

300" 6 CYL. ENGINE

GENERAL SPECIFICATIONS							
Year	Displ. Cu. Ins. ①	Carburetor	HP at RPM	Torque (Ft. Lbs. at RPM)	Compr. Ratio	Bore	Stroke
1977	300" LD	1-Bbl.	119@3200	252@1600	8.9:1	4.00"	3.98"
	300" LD	1-Bbl.	122@3200	252@1600	8.9:1	4.00"	3.98"
	300" LD	1-Bbl.	123@3200	253@1600	8.9:1	4.00"	3.98"
	300" HD	1-Bbl.	114@3200	227@1800	8.0:1	4.00"	3.98"
	300" HD	1-Bbl.	117@3600	227@1800	8.0:1	4.00"	3.98"
	300" HD	1-Bbl.	118@3600	205@2200	8.0:1	4.00"	3.98"
	300" HD	1-Bbl.	120@3400	229@1400	8.0:1	4.00"	3.98"
	300" HD	1-Bbl.	124@3600	217@2200	8.0:1	4.00"	3.98"
	300" HD	1-Bbl.	124@3400	222@2200	8.0:1	4.00"	3.98"

① — LD is Light Duty Emission vehicles under 6000 GVW and HD is Heavy Duty Emission vehicles over 6000 GVW.

ENGINE IDENTIFICATION

Rating plate carries information concerning vehicle model, series, point of manufacture, and unit number. Plate is located on cowl surface under hood. Number code is as follows:

F10BLQ00000

- First Digit** — Truck Series Letter.
- Second & Third Digits** — Truck Series Number.
- Fourth Digit** — Engine Code.
- Fifth Digit** — Assembly Plant.
- Remaining Digits** — Consecutive Unit Number.

Engine Identification Code

Application	Code
300"	B

ENGINE REMOVAL

See *Engine Removal at end of ENGINE Section.*

INTAKE MANIFOLD

Removal — 1) Remove air cleaner, disconnect choke cable and accelerator cable or rod at carburetor. Remove accelerator retracting spring.

2) Remove kick-down rod retracting spring (vehicles with automatic transmission), remove accelerator rod bellcrank assembly.

3) Disconnect fuel inlet line and distributor vacuum line from carburetor, disconnect muffler inlet pipe from exhaust manifold, and disconnect power brake vacuum line if equipped.

4) Remove bolts and nuts retaining both manifolds to cylinder head. Lift manifold assemblies from engine, remove and discard gaskets. Separate manifolds by removing nuts joining both pieces, discard gaskets between manifolds.

Installation — 1) Clean joining surfaces of cylinder head and manifolds. If one of the manifolds is to be replaced, remove tube fittings from discarded part and install on new part as required, also install new studs in replacement part.

2) If intake manifold and exhaust manifold have been separated, coat mating surfaces lightly with graphite grease, and position exhaust manifold over studs on intake manifold. Install lock washers and nuts, then tighten finger tight. Install new intake manifold gasket.

3) Coat mating surfaces lightly with graphite grease, place manifold assemblies in position against cylinder head. Make sure gaskets have not become dislodged. Install attaching washers, bolts, and nuts. Torque bolts and nuts to specifications using sequence shown in *Fig. 1*. If intake and exhaust manifolds were separated, tighten nuts joining both parts.

4) Position new gasket on muffler inlet pipe and connect inlet pipe to exhaust manifold. Torque nuts to specifications. Connect crankcase vent hose to intake manifold inlet tube, and position hose clamp.

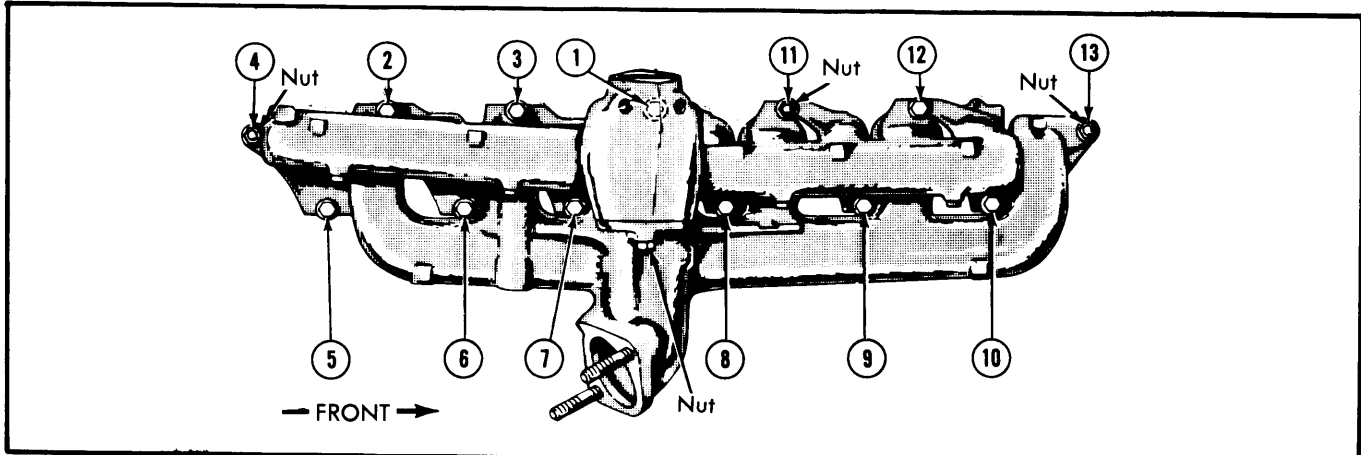


Fig. 1 Tightening Sequence for Intake and Exhaust Manifold

300" 6 CYL. ENGINE (Cont.)

5) Connect accelerator cable to carburetor and install retracting spring. Connect choke cable to carburetor. Install bellcrank assembly and kickdown rod retracting spring on models with automatic transmission. Adjust transmission control linkage as necessary. Install air cleaner, adjust engine idle speed and idle fuel mixture.

