

# Oldsmobile V8 Engines

## 1968-73 350", 400" & 455" V8 ENGINES

GENERAL SPECIFICATIONS							
Year	Displ. Cu. Ins.	Carburetor	HP at RPM	Torque (Ft. Lbs. at RPM)	Compr. Ratio	Bore	Stroke
1968	350"	2-Bbl.	250@4400	355@2600	9.0-1	4.057"	3.385"
		4-Bbl.	310@4800	390@3200	10.25-1	4.057"	3.385"
	400"	2-Bbl.	290@4600	425@2400	9.0-1	3.870"	4.250"
		4-Bbl.	325@4800	440@3200	10.5-1	3.870"	4.250"
			350@4800	440@3200	10.5-1	3.870"	4.250"
		Ram Air Ram Air W-30	325@4800	440@3000	10.5-1	3.870"	4.250"
	455"		360@5400	440@3600	10.5-1	3.870"	4.250"
		2-Bbl.	310@4200	490@2400	9.0-1	4.126"	4.250"
			320@4200	500@2400	10.25-1	4.126"	4.250"
4-Bbl.		365@4600	510@3000	10.25-1	4.126"	4.250"	
Toronado Air Induction		375@4600	510@3000	10.25-1	4.126"	4.250"	
	400@4800	500@3200	10.25-1	4.126"	4.250"		
1969	350"	2-Bbl.	250@4400	355@2600	9.0-1	4.057"	3.385"
		4-Bbl.	310@4800	390@3200	10.25-1	4.057"	3.385"
	400"	4-Bbl.	325@4600	440@3000	10.5-1	3.870"	4.250"
		Auto. Trans. Man. Trans. W30	350@4800	440@3200	10.5-1	3.870"	4.250"
			260@5400	400@3600	10.5-1	3.870"	4.250"
455"	2-Bbl.	310@4200	490@2400	9.0-1	4.125"	4.250"	
	4-Bbl. Opt. & G.T.	365@4600	510@3000	10.25-1	4.125"	4.250"	
	390@5000	500@3200	10.25-1	4.125"	4.250"		
1970	350"	2-Bbl.	250@4400	355@2600	9.0-1	4.057"	3.385"
		4-Bbl.①	310@4800	390@3200	10.25-1	4.057"	3.385"
	455"	2-Bbl.	310@4200	510@3000	9.0-1	4.125"	4.250"
			320@4200	500@2400	10.25-1	4.125"	4.250"
		4-Bbl. Toronado Air Induction	365@4600	510@3000	10.25-1	4.125"	4.250"
	375@4600	510@3000	10.25-1	4.125"	4.250"		
	400@3200	500@3200	10.25-1	4.125"	4.250"		
1971	350"	2-Bbl.	240@4200	350@2400	8.5-1	4.057"	3.385"
		4-Bbl.	260@4600	360@3200	8.5-1	4.057"	3.385"
	455"	2-Bbl.	280@4000	455@2000	8.5-1	4.125"	4.250"
		4-Bbl.	320@4400	460@2800	8.5-1	4.125"	4.250"
		442 Toronado	340@4600	460@3200	8.5-1	4.125"	4.250"
	350@4400	465@2800	8.5-1	4.125"	4.250"		
1972	350"	2-Bbl.	160@4400	275@2400	8.1-1	4.057"	3.385"
		Dual Exhaust	175@4000	295@2600	8.1-1	4.057"	3.385"
		4-Bbl.	180@4000	275@2800	8.1-1	4.057"	3.385"
		Dual Exhaust	200@4400	300@3200	8.1-1	4.057"	3.385"
	455"	4-Bbl.	225@3600	360@2600	8.1-1	4.126"	4.250"
		Dual Exhaust	250@4200	370@2800	8.1-1	4.126"	4.250"
		Toronado	265@4200	375@2800	8.1-1	4.126"	4.250"
		442 Air Induction②	270@4400	370@3200	8.1-1	4.126"	4.250"
	300@4700	410@3200	8.1-1	4.126"	4.250"		
1973	350"	2-Bbl.	160@3800	275@2400	8.5-1	4.057"	3.385"
		4-Bbl.	180@3800	275@2800	8.5-1	4.057"	3.385"
	455"	4-Bbl.	225@3600	360@2600	8.5-1	4.126"	4.250"
		Dual Exhaust	250@4000	370@2800	8.5-1	4.126"	4.250"
		Man. Trans. Toronado	270@4200	370@3200	8.5-1	4.126"	4.250"
	250@4000	375@2800	8.5-1	4.126"	4.250"		

① — 350" Police engine, 10.5-1 compression ratio.

