GENERAL SPECIFICATIONS						
Engine	Net HP At RPM	Torque (Ft. Lbs. at RPM)	Compr. Ratio	Bore	Stroke	Displ. Cu. Ins.
350" 2-Bbl.	145 @ 3600	250 @ 2200	8.5-1	4.000"	3.48"	350"
350" 4-Bbl.	160 @ 3800	245 @ 2400	8.5-1	4.000"	3.48"	350"
350" 4-Bbl.	185 @ 4000	270 @ 2600	8.5-1	4.000"	3.48"	350"
350" 4-Bbl.	195 @ 4400	275 @ 2800	8.5-1	4.000"	3.48"	350"
350" 4-Bbl.	245 @ 5200	280 @ 4000	9.0-1	4.000"	3.48"	350"
350" 4-Bbl.	250 @ 5200	285 @ 4000	9.0-1	4.000"	3.48"	350"
400" 2-Bbl.	150 @ 3200	295 @ 2000	8.5-1	4.125"	3.75"	400"
400" 4-Bbl.	180 @ 3800	290 @ 2400	8.5-1	4.125"	3.75"	400"
454" 4-Bbl.	235 @ 4000	360 @ 2800	8.5-1	4.250"	4.00"	454"
454" 4-Bbl.	270 @ 4400	380 @ 2800	8.5-1	4.250"	4.00"	454"

NOTE – Horsepower and Torque figures given above are NET. Net Horsepower and Torque represents power at the flywheel when the engine is installed in a vehicle, with wide open throttle and all systems operating such as; air cleaner, exhaust system, water pump, generator, oil pump and air conditioning.

ENGINE IDENTIFICATION

Engine code is stamped on front right side of cylinder block. Suffix (code) letters designate engine displacement as follows:

Engine	HP	Code
350" 2-Bbl.	145	CMA,CMC,CMD
350" 4-Bbl.	160,185	CMK,CMH,CMJ CKD,CKB,CKH CKU,CLK
350" 4-Bbl.	195	CKZ,CLB CLC,CLA
350" 4-Bbl.	245	CLJ
350" 4-Bbl.	250	CLD,CLR
400" 2-Bbl.	150	CTA,CTB
400" 4-Bbl.	180	CTA,CTC,CTD CTK,CTJ
454" 4-Bbl.	235	CWA,CWX,CWD CWU,CWW CWY,CXA
454" 4-Bbl.	270	CWS,CWT CWM,CWR

Engine Classification – Chevrolet V8 engines are classified as either "Small V8" or "Mark IV V8" engines. The 454" engines are classified as "Mark IV V8's" and all others are "Small V8's".

ENGINE REMOVAL

Chevrolet (Except Corvette With Automatic Transmission) – Remove engine and transmission assembly as a unit. Remove hood, disconnect battery cables and proceed as follows:

1) Drain cooling system and remove radiator, shroud, fan blade and pulley. Disconnect all wires, water hoses, vacuum hoses, and exhaust pipes. Disconnect accelerator linkage at pedal lever and fuel line at fuel pump. Disconnect A/C and power steering components and position to one side with hoses attached.

2) Disconnect following at transmission; shift linkage, speedometer cable, cooler lines and TCS switch. Remove drive shaft. On manual transmissions, disconnect clutch linkage at cross-shaft and remove cross-shaft at frame bracket.

3) Attach lifting fixture to lift brackets and raise engine to remove weight from front mounts. Remove front mount through bolts. Remove rear mount to crossmember bolts and remove engine and transmission assembly from vehicle.

Corvette With Automatic Transmission – Engine is removed using same procedures as Chevrolet while noting the following:

1) Engine is removed with transmission left in vehicle. Do not remove radiator, drive shaft or rear crossmember bolts. Do not disconnect following at transmission; shift linkage, speedometer cable, cooler lines or TCS switch.

2) Remove converter-to-flywheel attaching bolts and support converter as engine is removed from vehicle.

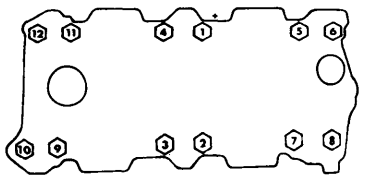
INTAKE MANIFOLD

Removal – 1) Drain radiator and remove air cleaner. Disconnect battery cables, upper radiator hose and heater hose at manifold, accelerator linkage at pedal lever, and fuel line at carburetor. Disconnect temperature sending unit and coil wires, power brake hose at carburetor base or manifold, and crankcase ventilation hoses as required.

2) Disconnect distributor vacuum hose and remove distributor cap. Mark rotor position to aid in reassembly and remove distributor assembly. Remove Delcotron upper bracket.

