GROUP 2

ENGINE

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SECTION 2-A

ENGINE SPECIFICATIONS

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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	25-35
Plug	Crankcase Drain	1/2"-20	30-35
Bolt	Water Pump Cover	1/4-20	6-8
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	3-5
Bolt	Valve Rocker Arm Cover	5/16-18	3-5
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
Nut	Connecting Rod Cap Bolt	3/8-24	40-45
Bolt	Flywheel to Crankshaft	7/16-20	50-60
Bolt	Cylinder Head	7/16-14	65-75
Bolt	Crankshaft Bearing Cap	1/2-13	100-110
Bolt	Harmonic Balancer	3/4-16	200-220

2-2 ENGINE GENERAL SPECIFICATIONS

NOTE: See paragraph 2-3 for dimensions.

Item	Series 4400	Series 4600-4700-4800
Type - No. of Cylinders	90 Deg. V-8	
Valve Arrangement	In Head	
Bore and Stroke	4.1875" x 3.640"	
Piston Displacement (cu. in.)	401	
Compression Ratio,		
Std.	10.25 to 1	
Power Pack	10.25 to 1	No Power Pack
Regular Gas Option	9.0 to 1	No Reg. Gas Option
Export	8.75 to 1	8.75 to 1
Compression Pressure @ 160 RPM Cranking Speed -		
Std. (P.S.I.)	180	180
Power Pack (P.S.I.)	180	No Power Pack
Regular Gas Option (P.S.I.)	160	No Reg. Gas Option
Taxable Horsepower	56.11	
Max. Brake Horsepower, Bare Engine - @ RPM		
Std.	280 @ 4400	325 @ 4400
Power Pack	325 @ 4400	No Power Pack
Regular Gas Option	265 @ 4400	No Reg. Gas Option
Engine Torque (lbs.-ft. @ RPM)		
Std.	424 @ 2800	445 @ 2800
Power Pack	445 @ 2800	No Power Pack
Regular Gas Option	412 @ 2800	No Reg. Gas Option
Octane Requirements		
Std.	99 Research 88 Motor	
Power Pack	99 Research 88 Motor	No Power Pack
Regular Gas Option	93 Research 84 Motor	No Reg. Gas Option
Export	93 Research 84 Motor	
Manufacturing Code Number Preface (See Fig. 0-1)		
Std.	21	41
Power Pack	41	No Power Pack
Regular Gas Option	L21	No Reg. Gas Option
Export	L21	L41
Firing Order	1-2-7-8-4-5-6-3	
Crankshaft Bearings No. and Type	5, Replaceable Liners	
Material	Steel Backed Moraine 400	
Bearing Which Takes End Thrust	No. 3	
Connecting Rod Bearings, Type	Replaceable Liners	
Material	Steel Backed Moraine 400	
Piston Material & Surface Treatment	Aluminum Alloy - Tin Plated	
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, Alloy Iron	
Valve Spring Type	Dual Helical	
Oiling System Type	Forced Feed	
Oil Supplied to Bearing Surfaces -		
Crankshaft, Camshaft, Con. Rods	Full Pressure	
Pistons, Pins	Splash	
Cylinder Walls	Splash & Nozzle	
Valve Lifters, Rocker Arms, Valves	Low Pressure	
Normal Oil Pressure	40 lbs. @ 1600 RPM	
Oil Reservoir Capacity - Quarts		
Dry Engine	5 (6 with dry filter)	
Refill	4 (5 with dry filter)	
Oil Filter, Make and Type	AC, Type PF-7	
Cooling System Type	Pressure (15 lb. Rad. Cap.)	
Water Temperature Control	Thermostat & Fixed By-Pass	
Thermostat Opens at - (deg. F)	167 to 172	

2-2 ENGINE GENERAL SPECIFICATIONS (Cont'd)

Items	Series 4400	Series 4600-4700-4800
Cooling System Capacity - Quarts		
Less Heater		17
With Heater		18.5
Fan Diameter, No. of Blades, Regular		18", 4
With Air Conditioning		20", 5
Fan Drive - Regular		Water Pump Shaft
With Air Conditioner		Torque and Temperature Sensitive Clutch

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	Series 4400	Series 4600-4700-4800
Crankshaft Journal Diameter		2.498 - 2.499
Crankshaft Journal to Bearing Clearance		.0005" - .0021"
Crankshaft End Play at Thrust Bearing		.004" - .008"
Crankshaft Bearing Effective Length -		
No. 1, 2, 4 and 5		.804"
No. 3		.861"
Crankpin Journal Diameter		2.249" - 2.250"
Crankpin Journal to Bearing Clearance		.0002" - .0023"
Connecting Rod End Play on Crankpin		.005" - .012" Total, Both Rods
Connecting Rod Bearing Length		.781"
Cylinder Bores, Standard Size		4.186" - 4.189"
Piston Clearance in Bore		.001" - .0016"
Piston Pin Diameter		.9994" - .9997"
Piston Pin Length		3.520"
Piston Pin Fit @ 70° F. (In Piston)		Finger Push (.0001")
Piston Pin Fit (In Connecting Rod)		.0007"T to .0015"T
Compression Ring		.003" - .005"
Oil Ring		.0035" - .0095"
Piston Ring Gap, Compression Ring in Bore		.015" - .025"
Oil Ring in Bore		.015" - .035"
Camshaft Bearing Journal Diam.		
No. 1		1.785" - 1.786"
No. 2		1.755" - 1.756"
No. 3		1.725" - 1.726"
No. 4		1.695" - 1.696"
No. 5		1.665" - 1.666"
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 Ratio		1.6 to 1
Rocker Arm Clearance on Shaft		.0027" - .0042"
Valve Head Diameter - Inlet		1.875"
Valve Head Diameter - Exhaust		1.500"
Valve Seat Angle - Inlet & Exhaust		45 Degrees
Valve Stem Diameter - Inlet		.373" Top - .3715" Bottom
Valve Stem Diameter - Exhaust		.372" Top - .3705" Bottom
Valve Stem Clearance in Guide - Inlet		.001" - .003" Top - .002" - .004" Bottom
- Exhaust		.0015" - .0035" Top - .0025" - .0045" Bottom
Valve Spring - Outer		
Valve Closed (lbs. @ length)		39.5 - 44.5 @ 1.60"
Valve Open (lbs. @ length)		93 - 99 @ 1.16"
Valve Spring - Inner		
Valve Closed (lbs. @ length)		23 - 28 @ 1.69"
Valve Open (lbs. @ length)		73 - 79 @ 1.25"

