1965-73 170", 198", 225" OHV 6 CYL. ENGINES

GENERAL SPECIFICATIONS							
Year	Displ. Cu. Ins.	Carburetor	HP at RPM	Torque (Ft. Lbs. at RPM)	Compr. Ratio	Bore	Stroke
1965-66	170" 225"	1-Bbl. 1-Bbl.	101 @ 4400 145 @ 4000	155 @ 2400 215 @ 2400	8.5-1 8.4-1	3.40" 3.40"	3.125" 4.125"
1967-69	170" 225"	1-Bbl. 1-Bbl.	115 @ 4400 145 @ 4000	155 @ 2400 215 @ 2400	8.5-1 8.4-1	3.40" 3.40"	3.125" 4.125"
1970-71	198" 225"	1-Bbl. 1-Bbl.	125 @ 4400 145 @ 4000	180 @ 2000 215 @ 2400	8.4-1 8.4-1	3.40" 3.40"	3.640" 4.125"
1972	198" 225"	1-Bbl. 1-Bbl.	100 @ 4400 110 @ 4000	160 @ 2400 185 @ 2000	8.4-1 8.4-1	3.40" 3.40"	3.640" 4.125"
1973	198" 225"	1-Bbl. 1-Bbl.	95@4000 105@4000	150@1600 185@1600	8.4-1 8.4-1	3.40" 3.40"	3.640" 4.125"

► *NET HORSEPOWER & TORQUE NOTE – Horsepower and Torque figures given for 1972 and later are NET. NET Horsepower and Torque represent power at the flywheel when the engine is installed in the vehicle, with wide open throttle and all systems operating such as; air cleaner, exhaust system, water pump, generator, oil pump and air conditioning.*

MODEL IDENTIFICATION

SERIAL NUMBER

1965-67 – Stamped on plate attached to left front door hinge post. Number includes identification as follows:

① ② ③ ④ ⑤
4 1 4 2 100001

1965

① - Car Make. **2** Dart, **4** Coronet, **1** Valiant, **3** Belvedere, **5** Fury.
② - Designates Model Series.
③ - Model Year. **5** (1965)
④ - Assembly Plant.
⑤ - Beginning vehicle number at each assembly plant.

1966-67

① ② ③ ④ ⑤ ⑥ ⑦
L L 41 A 6 2 100001

① - Car Make. **L** Dart, **W** Coronet, **X** Charger, **B** Barracuda, **V** Valiant, **R** Plymouth 116", **P** Plymouth 119".
② - Price Class.
③ - Body Stle.
④ - Engine Displacement. **A** 170", **B** 225", **C** Spec. Ord. 6 Cyl. (1967 Only).
⑤ - Model Year. **6** (1966), **7** (1967).
⑥ - Assembly Plant.
⑦ - Vehicle Serial Number.

1968-73 – Vehicle serial number is on a plate attached to instrument panel. Located near left windshield post and visible from outside of car. It will normally contain thirteen digits. The fifth digit identifies CID of engine as follows: **A** 170" & **B** 225" (1968-69), **B** 198", **C** 225" & **E** Special Order (1970-73). The sixth digit identifies model year as follows: **8** 1968, **9** 1969, etc.

ENGINE NUMBER

1965-67 – Engine number stamped on right side of block on a machined boss directly behind ignition coil. Number includes identification data as follows:

① ② ③ ④
V 17 8 4

1965

① – Model Year – **A** 1965. **AS** Denotes aluminum engine.
② – Displacement. **17** 170", **22** 225".
③ – Month Assembled. **8** August, etc.
④ – Day Assembled. **4** 4th day, etc.

① ② ③ ④ ⑤
B 170 1 3 R

1966-67

① – Model Year. **B** 1966, **C** 1967.
② – Displacement.
③ – Month Assembled. **1** January, etc.
④ – Day Assembled. **3** 3rd day, etc.
⑤ – Type of engine. **R** Regular fuel, **HP** High Performance.

1968-73 – On right side of block, adjacent to #1 Cylinder bore. See example below for pertinent coding:

① ②
PT 170 R 5136 2579

① – Engine CID.
② – Designates engine model. **R** (regular fuel). **L** (low compression). **P** (premium fuel). **S** (special engine).