CYLINDER HEAD

Removal – If cylinder head is to be replaced, disassemble and transfer all valves, springs, rocker arms, etc. to new cylinder head. Clean and inspect all components, reface valves and check valve guide clearances before assembling used parts to new cylinder head. To remove cylinder head from engine block, proceed as follows:

1) Drain cooling system, and remove air cleaner. Remove PCV valve from rocker cover and disconnect vent tube at intake manifold inlet tube. Disconnect and remove carburetor fuel inlet line and distributor vacuum line. Disconnect choke cable at carburetor and position choke cable and housing to one side.

2) Remove accelerator cable retracting spring, and disconnect accelerator cable from carburetor. On vehicles with automatic transmission, disconnect kickdown rod at carburetor. Disconnect upper radiator hose and heater hose at coolant outlet elbow. Remove coil bracket retaining bolt and position coil to one side.

3) Disconnect muffler inlet pipe from exhaust manifold and discard inlet pipe gasket. Remove rocker arm cover, loosen rocker arm stud nuts and rotate rocker arms to one side. Remove and identify push rods in sequence to allow reinstallation in original positions. Disconnect spark plug wires at spark plugs.

4) Remove cylinder head bolts and attach lifting eyes to cylinder head. Position a floor crane or other suitable lifting device and attach lifting sling to lifting eyes. Raise cylinder head and manifold assembly from engine. **CAUTION** – Do not pry between cylinder head and block when freeing head assembly as gasket surface may be damaged.

Installation – 1) Clean cylinder head and cylinder block gasket surfaces. Clean gasket surfaces on exhaust manifold and muffler inlet pipe.

2) If cylinder head was removed for head gasket replacement, check flatness of block and head gasket surfaces, then position new gasket over dowel pins on cylinder block.

3) Install lifting eyes on cylinder head in previous locations used to detach head assembly. Use suitable hoist to lift cylinder head over block, lowering carefully until head assembly is properly positioned on block and dowel pins. Remove hoist and lifting eyes.

4) Coat threads of head bolts with engine oil and install bolts. Tighten cylinder head bolts, in steps, in sequence as shown in Fig. 2. Reverse removal procedure to install remaining components.

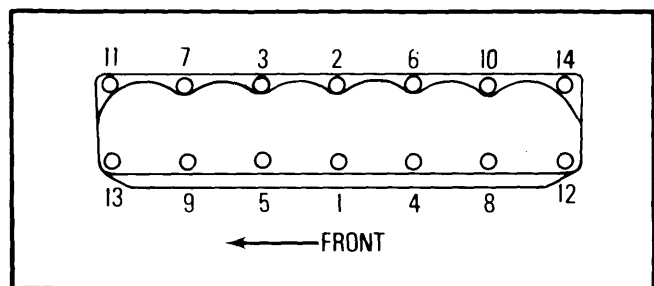


Fig. 2 Tightening Sequence for Cylinder Head

VALVES							
Engine & Valve	Head Diam.	Face Angle	Seat Angle	Seat Width	Stem Diameter	Stem Clearance	Valve Lift
300"							
Int.	1.772-1.790"	44°	45°	.060-.080"	.3416-.3423"	.0010-.0027"	.403"
Exh.	1.551-1.569"	44°	45°	.070-.090"	.3416-.3423"	.0010-.0027"	.403"

VALVE ARRANGEMENT

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

VALVE GUIDE SERVICING

To ream valve guides for installation of valves with oversize stems, always use reamers in sequence and reface valve seat after valve guide is reamed. Reamers are available .003" over-

size with standard diameter pilots; .015" oversize with .003" oversize pilot; .030" oversize with .015" oversize pilot. **NOTE** – Always break sharp corner (ID) at top of valve guide after reaming.

VALVE STEM OIL SEALS

Cup type seal used on all intake valves. Install cupped side down, below upper spring retainer. "O" ring type seal used on all exhaust valves.

300" 6 CYL. ENGINE (Cont.)

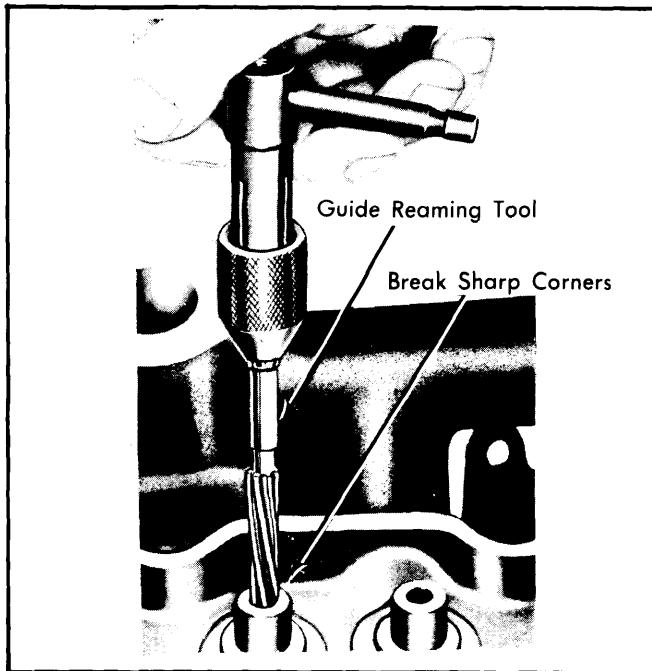


Fig. 3 Reaming Valve Guides

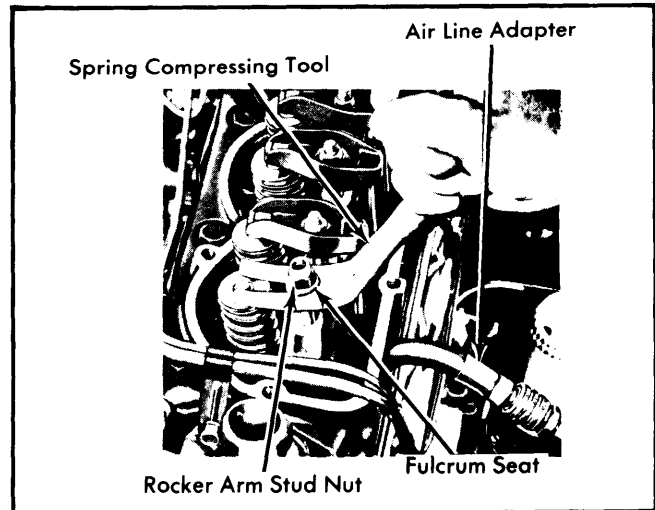


Fig. 4 Compressing Valve Springs

2) Install push rod, rocker arm, fulcrum seat and stud nut. Adjust valve clearance. Remove air line and adapter, then install spark plug. Install rocker arm cover and PCV valve. Connect accelerator cable, choke cable and accelerator cable retracting spring. Install air cleaner.