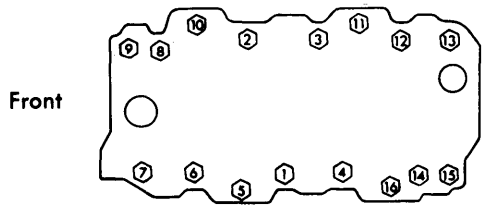
3) Remove coil and bracket. Remove manifold-to-head bolts and remove manifold and carburetor as an assembly from engine. Discard gaskets and seals.

Installation – Clean gasket and seal surfaces on manifold, cylinder heads and block. Install end seals on block. Install side gaskets on cylinder heads using sealing compound around water passages. Install manifold being careful not to displace gaskets and seals. Install manifold bolts and tighten in sequence (see illustration). *NOTE – If crankshaft has been rotated while distributor was removed, time distributor to No. 1 cylinder.*



6F6013

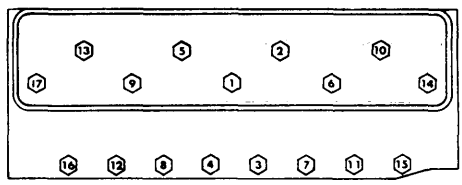
INTAKE MANIFOLD TIGHTENING SEQUENCE SMALL V8



5M221

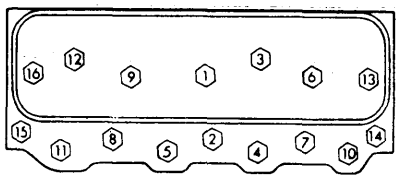
INTAKE MANIFOLD TIGHTENING SEQUENCE MARK IV V8

Installation – Clean gasket surfaces on block and cylinder heads. Clean head bolt threads and threads in block (dirt will affect torque). Use sealer on both sides of steel gaskets. *NOTE – Do not apply sealer to composition gaskets.* Place gaskets in position on block with bead up. Install cylinder heads and bolts (with sealing compound on threads). Tighten bolts evenly, a little at a time, in sequence (see illustration).



8F6010

CYLINDER HEAD TIGHTENING SEQUENCE SMALL V8



8F6009

CYLINDER HEAD TIGHTENING SEQUENCE MARK IV V8

CYLINDER HEAD

Removal – Remove intake manifold and carburetor as an assembly. Remove A/C and power steering components as necessary. Remove exhaust manifolds. Remove rocker arm cover, rocker arm nuts, balls and rocker arm. Remove push rods. *NOTE – Valve mechanism components must be reinstalled in same location.* Drain cooling system and remove cylinder head bolts. Remove cylinder head and gaskets.

VALVES

Engine & Valve	Head Diam.	Face Angle	Seat Angle	Seat Width	Stem Diameter	Stem Clearance	Valve Lift
350" & 400" (Exc. 245 & 250 HP)	Int. 1.940"	45°	46°	1/32-1/16"	.3414"	.001-.0027"	.3900"①
	Exh. 1.500"	45°	46°	1/16-3/32"	.3414"	.0012-.0029"	.4100"
350" 245 & 250 HP	Int. 2.020"	45°	46°	1/32-1/16"	.3414"	.001-.0027"	.4500"
	Exh. 1.600"	45°	46°	1/16-3/32"	.3414"	.0012-.0029"	.4600"
454"	Int. 2.065"	45°	46°	1/32-1/16"	.3719"	.001-.0027"	.4400"
	Exh. 1.720"	45°	46°	1/16-3/32"	.3717"	.0012-.0029"	.4400"

① – California vehicles .4006"

VALVE ARRANGEMENT

Small V8 – E-I-I-E-E-I-I-E Both banks, front to rear.
Mark IV V8 – E-I-E-I-E-I-E-I Left bank, front to rear.
I-E-I-E-I-E-I-E Right Bank, front to rear.

VALVE GUIDE SERVICING

Integral with cylinder head. If valve stem clearance excessive, ream to next oversize.

VALVE STEM OIL SEALS

Small V8 engines use an "O" ring type seal and Mark IV V8 use a cup type seal. "O" ring seal is installed on lower groove of valve stem and cup type over valve stem and guide.

VALVE SPRINGS

Engine	Free Length	PRESSURE (LBS.) Valve Closed	Valve Open
350" (Exc. 250 HP)			
Int.	2.03"	76-84 @ 1.70"	194-206 @ 1.25"
Exh.	1.91"	76-84 @ 1.61"	183-195 @ 1.20"
350" 250 HP			
Int. & Exh.	2.03"	76-84 @ 1.70"	194-206 @ 1.25"
400"			
Int. & Exh.	2.03"	76-84 @ 1.70"	194-206 @ 1.25"
454"			
Int.& Exh.	2.10"	74-86 @ 1.88"	288-312 @ 1.38"

VALVE SPRINGS

Removal (All Engines) – Remove rocker arm cover, spark plug, rocker arm and push rods on cylinders to be serviced. Install air line adapter to spark plug port and apply compressed air to hold valves in place. Use suitable tool (J-5892) to compress valve spring, then remove valve retainers, cap, spring and damper. Remove oil seal.