1965-73 170", 198", 225" OHV 6 CYL. ENGINES (Cont.)

SPECIAL ENGINE MARKS		
Code	Location	Identification
"Maltese Cross"	Engine No. Pad	.001" undersize crankshaft journals.
"R" or "M"	Crankshaft ①	
"B" or "Maltese Cross and X"	Engine No. Pad	.010" undersize crankshaft journals.
"RX" or "MX"	Crankshaft ①	
"A"	Engine No. Pad	.020" oversize cylinder bores.
"♦"	Engine No. Pad	.008" oversize tappet bodies.
"X" or "O/S"	End of Cylinder Head	.005" oversize valve stems.
"LC"	Model Pad	Low Compression
"HP"	Model Pad	High Performance
"SP"	Model Pad	Special Police

① – Milled flat on crankshaft counterweight.

ENGINE REMOVAL

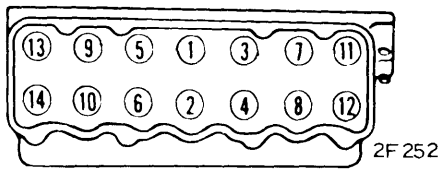
See Engine Removal at end of Engine Section.

MANIFOLD ASSEMBLY

Loosen three intake manifolt-to-exhaust manifold bolts before installing assembly. Install manifolds on cylinder head with cup side of conical bolt washers against manifold. Tighten nuts to specifications. Tighten intake manifold bolts to specifications.

CYLINDER HEAD INSTALLATION

Coat new gasket with suitable sealer, install gasket and head over dowels in block. Tighten all cylinder head bolts in sequence shown in diagram to specifications, then re tighten bolts again to specifications.



CYLINDER HEAD TIGHTENING SEQUENCE

VALVES								
Engine & Valve		Head Diam.	Face Angle	Seat Angle	Seat Width	Stem Diameter	Stem Clearance	Valve Lift
ALL 1965	Int.	1.620"	45°	45°	.078-.094"	.372-.373"	.001-.003"	.375"
	Exh.	1.360"	47°	45°	.047-.063"	.371-.372"	.002-.004"	.360"
170" 1966	Int.	1.620"	45°	45°	.078-.094"	.371-.373"	.001-.003"	.375"
	Exh.	1.360"	47°	45°	.047-.063"	.371-.372"	.002-.004"	.365"
1967-69	Int.	1.620"	45°	45°	.078-.094"	.372-.373"	.001-.003"	.395"
	Exh.	1.360"	47°	45°	.047-.063"	.371-.372"	.002-.004"	.395"
225" 1966-69	Int.	1.620"	45°	45°	.078-.094"	.372-.373"	.001-.003"	.395"
	Exh.	1.360"	47°	45°	.047-.063"	.371-.372"	.002-.004"	.395"
ALL 1970	Int.	1.620"	45°	45°	.078-.094"	.372-.373"	.001-.003"	.395"
	Exh.	1.360"	43°	45°	.047-.063"	.371-.372"	.002-.004"	.395"
1971-73	Int.	1.620"	45°	45°	① .078-.094"	.372-.373"	.001-.003"	.406"
	Exh.	1.360"	43°	45°	② .047-.063"	.371-.372"	.002-.004"	.414"

① – 1973 .070-.090".
② – 1973 .040-.060".

1965-73 170", 198", 225" OHV 6 CYL. ENGINES (Cont.)

VALVE ARRANGEMENT

E-I-E-I-E-I-I-E-I-E-I-E.

VALVE TAPPET CLEARANCE		
Engine & Year	Intake	Exhaust
170", 198", 225" 1965-73	.010" HOT	.020" HOT

NOTE: When setting tappet clearance, after engine reaches normal temperature, remove rocker arm cover and operate engine for an additional 5 minutes at 550 RPM before making adjustments.

VALVE GUIDE SERVICING

Integral with cylinder head. Ream to next oversize with Tool C-3433 (.005"), C-3430 (.015"), C-3427 (.030").

