GROUP 2
ENGINE

SECTIONS IN GROUP 2

SECTION 2-A
ENGINE SPECIFICATIONS

CONTENTS OF SECTION 2-A

SERVICE BULLETIN REFERENCE

Bulletin No.	Page No.	SUBJECT

2-1 ENGINE TIGHTENING SPECIFICATIONS

a. Series 40 (8-in-line) Engine

See paragraph 2-1 in the 1952 Buick Shop Manual for tightening specifications on the Series 40 engine.

b. Series 50-70 (V-8) Engines

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	1/4-20	12-15
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
Bolt	Piston Pin Clamp	5/16-24	25-30
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	Fan Driving Pulley	3/4-16	100-110

2-2 ENGINE GENERAL SPECIFICATIONS

a. Series 40 (8-in-line) Engine

See paragraph 2-2 in the 1952 Buick Shop Manual for general specifications on the Series 40 engine, with the exception of the following items which are new for 1953.

Compression Ratio, Synchromesh	7.0 to 1
Dynaflow	7.6 to 1
Max. Brake Horsepower, Bare Engine—	
Synchromesh, H.P. @ RPM	125 @ 3800
Dynaflow, H.P. @ RPM	130 @ 3800

b. Series 50-70 (V-8) Engines

NOTE: *See paragraph 2-3 for dimensions.*

Items	Series 50	Series 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	322
Compression Ratio, Synchromesh	8.0 to 1	——
Dynaflow	8.5 to 1	8.5 to 1
Compression Pressure @ 200 RPM Cranking Speed—		
Synchromesh, (P.S.I.)	160	——
Dynaflow (P.S.I.)	170	170
Taxable Horsepower	51.2	51.2
Max. Brake Horsepower, Bare Engine—		
Synchromesh, H.P. @ RPM	164 @ 4000	——
Dynaflow, H.P. @ RPM	170 @ 4000	188 @ 4000
Engine Weight, less Transmission, Lbs.		
Synchromesh	739	——
Dynaflow	649	653
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 Durex—100A	
Piston Material & Surface Treatment	Aluminum Alloy—Anodized	
Compression Rings—No./Piston, Material	2, Cast Iron	
Oil Rings—No./Piston	One	
First Type	Flex-Fit	
Second Type	3-Piece/Expander	
Location of all Piston Rings	Above Piston Pin	
Camshaft Drive	Chain	
No. & Type of Camshaft Bearings	5, Steel Backed Babbitt	
Valve Lifter Type	Hydraulic	
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, Full Flow	
Cooling System Type	Pressure (7 lb. Rad. Cap.)	
Water Temperature Control	Thermostat & Fixed By-Pass	
Thermostat Opens at—(deg. F)	157 to 162	
Cooling System Capacity—Quarts		
Less Heater	18 (16.5*)	18
With Heater	19.5 (18*)	19.5
	*Synchromesh	
Fan Diameter, No. of Blades	18″	18″

2-3 ENGINE DIMENSIONS, FITS, AND ADJUSTMENTS

a. Series 40 (8-in-line) Engine

See paragraph 2-3 in the 1952 Buick Shop Manual for these specifications on the Series 40 engine.

b. Series 50-70 (V-8) Engine

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

Items	Series 50	Series 70
Crankshaft Journal Diameter	2.498—2.499	
Crankshaft Journal to Bearing Clearance	.0005"—.003"	
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"—.0022"	
Connecting Rod End Play on Crankpin	.006"—.011"	
Connecting Rod Bearing Length	.881"	
Cylinder Bores, Standard Size	3.9985"—4.0015"	
Piston Clearance in Bore	.0007"—.0017"	
Piston Fit @ 70 Deg. F., Pull on Scale with .003" Feeler—Lbs.	7 to 13	
Piston Pin Diameter	.940"	
Piston Pin Fit @ 70° F.	Finger Push (.0003"—.0005")	
Piston Ring Side Clearance in Groove—		
Compression Ring	.002"—.004"	
Oil Ring	.0002"—.0025"	
Piston Ring Gap, Compression Ring in Bore	.010"—.020"	
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.	
Rocker Arm Clearance on Shaft	.001"—.003"	
Valve Head Diameter—Inlet	1.750"	
Valve Head Diameter—Exhaust	1.250"	
Valve Seat Angle—Inlet & Exhaust	45 Degrees	
Valve Stem Diameter—Inlet	.372"	
Valve Stem Diameter—Exhaust	.3715"	
Valve Stem Clearance in Guide—Inlet	.0025"	
Exhaust	.0030"	
Valve Spring—Outer		
Valve Closed (lbs. @ length)	37.5—42.5 @ 1.5"	
Valve Open (lbs. @ length)	85—91 @ 1.12"	
Valve Spring—Inner		
Valve Closed (lbs. @ length)	19.5—24.5 @ 1.53"	
Valve Open (lbs. @ length)	53—59 @ 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"—.004"	
Oil Pressure Valve Clearance in Body	.003"—.006"	
Fan Belt Adjustment (Deflection)	3/8"	
Water Pump Bearing Fit in Body	.0006"L—.0009"T	
Fan Hub Fit on Bearing Shaft	.001"T—.0025"T	
Fan Hub Position from End of Shaft	13/64"	