2-3 ENGINE DIMENSIONS, FITS AND ADJUSTMENTS (Cont'd.)

Items	Series 4400	Series 4600-4700-4800
Oil Pump Shaft to Bearing Clearance		.001" - .0025"
Oil Pump Idler Gear Bearing Clearance		.001" - .0025"
Oil Pump Driving Gear Backlash		.002" - .004"
Oil Pump, Drive and Idler Gear Backlash		.004" - .008"
Oil Pump Gear End Clearance in Body		.0005" - .005"
Fan Belt Adjustment		See Fig. 2-39 and 2-40

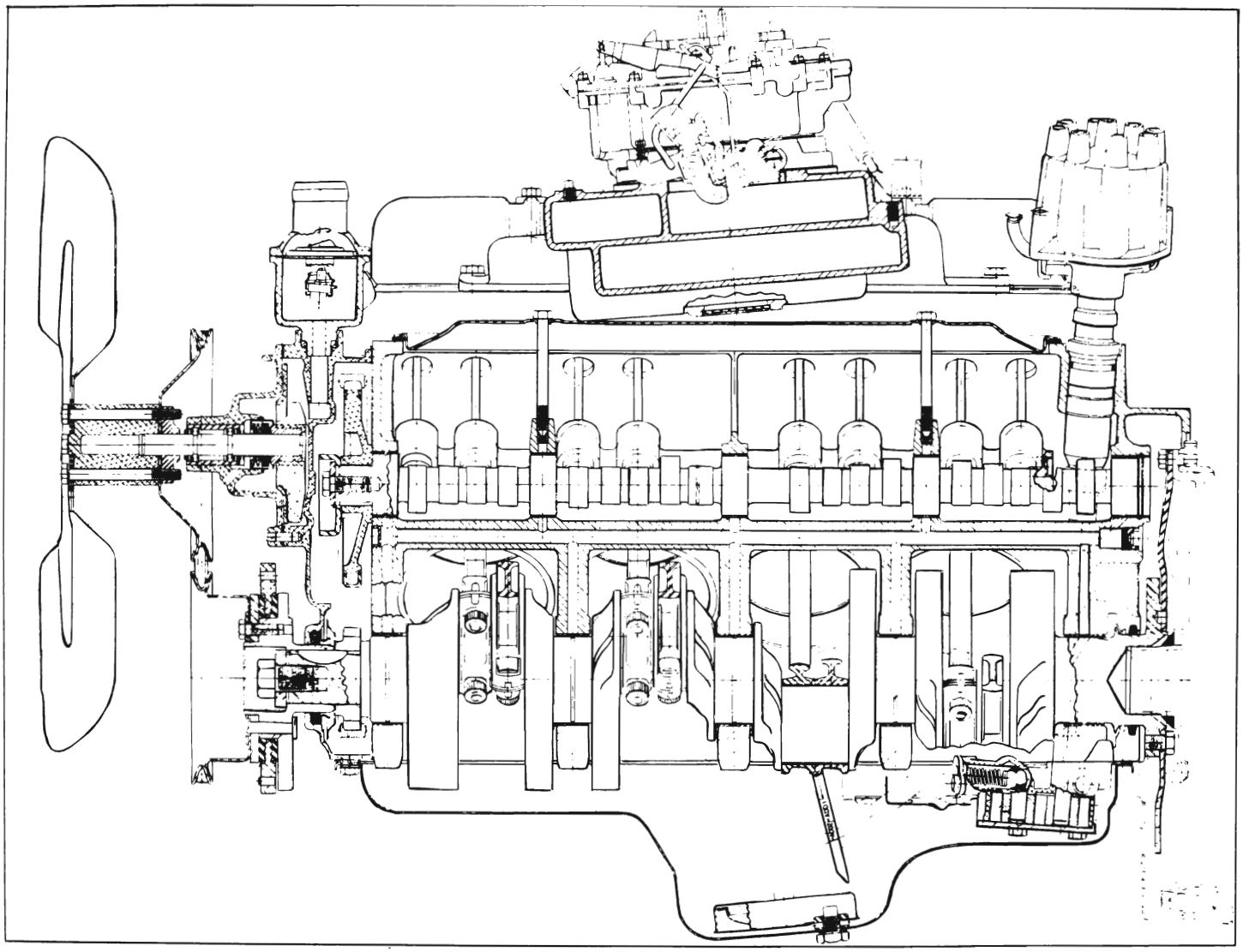

Figure 2-1—Engine Cross Sectional View