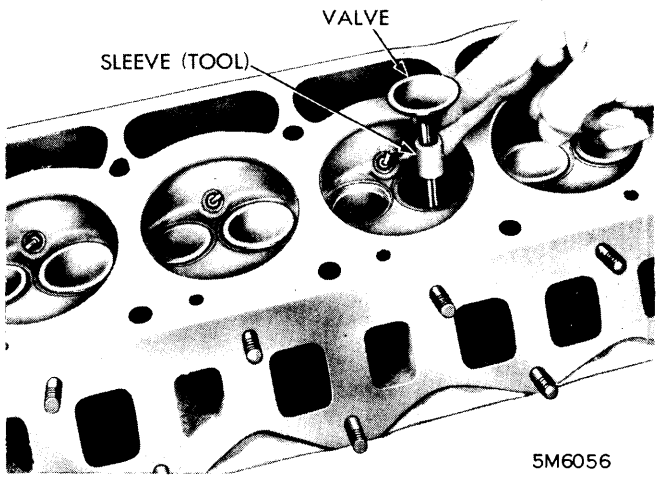
CAUTION: Do not attempt to ream valve guides from standard directly to .030". Use step procedure of .005, .015 and .030" so valve guides may be reamed true in relation to the valve seat.

CHECKING VALVE STEM-GUIDE WEAR

Use dial indicator to measure sideplay at head with suitable valve sleeve (see illustration) over the valve stem. Total dial indicator reading should not exceed .017" on intake and exhaust valves.

VALVE STEM OIL SEALS

Cup type used on all valves. Long seal used on intake valve, short seal used on exhaust valve.

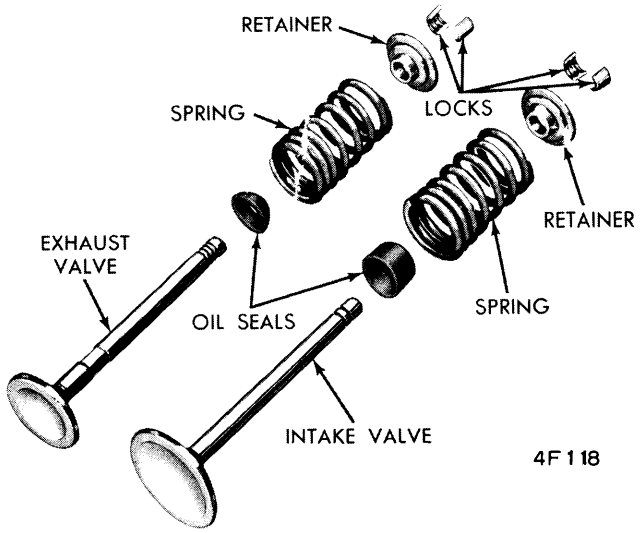


CHECKING WEAR WITH SLEEVES (TOOL C-3036)

VALVE SPRINGS			
Engine	Free Length	PRESSURE (LBS.)	
		Valve Closed	Valve Open
1965-73 (All)	1.92"	49-57@1.687"	137-150@1.313"

VALVE SPRING INSTALLED HEIGHT

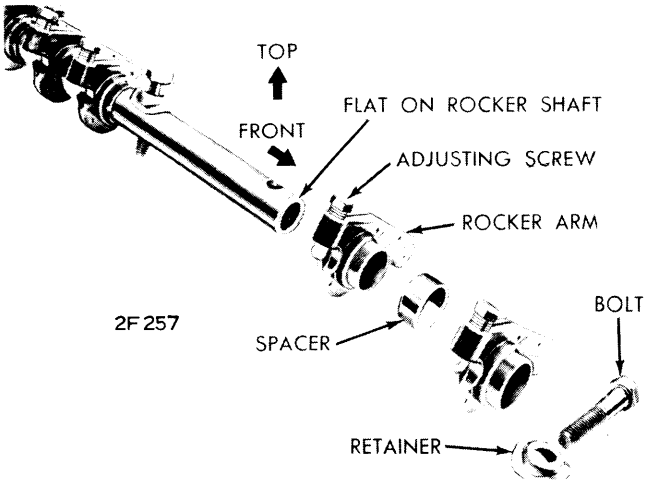
Measure from spring seat on head to underside of spring retainer. If height exceeds maximum of 1 11/16", install 1/16" spacer under spring to obtain normal height range of 1 5/8"-1 11/16".



