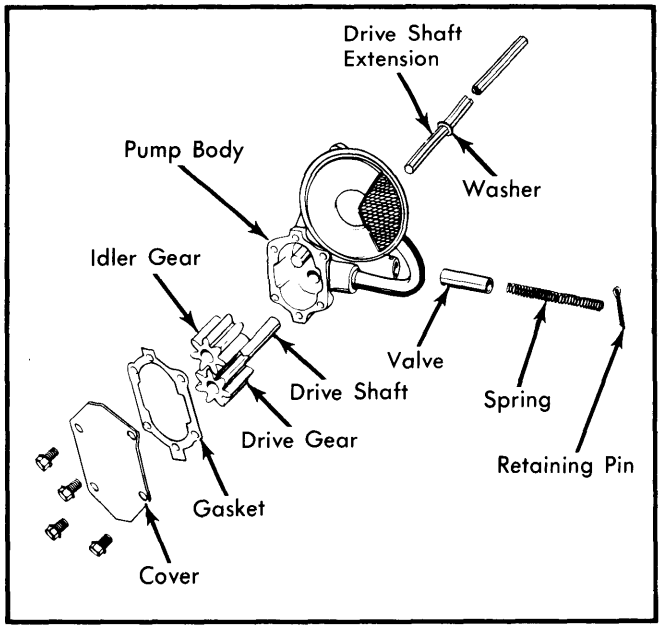

Fig. 13 Oil Pump

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Camshaft Sprocket Bolt	65
Connecting Rod Nut	42
Crankshaft Bearing Cap Bolt	120
Cylinder Head	130①
Engine Front Cover	35
Exhaust Manifold-to-Cylinder Head Bolts	25
Flywheel-to-Crankshaft	60
Injection Pump Adapter	25
Injection Pump Nuts	18
Intake Manifold	40①
Oil Pan Bolts	10
Oil Pump Cover Bolts	8
Oil Pump	35
Rocker Arm Pivot Bolts	25
Vibration Damper	200-310
Water Pump-to-Front Cover Bolts	13

① — Dip entire bolt in engine oil to get correct torque reading

GENERAL SPECIFICATIONS

Engine	Cycle	Displ. Cu. Ins.	Compr. Ratio	Bore	Stroke	Firing Order	Inj. Timing ①
1978	4	350"	22.5-1	4.057"	3.385"	1-8-4-3-6-5-7-2	Int. 16° 38°② Exh. 64° 17°②

① — Unless noted otherwise, all Injection Timing is BTDC.
② — ATDC

VALVES

Engine & Valve	Head Diam.	Face Angle	Seat Angle	Seat Width	Stem Diameter	Stem Clearance	Valve Lift
350"							
Int.	1.875"	44°	45°	.075-.098"	.3425-.3432"	.0010-.0027"	.....
Exh.	1.625"	30°	31°	.037-.075"	.3420-.3427"	.0015-.0032"	.....

PISTONS, PINS, RINGS

Engine	PISTONS	PINS		RINGS		
	Clearance	Piston Fit	Rod Fit	Rings	End Gap	Side Clearance
350"	.005-.006"	.0003-.0005"	.0003-.0013"	1	.015-.025"	.005-.007"
				2	.015-.025"	.0018-.0038"
				3	.015-.055"	.001-.005"

350" DIESEL ENGINES (Cont.)

CRANKSHAFT MAIN & CONNECTING ROD BEARINGS							
	MAIN BEARINGS				CONNECTING ROD BEARINGS		
Engine	Journal Diam.	Clearance	Thrust Bearing	Crankshaft End Play	Journal Diam.	Clearance	Side Play
350"	2.9993-3.0003"	.0005-.0021"	No.3	.0035-.0135"	2.1238-2.1248"	.0005-.0026"	.006-.020"

VALVE SPRINGS			
Engine	Free Length	PRESSURE (LBS.)	
		Valve Closed	Valve Open
350"	2.09"	77-83@1.670"	144-158@1.300"

CAMSHAFT			
Engine	Journal Diam.	Clearance	Lobe Lift
350"			
No.1	2.0357-2.0365"	.0020-.0058"	....
No.2	2.0157-2.0165"	.0020-.0058"	
No.3	1.9957-1.9965"	.0020-.0058"	
No.4	1.9757-1.9765"	.0020-.0058"	
No.5	1.9557-1.9565"	.0020-.0058"	

425" V8 ENGINES

IDENTIFICATION CODING

ENGINE IDENTIFICATION

Engines may be identified by codes stamped behind intake manifold. Codes are as follows:

Application	Code
425" 4-Bbl V-8	S
425"①E.F.I.	T

① — Electronic Fuel Injection.

