

GROUP 2

ENGINE

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SECTION 2-A

ENGINE SPECIFICATIONS

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NOTES

2-1 ENGINE TIGHTENING SPECIFICATIONS

Use a reliable torque wrench to tighten the parts listed, to insure proper tightness without straining or distorting parts. These specifications are for *clean and lightly lubricated threads* only; dry or dirty threads produce increased friction which prevents accurate measurement of tightness.

Part	Location	Thread Size	Torque Ft. Lbs.
Plug	Spark	14 MM	22-28
Plug	Crankcase Drain	18 MM	30-35
Bolt	Water Pump Cover	¼-20	12-15

Part	Location	Thread Size	Torque Ft. Lbs.
Bolt	Timing Chain Cover	5⁄16-18	20-25
Bolt	Lower Crankcase (Oil Pan) .	5⁄16-18	6-15
Bolt	Valve Lifter Cover	5⁄16-18	4-6
Nut	Valve Rocker Arm Cover . . .	5⁄16-24	4-5
Bolt	Intake Manifold	3⁄8-16	25-30
Bolt	Exhaust Manifold	3⁄8-16	10-15
Bolt	Rocker Arm Shaft Bracket . .	3⁄8-16	30-35
Bolt	Water Manifold	3⁄8-16	25-30
Bolt	Generator Mounting Bracket	3⁄8-16	25-30
Bolt	Engine Mounting Bracket . .	3⁄8-16	30-35
Nut	Connecting Rod Bolt	3⁄8-24	40-45
Bolt	Flywheel to Crankshaft . . .	7⁄16-20	50-55
Bolt	Cylinder Head	7⁄16-14	63-73
Bolt	Crankshaft Bearing Cap . . .	1⁄2-13	100-110
Bolt	Harmonic Balancer	1⁄2-20	55-65

2-2 ENGINE GENERAL SPECIFICATIONS

NOTE: See paragraph 2-3 for dimensions.

Items	Series 40	Series 50-60-70
Type—No. of Cylinders	← 90 Deg. V-8 →	
Valve Arrangement	← In Head →	
Bore and Stroke	← 4" x 3.2" →	
Piston Displacement (cu. in.)	← 322 →	
Compression Ratio, Synchromesh	← 7.6 to 1 →	
Dynaflow	← 8.9 to 1 →	← 9.5 →
Compression Pressure (a) 140 RPM Cranking Speed—		
Synchromesh (P.S.I.)	← 140 →	
Dynaflow (P.S.I.)	← 160 →	← 170 →
Taxable Horsepower	← 51.2 →	
Max. Brake Horsepower, Bare Engine—		
Dynaflow, H.P. (a) RPM	← 220 @ 4400 →	← 255 @ 4400 →
Cylinder Numbers, Front to Rear—		
Right Bank	← 1-3-5-7 →	
Left Bank	← 2-4-6-8 →	
Firing Order	← 1-2-7-8-4-5-6-3 →	
Crankshaft Bearings, No. and Type	← 5, Replaceable Liners →	
Material	← Steel Backed Durex—100A →	
Bearing Which Takes End Thrust	← No. 5 →	
Connecting Rod Bearings, Type	← Replaceable Liners →	
Material	← Steel Backed Moraine 400 →	
Piston Material & Surface Treatment	← Aluminum Alloy—Anodized →	
Compression Rings—No./Piston, Material	← 2, Cast Iron →	
Oil Rings—No./Piston	← One →	
Type	← 3-Piece/Expander →	
Location of all Piston Rings	← Above Piston Pin →	
Camshaft, Type and Material	← Cast Iron Alloy →	
Camshaft Drive	← Chain →	
No. & Type of Camshaft Bearings	← 5, Steel Backed Babbitt →	
Valve Lifter Type and Material	← Hydraulic, Cast Iron →	
Valve Spring Type	← Dual Helical →	
Oiling System Type	← Forced Feed →	
Oil Supplied to Bearing Surfaces—		
Crankshaft, Camshaft, Con. Rods	← Full Pressure →	
Pistons, Pins, Cylinders	← Splash →	
Cylinder Walls	← Splash & Nozzle →	
Valve Lifters, Rocker Arms, Valves	← Low Pressure →	
Normal Oil Pressure	← 35 lbs. @ 35 MPH →	
Oil Reservoir Capacity—Quarts		
Dry Engine	← 7 (8 with dry filter) →	
Refill	← 6 (7 with dry filter) →	
Oil Filter, Make and Type	← AC, Type PF-122 →	
Cooling System Type, Regular	← Pressure (7 lb. Rad. Cap.) →	
With Air Conditioning	← Pressure (13 lb. Rad. Cap.) →	
Water Temperature Control	← Thermostat & Fixed By-Pass →	
Thermostat Opens at—(deg. F.)	← 157 to 162 →	
Cooling System Capacity—Quarts		
Less Heater	← 17.5 →	
With Heater	← 19 →	
Fan Diameter, No. of Blades, Regular	← 18", 4 →	
With Air Conditioning	← 18.5", 5 →	