NOTE – Before reinstalling old springs, check with a suitable spring tester. Springs should be replaced if not within 10 lbs. of specified load.

Installation (Small V8) – Set valve spring, damper, valve shield and valve cap or rotator in place. Compress spring and install oil seal in lower groove of stem (ensure that seal is flat and not twisted). Install valve retainers and release compressor tool. Check that valve locks are properly seated in upper groove of valve stem.

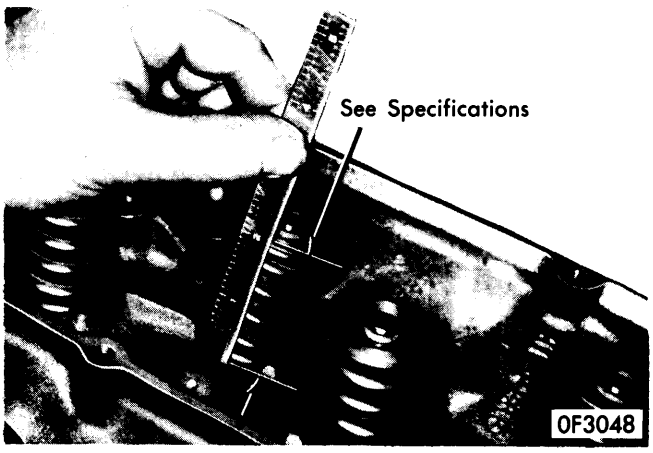
Installation (Mark IV V8) – Install valve stem oil seal over valve and valve guide. Set valve spring (with damper) and valve cap in place. Compress spring and install valve locks, then release compressor tool and check that retainers are seated properly in groove of valve stem.

VALVE SPRING INSTALLED HEIGHT

Measured from spring seat (or top of shim) to top of valve spring shield. If not within specifications, install 1/16" spacer under spring. *CAUTION – Do not shim spring to give installed height less than specification.*

Engine	①Installed Height
350" (Exc. 250 HP) Int.	1 5/8"
Exh.	1 23/32"
350" 250 HP & 400" Int. & Exh.	1 23/32"
454" Int. & Exh.	1 7/8"

① – All values are ±1/32"



MEASURING SPRING INSTALLED HEIGHT

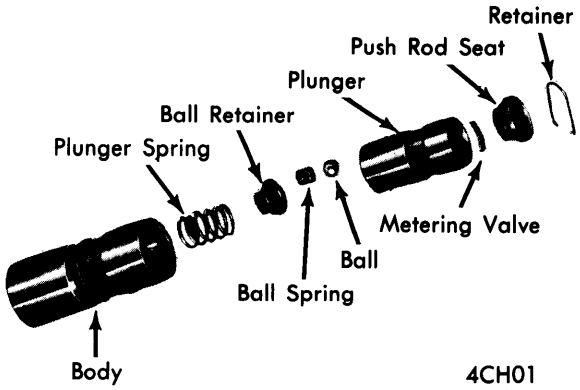
ROCKER ARM STUDS

Small V8 Engines – Studs are available in .003" and .013" oversize. Remove old stud using flat washers and nut on stud. Tighten nut to remove stud. Ream stud hole to proper oversize. Coat pressfit area of stud with hypoid axle lubricant. *CAUTION – Do not attempt to install an oversize stud without reaming stud hole to proper oversize.* Install new stud using suitable tool (Kent Moore No. J-6880) as a guide. Tool should bottom on head.

Mark IV Engines – Push rod guides are attached to cylinder head by rocker arm studs. Replace where necessary. Tighten rocker arm studs after coating threads on cylinder head end of new stud with sealer.

HYDRAULIC VALVE LIFTER ASSEMBLY

NOTE – Lifters are serviced as complete assemblies only. Parts are not interchangeable between lifters. If any component of lifter is worn or damaged, complete lifter must be replaced. If lifters are disassembled for cleaning and inspection, after reassembly they should be tested using a leak down tester following manufacturers instructions. Before installing lifters, coat bottom of lifter with Molykote.



HYDRAULIC VALVE LIFTER

HYDRAULIC VALVE LIFTER ADJUSTMENT

With No. 1 cylinder at TDC firing position, adjust exhaust valves No. 1,3,4,8 and intake valves 1,2,5,7 as follows:

1) Back off rocker arm stud adjusting nut until there is play in push rod, then tighten nut until push rod-to-rocker arm clearance is removed. Tighten nut one additional turn from this point (places lifter plunger in center of its travel).

2) Crank engine one complete revolution so No. 6 cylinder is at TDC firing position and adjust exhaust valves No. 2,5,6,7 and intake valves No. 3,4,6,8 in same manner.