② — Not available in Calif.

► **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.

# Oldsmobile V8 Engines

## 1968-73 350", 400" & 455" V8 ENGINES (Cont.)

### ENGINE IDENTIFICATION

Sixth digit on identification plate, located on left upper instrument panel, indicates model year. Code letters above engine number, on oil fill tube, indicate engine type, horsepower, and other characteristics, as follows:

#### 1968

Engine	Man. Trans.	Auto. Trans.
350" 2-Bbl.	QI	QA,QB
Delmont 88	TL	TB,TD
4-Bbl.	QV	QN,QP
Delmont 88		TN
400" 2-Bbl.		QL
4-Bbl.	QW,QU	QR,QS,QT
455" 2-Bbl. Low Comp.	UJ	UC,UD
High Comp.		UA,UB
4-Bbl.		UN,UO
Toronado		US,UT,UV,UW

#### 1969

Engine	Man. Trans.	Auto. Trans.
350" 2-Bbl.	QI, TL	QA, QB, QJ, TB, TD, TC
4-Bbl.	QV	QN, QP
Hi Comp.	QX	
400" 4-Bbl.	QW	QR, QS
Hi Comp.	QU	QT
455" 2-Bbl.	UJ	UC, UD
4-Bbl.		UN, UO, UW, UL, US, UT, UV

#### 1970

Engine	Man. Trans.	Auto. Trans.
350" 2-Bbl.	QI, TL	QA, QJ, TD, TC
4-Bbl.	QV	QN, QP
Hi Comp.	QX	QD
455" 2-Bbl.	UJ	UC, UD
Hi Comp.		TX, TY
4-Bbl.	TU	TW, TV, TP, UN, UO
Air Induction	TS	TT
Police		UL
Toronado		US, UT
Air Induction		UW, UV

#### 1971

Engine	Man. Trans.	Auto. Trans.
350" 2-Bbl.	QI, TE	QA, QJ, TD, TC
4-Bbl.	QB, QO	QN, QP
455" 2-Bbl.	UE	UC, UD
4-Bbl.	TN, TP, TQ, TU	TW, TV, TA, UN
4-Bbl.		UO, US, UT
Air Induction	TS, TB	TL, TT

#### 1972

Engine	Man. Trans.	Auto. Trans.
350" 2-Bbl.	QA	QB, QC, QN, QO
4-Bbl.	QD, QE	QJ, QK, QP, QQ
455" 4-Bbl.	UD, UE	UA, UB, US, UT, UU, UV
Air Induction	UL, UN	UO

#### 1973

Application	Man. Trans.	Auto. Trans.
350" 2-Bbl.		QQ, QP, QS, QT, QN, QO
350" 4-Bbl.	QL, QD, QE, QC	QA, QB, QJ, QK, QU, QV
455" 4-Bbl.	UD	UA, UB, US, UT, UU, UV

### OIL PAN REMOVAL

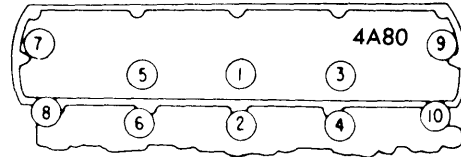
See *Oil Pan Removal* at end of *ENGINE* Section.

### ENGINE REMOVAL

See *Engine Removal* at end of *ENGINE* Section.

### CYLINDER HEAD INSTALLATION

Coat both sides of head gasket with suitable sealer (No. 1050026). Tighten cylinder head bolts, using sequence shown in illustration, first to 60 ft. lbs. then to 80-85 ft. lbs.

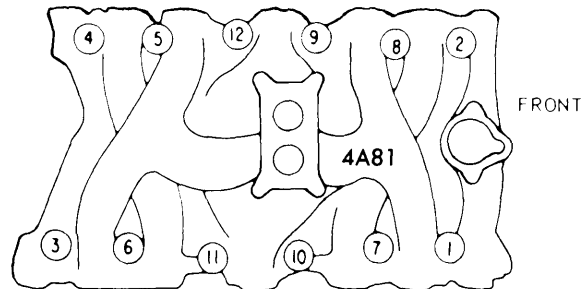


### CYLINDER HEAD TIGHTENING SEQUENCE

### INTAKE MANIFOLD INSTALLATION

Coat both sides of intake manifold gasket with suitable sealer (No. 1050026) and position gasket on head. Align end seals, ensuring they are fitted under edges of cylinder heads. Tighten manifold bolts, as shown in illustration, first to 15 ft. lbs. then to 35-40 ft. lbs.

