

ENGINE MECHANICAL

GENERAL DESCRIPTION

The 1955 Cadillac engine is of the V-8, overhead valve design, with a 3-13/16" bore and a 3-5/8" stroke to provide a piston displacement of 331 cubic inches. The compression ratio is 9 to 1 and the standard engine, used on all 1955 Cadillac cars except the Eldorado, develops 250 horsepower at 4600 RPM. The Eldorado engine, which develops 270 horsepower at 4800 RPM, utilizes two four-barrel carburetors and a special intake manifold to attain the higher horsepower. In all other respects, the Eldorado engine is identical to the standard engine.

In addition to the higher compression ratio, other design changes have been made which contribute to the increased horsepower of the 1955 engine. The valve lift has been increased by alter-

ing the rocker arm ratio and the valve timing has been retarded by relocating the dowel holes in the camshaft sprocket. Valve lifter push rods are .045" shorter than those used on the 1954 Cadillac engine, to accommodate the lower cylinder head, and may be identified by a single groove at the upper end of the rod as compared with the double groove on 1954 push rods. Valve springs are longer to assure proper valve action with the higher valve lift. The camshaft used in the 1955 engine is the same as that used in 1954, as the higher valve lift and retarded valve timing have been accomplished by design improvements which do not affect the camshaft.

Service procedures remain the same as those outlined in Section 10 of the 1954 Shop Manual.

SPECIFICATIONS

Subject and Remarks	All Series	Subject and Remarks	All Series
Bore	3-13/16"	VALVES, INLET	
Stroke	3-5/8"	Clearance between stem and guide --	
Compression Pressure --		New limits . . . . .	.0010 - .0025"
At cranking speed (throttle open)	165 to 185	Worn limits, not over . . . . .	.005"
At 1000 R.P.M.	212 to 230	Clearance between lifter body and	
Compression Ratio	9.0 to 1	crankcase . . . . .	.0010 - .0023"
Horsepower --		Head diameter, overall	1.750"
Rated (taxable)	46.5	Lift . . . . .	.411"
Standard Engine		Seat angle	44°
Developed at 4600 R.P.M.	250	Seat width in head . . . . .	.050 - .068"
Eldorado Engine		Seat eccentricity, not over	
Developed at 4800 R.P.M.	270	(total indicator reading) . . . . .	.004"
Piston Displacement	331 Cu. In.	Stem, length overall	4.628 - 4.650"
Points of Suspension	3	Stem, diameter . . . . .	.3415 - .3425"
Standard Engine		VALVE SPRINGS	
Torque, at 2800 R.P.M.	345 ft. lbs.	Free length	1.980"
Eldorado Engine		Pressure in Pounds -- Compressed to	
Torque at 3200 R.P.M.	345 ft. lbs.	(valve closed)	62 to 68
VALVES, EXHAUST		Compressed to 1.285" (valve open) .152 to .162"	
Clearance between stem and guide --		ROCKER SHAFT ASSEMBLY	
New limits . . . . .	.0010 - .0025"	Clearance between arm and shaft --	
Worn limits, not over . . . . .	.005"	New Limits . . . . .	.0007 - .0022"
Clearance between lifter body and		Worn Limits . . . . .	.003"
crankcase . . . . .	.0010 - .0023"	Clearance between shaft and	
Head diameter, overall	1.562"	bracket . . . . .	.0002 - .0017"
Lift . . . . .	.411"	Shaft diameter . . . . .	.8108 - .8113"
Seat Angle	44°	Diameter of hole in arm . . . . .	.812 - .813 "
Seat width in head . . . . .	.050" - .068"	Short Spring (Center)	
Seat eccentricity, not over		Free length	3-63/64"
(total indicator reading)004"		
Length overall	4-21/32"		
Stem, diameter3415 - .3420"		

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SPECIFICATIONS (Cont'd)