PISTONS, PINS, RINGS						
	PISTONS	PINS		RINGS		
Engine	Clearance	Piston Fit	① Rod Fit	Rings	End Gap	Side Clearance
350" 145 HP	.0005-.0011"	.00015-.00025"	.0008-.0016"	1 2 3	.010-.020" .010-.020" .015-.055"	.0012-.0027" .0012-.0032" .005"
350" 160, 185 & 195 HP	.0007-.0013"	.00015-.00025"	.0008-.0016"	1 2 3	.010-.020" .013-.025" .015-.055"	.0012-.0032" .0012-.0027"② .002-.007"③
350" 245 & 250 HP	.0036-.0042"	.00045-.00055"	.0008-.0016"	1 2 3	.010-.020" .010-.020" .015-.055"	.0012-.0032" .0012-.0027" .005"
400"	.0014-.0020"	.00015-.00025"	.0008-.0016"	1 2 3	.010-.020" .010-.020" .015-.055"	.0012-.0027" .0012-.0032" .005"
454"	.0018-.0028"	.00025-.00035"	.0008-.0016"	1 2 3	.010-.020" .010-.020" .015-.055"	.0017-.0032" .0017-.0032" .005"

① — Interference fit.
② — Except 160 HP which is .0012-.0032".
③ — Except 185 & 195 HP which are .005".

OIL PAN

Removal (Exc. Corvette) — 1) Disconnect battery ground cable and remove distributor cap to prevent damage when engine is raised. Remove fan shroud retaining bolts. On Mark IV engines, place heavy cardboard between radiator and fan to avoid damage when engine is raised.

2) Disconnect exhaust pipes or crossover pipe. With automatic transmission, remove converter housing under pan and splash shield. On Chevelle with Mark IV engine and manual transmission, remove flywheel shield, starter and rear transmission mount-to-crossmember nut. On all Nova models, disconnect steering idler lever at frame, and swing linkage down. Rotate crankshaft until timing mark on damper is at 6 o'clock position.

3) On 400" engines and 454" with manual transmission (exc. Chevelle), disconnect starter brace at starter. Remove inboard starter bolt and loosen outboard bolt. Starter can now be swung outboard to gain additional clearance for oil pan removal.

4) Remove through bolts from engine front mounts. Raise engine until 2" wood blocks (Chevrolet & Nova) or 3" blocks (Chevelle) can be inserted under engine mounts. Lower engine on blocks. On Chevelle models with 454" and manual transmission, remove rear transmission mount to crossmember nut and raise rear of transmission. Remove oil pan from vehicle.

Removal (Corvette) — Disconnect battery, remove dipstick tube, raise vehicle and drain oil. Disconnect steering linkage idler at frame and remove oil pan.

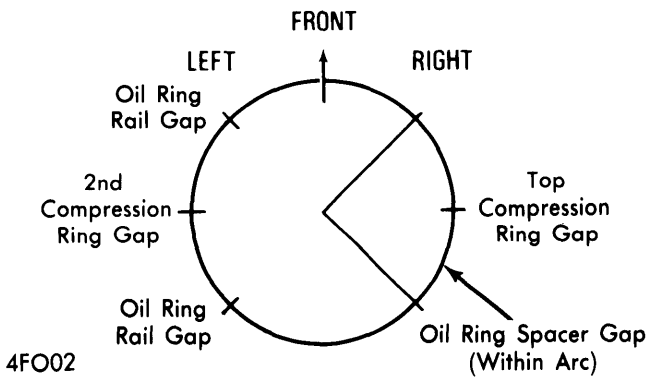
Installation (All Models) — Clean all gasket surfaces on block and oil pan. Install new side gaskets on block using suitable sealer as a retainer. Install front and rear pan seals, making sure ends butt with side gaskets. Install oil pan and tighten bolts.

PISTON & ROD ASSEMBLY

NOTE — New pistons must be installed in same cylinders for which they were fitted and used pistons in same cylinder from which they were removed.

Removal — With oil pan, oil pump and cylinder head removed, use a suitable ridge reamer to remove any ridge or deposits on upper end of cylinder bore. *NOTE — Piston must be at bottom of stroke and covered with cloth to collect cuttings.* Inspect connecting rods and caps for cylinder identification and mark as necessary. Remove rod cap and install suitable tool on connecting rod studs. Push piston and rod assembly out top of cylinder block.