SPECIAL ENGINE MARKS

Information identifying oversize and undersize components are stamped in following locations:

Oversize Valve Guides — On cylinder head gasket surface in line with oversize valve.

Oversize Cylinder — On cylinder head face of block.

Number — Indicates oversize valve guide.

Letter — Indicates oversize cylinder.

NOTE — *If double letter appears on cylinder head face of block, it indicates cylinder has been bored .010" over diameter indicated by single letter in chart. See Chart.*

Letter	Cyl. Size	Piston Size
A	4.0820-4.0824"	4.0810-4.0814"
B	4.0824-4.0828"	4.0814-4.0818"
C	4.0828-4.0832"	4.0818-4.0822"
D	4.0832-4.0836"	4.0822-4.0826"
E	4.0836-4.0840"	4.0826-4.0830"

ENGINE REMOVAL

See Engine Removal at end of ENGINE Section.

CYLINDER HEAD & MANIFOLDS

INTAKE MANIFOLD

Removal (Carburetor Models) — 1) Disconnect negative battery cable. Disconnect all hoses at air cleaner and remove air cleaner. Disconnect HEI connector. Disconnect carburetor and cruise control linkage at throttle adapter plate. Disconnect spark plug wires from spark plugs on right side of engine. Disconnect two orange wires from downshift switch and one white wire from choke.

2) Remove throttle return spring and downshift switch bracket. Disconnect power brake vacuum line and vacuum modulator line from rear of carburetor on all models except Eldorado. Position brake line out of way. Disconnect double connector from compressor clutch. Disconnect vacuum hoses at rear of manifold. Disconnect fuel line at carburetor.

3) Disconnect canister purge hose at carburetor and distributor vacuum advance hose at intake manifold. Remove air conditioning compressor without disconnecting hoses, and set aside. Disconnect PCV valve from right valve cover. Disconnect automatic level control vacuum hose (if equipped). Remove manifold bolts and nuts, and remove manifold. Remove sheet metal manifold shield and gasket. Remove front and rear manifold to cylinder block rubber seals.

Installation — 1) Position rubber seals over rails at front and rear of cylinder block. Tabs on gasket should be positioned in holes in rails and beveled ends of gasket tucked into slot at mating of head and rail. Use suitable sealer and position sheet metal gasket and shield on engine.

NOTE — *Holes in gasket should engage dowel pins on cylinder heads.*

2) Install manifold and tighten nuts and bolts. To complete installation, reverse removal procedures.

Removal (Fuel Injection Models) — 1) Disconnect negative battery cable. Remove air cleaner and crankcase filter. Disconnect throttle cable and cruise control linkage at throttle body. Disconnect cable from bracket and position out of way. On left side of engine disconnect all electrical connections. Disconnect harness from fuel rail brackets and position out of way.

2) Disconnect vacuum hoses from carburetor.

CAUTION — *Fuel in fuel system may be under pressure, system must be bled before disconnecting fuel line from fuel rail.*

3) On models without pressure relief valve in rear fuel rail, cover fuel inlet line with a shop towel while loosening clamps. Models equipped with Schrader valve in rear fuel rail do not require bleeding of system. Disconnect fuel line from fuel rail.

4) On right side of engine, disconnect all electrical connections. Disconnect harness from fuel rail brackets and position harness out of way. Remove PCV valve from valve cover. Remove spark plug cables and remove distributor cap. Remove front fuel rail.

5) Remove air compressor without disconnecting lines and position out of way. Remove fuel return line from pressure regulator. Remove intake manifold bolts and nuts and remove intake manifold. Remove sheet metal shield gaskets.

Installation — 1) Position rubber seals over rails at front and rear of cylinder block. Tabs on gasket should be positioned in holes in rails and beveled ends of gasket tucked into slot at mating of head and rail. Use suitable sealer and position sheet metal gasket and shield on engine.