*NOTE - It will be necessary to remove oil fill tube on 455" engines to provide removal clearance.*



### INTAKE MANIFOLD TIGHTENING SEQUENCE

### FITTING PISTONS

Using a .0015" x 1/2" x 12" feeler gauge with pull scale attached, check piston fit. Slip gauge between cylinder wall and inverted piston (pin and rings removed), at right angle to piston pin bore. Pull to withdraw feeler gauge should register 3-12 lbs. on scale.

# Oldsmobile V8 Engines

## 1968-73 350", 400" & 455" V8 ENGINES (Cont.)

PISTONS, PINS, RINGS						
Engine	PISTONS ① Clearance	PINS		RINGS		
		Piston Fit	Rod Fit	Rings	End Gap	Side Clearance
350" 1968-69	.00075-.00125"	.0003-.0005"	.0008-.0018"	1 & 2	.010-.020"	.002-.004"
				3	.015-.055"	.001-.005"
				1 & 2	.010-.020"	.0018-.0033"
				3	.015-.055"	.0006-.0096"
				1 & 2	.010-.020"	.0018-.0038"
3	.015-.055"	.0006-.0096"				
1970	.001-.002"	.0003-.0005"	.0008-.0018"	1 & 2	.010-.020"	.0018-.0033"
				3	.015-.055"	.0006-.0096"
1971	.001-.002"	.0003-.0005"	.0008-.0018"	1 & 2	.010-.020"	.0018-.0038"
				3	.015-.055"	.0006-.0096"
1972	.001-.002"	.0003-.0005"	.0008-.0018"	1 & 2	.010-.023"	.002-.004"
				3	.015-.055"	.0006-.0096"
1973	.001-.002"	.0003-.0005"	.0008-.0018"	1 & 2	.010-.023"	.0020-.0040"
				3	.015-.055"	.....
400" 1968-69	.001-.002"	.0003-.0005"	.0008-.0018"	1 & 2	.010-.020"	.002-.004"
				3	.015-.055"	.001-.010"
455" 1968-69	.001-.002"	.0003-.0005"	.0008-.0018"	1 & 2	.013-.023"	.002-.004"
				3	.015-.055"	.002-.008"
1970	.001-.002"	.0003-.0005"	.0008-.0018"	1 & 2	.013-.023"	.0018-.0033"
				3	.015-.055"	.0021-.0031"
1971	.001-.002"	.0003-.0005"	.0008-.0018"	1 & 2	.013-.023"	.0018-.0038"
				3	.015-.055"	.0021-.0031"
1972	.001-.002"②	.0003-.0005"	.0008-.0018"	1 & 2	.013-.023"	.002-.004"
				3	.015-.055"	.0021-.0031"
1973	.001-.002"	.0003-.0005"	.0008-.0018"	1 & 2	.010-.023"	.0020-.0040"
				3	.015-.055"	.....

① - Interference fit.

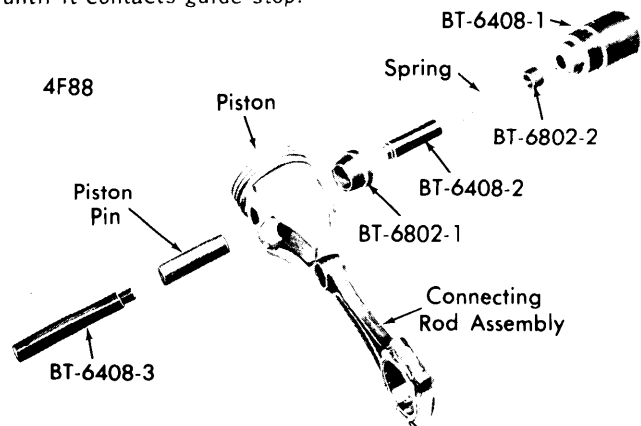
② - W/Air Induction .0025-.0035".

### PISTON & ROD INSTALLATION

Install piston on same numbered connecting rod with "F" and notch in head toward front of engine. Install connecting rod with oil hole toward center of engine. Install rod caps with bearing index notches in rod and cap on same side.

### PISTON PIN INSTALLATION

Use Tool BT-6408. Place spring and guide stop in main body of support. Place piston on this tool with letter "F" up. Place connecting rod in piston (see illustration). Coat pin with engine oil and press into piston and rod until it contacts guide stop.