VALVE ASSEMBLY

ROCKER ARM ASSEMBLY

See illustration for assembly of parts. To provide proper lubrication of rocker arms, the assembly must be installed with flat on end of shaft upward and toward front of engine. Be sure the shaft retainers are seated on rocker shaft and are not on extended bushing of rocker arm. Install long retainer at center position and long shaft bolt at rear of engine. Tighten bolts evenly to 25 Ft. Lbs.



ROCKER ARM ASSEMBLY

1965-73 170", 198", 225" OHV 6 CYL. ENGINES (Cont.)

PISTONS, PINS, RINGS						
	PISTONS	PINS		RINGS		
Engine	①Clearance	Piston Fit	Rod Fit	Rings	② End Gap	Side Clearance
170" & 225" 1964-65	.0005-.0015"	.00045-.00075"	.0007-.00012"	1 & 2 3	.010-.020" .015-.055"	.0015-.003" .0010-.003"
1966-69	.0005-.0015"	.00045-.00075"	.0007-.00012"	1 & 2 3	.010-.047" .015-.062"	.0015-.004" .0002-.005"
198-225" 1970-73	.0005-.0015"	.00045-.00075"	.0007-.00012"	1 & 2 3	.010-.047" .015-.062"	.0015-.004" .0002-.005"

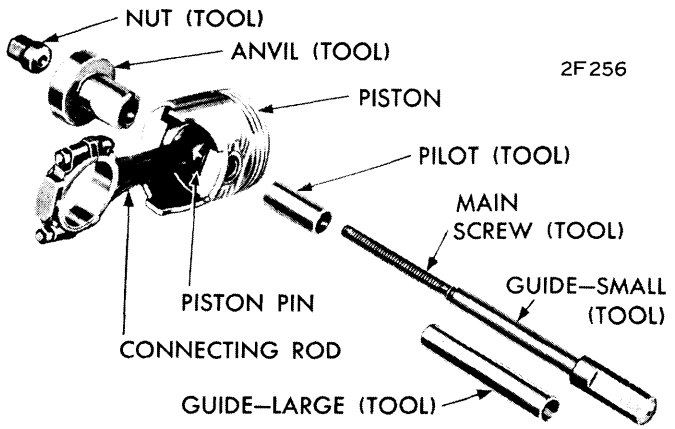
① - Measured at Top of Skirt.
② – 1973 .010-.020" .015-.055"

PISTON PIN REPLACEMENT

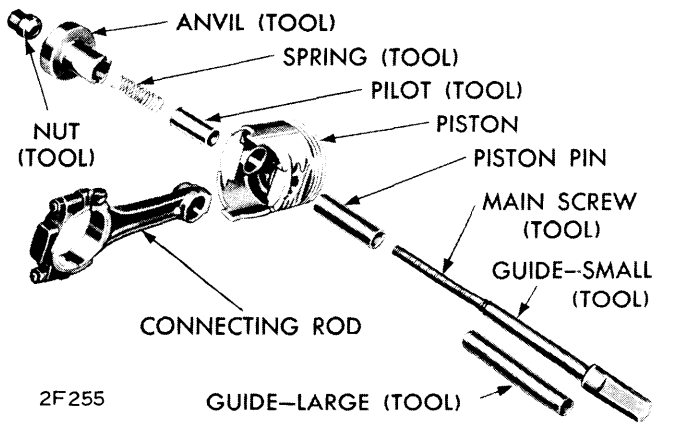
Piston pin must be a tight press fit in connecting rod.

Removal - Use Tool C-3724 to remove pin from piston and rod. *CAUTION - When pin falls free of rod, stop press to prevent damage to anvil of tool.*

Installation - Lubricate pin bores and use Tool C-3724. Press pin in until pin bottoms on pilot. To test for proper fit, assemble piston and rod with tool in same manner as for pin removal (see illustration). Clamp screw shaft end of tool in a vise. With torque wrench at nut (anvil end of tool) apply 15 ft. lbs. torque. If pin does not move, the fit is correct. If pin moves in rod, replace rod.



