

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 Min.

2-2 ENGINE GENERAL SPECIFICATIONS

NOTE: See paragraph 2-3 for dimensions.

	300 Cu. In.	401 Cu. In.	425 Cu. In.
Type - No. of Cylinders		90 Degree V-8	
Valve Arrangement		In Head	
Bore and Stroke	3.750" x 3.400"	4.1875" x 3.640"	4.3125" x 3.640"
Piston Displacement (cu. in.)	300	401	425
Compression Ratio	9.0 to 1	10.25 to 1	10.25 to 1
Export	7.6 to 1	8.75 to 1	
Compression Pressure @ 160 RPM			
Cranking Speed -			
Taxable Horsepower	45.0	56.11	59.51
Max. Brake Horsepower, Bare Engine - @ RPM	210 @ 4600	325 @ 4400	340 @ 4400
Engine Torque (lbs.-ft. @ RPM)	330 @ 2400	445 @ 4400	465 @ 2800
Octane Requirements			
Export		93 Research 84 Motor	
Power Pack		99 Research 88 Motor	
Manufacturing Code Number Preface (See Fig. 0-1)			
Firing Order	1-8-4-3-6-5-7-2		1-2-7-8-4-5-6-3
Crankshaft Bearings No. and Type		5 Replaceable Liners	
Material		Steel Backed Babbitt	
Bearing Which Takes End Thrust		No Three	
Connecting Rod Bearings, Type		Replaceable liners	
Material	#5 M/100 Durex	First 4 M/400 Rear Durex 100A	
Piston Material		Cast Aluminum Alloy	
Compression Rings - Piston, Material	Cast Iron Lubrited	#1 Cast Iron Chrome -#2 Cast Iron Lubrited	
Oil Rings - No./Piston		One	
Type		3-Piece/Expander	
Location of all Piston Rings		Above Piston Pin	
Camshaft, Type and Material		Cast Alloy Iron	
Camshaft Drive		Chain	
No. & Type of Camshaft Bearings		5 Steel Backed Babbitt	
Valve Lifter Type and Material		Hydraulic, Iron Alloy	
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			
Oil Reservoir Capacity - Quarts			
Dry Engine		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)	170		180
Cooling System Capacity - Quarts			
Less Heater	13.5	17	17
With Heater	15	18.5	18.5
Fan Diameter, No. of Blades, Regular		18.0"	
With Air Conditioning		20.0"	
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	300 Cu. In.	401 Cu. In.	425 Cu. In.
Crankshaft Journal Diameter	2.2992"	2.2495	2.2495"
Crankshaft Journal to Bearing Clearance . . .		.0005" - .0021"	
Crankshaft End Play at Thrust Bearing . . .		.004" - .008"	
Crankpin Journal Diameter	2.000"	2.2495"	2.2495"
Crankpin Journal to Bearing Clearance . . .	.0022"		.0002" - .0023"
Connecting Rod End Play on Crankpin . . .		.005" - .012" Total, Both Rods	
Connecting Rod Bearing Length . . . . .		.820	
Cylinder Bores, Standard Size	3.750"	4.1875"	4.3125"
Piston Pin Diameter . . . . .	.9394"		.9994" - .9997"
Piston Pin Length	3.060"		3.520"
Piston Pin Fit (In Connecting Rod) . . . . .		.0007"T to .0015"T	
Piston Ring Cap, Compression Ring in Bore .	.003" - .005"		.015" - .025"
Oil Ring in Bore . . . . .	.0095"		.015" - .055"
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"	
Valve Lifter Diameter . . . . .		.8425"	
Valve Lifter Clearance in Crankcase . . . . .		.0015 - .003"	
Valve Lifter Leakdown Rate, in Test Fixture		12 to 60 Sec.	
Rocker Arm Ratio		1.6 to 1	
Rocker Arm Clearance on Shaft . . . . .	.0017" - .0032"		.0027" - .0042"
Valve Head Diameter - Inlet	1.625"		1.875"
Valve Head Diameter - Exhaust	1.3125"		1.500"
Valve Seat Angle - Inlet & Exhaust		45 Degrees	
Valve Stem Diameter - Inlet . . . . .	.3412" Top - .3407" Bottom		.373" Top - .3720" Bottom
Valve Stem Diameter - Exhaust . . . . .	.3407" Top - .3402" Bottom		.372" Top - .3715" Bottom
Valve Stem Clearance in Guide - Inlet	.001" - .003" Top -		.001" - .003" Top - .002" - .004" Bottom
	.0015" - .0035 Bottom		
- Exhaust	.0015" - .0035" Top -		.0015" - .0035" Top - .0025" - .0045 Bottom
	.002" - .004 Bottom		
Valve Spring - Outer			
Valve Closed (lbs. @ length)	64 @ 1.640"		46 @ 1.600"
Valve Open (lbs. @ length)	168 @ 1.260"		101 @ 1.160"
Valve Spring - Inner			
Valve Closed (lbs. @ length)			25.5 @ 1.690"
Valve Open (lbs. @ length)			76 @ 1.250"