PISTON PIN REMOVAL & INSTALLATION

### TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Cylinder Head.....	① 80-85
Intake Manifold.....	① 35-40
Exhaust Manifold.....	25
Main Bearings (Exc. Rear).....	80
(Rear).....	120
Con. Rod Caps.....	42
Crankshaft Pulley Hub.....	160
Crankshaft Pulley.....	20
Oil Pump-to-Bearing Cap.....	35
Oil Pump Cover.....	8
Oil Filter.....	20
Oil Pan (1/4" Bolts).....	8
(5/16" Bolts).....	12
Engine Front Cover (3/8" Bolts).....	35
(5/16" Bolts).....	25
Water Pump-to-Front Cover.....	13
Rocker Arm Studs-to-Head.....	25
Intake Manifold Baffle.....	8
Rocker Arm Cover.....	7
Fuel Pump-to-Block.....	25
Fuel Pump Eccentric-to-Camshaft.....	65
Engine Mounts-to-Engine (1968-69).....	50
(1970-73).....	75-80
Transmission-to-Engine.....	30

① - Clean and dip entire bolt in oil before tightening.

## 1968-73 350", 400" & 455" V8 ENGINES (Cont.)

Engine	MAIN BEARINGS				CONNECTING ROD BEARINGS		
	Journal Diam.	Clearance	Thrust Bearing	Crankshaft Endplay	Journal Diam.	Clearance	ⓐSideplay
<b>1968-69</b> 350"	2.4990"	①.0005-.0021" ②.0015-.0031"	No.3	.004-.008"	2.1242"	.0009-.0031"	.002-.013"
400", 455"	2.9998"	①.0005-.0021" ②.0020-.0034"	No.3	.004-.008"	2.4993"	.0004-.0033"	.002-.013"
<b>1970</b> 350"	2.4990"	①.0005-.0021" ②.0015-.0031"	No.3	.004-.008"	2.1242"	.0004-.0033"	.002-.013"
455"	2.9998"	①.0005-.0021" ②.0020-.0034"	No.3	.004-.008"	2.4993"	.0004-.0033"	.002-.013"
<b>1971</b> 350"	2.4990"	①.0005-.0021" ②.0015-.0031"	No.3	.004-.008"	2.1243"	.0004-.0033"	.002-.011"
455"	2.9998"	①.0005-.0021" ②.0020-.0034"	No.3	.004-.008"	2.4993"	.0004-.0033"	.002-.011"
<b>1972</b> 350"	2.4990"	①.0005-.0021" ②.0015-.0031"	No.3	.004-.008"	2.1242"	.0004-.0033"	.006-.020"
455"	2.9998"	①.0005-.0021" ②.0020-.0034"	No.3	.004-.008"	2.4993"	.0004-.0033"	.006-.020"ⓐ
<b>1973</b> 350"	2.4990"	①.0005-.0021" ②.0015"	No.3	.004-.008"	2.1242"	.0004-.0033"	.006-.020"
455"	2.9998"	①.0005-.0021" ②.0020-.0034"	No.3	.004-.008"	2.1242"	.0004-.0033"	.006-.020"

① - No. 1,2,3,4 Bearings.    ② - No. 5 Bearing.    ③ - W/Air Induction .002-.001".

### REAR OIL SEAL INSTALLATION

To replace upper rear main bearing oil seal to correct leak without removing crankshaft, proceed as follows:

- 1) Drain crankcase, remove oil pan and rear main bearing cap.
- 2) Drive both ends of old seal into bearing groove in cylinder block, using suitable tool (BT-6433 or BT-6434), until the groove is packed tight.
- 3) Measure the amount the seal was driven up into block on one side, add 1/16", then cut this length from the old seal in the bearing cap (remove bearing cap seal with razor blade). Repeat procedure on other side of block.
- 4) Work the two pieces of seal, which were cut from old cap seal, into block with two small screwdrivers, and drive into place, using suitable tool (BT-6433 or BT-6434). Trim seal flush with block.
- 5) To replace upper rear main bearing oil seal, with crankshaft removed, proceed as follows:

Install upper half of seal by hand, then drive into place using suitable tool (BT-6433 or BT-6434). Cut ends of seal flush. Install lower half of seal by hand, then drive into place using same tools, cut ends flush. Rotate tool before cutting excess seal packing, then cut seal 1/16" from bearing surface.

### ENGINE FRONT COVER REMOVAL

Drain cooling system, disconnect all water hoses and remove radiator. Remove belts, fan, fan pulley, crankshaft pulley and pulley hub (harmonic balancer). Remove oil pan. Remove cover, timing pointer and water pump.