VALVE SPRINGS			
Engine	Free Length	PRESSURE (LBS.)	
		Valve Closed	Valve Open
300"			
Int.	1.99"	76-85@1.700"	187-207@1.300"
Exh.	1.87"	77-85@1.580"	182-202@1.180"

VALVE SPRINGS

Removal - 1) Remove air cleaner, accelerator cable retracting spring, and disconnect accelerator and choke cables at carburetor. Remove PCV valve from rocker arm cover, and remove rocker arm cover.

2) Remove spark plug from cylinder to be serviced. Crank engine to position cylinder on TDC after compression stroke. Install an air line and adapter to spark plug hole and apply air pressure.

3) Remove rocker arm stud nut, fulcrum seat, rocker arm, and push rod. Install a spring compressor to compress spring, then remove valve locks. Remove tool, then remove spring retainer, valve spring, and valve stem seal. **CAUTION** - Do not remove air pressure until all components are reinstalled.

Installation - 1) Install new valve stem seal, position spring over valve, and install spring retainer. **NOTE** - Closed coil end of spring faces cylinder head. Compress valve spring and install retainer locks. Apply Lubriplate to fulcrum seat and socket.

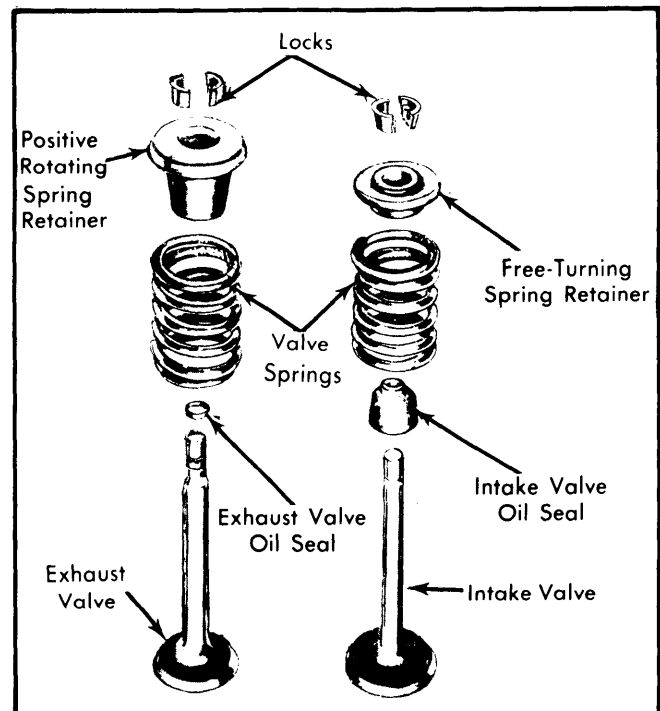


Fig. 5 Exploded View of Valve Assemblies

VALVE SPRING INSTALLED HEIGHT

1) Check valve springs for squareness using steel square and surface plate. Stand spring against edge of square and rotate spring slowly observing space between top coil of spring and square. If spring is out of square more than $\frac{3}{64}$ ", spring must be replaced.

300" 6 CYL. ENGINE (Cont.)

2) Measure assembled height of valve spring from surface of cylinder head spring pad to underside of spring retainer using dividers. Check divider against scale, if assembled height of spring is greater than specified height, install necessary .030" spacers between cylinder head spring pad and valve spring to bring assembled height to recommended dimensions.

CAUTION — Do not install spacers unless necessary to meet specifications. Excess use of spacers will result in overstressing of valve spring assembly, and will overload camshaft lobes, causing possible spring breakage and/or camshaft wear.

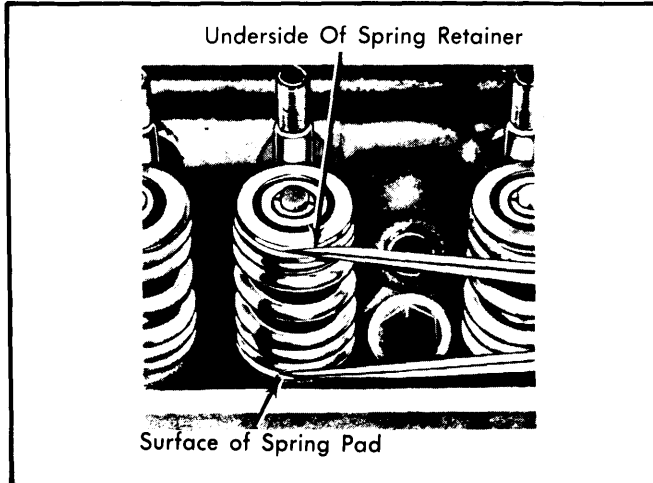


Fig. 6 Checking Assembled Valve Spring Height

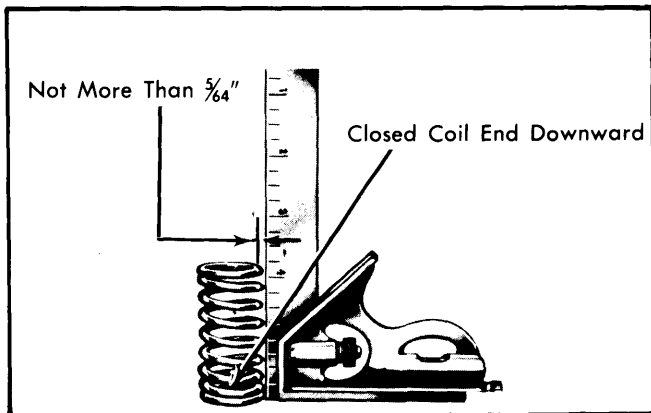


Fig. 7 Checking Valve Spring Squareness

Valve Spring Installed Height Specifications

Application	Intake Valve	Exhaust Valve
300"	$1\frac{1}{16}$ " - $1\frac{23}{32}$ "	$1\frac{1}{16}$ " - $1\frac{1}{32}$ "

ROCKER ARM STUDS

Removal — 1) Use suitable stud pulling tool kit (T62F-6A527-B) to facilitate removal of faulty studs. Follow instructions of manufacturer for proper use.

