

GROUP 2

ENGINE

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SECTION 2-A

ENGINE SPECIFICATIONS

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2-1 ENGINE BOLT TORQUE SPECIFICATIONS

Use a reliable torque wrench

to tighten the parts listed. This will insure that the proper torque is obtained without straining or distorting the parts. The specifications are for clean and

lightly lubricated threads only. Dry or dirty threads produce increased friction which prevents accurate measurement of torque.

Torque Specifications for the Gran Sport 400 Cubic Inch Engine

<u>Part Location</u>	<u>Torque Ft. Lbs.</u>
Main Bearing Caps to Cylinder Block	95-120
Cylinder Head to Cylinder Block Bolts	65-80
Harmonic Balancer to Crankshaft	200 Min.
Fan Driving Pulley to Harmonic Balancer	18-25
Flywheel to Crankshaft (Auto. & Synchro.)	50-65
Connecting Rod	40-50
Oil Pan to Cylinder Block	9-13
Oil Pan Drain Plug	25-35
Oil Pump Cover - Body	6-12
Oil Screen Housing & Pipe to Block	6-9
Oil Pump to Block	30-40
Oil Gallery Plug	25-35
Oil Filter to Block	30-40
Timing Chain (& Water Pump Cover) to Block	17-23
Water Pump Cover to Timing Chain Cover	6-8
Fan Driven Pulley	17-23
Water Outlet to Manifold	17-23
Intake Manifold to Cylinder Head	25-35
Exhaust Manifold to Cylinder Heads	10-15
Carburetor to Intake Manifold	10-15
Air Cleaner Stud	17-23 lb. in.
Air Cleaner Wing Nut	17-23 lb. in.

2-2 SPECIFICATIONS**Torque Specifications for the Gran Sport 400 Cubic Inch Engine (Cont'd.)**

<u>Part Location</u>	<u>Torque Ft. Lbs.</u>
Fuel Pump to Cylinder Block	25-35
Motor Mount to Block	25-40
Push Rod Cover to Cylinder Block	3-5
Fuel Pump Eccentric & Timing Chain Sprocket to Camshaft	40-55
Rocker Arm Covers to Cylinder Head	3-5
Rocker Arm Shaft Bracket to Cylinder Head	25-35
Delcotron Bracket to Cylinder Head	65-80
Delcotron Bracket Brace	18-25
Delcotron Pivot Bolt	30-40
Starting Motor to Cylinder Block	40-55
Distributor Clamp to Cylinder Block	10-15
Spark Plugs	25-35
Ignition Coil to Intake Manifold	9-13
Water Manifold to Cylinder Head	25-35
Flywheel Housing to Cylinder Block	45-60
Automatic Transmission Case to Block	45-60

2-2 ENGINE GENERAL SPECIFICATIONS**General Description & Specifications**General

Type - No. of Cylinders	V-8
Valve Arrangement	In Head
Bore and Stroke	4.1875 x 3.640
Piston Displacement	400 Cu. In.
Compression Ratio - Standard	10.25:1
Compression Ratio - Export	8.75:1
Taxable Horsepower	56.11
Max. Brake Horsepower @ RPM	325 @ 4400
Engine Torque @ RPM	445 @ 2800
Octane Requirements	99 Research, 90 Motor
Firing Order	1-2-7-8-4-5-6-3
Crankshaft Bearings - No. & Type	5 Steel-Backed
Material	#1 - #4 M-400 #5 Durex 100A
Bearing Taking End Thrust	#3
Connecting Rod Bearing Type	Steel Backed
Material	M-400
Piston Material	Cast Aluminum Alloy
Compression Rings - Material	Lubrited Cast Iron
Oil Rings - Type	Hump Type Expander
Material	Steel
Location of All Rings	Above Pin
Camshaft	Cast Alloy Iron
Camshaft Drive	Chain
Camshaft Bearings	5
Valve Lifter - Type	Hydraulic
Valve Spring - Type	Inner & Outer Helical

Lubrication System

Oil Supplied to Bearing Surfaces	Pressure
Oil Supplied to Crankshaft & Camshaft	Pressure
Oil Supplied to Connecting Rods	Pressure
Oil Supplied to Pistons & Pins	Splash
Oil Supplied to Cylinder Walls	Splash & Nozzle
Oil Supplied to Valve Lifters, Rocker Arms, and Valves	Pressure
Normal Oil Pressure	40 @ 2400
Oil Reservoir Capacity	4
Dry Engine	5
Oil Filter	Full Flow

General Description & Specifications (Cont'd.)Cooling System

Water Temperature Control	Thermostat
Thermostat Opens At	180
Cooling System Capacity	
Less Heater	16.7 Qts.
With Heater	17.7 Qts.
With A/C	18.3 Qts.
Fan Diameter, No. of Blades	
Standard	18" x 4
Air Conditioning	20" x 7
Fan Drive	
Standard	Water Pump Shaft
Air Conditioning	Thermostatic Controlled Clutch