PISTON PIN REMOVAL



PISTON PIN INSTALLATION

FITTING PISTON

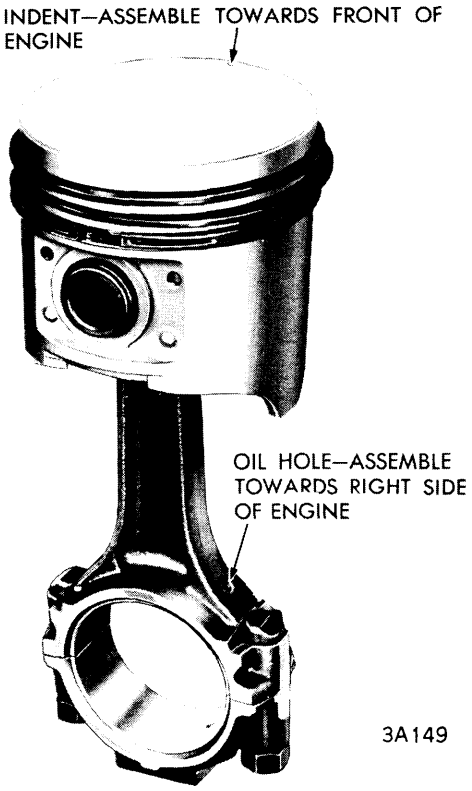
With piston and cylinder wall clean and dry, clearance between top of skirt and cylinder wall should be .0005-.0015". Measure 90° to piston pin axis. Cylinder bores on used engines should be measured halfway down cylinder bore and 90° to crankcase centerline.

PISTON & ROD INSTALLATION

Notch on piston must point toward front of engine. Squirt hole in connecting rod is toward right of engine.

PISTON RING INSTALLATION

Mark "top" on compression rings must be toward top of engine.



PISTON & ROD ASSEMBLY

1965-73 170", 198", 225" OHV 6 CYL. ENGINES (Cont.)

CRANKSHAFT MAIN & CONNECTING ROD BEARINGS							
	MAIN BEARINGS				CONNECTING ROD BEARINGS		
Year	Journal Diam. ①	Clearance ②	Thrust Bearing	Crankshaft Endplay	Journal Diam.	Clearance ②	Sideplay
1965-73	2.7495-2.7505"	.0005-.0015"	No. 3	.002-.007"	2.1865-2.1875"	.0005-.0015"	.006-.012"

① - Taper & Out-of-Round Limits .001". ② - Wear Limit .0025".

OIL PAN REMOVAL

See Oil Pan Removal at end of Engine Section.

MAIN BEARING REPLACEMENT

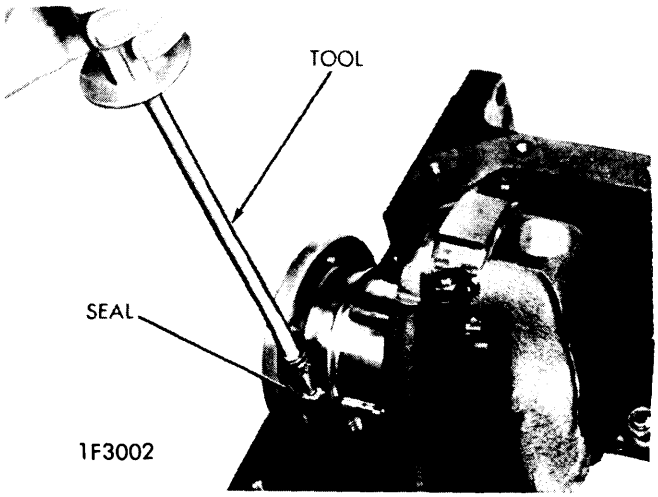
Bearings are interchangeable in an engine only as follows: Nos. 1,2,4, lower bearings; Nos. 2 & 4 upper bearings. No. 1 upper bearing is chamfered on tab side (red marking on edge) and must be installed with chamfer forward to provide timing chain lubrication. Bearing caps are not interchangeable and should be numbered before removal.