2) If rocker arm stud was broken off flush with stud boss, use suitable screw extractor to remove broken stud.

Installation — 1) Replacement studs may be pressed into head using suitable stud replacement tool (T69P6049D). Align stud and replacement tool with stud bore and tap sliding driver on tool until tool contacts stud boss, indicating stud is installed to proper height.

2) If rocker arm stud being replaced was loose, ream stud bore using proper reamer (or reamers in sequence) for selected oversize stud. Studs are available in oversizes of .006", .010", and .015". **CAUTION** — Make sure metal particles from reaming process of stud bore do not enter valve area. Install rocker arm stud using same replacement tool as for standard size stud.

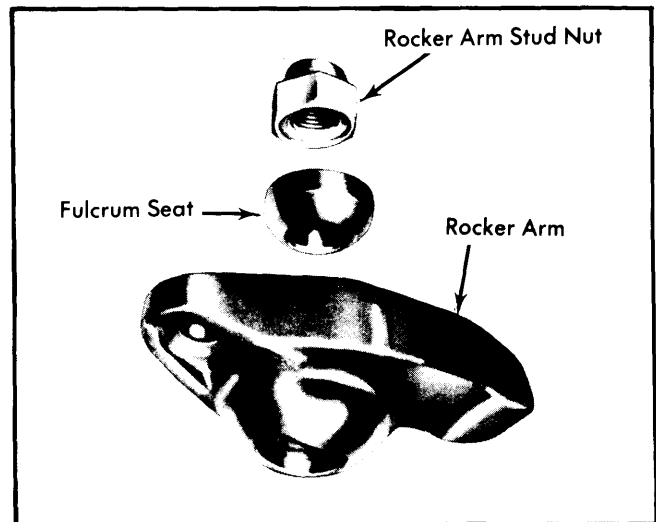


Fig. 8 Rocker Arm Assembly

HYDRAULIC VALVE LIFTER ASSEMBLY

Lifters should be serviced as assemblies only. Parts should not be interchanged from unit to unit. Leak down rate on all lifters is 5-50 seconds at $\frac{1}{16}$ " plunger travel using suitable lifter leak down testing device. Replace lifter assembly if any sign of malfunction is noticed.

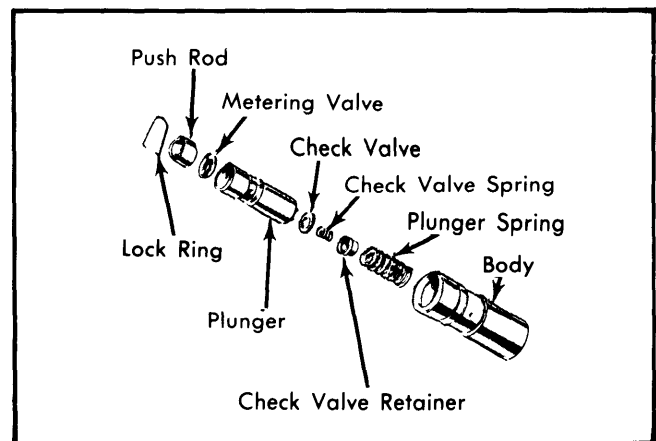


Fig. 9 Disassembled View of Hydraulic Valve Lifter

300" 6 CYL. ENGINE (Cont.)

HYDRAULIC VALVE LIFTER ADJUSTMENT

1) Make two chalk marks on crankshaft pulley spaced approximately 120° apart, which together with timing marks, will divide damper pulley into three equal parts. Rotate crankshaft until number one piston is on TDC at end of compression stroke.

2) Adjust intake and exhaust valve clearance for number one cylinder by loosening rocker arm stud nut until there is end clearance in push rod, then tighten nut to just remove all push rod to rocker arm clearance (determined by rotating or moving push rod with fingers as nut is tightened).

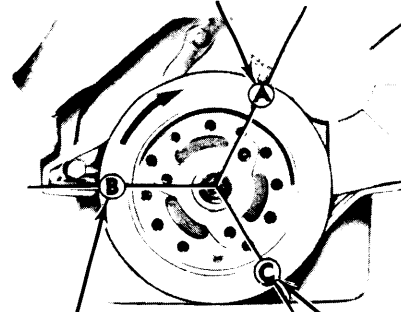
3) When push rod to rocker arm clearance has been eliminated, tighten stud nut an additional one turn to place hydraulic lifter piston in desired range.

4) Repeat procedure for remaining set of valves, turning engine with auxiliary starter switch 1/3 turn at a time, in direction of rotation, while adjusting valves in firing order sequence of 1-5-3-6-2-4.

5) Start engine and check for rough engine idle or noisy lifters. Valve clearance set too tight will cause rough idle and valve clearance set too loose will cause noisy lifters. Readjust if necessary.

Step 1 — Set No. 1 Piston on TDC at End of Compression Stroke, Adjust No. 1 Intake and Exhaust

Step 4 — Adjust No. 6 Intake and Exhaust



Step 2 — Adjust No. 5 Intake and Exhaust

Step 3 — Adjust No. 3 Intake and Exhaust

Step 5 — Adjust No. 2 Intake and Exhaust

Step 6 — Adjust No. 4 Intake and Exhaust

Fig. 10 Crankshaft Pulley Marking for Valve Clearance Adjustment

Collapsed Lifter Clearance

Application	Allowable	Desired
300"100-.200"125-.175"

PISTONS, PINS, RINGS						
Engine	PISTONS	PINS		RINGS		
	Clearance	Piston Fit	Rod Fit	Rings	End Gap	Side Clearance
300"	.0014-.0022"	.0002-.0004"	Press Fit	1 2 3	.010-.020" .010-.020" .010-.035"	.0019-.0036" .002-.004" ⓪

⓪ — Oil ring should be a slight snug fit in groove.