**NOTE** - On *Toronado*, it will be necessary to remove the engine.

### FRONT COVER OIL SEAL REPLACEMENT

With crankshaft pulley and pulley hub (harmonic balancer) removed, remove seal using suitable tool (BT-6406). Before installing, coat outside of seal using a suitable compound. Using suitable tool (BT-6405), install seal. With seal properly seated, clearance between tool and block should be .005".



Torque To 35 Ft. Lbs.  
Torque To 50 Ft. Lbs.

### FRONT COVER

## Oldsmobile V8 Engines

## 1968-73 350", 400" &amp; 455" V8 ENGINES (Cont.)

VALVES							
Engine & Valve	Head Diam.	Face Angle	Seat Angle	Seat Width	Stem Diameter	Stem Clearance	Valve Lift
<b>1968</b>							
350" Int.	1.875"	46°	45°	.037-.075"	.3425-.3432"	.0010-.0027"	① .435"
Exh.	1.562"	46°	45°	.037-.075"	.3420-.3427"	.0015-.0032"	① .435"
400" 2-Bbl. Int.	1.995"	46°	45°	.030-.045"	.3425-.3432"	.0010-.0027"	.435"
Exh.	1.624"	46°	45°	.037-.075"	.3420-.3427"	.0015-.0032"	.435"
4-Bbl. Int.	2.072"	30°	30°	.030-.045"	.3425-.3432"	.0010-.0027"	②
Exh.	1.624"	46°	45°	.037-.075"	.3420-.3427"	.0015-.0032"	②
455" (Exc. Toronado)							
Int.	1.995"	46°	45°	.030"	.3425-.3432"	.0010-.0027"	.435"
Exh.	1.624"	46°	45°	.037-.075"	.3420-.3427"	.0015-.0032"	.435"
Toronado							
Int.	2.072"	30°	30°	.030"	.3425-.3432"	.0010-.0027"	.435"
Exh.	1.624"	46°	45°	.037-.075"	.3420-.3427"	.0015-.0032"	.435"
<b>1969</b>							
350" Int.	1.875"	46°	45°	.037-.075"	.3425-.3432"	.0010-.0027"	① .388"
Exh.	1.562"	46°	45°	.037-.075"	.3420-.3427"	.0015-.0032"	① .388"
400" Int.	2.072"	30°	30°	.030-.045"	.3425-.3432"	.0010-.0027"	②
Exh.	1.624"	46°	45°	.037-.075"	.3420-.3427"	.0015-.0032"	②
455" (Exc. Toronado)							
Int.	2.072"	46°	45°	.037-.075"	.3425-.3432"	.0010-.0027"	.435"
Exh.	1.624"	46°	45°	.037-.075"	.3420-.3427"	.0015-.0032"	.435"
Toronado							
Int.	2.072"	30°	30°	.030-.075"	.3425-.3432"	.0010-.0027"	.435"
Exh.	1.624"	46°	45°	.037-.075"	.3420-.3427"	.0015-.0032"	.435"
<b>1970</b>							
350" Int.	2.072"	30°	30°	.030-.045"	.3425-.3432"	.0010-.0027"	.388"
Exh.	1.624"	46°	45°	.037-.075"	.3420-.3427"	.0015-.0032"	.388"
455" Int.	1.995"	46°	45°	.037-.075"	.3425-.3432"	.0010-.0027"	.435"
Exh.	1.624"	46°	45°	.037-.075"	.3420-.3427"	.0015-.0032"	.435"
442 & Toronado Int.	2.072"	30°	30°	.030-.045"	.3425-.3432"	.0010-.0027"	③ .435"
Exh.	1.624"	46°	45°	.037-.075"	.3420-.3427"	.0015-.0032"	③ .435"
<b>1971</b>							
350" Int.	1.875"	46°	45°	.037-.075"	.3428"	.0010-.0027"	④ .400"
Exh.	1.562"	46°	45°	.037-.075"	.3423"	.0015-.0032"	④ .400"
455" Int.	1.995"	46°	45°	.037-.075"	.3428"	.0010-.0027"	.435"
Exh.	1.624"	46°	45°	.037-.075"	.3428"	.0015-.0032"	.435"
442 Int.	2.072"	30°	30°	.030-.045"	.3428"	.0010-.0027"	⑤ .474"
Exh.	1.624"	46°	45°	.037-.075"	.3428"	.0015-.0032"	.427"
<b>1972</b>							
350" Int.	1.875"	46°	45°	.037-.075"	.3428"	.0010-.0027"	.400"
Exh.	1.622"	30°	30°	.037-.075"	.3423"	.0015-.0032"	.400"
455" Int.	2.000"	46°	45°	.037-.075"	.3428"	.0010-.0027"	.435"
Exh.	1.684"	30°	30°	.075-.098"	.3423"	.0015-.0032"	.435"
Toronado Int.	2.000"	46°	45°	.030-.053"	.3428"	.0010-.0027"	.435"
Exh.	1.625"	46°	45°	.030-.075"	.3423"	.0015-.0032"	.435"
Man. Trans. W/Air Induction							
Int.	2.072"	30°	30°	.030-.075"	.3428"	.0010-.0027"	.472"
Exh.	1.625"	46°	45°	.030-.075"	.3423"	.0015-.0032"	.472"
<b>1973</b>							
350" Int.	1.875"	44°	45°	.037-.075"	.3425-.3432"	.0010-.0027"	.....
Exh.	1.622"	30°	31°	.050-.090"	.3420-.3427"	.0015-.0032"	.....
455" Int.	1.995"	44°	45°	.037-.075"	.3425-.3432"	.0010-.0027"	.....
Exh.	1.622"	30°	31°	.050-.090"	.3420-.3427"	.0015-.0032"	.....