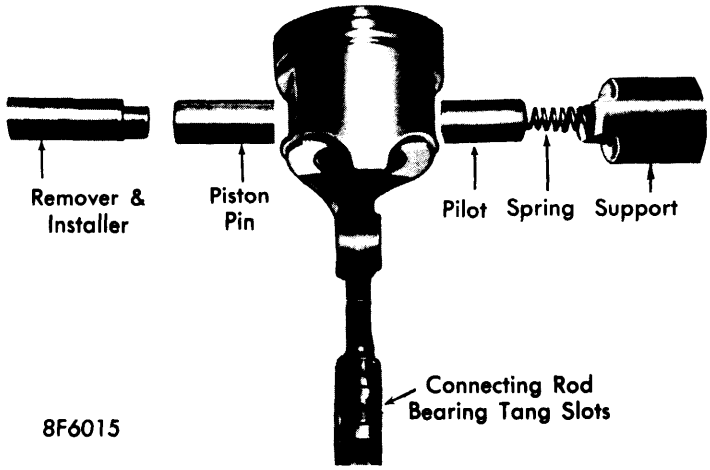
Installation — Lightly coat pistons, rings and cylinder walls with engine oil. Ensure ring gaps are properly spaced (see illustration) and install ring compressor on piston. Pistons are installed with connecting rod bearing tang slots on side opposite camshaft. *NOTE — Piston assemblies must be installed in correct cylinder. From front to rear, 1,3,5,7 on left bank and 2,4,6,8 on right bank.* Guide connecting rod onto crankshaft journal while tapping piston head with hammer handle to seat connecting rod against crankshaft. Remove tool from studs and install mating rod cap. Tighten rod cap nuts.



RING GAP LOCATION

FITTING PISTONS

Measure pistons across centerline of piston pin. Measure cylinder bore diameter approximately 2 1/2" from top of bore. The difference between the two diameters will be the piston to bore clearance. If clearance exceeds specification, an oversize piston may be used.



PISTON PIN TOOL SETUP (TYPICAL)

PISTON PINS

Measure piston pin and bore in piston. If clearance is not within specifications, replace piston and pin. Use suitable tool set and arbor press (see illustration) to press pin in and out of rod. Check freedom of piston on pin after pressing operation.

CRANKSHAFT MAIN & CONNECTING ROD BEARINGS

Engine	MAIN BEARINGS				CONNECTING ROD BEARINGS		
	Journal Diam.	Clearance	Thrust Bearing	Crankshaft Endplay	Journal Diam.	Clearance	Sideplay
350" Exc. 245 & 250 HP	① 2.4489" ② 2.4486" ③ 2.4484"	① .0014" ② .0017" ③ .0025"	Rear	.002-.006"	2.0995"	.0013-.0035"	.008-.014"
350" 245 & 250 HP Auto. Trans.	① 2.4489" ② 2.4486" ③ 2.4484"	① .0025" ② .0019" ③ .0028"	Rear	.002-.006"	2.0095"	.0013-.0035"	.008-.014"
350" 245 & 250 HP Man. Trans.	① 2.4489" ② 2.4486" ③ 2.4484"	④ .0019" ③ .0028"	Rear	.002-.006"	2.0995"	.0013-.0035"	.008-.014"
400"	④ 2.6489" ③ 2.6484"	① .0014" ② .0017" ③ .0025"	Rear	.002-.006"	2.0995"	.0013-.0035"	.008-.014"
454"	① 2.7490" ② 2.7486" ③ 2.7483"	④ .0019" ③ .0032"	Rear	.006-.010"	2.1995"	.0009-.0025"	.015-.021"

① — No. 1 Bearing.
② — No. 2, 3, 4 Bearings.
③ — No. 5 Bearing.
④ — No. 1, 2, 3, 4 Bearings.

MAIN & CONNECTING ROD BEARINGS

NOTE — Following procedures are performed with oil pan and oil pump removed.

Connecting Rod Bearings — After ensuring rod caps are marked for cylinder identification, remove rod caps. Use Plastigage method to check for proper bearing clearances. If not within specifications, new bearings must be installed. New bearings are available in standard, .001" and .002" undersize. Selective fitting is required on each connecting rod. A standard bearing may be used in combination with a .001" undersize or a .002" undersize. Coat bearing surfaces with oil, install rod cap and tighten nuts.

Main Bearings — 1) Support crankshaft at both front and rear (damper and flywheel) and ensure that all bearing caps, other than one being checked, are tight. Starting with rear main bearing cap and working forward, remove one cap at a time and check bearing clearances using Plastigage method.

2) If clearances are not within specifications, new bearings are available in .001", .002", .010" and .020" undersize. One half of a standard size bearing can be used in conjunction with one half of a .001" undersize bearing to obtain proper clearance. *NOTE — Some production crankshafts are ground .009" undersize. A engine fitted with a undersize crankshaft is identified by .009" stamped on crankshaft counterweight forward of center main journal. A figure "9" will be stamped on block at left front oil pan rail.*

3) Remove all main bearing upper halves (except rear main) by inserting suitable tool in oil hole of crankshaft journal and rotating crankshaft clockwise to roll bearing from engine. Oil new upper bearing and insert plain (unnotched) end between crankshaft and indented (or notched) side of block. Rotate bearing into place.

4) To replace rear main bearing upper half, use a small drift punch and hammer to start bearing rotating out of block. *NOTE — Take care not to nick crankshaft journal.* Use a pair of pliers (with taped jaws) to hold bearing thrust surface to oil slinger and rotate crankshaft to remove bearing. Oil new bearing and insert plain (unnotched) end between crankshaft and indented (or notched) side of block. Use pliers, as in removing, to rotate bearing into place.