OIL PAN

See Oil Pan Removal at end of ENGINE Section.

PISTON & ROD ASSEMBLY

Following procedure is with cylinder head, oil pan and oil pump removed from engine.

Removal — 1) Turn crankshaft until piston to be removed is at bottom of stroke. Place cloth or shop towel lightly soaked with oil on head of piston to collect metal cutting from cylinder ridge.

2) Remove any ridge and deposits from upper end of cylinder bore using suitable ridge cutter. Follow instructions furnished by tool manufacturer. **CAUTION** — Never cut into ring travel area in excess of 1/32" when removing ridges.

3) Make sure all connecting rod caps are marked to the appropriate pistons to ensure installation in original locations. Remove connecting rod cap.

4) Push connecting rod and piston out of top of cylinder using handle end of a hammer. Avoid damage to crankshaft journal or cylinder wall when removing piston and rod.

Installation — 1) Oil piston rings, piston, and cylinder wall with light engine oil. Install piston into original cylinder making sure ring gaps are spaced properly on piston as shown in Fig. 11. Install a ring compressor on piston.

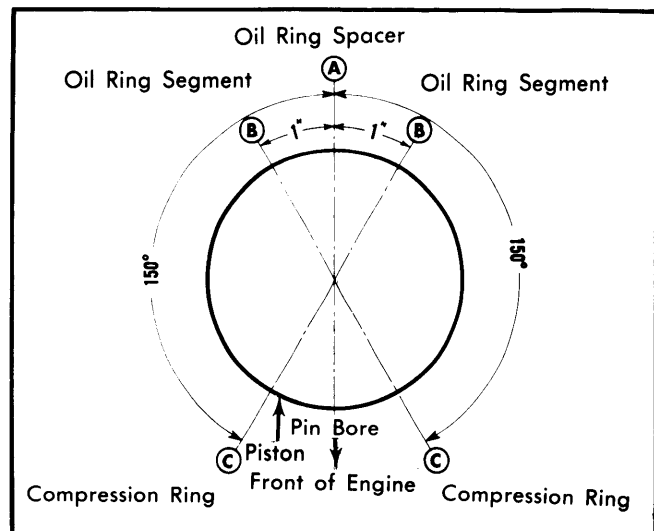


Fig. 11 Correct Spacing for Piston Rings

300" 6 CYL. ENGINE (Cont.)

2) Insert rod and piston assembly into cylinder bore and guide rod over crankshaft journal. **NOTE** — Arrow on piston top should point towards front of engine. Tap piston into cylinder bore using wooden handle tool until rod seats on crankshaft journal, install and tighten rod cap. Repeat procedure for each piston removed.

FITTING PISTONS

- 1) Calculate size of piston to be used by measuring cylinder bore at right angles to centerline of crankshaft below ring travel.
- 2) Measure piston diameter in line with centerline of piston pin and at 90° to piston pin axis.
- 3) Make sure that both piston and cylinder block are at normal room temperature (70°F) when fitting.

PISTON PINS

Removal — Using arbor press and suitable tool (T65L-6135-C), press piston pin from piston and connecting rod.

Installation — Start piston pin in piston and connecting rod. Using arbor press and suitable tool (T65L-6135-C), press piston pin through piston and connecting rod until pin is centered in connecting rod.

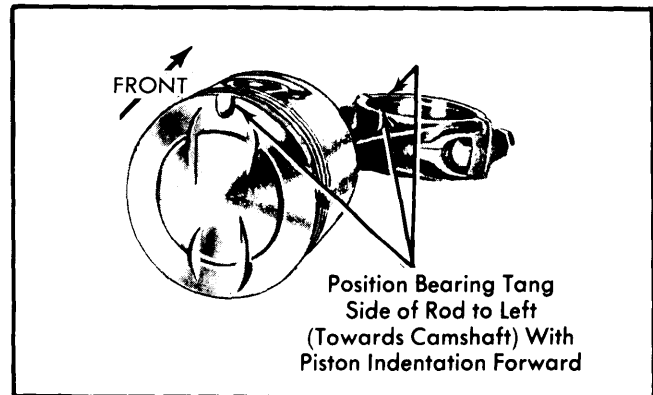


Fig. 12 Piston and Connecting Rod Assembly

CRANKSHAFT MAIN & CONNECTING ROD BEARINGS							
	MAIN BEARINGS			CONNECTING ROD BEARINGS			
Engine	Journal Diam.	Clearance	Thrust Bearing	Crankshaft End Play	Journal Diam.	Clearance	Side Play
300"	2.3982-2.3990"	.0008-.0015"	No. 5	.004-.008"	2.1228-2.1236"	.0008-.0015"	.006-.013"

MAIN & CONNECTING ROD BEARINGS

Removal — Remove oil pan as previously outlined and proceed as follows:

- 1) To change connecting rod bearings, remove and inspect connecting rod caps for cylinder identification to ensure correct position for replacement. With crankshaft lined up in center of cylinder bore, push piston upwards into block enough to allow removal of upper half of bearing.
- 2) Mark main bearing caps for identification purposes before removal. Remove main bearing cap. Remove upper half of main bearing by inserting suitable tool (6331-B) in oil hole of crankshaft, and slowly rotate crankshaft in direction of engine rotation to force out upper half of main bearing.

NOTE — Replace only one bearing at a time, leaving other bearings secured until ready to be changed.

Installation — Thoroughly clean all bearing surfaces and proceed as follows:

1) Determine crankshaft bearing journal clearance using Plastigage method. When checking main bearings, place a jack under counterweight adjoining bearing being gauged to avoid weight of crankshaft compressing Plastigage and giving erroneous readings. Place Plastigage on bearing surface over full width of bearing cap and about ¼" off center. Fit main cap or rod cap and torque to specified tightness. Remove cap and check width of Plastigage using scale provided with Plastigage.

2) If bearing clearance is excessive, a .001" or .002" undersize bearing half may be used in combination with a standard

size bearing half. If .002" undersize main bearings are used on more than one journal, they may be positioned in engine block rather than in bearing cap. If standard and .002" undersize combination did not bring bearing clearance within specified limits, crankshaft will have to be refinished and undersized bearings installed.