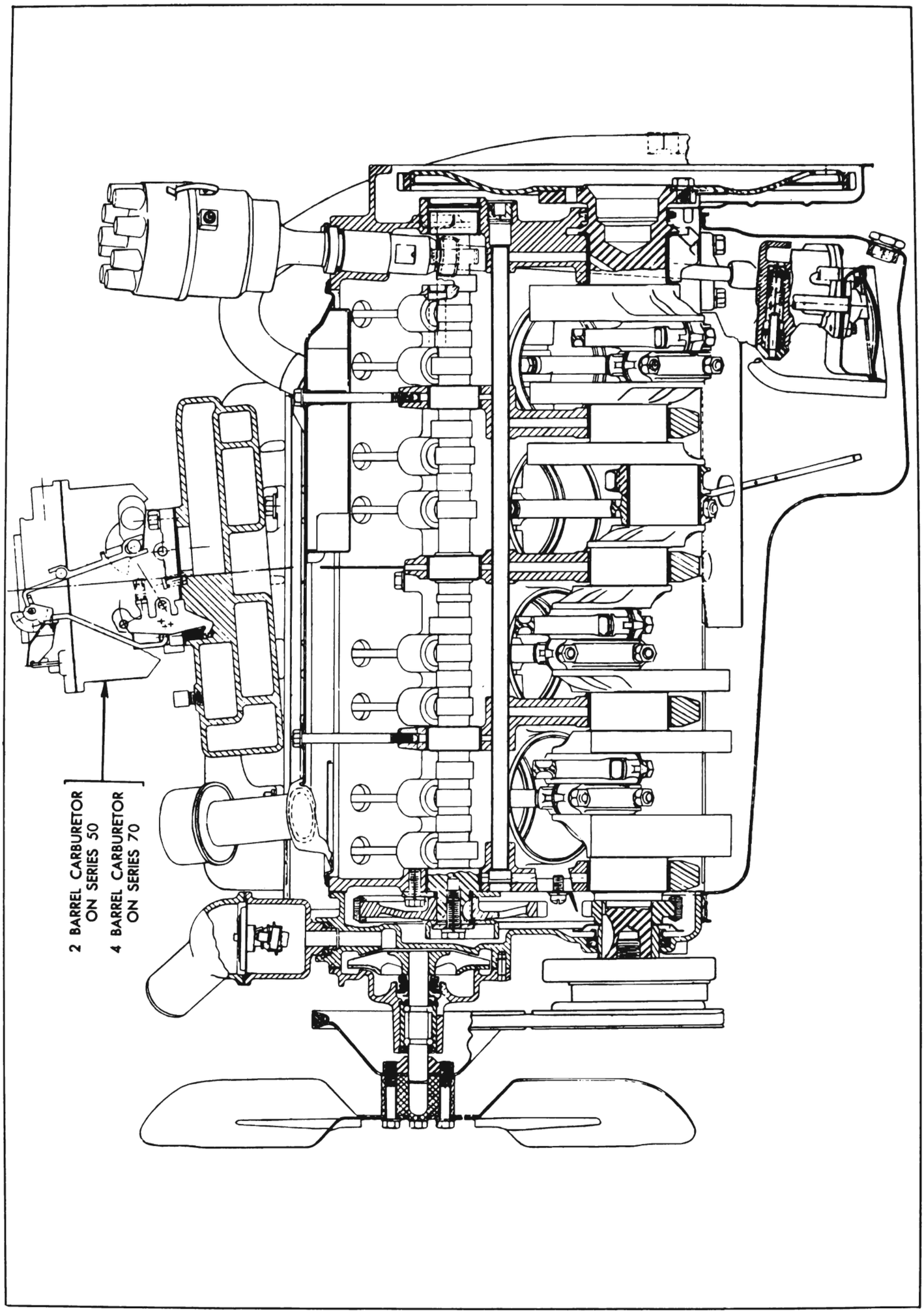

Figure 2-1—V-8 Engine Side Sectional View