5) Main bearing caps are to be installed with arrow pointing forward. Tighten main bearing bolts except rear main. Torque rear main bolts 10-12 ft. lbs. and tap end of crankshaft first rearward, then forward to line up rear main bearing with crankshaft thrust face. Tighten all main bearing cap bolts. Rotate crankshaft to ensure there is no excessive drag.

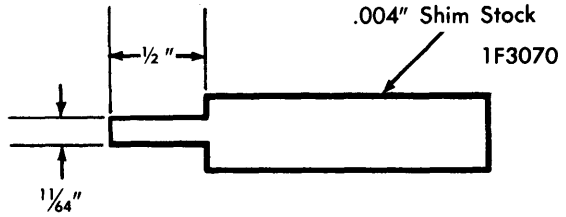
REAR MAIN BEARING OIL SEAL

NOTE — Replace upper and lower seal halves as a unit. Install seal with lip facing front of engine. With oil pan and oil pump removed, proceed as follows:

Removal — Remove rear main bearing cap and remove seal from cap. Use a small brass drift punch to tap upper seal until end protrudes far enough to be removed with pliers.

Installation — 1) Coat seal lips and bead with light engine oil, keeping oil off seal mating ends. To replace upper seal, fabricate a tool from .004" shim stock (see illustration). Position tip of tool between crankshaft and seal seat, then position seal between crankshaft and tip of tool so seal bead contacts tip of tool.

2) Roll seal around crankshaft using tool as a "shoehorn" to protect seal bead from sharp corner of seal seat surface. Remove tool, being careful not to withdraw seal. *CAUTION — Installation tool must remain in position until seal is positioned with both ends flush with block.*



REAR MAIN SEAL INSTALLING TOOL

3) Install lower seal in bearing cap, using tool as a "shoehorn". Feed seal into cap using light pressure with thumb and finger. Apply sealant to bearing cap interface, being careful to keep sealant off seal split line. Install bearing cap and tighten bolts.

TORSIONAL VIBRATION DAMPER

Removal — Remove fan, pulley, radiator and shroud. *NOTE — If camshaft removal is not to be performed, radiator will not have to be removed.* On Corvette models with Mark IV engine, remove engine front mount through bolts and raise front of engine enough for damper to clear frame crossmember. Remove accessory drive pulley and damper retaining bolt. Use puller to remove damper from crankshaft.

Installation — *CAUTION — Use suitable installer tool to prevent inertial weight section from walking off hub during installation.* Coat seal contact area of damper with oil. Place damper over key on crankshaft, pull damper onto shaft. Install damper bolt and tighten.

ENGINE FRONT COVER

Removal — Remove torsional damper and water pump. Remove crankcase front cover bolts and two oil pan to front cover attaching bolts. Remove front cover.

Installation — Clean all gasket surfaces and apply a ⅛" bead of silicone rubber sealer to joint formed at oil pan and cylinder block. Install front cover and new gaskets, then tighten bolts evenly.

FRONT COVER OIL SEAL

Front Cover Installed On Engine — Remove crankshaft pulley and hub or vibration damper and pry old oil seal out of cover from front side with screwdriver. Install seal with open end of seal toward inside of front cover and drive into place with suitable tool.

Front Cover Removed From Engine — Pry old oil seal out of cover from front side with screwdriver. Support cover at sealing area and install new seal with open end of seal toward inside of front cover. Drive into place with suitable tool.

CAMSHAFT

Engine	Journal Diam.	Clearance	Lobe Lift ①
350" Exc. 245 & 250 HP	1.8687"	.....	Int. .2600" Exh. .2733"
350" 245 & 250 HP	1.8687"	.....	Int. .3000" Exh. .3070"
400"	1.9487"	.....	Int. .2235" Exh. .2411"
454"	1.9487"	.....	Int. .2590" Exh. .2590"

① — ± .002"

TIMING CHAIN

Removal – Remove front cover and crank engine until timing marks are aligned (see illustration). Remove camshaft sprocket to camshaft bolts. Remove camshaft sprocket and timing chain together. *NOTE – Sprocket is a light press fit on camshaft, dislodge by tapping lightly on lower edge of sprocket.*

Installation – Install timing chain on camshaft sprocket and hold sprocket vertical with chain hanging and align marks on camshaft and crankshaft sprockets. Align dowel in camshaft with dowel hole in sprocket and install sprocket on camshaft. Draw sprocket onto camshaft using three mounting bolts. *CAUTION – Do not attempt to drive sprocket on shaft as plug at rear of camshaft can be dislodged. Tighten bolts and lubricate timing chain with oil.*

CAMSHAFT

Removal – Camshaft may be removed without removing engine from vehicle using following procedure:

1) Remove valve lifters, radiator, grille (except Nova) and engine front cover. On Nova remove both front mount through bolts and remove right motor mount, then lower engine on frame, remove two center and one lower bolt securing hood catch support to grille and radiator support.