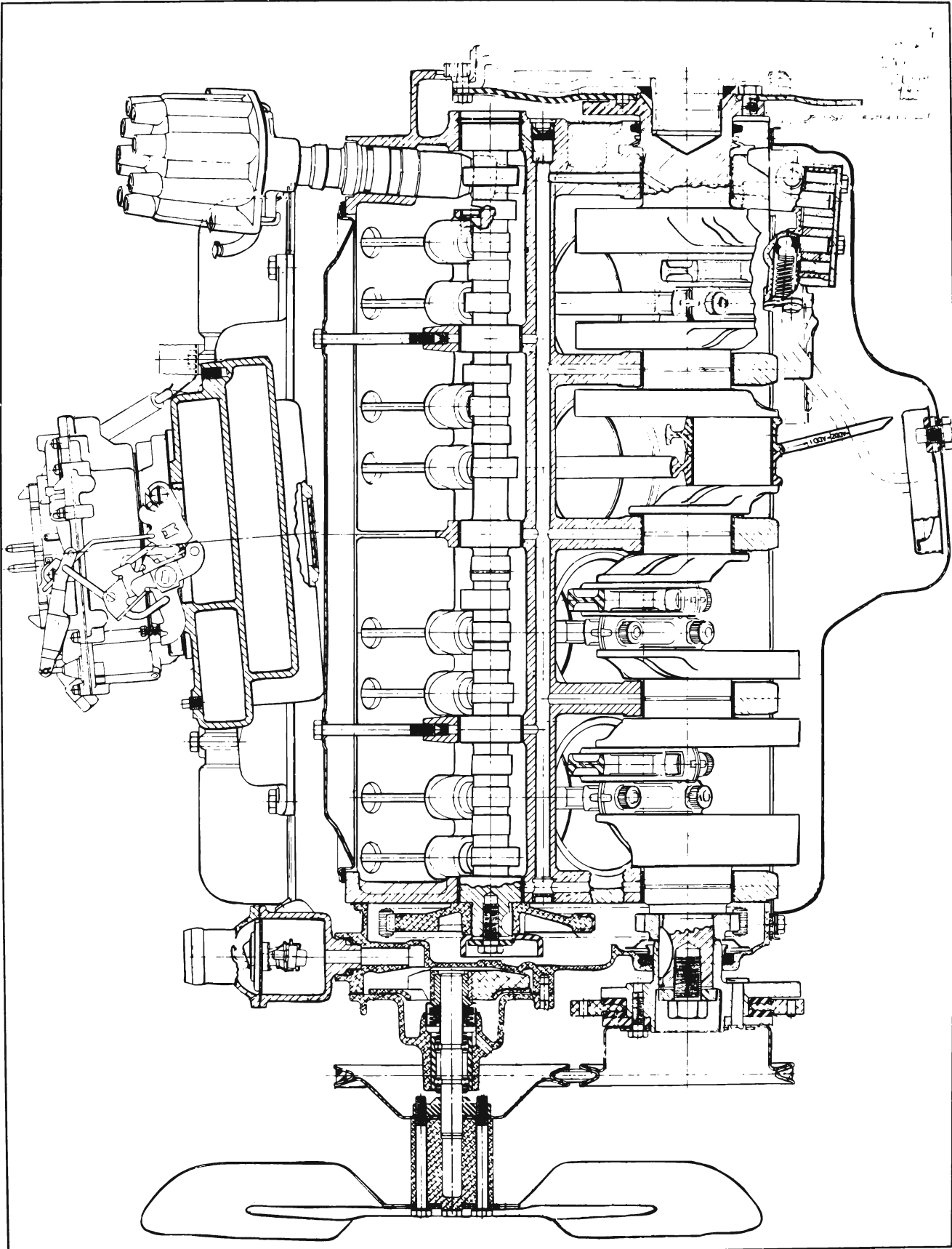


Figure 2-1—401 Cu. In. Engine Cross Sectional View