① - Delmont 350" is .400".

② - .472" for Man. Trans; .430" for Auto. Trans.

③ - Toronado W/Air Induction, .472".

④ - 4-Bbl. Man. Trans. is .472".

⑤ - With Auto. Trans. is .472".

## 1968-73 350", 400" & 455" V8 ENGINES (Cont.)

VALVE SPRINGS			
Engine	Free Length	PRESSURE (LBS.)	
		Valve Closed	Valve Open
1968-71 All	1.96"	76-84@1.67"	180-194@1.27"
1972 350"	1.96"	76-84@1.67"	180-194@1.27"
350"Ⓞ	1.96"	76-84@1.67"	191-206@1.27"
455"	1.96"	76-84@1.62"	180-194@1.27"
1973 All	1.96"	76-84@1.670"	180-194@1.270"

Ⓞ - California only.

### VALVE ARRANGEMENT

I-E-I-E-E-I-E-I (both banks, front to rear).

### VALVE GUIDES

Integral with cylinder head. If stem-to-guide clearance excessive (see table), replace valve. Some valves with oversize stems are used on production, and can be identified by marks on inboard side of cylinder head on a machined surface just above intake manifold. These marks may be seen when air cleaner is removed. Valve guide reamers are available in .003", .005", and .013" oversize. When guides are reconditioned, always use the next oversize reamer and replacement valve. Service valves are available in five different stem diameters as follows: Standard, .003", .005", .010", and .013" oversize.

### ROCKER ARMS

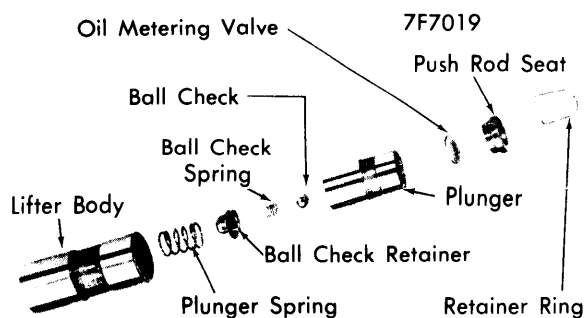
During assembly, friction surfaces on rocker arms and pivots must be coated with a suitable lubricant.

### HYDRAULIC VALVE LIFTERS

**Replacement Lifters** - Standard size and oversize lifters are available.

**Leak-Down Test** - Lifter must be assembled while submerged in test fluid. Proceed as follows:

1) Install Adapter Tool BT-105-2 in reservoir of Tester BT-60, then fill reservoir with Hydraulic Lifter Test Fluid to 1/2" below top of reservoir.



HYDRAULIC VALVE LIFTER ASSEMBLY

2) Assemble ball check, spring and retainer into plunger with flange pressed tight against bottom of recess in plunger.

3) Install spring over ball check retainer. Hold plunger with spring up and insert into lifter body (to prevent cocking spring). Place assembly in tester cup, then position push rod seat into plunger. Position 1/4" steel test ball on push rod seat and lower tester ram until it contacts steel ball. Allow ram to move downward by its own weight until air bubbles disappear. Repeat several times until all air is expelled from lifter. **CAUTION** - DO NOT attempt to expel air from lifter by pumping ram.

4) After air removed, allow ram to bleed down lifter to expose ring groove and install retaining ring.

5) Adjust ram screw so it contacts steel ball in push rod seat when pointer is at start line. Raise arm and start test by resting ram on steel ball.