3) After rod bearings have been fitted, apply light coat of engine oil to journals and bearings. With crankshaft throw to bottom of stroke and upper half of rod bearing installed, move piston down until connecting rod bearing seats on journal. Install connecting rod cap and tighten. Check connecting rod side clearance.

4) To install upper main bearing, lubricate bearing with engine oil and place plain end of bearing over shaft on locking tang side of block. Partially insert bearing to allow suitable tool (6331-E) to be inserted into oil hole in crankshaft journal. Rotate crankshaft in opposite direction of engine rotation until bearing tang is seated. Remove bearing tool, install bearing cap and tighten.

THRUST BEARING ALIGNMENT

Install thrust bearing cap after all other main caps have been tightened. Install thrust bearing cap with bolts finger tight. Pry crankshaft forward against thrust surface of upper half of bearing. Hold crankshaft forward and pry thrust bearing cap to rear. This will align thrust surfaces of both halves of bearing. Retain forward pressure on crankshaft and torque cap bolts to specifications.

300" 6 CYL. ENGINE (Cont.)

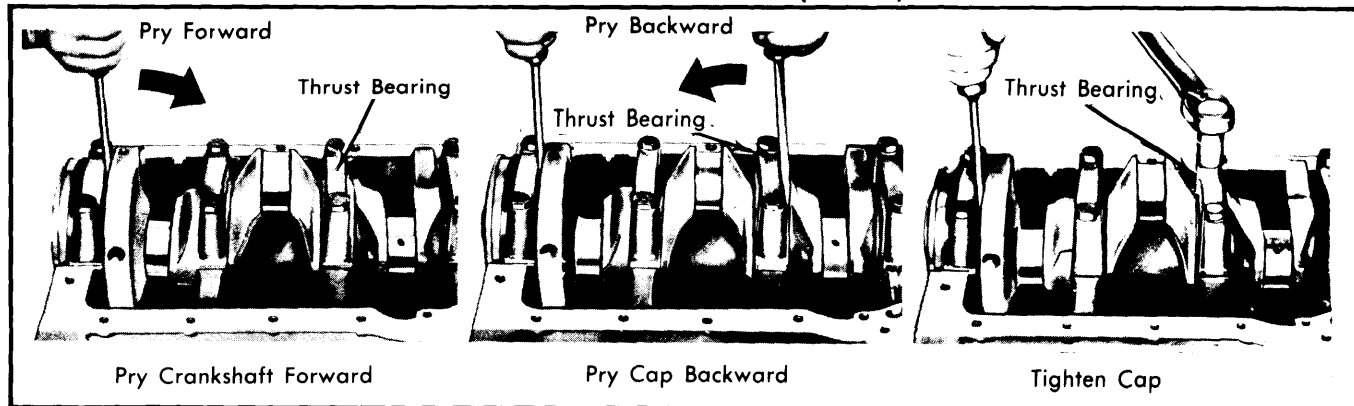


Fig. 13 Aligning Thrust Bearing

REAR MAIN BEARING OIL SEAL

Removal - 1) **NOTE** - If oil seal is being replaced at same time as rear main bearing replacement, engine must be removed from vehicle. Remove transmission, flywheel assembly, and engine rear cover plate.

2) Use an awl or other suitable tool to punch two holes in crankshaft rear oil seal. Punch holes on opposite sides of crankshaft and just above bearing cap-to-cylinder block split line.

3) Install sheet metal screw in each hole and pry out rear oil seal using two large screwdrivers or small pry bars. Avoid scratching or damaging crankshaft oil seal surface.

Installation - 1) Coat new oil seal and crankshaft with light film of engine oil. Start seal in recess with seal lip facing forward.

2) Install seal using suitable tool (T65L-6701-A or equivalent) to pressure seal into place until tool contacts cylinder block surface. Inspect seal for any possible damage.

3) Replace engine rear cover plate, flywheel, and transmission.

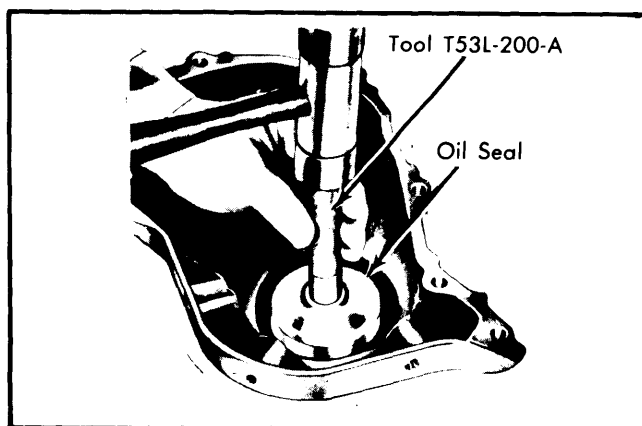


Fig. 14 Installing Front Cover Oil Seal

ENGINE FRONT COVER

Removal - Drain cooling system and crankcase, then remove radiator. Remove alternator adjusting arm bolt, drive belt, and then swing adjusting arm to one side. Remove crankshaft damper. Remove oil pan, oil pump screen and inlet tube assembly. Remove front cover and gasket.

Installation - Replace front cover oil seal. Install an alignment tool into bore of front cover, then install cover, gasket, and alignment tool to engine. Install and tighten front cover attaching bolts. Install remaining components in reverse of removal procedure.

FRONT COVER OIL SEAL

Removal & Installation - With front cover removed from engine, drive oil seal out of cover using suitable pin punch. Clean out recess in cover. Coat new seal with grease and drive in seal until seal is fully seated in front cover recess. Check seal after installation to see that spring is properly positioned in seal.

CAMSHAFT			
Engine	Journal Diam.	Clearance	Lobe Lift
300"	2.017-2.018"	② .001-.003"	① .2490"

① - Intake and exhaust have same lift.

② - End play is .001-.007".

TIMING GEARS

Removal & Installation - 1) Drain cooling system and crankcase. Remove front engine cover as previously outlined. Check camshaft end play with a dial indicator. End play should not exceed .009". Check timing gear runout with a dial indicator. Runout should not exceed .006". Crank engine over until timing marks are aligned as shown in Fig. 15. Use a gear puller to remove camshaft and crankshaft gears.