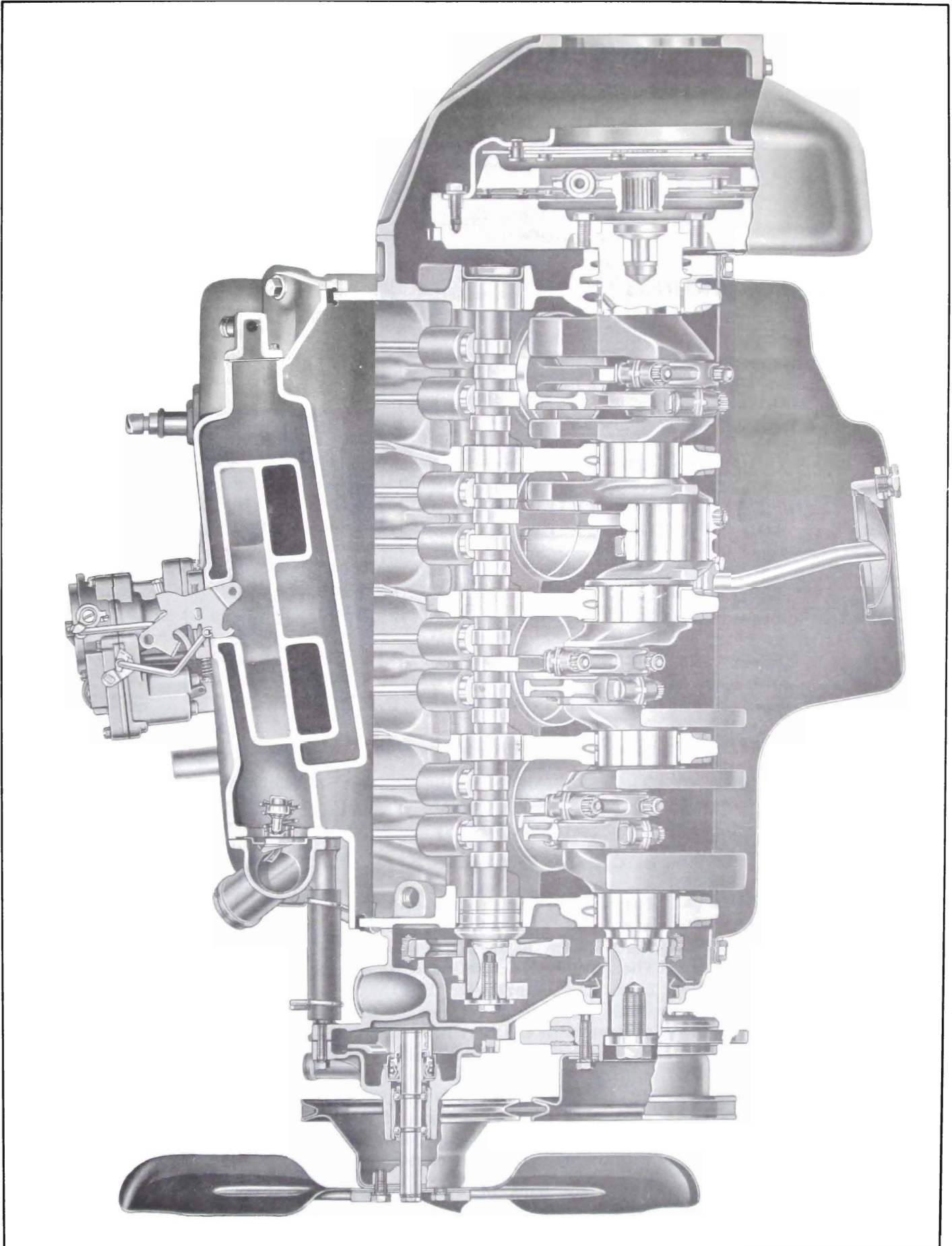


Figure 2-2-300 Cu. In. Engine Cross Section View