2) Remove fuel pump and push rod. Remove camshaft sprocket and timing chain. Tap sprocket with plastic mallet to loosen it from shaft. Remove camshaft.

Installation – Coat camshaft lobes with Molykote and journals with engine oil. Reverse removal procedure.

CAMSHAFT BEARINGS

NOTE – Following procedures are done with crankshaft and camshaft removed. If piston assemblies remain in engine, tape connecting rods to cylinder walls so they will not be in the way while replacing bearings.

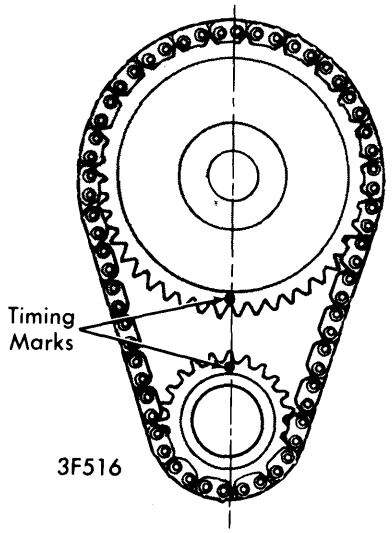
Removal – 1) Drive camshaft rear plug from cylinder block. Using suitable tool (J-6098) with nut and thrust washer installed to end of threads, index pilot in front bearing and install puller screw through pilot. Install remover and installer tool, with shoulder toward bearing, making sure sufficient number of threads are engaged. *NOTE – Remove bearings nearest center of engine first.*

2) Using two wrenches, hold puller screw while turning nut. When bearing has been pulled from bore, remove tool and bearing from puller screw. Remove remaining bearings (except front and rear) in same manner. It is necessary to index pilot in rear bearing to remove rear intermediate bearing. Assemble remover and installer tool on driver handle and remove front and rear bearings by driving towards center of cylinder block.

Installation – Install front and rear bearings first. These bearings will act as guides for the pilot (tool) and will center remaining bearings as they are pulled into place. As each bearing is installed, make sure oil holes in bearing are aligned with oil holes in block. After all bearings have been installed, install new rear camshaft plug. *NOTE – Plug should be installed flush to 1/32" deep and be parallel with rear surface of block.*

CAMSHAFT LOBE LIFT

Remove rocker arm. Attach dial indicator to rocker arm stud or rocker arm cover mounting hole and adjust dial indicator to seat in push rod cup. *NOTE – Be sure push rod is seated in lifter socket.* Rotate crankshaft slowly until lifter is on heel of cam lobe (push rod will be in lowest position). Zero dial indicator and slowly bump engine over until push rod is fully raised. *CAUTION – If using an auxilary starter switch, distributor primary lead must be disconnected from coil and ignition switch must be "ON". Failure to do this will result in damage to ignition switch.* Compare total lift on dial indicator with specifications. Continue to rotate engine until indicator reads zero (for accuracy check of dial indicator).



TIMING CHAIN SPROCKET ALIGNMENT

ENGINE OILING

Crankcase Capacity – All engines, 4 quarts. Add 1 quart with oil filter change.

Oil Filter – Replace at first oil change then every second oil change after that.

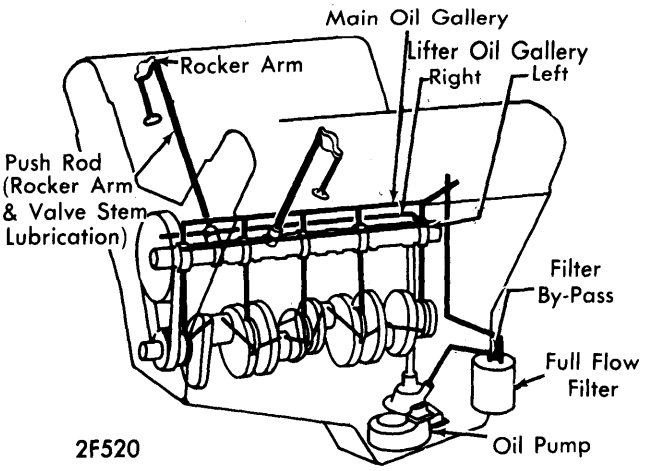
Normal Oil Pressure (Hot) – 40 psi @ 2000 RPM.

Pressure Regulator Valve – In oil pump body. Not adjustable.