2) Ensure that key and spacer are properly installed. Align gear keyway with key and install camshaft gear and crankshaft gear. Check that timing marks line up on camshaft and crankshaft gears. Install front cover and related components.

300" 6 CYL. ENGINE (Cont.)

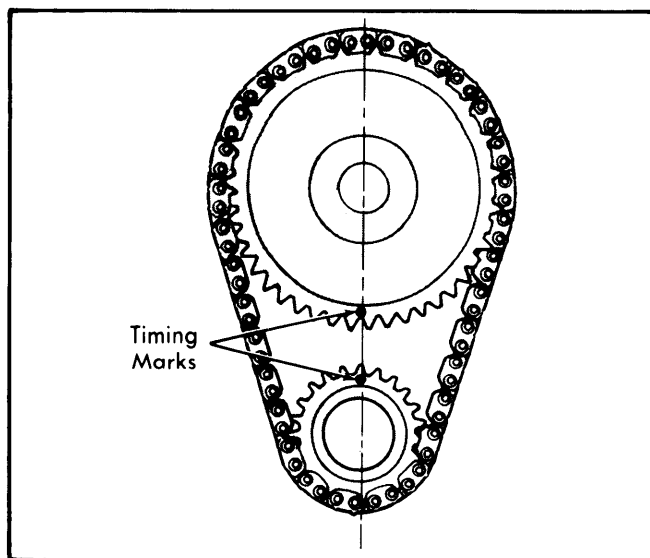


Fig. 15 Aligning Timing Marks

CAMSHAFT

Removal — Drain cooling system and crankcase. Remove radiator, valve lifters, front cover, oil pump and oil pan. Disconnect fuel lines at fuel pump, remove fuel pump attaching bolts, and position fuel pump to one side. Disconnect wires and vacuum line to distributor, then remove distributor. Turn crankshaft to align timing marks as shown in Fig. 15. Remove camshaft thrust plate screws. Carefully remove camshaft taking care not to damage camshaft lobes.

Installation — Coat camshaft lobes with Lubriplate and coat journals with engine oil. Carefully slide camshaft through bearings and install thrust plate with oil groove toward rear of engine and tighten bolts. Replace oil seal in front cover. Reverse removal procedure for remaining components.

CAMSHAFT BEARINGS

Removal & Installation — Remove engine from vehicle and remove flywheel. Remove camshaft and rear bearing bore plug. Remove crankshaft and push pistons to top of cylinders. Using a driver-puller tool (T65L-6250-A), remove camshaft bearings. Position new bearings at bearing bores and press into place while noting the following: Oil holes in bearings

must be aligned with oil holes in cylinder block. Front bearing must be installed below front face of cylinder block at a distance of .020-.035".

CAMSHAFT END THRUST

With engine front cover removed, push camshaft toward rear of engine and install dial indicator so indicator point is on camshaft sprocket cap screw. Zero the dial indicator. Position large screwdriver between camshaft sprocket and block. Pull camshaft forward and then release. If dial indicator reading is not within specifications, replace thrust plate.

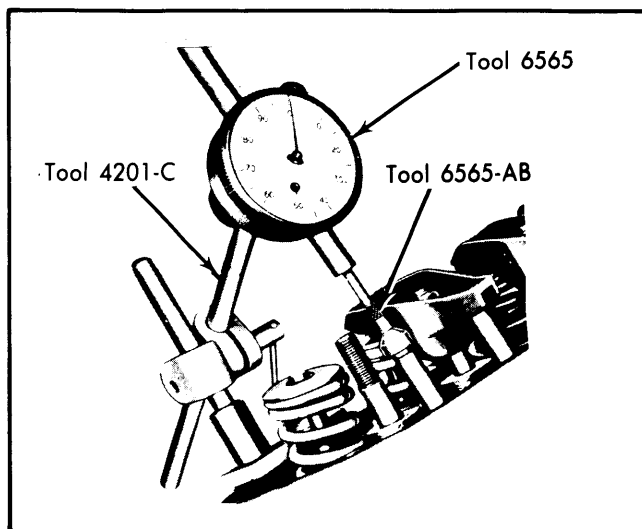


Fig. 17 Checking Camshaft Lobe Lift

CAM LOBE LIFT

Remove rocker arm cover, stud nut, fulcrum seat, and rocker arm. Check lift of each lobe in consecutive order. Using a dial indicator, position point on end of push rod and in same plane as push rod movement. Rotate crankshaft until lifter and push rod are at lowest position and zero the indicator. Rotate crankshaft slowly until push rod is in fully raised position. Check that total lift recorded with indicator is within specifications. If lift on any lobe is below specifications, camshaft and valve lifter operating on worn lobes must be replaced.

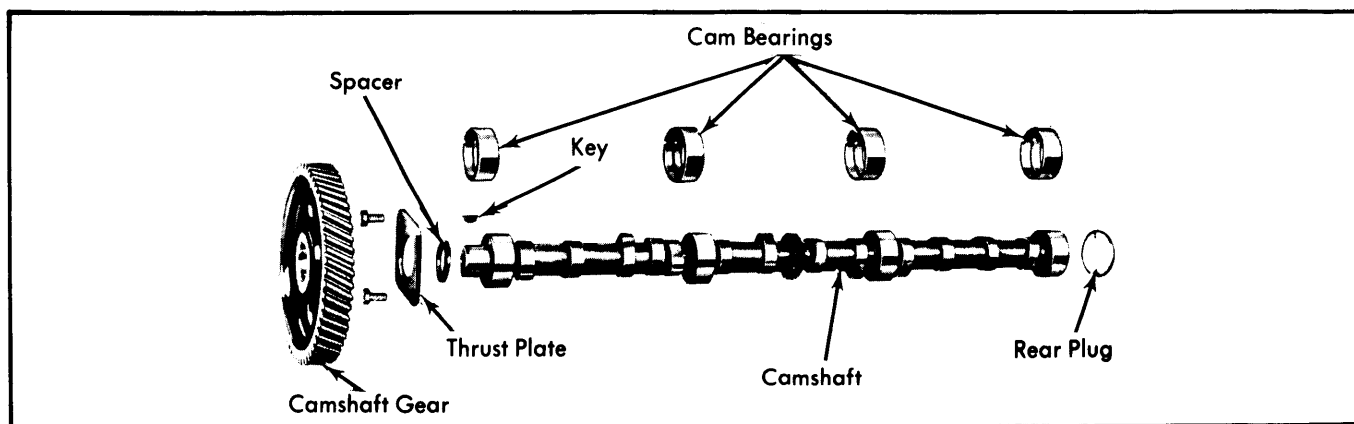


Fig. 16 Exploded View of Camshaft Assembly

300" 6 CYL. ENGINE (Cont.)