2-3 ENGINE DIMENSIONS, FITS AND ADJUSTMENTS

NOTE: These dimensions and limits for fit of parts apply to new parts only. "T" means tight. "L" means loose.

Items	All Series
Crankshaft Journal Diameter	← 2.498—2.499 →
Crankshaft Journal to Bearing Clearance	← .0005"—.0025" →
Crankshaft End Play at Rear Bearing	← .004"—.008" →
Crankshaft Bearing Effective Length—	
No. 1, 2, 3, 4	← .778" →
No. 5	← .977" →
Crankpin Journal Diameter	← 2.249"—2.250" →
Crankpin Journal to Bearing Clearance	← .0002"—.0023" →
Connecting Rod End Play on Crankpin	← .005"—.012" →
Connecting Rod Bearing Length	← .881" →
Cylinder Bores, Standard Size	← 3.9985"—4.0015" →
Piston Clearance in Bore	← .0014"—.0020" →
Piston Fit (a) 70 Deg. F., Pull on Scale with .003" Feeler—Lbs.	← 7 to 13 →
Piston Pin Diameter	← .940" →

Items	All Series
Piston Pin Fit @ 70° F.....	← Finger Push (.0003" — .0005") →
Piston Ring Side Clearance in Groove—	
Compression Ring.....	← .002" — .004" →
Oil Ring.....	← .0035" — .0095" →
Piston Ring Gap, Compression Ring in Bore.....	← .010" — .020" →
Oil Ring in Bore.....	← .015" — .035" →
Camshaft End Play.....	← .004" — .008" →
Camshaft Bearing Journal Diam.	
No. 1.....	← 1.685" — 1.686" →
No. 2.....	← 1.655" — 1.656" →
No. 3.....	← 1.625" — 1.626" →
No. 4.....	← 1.595" — 1.596" →
No. 5.....	← 1.565" — 1.566" →
Camshaft Journal Clearance in Bearings.....	← .0005" — .0035" →
Valve Lifter Diameter.....	← .8425" →
Valve Lifter Clearance in Crankcase.....	← .0015" — .003" →
Valve Lifter Leakdown Rate, in Test Fixture.....	← 12 to 40 Sec. →
Valve Lifter Check Ball Travel.....	← .004" to .008" →
Rocker Arm Clearance on Shaft.....	← .002" — .004" →
Valve Head Diameter—Inlet.....	← 1.750" →
Valve Head Diameter—Exhaust.....	← 1.375" →
Valve Seat Angle—Inlet & Exhaust.....	← 45 Degrees →
Valve Stem Diameter—Inlet.....	← .372" →
Valve Stem Diameter—Exhaust.....	← .371" →
Valve Stem Clearance in Guide—Inlet.....	← .002" — .003" →
Exhaust.....	← .003" — .004" →
Valve Spring—Outer	
Valve Closed (lbs. @ length).....	← 43—48 @ 1.5" →
Valve Open (lbs. @ length).....	← 91—97 @ 1.12" →
Valve Spring—Inner	
Valve Closed (lbs. @ length).....	← 24—29 @ 1.53" →
Valve Open (lbs. @ length).....	← 58—64 @ 1.15" →
Oil Pump Shaft to Bearing Clearance.....	← .001" — .0025" →
Oil Pump Idler Gear Bearing Clearance.....	← .001" — .0025" →
Oil Pump Driving Gear Backlash.....	← .003" — .006" →
Oil Pump, Drive and Idler Gear Backlash.....	← .006" — .012" →
Oil Pump Gear End Clearance in Body.....	← .0005" — .0045" →
Oil Pressure Valve Clearance in Body.....	← .003" — .006" →
Fan Belt Adjustment (Deflection).....	← $\frac{3}{8}$ " →
Water Pump Bearing Fit in Body.....	← .0004"T to .0018"T →
Fan Hub Fit on Bearing Shaft.....	← .001"T — .0025"T →
Fan Hub Position from End of Shaft.....	← $\frac{13}{64}$ " →