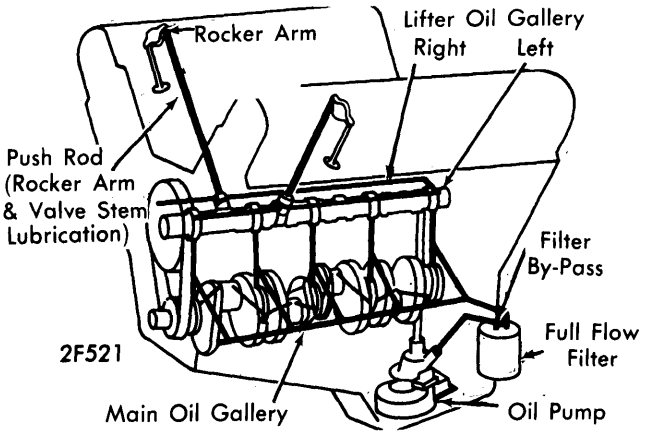
ENGINE OILING SYSTEM

Full pressure lubrication through a full flow oil filter is furnished by a gear-type oil pump. Main oil gallery feeds oil, through drilled passages, to camshaft and crankshaft to lubricate bearings. Valve lifter gallery feeds the valve lifters, which feed individual rocker arms through hollow push rods.

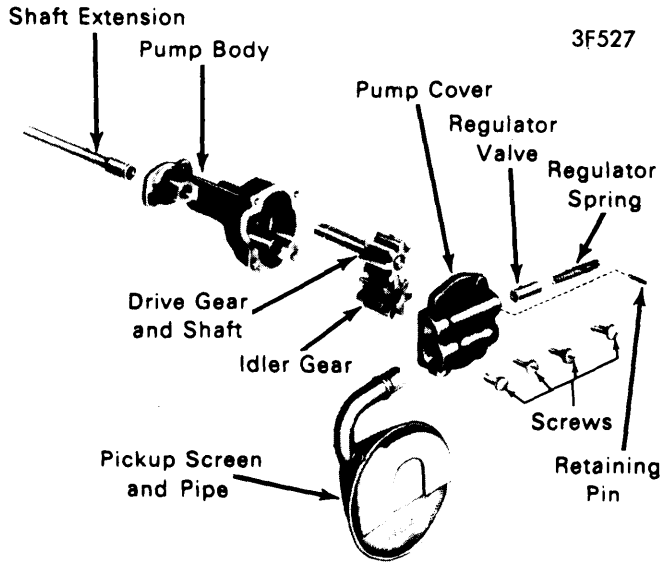
ENGINE OILING (Cont.)



ENGINE OILING SYSTEM – SMALL V8



ENGINE OILING SYSTEM – MARK IV V8

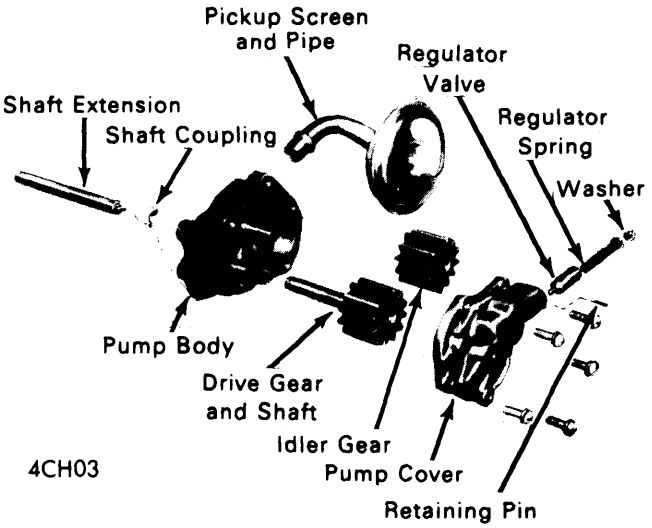


"SMALL V8" OIL PUMP ASSEMBLY

OIL PUMP

Removal – Mark gears so they may be reassembled with same teeth indexing. Do not disturb pickup screen on pipe. Screen is serviced as an assembly. *NOTE – If pump gears or body are damaged or worn, replacement of entire pump assembly is necessary.*

Installation – Apply sealer to end of pipe and tap in place. Install idler gear in pump body with smooth side of gear towards cover opening. *NOTE – Bottom of screen must be parallel with bottom of pan.*



"MARK IV" OIL PUMP ASSEMBLY

TIGHTENING SPECIFICATIONS

Application	350" & 400"	454"
Cylinder Head	65	80
Intake Manifold	30	30
Exhaust Manifold ①	20	20
Oil Pan-to-Crankcase		
1/4" Bolts	7	
5/16" Bolts	22	11
Oil Pan-to-Front Cover		5
Main Bearings		
7/16" Bolts ②	70	
1/2" Bolts		110
Flywheel	60	65
Con. Rod Cap	45	50
Rocker Arm Stud	50	50
Camshaft Sprocket	20	20
Front Cover	7	7
Water Pump	30	30
Oil Pump	65	65
Clutch Pressure Plate	35	35
Water Outlet	30	30

① – Inside bolts on 350" are 30 ft. lbs.
② – Outer bolts on 4 bolt caps are 65 ft. lbs.