REAR MAIN BEARING OIL SEAL

Split rubber type seals may be replaced without removing crankshaft. This type must be installed as a pair, upper and lower seals and cannot be used or combined with old type rope seals. Install seals as follows:

Upper Seal – Remove upper seal with suitable tool (Chrysler C-4148), being careful not to mar crankshaft. Lubricate seal with engine oil. Hold seal (paint stripe to rear) tightly against crankshaft with thumb and rotate crankshaft while sliding seal into groove. Make sure that sharp edge of groove in block does not shave or nick the back edge of seal.

Lower Seal – Install lower half of seal into lower seal retainer with paint stripe to rear. Install rear main bearing cap, then install lower seal retainer and torque both units to specifications. *NOTE – Do not use sealer or cement on seal ends or lip.*



USING TOOL ON UPPER REAR MAIN OIL SEAL

ENGINE FRONT COVER

Remove radiator and fan, pull vibration damper using Tool C-3732 or suitable puller, loosen oil pan bolts to provide clearance between pan and lower flange of cover, remove front cover. To install, reverse removal procedure.

CRANKSHAFT FRONT SEAL REPLACEMENT (IN ENGINE FRONT COVER)

Cover must be removed to replace front seal. Use Tool C-3506 or suitable puller and drive to remove and install seal from inside of cover. With seal properly installed, neoprene face of seal should be tight against face of cover (a .0015" feeler should not enter between neoprene face and cover).

CAMSHAFT			
Engine	Journal Diam.	Clearance ①	Lobe Lift
(All)	No.1. 1.998" No.2 1.982" No.3 1.967" No.4 1.953"	.001-.003"	.....

① - Wear Limit .005".

CAMSHAFT & BEARINGS

Bearings (Cast Iron Eng.) are lead-based babbitt on steel. In Aluminum Engine, bearing inserts are not used; camshaft bearing journals run directly in finished bores in block.
Installation - No. 1 bearing must be installed 3/32" in from index with oil holes in block. Install new welch plug at rear (Tool C-897).
Camshaft Setting - Marks on sprockets must be adjacent and in line across shaft centers.

CAMSHAFT END THRUST

Taken by rear face of sprocket hub on front face of block. No thrust plate used.

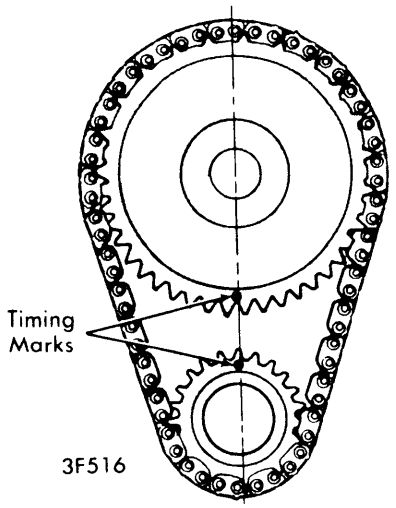
1965-73 170", 198", 225" OHV 6 CYL. ENGINES (Cont.)

CHECKING VALVE TIMING

Turn crankshaft until No. 6 exhaust valve is closing (No. 6 intake valve is opening). Turn No. 1 intake adjusting screw in one complete turn to remove lash. Adjust dial indicator to zero. Rotate crankshaft clockwise (normal running direction) until intake valve has lifted .019" (all 1964-65), .019" (1966 170"), .023" (1966 225"), .023" (all 1967-70), .029" (all 1971-73). Timing indicator of crankshaft pulley should now read from 12° BTDC to TDC.

TIMING CHAIN WEAR TEST

Use torque wrench on camshaft sprocket retaining bolt to rock camshaft sprocket back and forth while holding crankshaft sprocket stationary. Measure movement with scale at edge of chain link on camshaft sprocket. If total movement exceeds 3/16" (1965-72) or 1/8" (1973) with 15 ft. lbs. torque (head removed) or 30 ft. lbs. torque (head installed), replace chain.