ENGINE OILING

Crankcase Capacity — Capacity is 5 quarts. Add one quart with filter change.

Oil Filter — Replace filter at first oil change, then every second oil change after.

Normal Oil Pressure — Oil pressure at 2000 RPM should be 40-60 psi.

Pressure Regulator Valve — Located in pump body. Nonadjustable.

ENGINE OILING SYSTEM

Oil supply is picked up from pan by oil pump which routes oil through filter element to passages in block supplying crankshaft bearings, camshaft bearings, and lifters. Oil is moved up to top of engine by means of push rods from the lifters. Rocker arms are lubricated in this fashion. Oil is returned to pan through drain holes in head assembly which lead back down to oil pan.

Timing Gears — Lubricated by splash method from oil pan.

Oil Filter — Full flow externally mounted type located on left side of engine. Filter has integral by-pass valve and anti-drain back diaphragm. Filter is disposable, throw-away type.

OIL PUMP

Removal & Disassembly — Remove oil pan, remove attaching bolts and oil pump from engine. Remove oil inlet tube, cover attaching screws and cover. Remove inner rotor and shaft assembly, remove outer race. Drill small hole into oil pressure relief spring valve chamber cap, insert self-threading sheet metal screw into cap and pull from chamber. Remove spring and plunger.

Inspection and Reassembly — Clean, inspect, and oil all parts thoroughly. Install relief valve plunger, spring, and new cap. Stake cap into position. Install outer race and inner rotor and shaft assembly (see specifications for clearances). **NOTE** — Identification mark on rotor and on outer race both are to face bottom of pump. Inner rotor and shaft, and outer race are serviced as an assembly. Install cover and tighten cover bolts. Position oil inlet tube on oil pump, install new gasket, and tighten attaching bolts. Prime oil pump by submerging inlet port in oil and rotating shaft until oil flows from outer port.

Oil Pump Specifications	
Application	Specification
Relief Valve Spring Tension	20.6-22.6 lbs. @2.490"
Shaft-to-Housing Clearance.....	.0015-.0030"
Relief Valve Clearance.....	.0015-.0030"
Rotor Assembly End Clearance004" Max.
Outer Race-to-Housing Clearance.....	.001-.013"

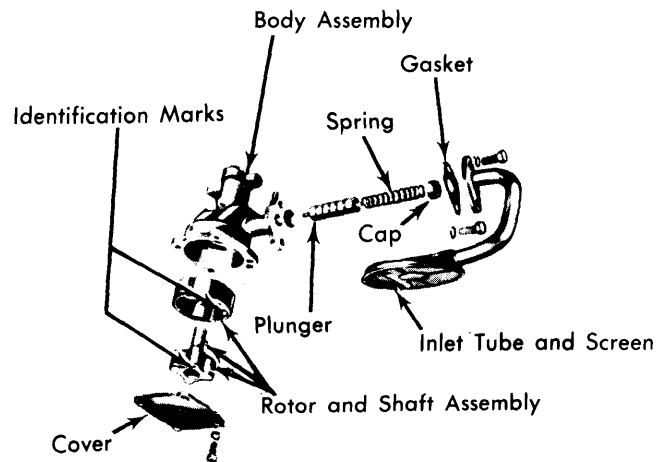


Fig. 19 Disassembled View of Oil Pump

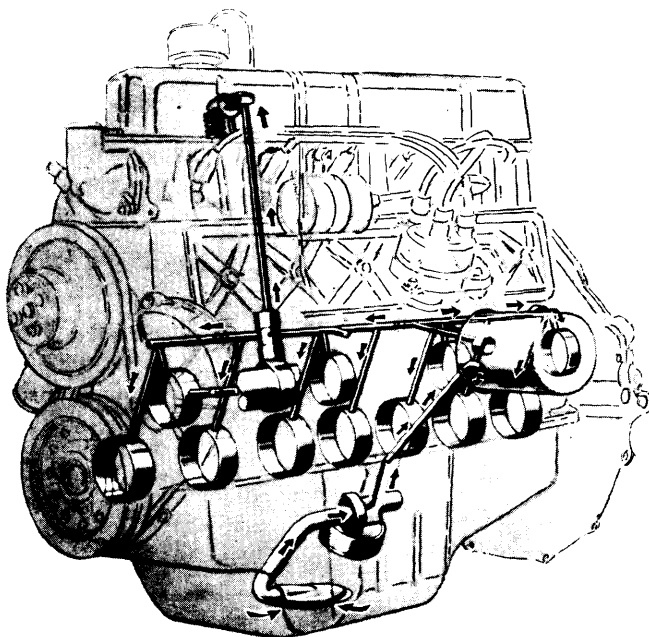


Fig. 18 Engine Oiling System

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Cylinder Head ①	70-85
Manifold-to-Cylinder Head.....	23-28
Intake Manifold-to-Exhaust Manifold.....	28-33
Oil Pick-Up Tube	10-15
Main Bearing Caps.....	60-70
Connecting Rod Caps	40-45
Vibration Damper.....	130-150
Camshaft Sprocket	
Camshaft Thrust Plate.....	
Flywheel	75-85
Rocker Arm Nut	
Engine Front Cover	
Rocker Arm Cover.....	4-7
Oil Pan-to-Block.....	10-15
Water Pump	15-20
Oil Pump.....	10-15

① — Tighten cylinder head bolts in three steps as follows:
 Step One — 55 ft. lbs., Step Two — 65 ft. lbs., Step Three — 70-85 ft. lbs.