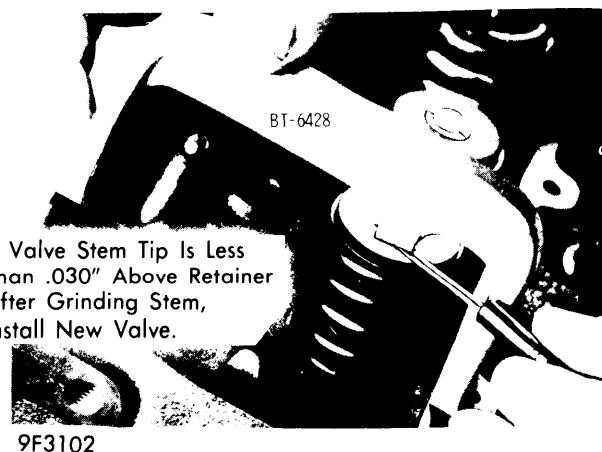
6) Rotate reservoir one revolution every two seconds, and time indicator from start to stop line. Allowable leak-down time is six seconds for used lifters, and 9-60 seconds for new ones. **NOTE** - If lifter within specifications, place in service without removing test fluid.

### VALVE STEM SEALS

Cup type used on all valves. Install with cupped side down toward cylinder head.

### VALVE STEM INSTALLED HEIGHT

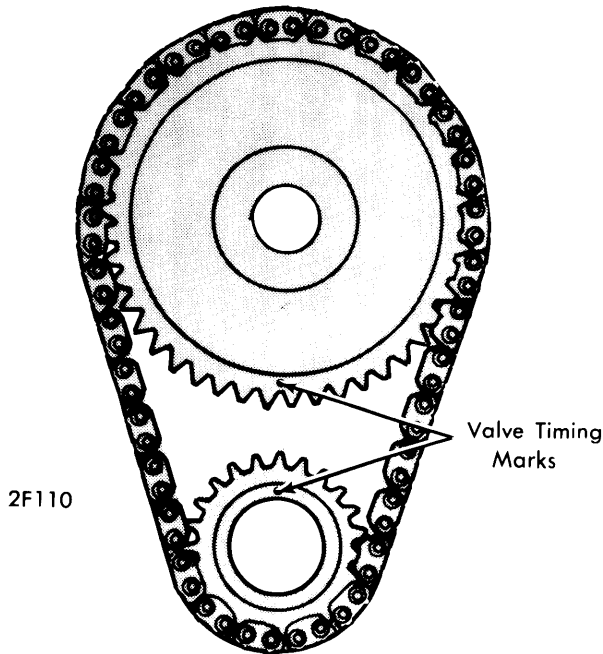
To measure valve stem height, place Gauge Tool BT-6428 over installed valve stem, and measure clearance between gauge and stem. Clearance should be at least .035" (350" engines), .005" (400", 455" engines). Grind tip of valve stem if clearance less than specified. With valve keys installed on valves, tap all valve stem ends with a hammer to seat valve retainers and keys. Replace Tool BT-6428 over stem, measure clearance between valve stem and gauge, then measure clearance between valve retainer and gauge. If the difference between these two clearances is less than .030", a new valve should be installed.



MEASURING VALVE STEM HEIGHT

# Oldsmobile V8 Engines

## 1968-73 350", 400" & 455" V8 ENGINES (Cont.)



VALVE TIMING MARKS (TYPICAL)

### CAMSHAFT REMOVAL

**Removal** — Remove front cover, grille, fuel pump, distributor, intake manifold, rocker arm assembly, push rods and valve lifters. Remove camshaft, being careful not to damage bearings.

**Installation** — To install camshaft, reverse removal procedure. **NOTE** — Before installation, coat camshaft and bearings liberally with suitable lubricant.

CAMSHAFT			
Engine	Journal Diam.	Clearance ①	Lobe Lift
All 1968-69	No.1 2.0365-2.0357" ②	.020-.0058"	.....
All 1970-71	No.1 2.0365-2.0357" ②	.020-.0043"	.....
All 1972-73	No.1 2.0365-2.0357" ②	.020-.0058"	.....

① — End Play — .011-.077".

② — Each succeeding journal .020" smaller than preceding journal.

### CAMSHAFT BEARING REPLACEMENT

Bearings must be replaced as a set using Tool Set BT-6409, and observe the following:

- 1) Remove bearings in order (No. 1 first, No. 2 second, etc.).
- 2) Replace bearings in reverse order (No. 5 first, No. 4 second, etc.).
- 3) Do not remove or disturb camshaft plug at rear of block.