VALVE TIMING MARKS

ENGINE OILING

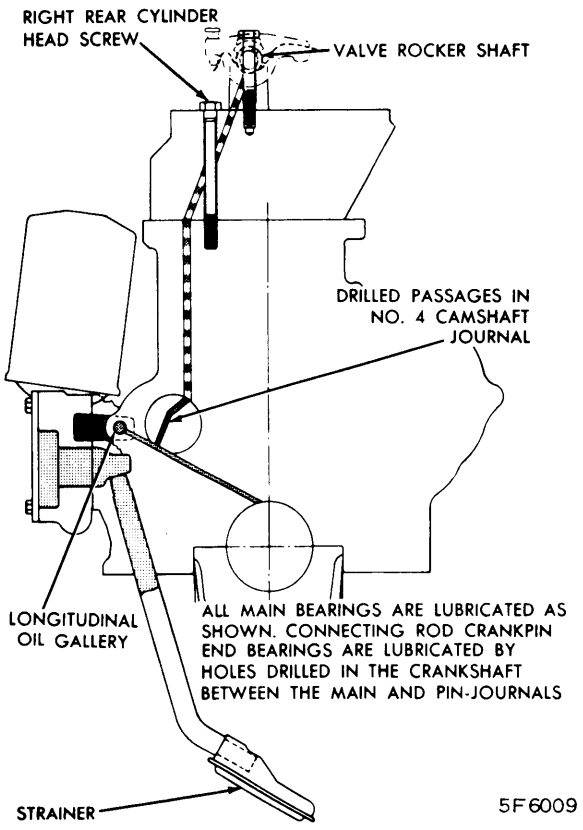
Crankcase Capacity - 4 qts. Add 1 qt. with filter change.

Oil Filter Replacement – Replace every second oil change. Follow installation directions printed on case of new filter.

Normal Oil Pressure – 45-60 Lbs. at 1000 RPM (1965-72) and 30-70 Lbs. at 2000 RPM (1973).

PRESSURE REGULATOR VALVE

In oil pump body. Not adjustable.



ENGINE OILING SYSTEM

ENGINE OILING SYSTEM

► *ALUMINUM ENGINE OILING SYSTEM NOTE: Same as for Cast Iron Eng. except that oil to main bearings passes through upper main bearing caps, then to bearings.*

Rotor type oil pump mounted externally on right side of crankcase (assembly consists of oil pump, oil filter, and oil pressure regulator). Pump draws oil from oil pan through fixed strainer and intake pipe screwed into crankcase wall at pump mounting pad. Pump delivers oil directly into main oil gallery extending along right side of crankcase (slot in gallery registers with pump outlet port when pump installed). Oil is distributed through main oil gallery by flow and spray.

OIL PUMP REMOVAL & INSTALLATION

Removal - 1) Drain radiator, disconnect upper and lower hoses, disconnect fuel line at pump inlet, disconnect throttle linkage at carburetor (lay linkage on engine).

2) Support engine with jack placed under right front corner of oil pan, remove front engine mounts.

3) Raise engine just enough to insert 2" x 4" x 8" wood block between right front of oil pan and "K" member front rail (end of block against right engine mount support at "K" member weld).

4) With engine resting on wood block, pry lightly on right side until engine and wood block moved approximately 1½" to left (engine will tip slightly toward left).

5) Remove oil filter, oil pump cover, and pump outer rotor *(CAUTION - Rotor will fall out when cover removed).*

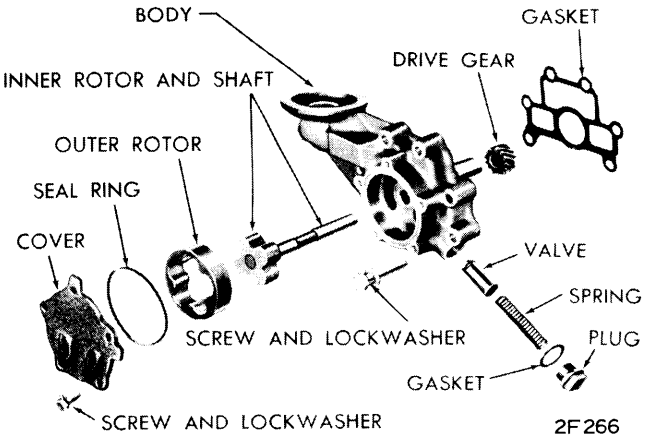
6) Remove pump mounting screws and slide pump out between engine and "K" member. *NOTE* - Above procedure will provide just enough clearance to slide pump out.