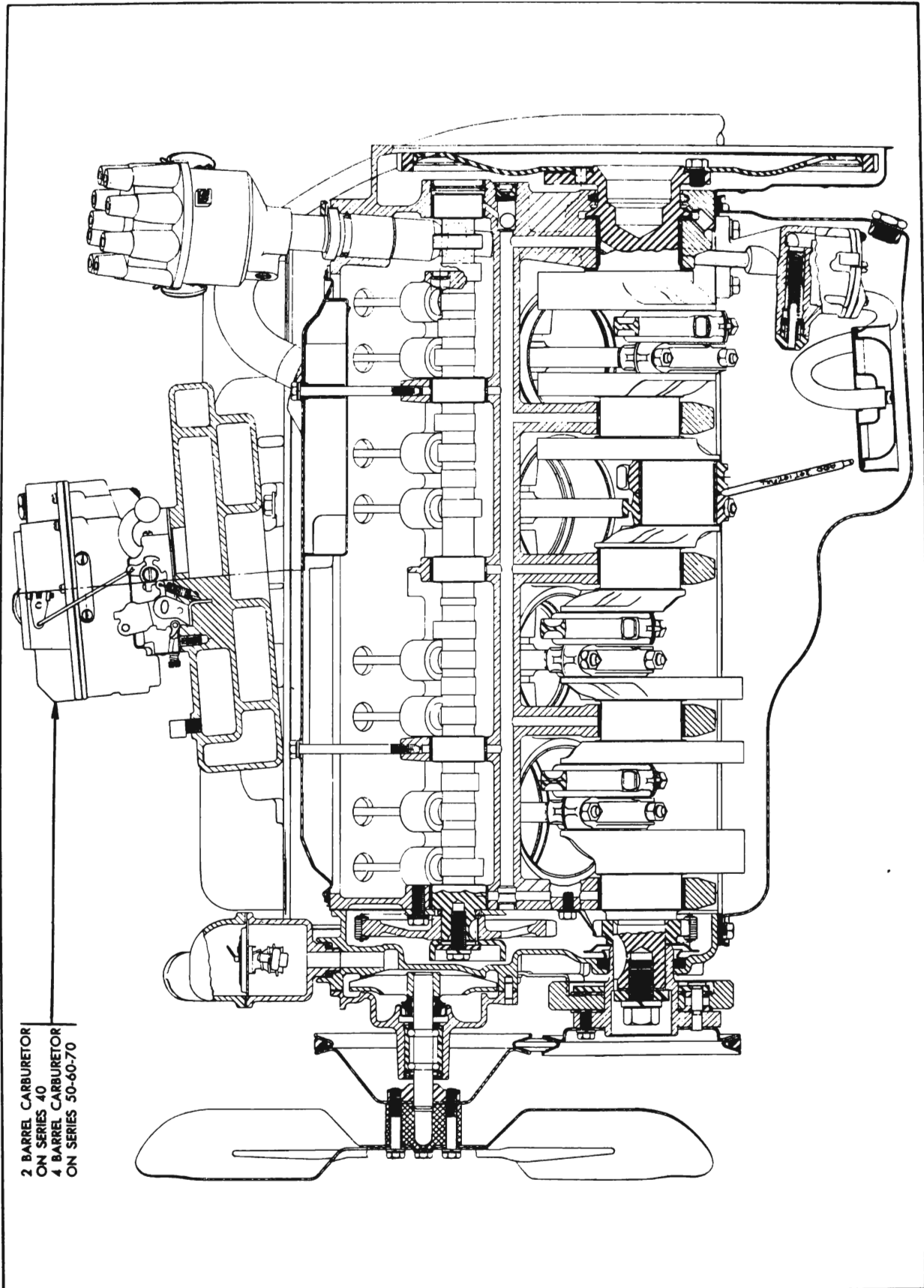


Figure 2-1—Engine, Side Sectional View—All Series