## ENGINE OILING

**Oil Pressure** — 30-45 psi at 1500 RPM (350", 455" engines)  
35-45 psi at 1500 RPM (400" engines).

**Crankcase Capacity** - 4 qts. (Exc. Toronado); 5 qts. (Toronado). Add 1 qt. with filter.

**Oil Filter Replacement** - Replace filter every 6000 miles. Use a new seal and tighten to 20 ft. lbs.

**Pressure Regulator Valve** - Located in oil pump cover. Not adjustable.

### ENGINE OILING SYSTEM

Oil pump is mounted on rear main bearing cap in crankcase with full flow filter on right side of crankcase (see illustration). Oil from filter flows through passages at rear of block to rear end of right main oil gallery and through "V" passage at front of engine to left main oil gallery. Oil distribution is conventional, except as follows:

**Crankshaft & Camshaft Bearings** - Rear crankshaft and camshaft bearings are lubricated by a vertical passage intersecting the horizontal cross passage from the oil filter (see above). Other crankshaft and camshaft bearings

are lubricated by a "V" shaped oil passage in each crankcase web.

**Distributor Drive Gear** - Lubricated from drilled hole in plug at rear end of left main oil gallery.

**Valve Lifters** - Each lifter supplied with oil through short passage leading upward from main gallery at point directly below lifter.

**Rocker Arms, Push Rods & Valves** — Hollow push rods are supplied with oil through hole in valve lifter push rod seat.

**Timing Chain & Sprockets, Fuel Pump Lever & Eccentric** - Lubricated from drilled hole in hexagonal headed plug which closes front end of right main oil gallery.

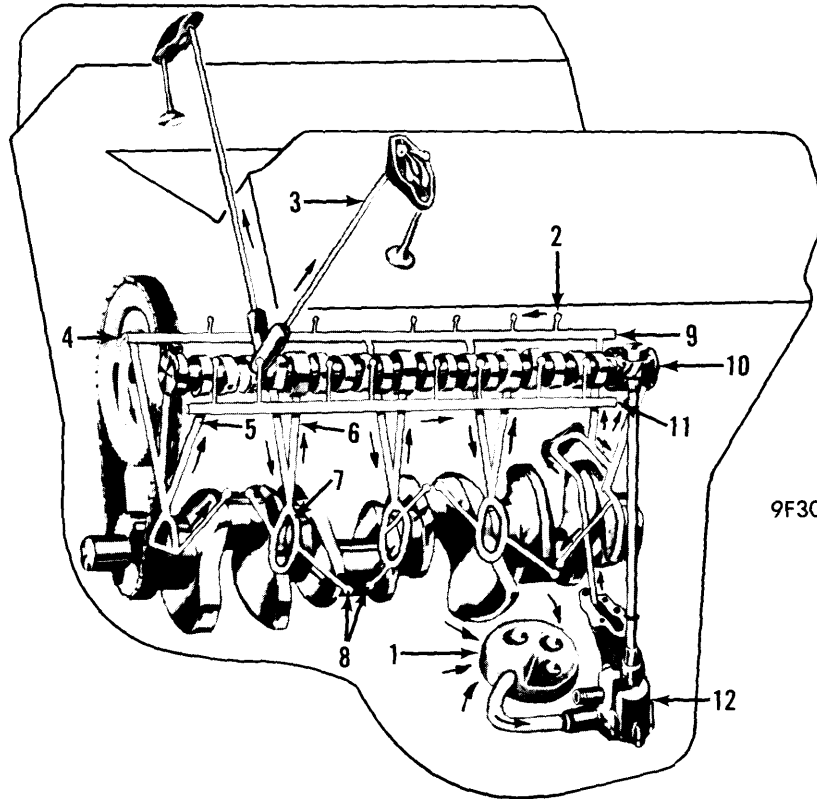
### OIL PUMP

Located on rear main bearing cap. Do not remove drive shaft extension washers (serviced as a unit). Pressure relief valve clearance in bore should be .0025-.005". End clearance of gears should be .0025-.0065".

## 1968-73 350", 400" & 455" V8 ENGINES (Cont.)

### ENGINE OILING (Cont.)

1. Oil Pick-Up
2. Lifter Feed
3. Rocker Arm  
Valve Tip Feed
4. Splash Lube For  
Timing Chain And  
Fuel Pump Cam
5. Left Main  
Gallery Feed
6. Cam Bearing Feed
7. Main Bearing Feed
8. Rod Bearing Feed
9. Right Main  
Gallery
10. Distributor and  
Oil Pump Drive
11. Left Main  
Gallery
12. Oil Pump



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ENGINE OILING SYSTEM