Installation - Reverse removal procedure. Install outer rotor, pump cover, and filter after pump installed in engine.

1965-73 170", 198", 225" OHV 6 CYL. ENGINES (Cont.)

ENGINE OILING (Cont.)

Oil Screen & Intake Pipe Installation - Turn pipe in until it is tight in block and right edge of screen is 1 1/8" in from vertical line projected down from inner flat surface of block on right side. Bottom of screen should be parallel with bottom of oil pan with 1/8" clearance when pan installed.



ENGINE OIL PUMP

OIL PUMP OVERHAUL

Replace all parts which measure less than specifications listed or where clearances exceed maximum listed.

Pump Cover Wear ..... .0015" Max.
(Place straightedge across inner face of cover, measure clearance between straightedge and face of cover with a feeler gauge).

Inner & Outer Rotor Thickness ..... .649" Min.
Outer Rotor Diameter ..... 2.469" Min.
Outer Rotor Clearance in Body ..... .012" Max.
Inner & Outer Rotor Clearance ..... .010" Max.
Rotor-to-Cover Clearance ..... .004" Max.

(Install rotors in pump body; place straightedge across pump face between bolt holes, measure clearance between straightedge and face of rotors with a feeler gauge).

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Cylinder Head	① 65-70
Intake Manifold (1965-72)	10
(1973)	20
Exhaust Manifold (1965-69)	17
(1970-72)	20
(1973)	10
Oil Pan	17
Main Bearing Caps	85
Connecting Rod Caps	45
Camshaft Sprocket	35
Engine Front Cover	15
Water Pump	30
Oil Pump	17
Oil Pump Cover	8
Flywheel Housing	50

① - Tighten all bolts twice in sequence when installing cylinder heads.

ENGINE NOTES

►*ALUMINUM ENGINE CAMSHAFT REAR PLUG REMOVAL NOTE:* To prevent damage to aluminum block, punch a hole in center of plug with 1/8" sharp punch (do not drill hole), then tap hole for threads with 10-24 tap. Use a steel bar 1/4" x 1" x 6" with 1/4" hole drilled in center, cross supports to plug pull with a 10-24 x 1 1/8" long screw placed in hole in bar. Remove all foreign material from block before inserting new plug.

►*BEARING CAP CAUTION:* Some 1970 engines do not have cylinder numbers or bearing journal numbers stamped on main bearing and connecting rod bearing caps. Should a bearing cap be removed, it should be inspected for a stamped identification number. If a number is not apparent, stamp or file an identification mark.

►*1971 225" ENGINE OIL PUMP LEAK NOTE:* Oil leakage on the 225" engine at the oil pump to block, may by caused by a slightly out of flat joint face on the cylinder block. After removal of pump, if no visual defects, reinstall pump using two gaskets.

►*OIL PUMP OR DISTRIBUTOR DRIVE SHAFT FAILURE NOTE:* If failure of the oil pump or distributor drive shaft is encountered, check flatness and squareness of oil pump mounting surface on rear main bearing cap. If any lack of uniformity in machined marks appears on the pump mounting surface, or if there is any interference of the drive shaft in the pump shaft when assembling, the bearing cap should be milled. *NOTE - Do not attempt to correct by hand methods.* Replace material removed by milling operation with shims. Extend threads for oil pump mounting screws with bottoming tap. Use 1½" long cap screws instead of original 1¼" screws.

►*ALUMINUM ENGINE MAIN BEARING NOTE:* Same as for cast iron engine except that oil feed holes in bearings are in a different location and require special inserts. *CAUTION - DO NOT use cast iron block original main bearing inserts in aluminum block.* Upper and lower bearing caps are cast iron and are line bored in complete sets. If replacement is required, all four upper and lower main bearing caps must be replaced with a matched set for proper alignment. Identification numbers are stamped on upper caps and cast into lower caps. When upper and lower caps are installed, bearing tab slots should be on left side of engine.