Subject and Remarks	All Series	Subject and Remarks	All Series
ROCKER SHAFT ASSEMBLY (Cont'd.)		PISTONS AND CYLINDERS	
Pressure in pounds (when compressed to 1.844")	10-1/2 - 12	Cylinder bore out of round (new or reground limit)	
Long spring (end)		Not over. . . . .	.0005"
Free length	4-31/32"	Taper, not over. . . . .	.0007"
Pressure in pounds (when compressed to 2.219")	10-1/2 - 12	Cylinder bore, standard	3.8125 - 3.8145
		Cylinder sizes (as indicated by letters stamped on top face of block).	
VALVE TIMING (without ramp)		Letter	Cylinder Sizes Piston Sizes
Intake opens	19° B.T.D.C.	A	3.8125-3.8127" 3.8116-3.8118"
Intake closes	70° A.B.D.C.	B	3.8127-3.8129" 3.8118-3.8120"
Exhaust opens	60° B.B.D.C.	C	3.8129-3.8131" 3.8120-3.8122"
Exhaust closes	30° A.T.D.C.	D	3.8131-3.8133" 3.8122-3.8124"
		E	3.8133-3.8135" 3.8124-3.8126"
		H	3.8135-3.8137" 3.8126-3.8128"
		J	3.8137-3.8139" 3.8128-3.8130"
		K	3.8139-3.8141" 3.8130-3.8132"
		L	3.8141-3.8143" 3.8132-3.8134"
		M	3.8143-3.8145" 3.8134-3.8136"
CONNECTING RODS		Piston material	Aluminum Alloy
Bearing material.	Moraine 400 Alum.	Piston skirt diameter-standard.	3.8116-3.8146"
Clearance between bearing and shaft --		Piston skirt diameter-oversize --	
New limits . . . . .	.0005 - .0020"	.010" oversize	3.8216-3.8236"
Worn limits, not over. . . . .	.0045"	.020" oversize	3.8316-2.8336"
Diameter lower end, without bearing.	2.3740 - 2.3745"	.030" oversize	3.8416-3.8436"
Length, center to center	6-5/8"	Piston skirt top clearance . . . . .	.0009"
End play of rods on crank pin . . . . .	.008 - .014"	Piston skirt bottom clearance . . . . .	.000"
		Piston top land diameter --	
		Standard.	3.784-3.787"
		Piston top land clearance. . . . .	.0255-.0315"
PISTON RINGS		OIL PUMP	
Clearance between rings and sides of groove in piston --		Backlash between drive gears . . . . .	.008-.012"
Compression rings . . . . .	.0017 - .0035"	Clearance between pump body and drive shaft --	
Oil rings . . . . .	.0008 - .0026"	New limits . . . . .	.0010-.0025"
Gap between ends in 3.8125" cylinder --		Worn limits, not over . . . . .	.005"
Compression rings . . . . .	.010 - .020"	Clearance between pump body and gears --	
Oil rings . . . . .	.010 - .020"	New limits . . . . .	.003-.005"
Number of compression rings	2	Worn limits, not over . . . . .	.006"
Number of oil rings	1	End play in pump gears --	
Width of compression rings.	3/64"	New limits . . . . .	.001-.004"
Width of oil rings	3/16"	Worn limits, not over . . . . .	.006"
Width of oil ring slot . . . . .	.064"	Oil pump type	Helical gear
Diameter at bottom of groove			
Oil rings	3.410 - 3.415"		
Compression rings	3.405 - 3.410"		
Maximum wall thickness			
Oil rings . . . . .	.165"		
Compression rings . . . . .	.184"		
PISTON PINS		VACUUM PUMP	
Clearance between pin and piston --		Clearances --	
New limits00005 to .0001" at 70°F.	Vane to cover plate002-.005"
Pin length.	3-3/32"	Rotor to cover plate004-.007"
Pin diameter	1.000"		

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SPECIFICATIONS (Cont'd)

Subject and Remarks	All Series	Subject and Remarks	All Series
VACUUM PUMP (Cont'd.)		OIL PRESSURE REGULATOR	
Clearances --		Clearance between valve plunger and housing --	
Socket to cover plate . . . . .	.0144-.0324"	New limits . . . . .	.0020-.0035"
Socket to rotor face . . . . .	.0104-.0254"	Worn limits, not over . . . . .	.005"
Rotor to shaft . . . . .	.0010-.0023"	Normal pressure to 30	
Rotor to depression in body cavity . . . . .	.0005"-.0034"	M.P.H. (min.)	30-35 lbs.
CRANKSHAFT AND MAIN BEARINGS		Idle (average)	15 lbs.
Clearance, main bearings --		Spring --	
New limits . . . . .	.0008-.0025"	Free length (approx.)	2-27/64"
Worn limits, not over . . . . .	.005"	Pressure at 1-7/16"	4.3-4.8 lbs.
Main bearing caps --		Valve opens at	30 lbs.
Bolt thread diameter	1/2"	CHAINS	
Main bearing journal, diameter	2-1/2"	Camshaft chain --	
Main bearing journals, out-of-round, not over . . . . .	.00025"	Adjustment	None
Main bearing journal length --		Length	23"
Front . . . . .	.907"	Make	Link Belt
Intermediate . . . . .	.907"	Number of links	46
Rear	1.622"	Pitch . . . . .	.500"
Main bearings, material		Width	11/16"
Crankpin diameter	2.2488-2.2493"	CAMSHAFT	
Crankpin out-of-round, not over . . . . .	.00025"	Bearing Clearance --	
End play in crankshaft --		New limits . . . . .	.001-.0022"
New limits . . . . .	.001-.005"	Worn limits, not over . . . . .	.004"
Worn limits . . . . .	.010"	Bearing out-of-round, not over . . . . .	.002"
		Number of bearings	5

TORQUE TIGHTNESS

Location	Size	Ft. Lbs.	
		Min.	Max.
Camshaft sprocket screws	5/16-18	15	18
Connecting rod nuts	3/8-24	40	45
Cylinder head screws	7/16-14	65	70
Engine, rear support cushion	7/16-14	50	55
Engine, rear support, cushion to cross member bolt	7/16-20	50	60
Engine, rear support, cross member to frame bolt	3/8-24	25	30
Exhaust manifold to cylinder head	3/8-16	25	30
Fan blade assembly to flange	5/16-24	15	20
Flywheel to crankshaft	7/16-20	80	85
Flywheel housing plate--lower	1/4-20	10	12
Flywheel housing to crankcase	7/16-14	45	50
Flywheel housing to crankcase--lower	3/8-16	25	30
Flywheel housing to cover--lower	7/16-14	45	50
Front motor support stud nut	1/2-20	80	90
Front support cushion to engine nut	3/8-24	25	30
Harmonic balancer to crankshaft	1/2-20	60	65
Intake manifold to cylinder head	3/8-16	25	30
Intake manifold to cylinder head nut	3/8-24	25	30
Main bearing caps to crankcase	1/2-13	90	100

Make	Years	Engine	Application	Casting number	Material	Type
Cadillac	1955	331	El Dorado	1463205	Cast iron	2x4