2-3 ENGINE DIMENSIONS, FITS AND ADJUSTMENTS

Crankshaft Journal Diameter	See Chart at End of this Par.
Crankshaft Journal to Bearing Clearance . . . . .	.000 - .0019
Crankshaft End Play at Thrust Bearing . . . . .	.004 - .008
Crankshaft Journal Diameter	2.2495
Crankpin Journal to Bearing Clearance . . . . .	.0002 - .0023
Connecting Rod End Play on Crankpin . . . . .	.005 - .012
Connecting Rod Bearing Length . . . . .	.820
Cylinder Bores - Standard Size	4.1875
Piston Pin Diameter . . . . .	.9994 - .9997
Piston Pin Length	3.520
Piston Pin Fit (In Connecting Rod)	Press
Piston Ring Gap - Compression Ring in Bore . . . . .	.015 - .025
Piston Ring Gap - Oil Ring in Bore . . . . .	.015 - .035
Camshaft Bearing Journal Dia.	
#1	1.785 - 1.786
#2	1.755 - 1.756
#3	1.725 - 1.726
#4	1.695 - 1.696
#5	1.665 - 1.666
Valve Lifter Diameter . . . . .	.8425
Valve Lifter Clearance in Crankcase . . . . .	.0015 - .0030
Rocker Arm Ratio	1.6:1
Rocker Arm Clearance on Shaft . . . . .	.0027 - .0042
Valve Head Diameter - Inlet	1.875
Valve Seat Angle - Inlet	45°
Valve Stem Diameter - Inlet . . . . .	.373T - .372B
Valve Head Diameter - Exhaust	1.500
Valve Seat Angle - Exhaust	45°
Valve Stem Diameter - Exhaust . . . . .	.372T - .3715B
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)	46 @ 1.600"
Valve Open (Lbs. @ Length)	101 @ 1.160"
Valve Spring - Inner	
Valve Closed (Lbs. @ Length)	25.5 @ 1.690"
Valve Open (Lbs. @ Length)	76 @ 1.250"

Note: All Measurements in Inches Unless Otherwise Specified.

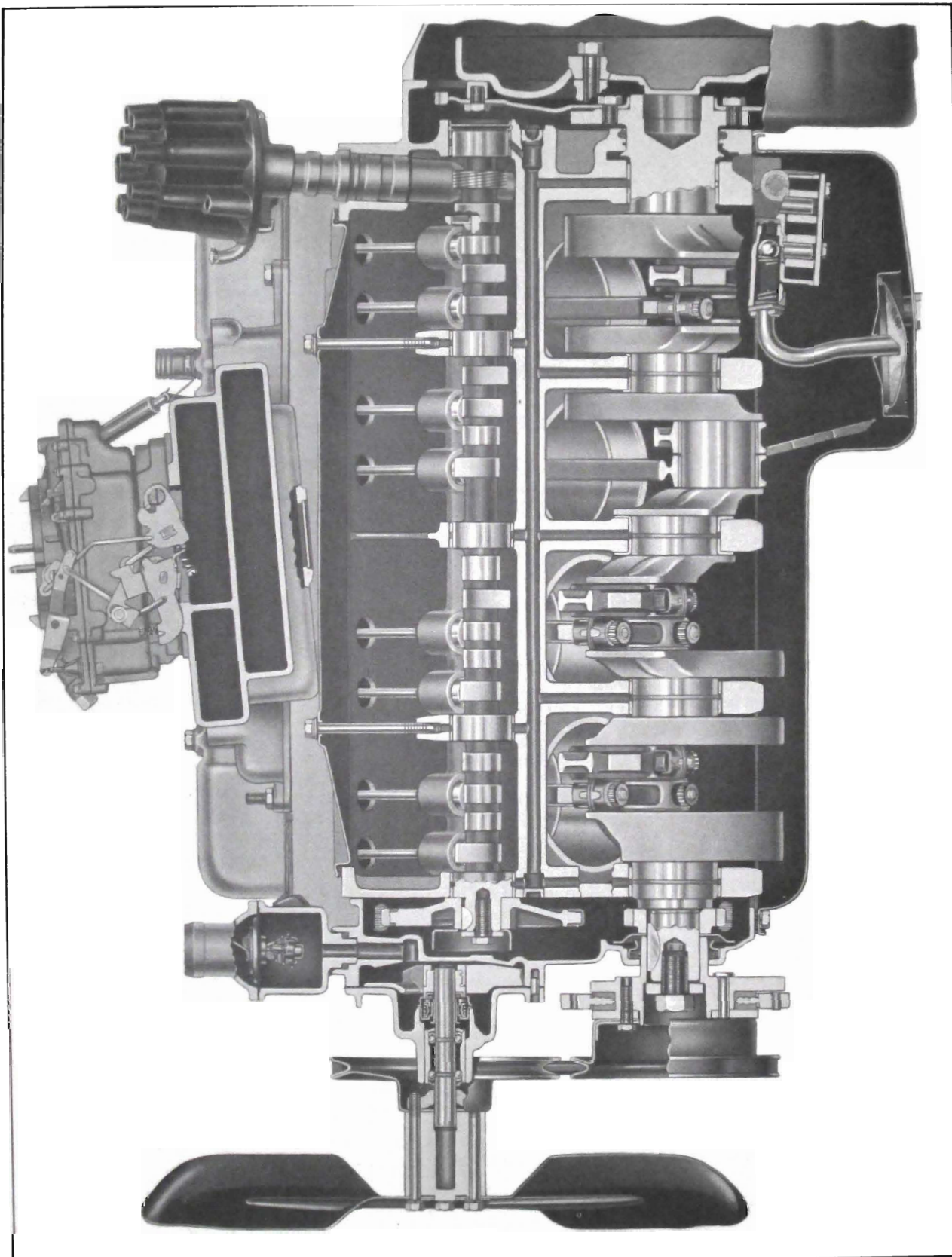


Figure 2-1—Gran Sport 400 Cu. In. Engine Cross Section (Side View)