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MANUAL PREVIEW

Hercules

Service Manual

C2-90

Engines

Service Manual

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2 CYLINDER
GASOLINE ENGINES

OPERATION

AND

MAINTENANCE

MANUAL

FOR

C2 SERIES

TWO CYLINDER

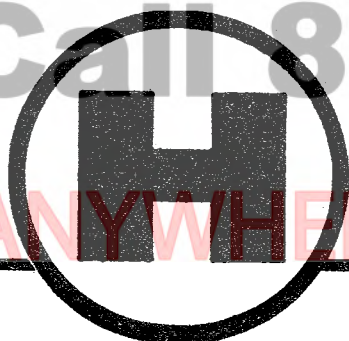
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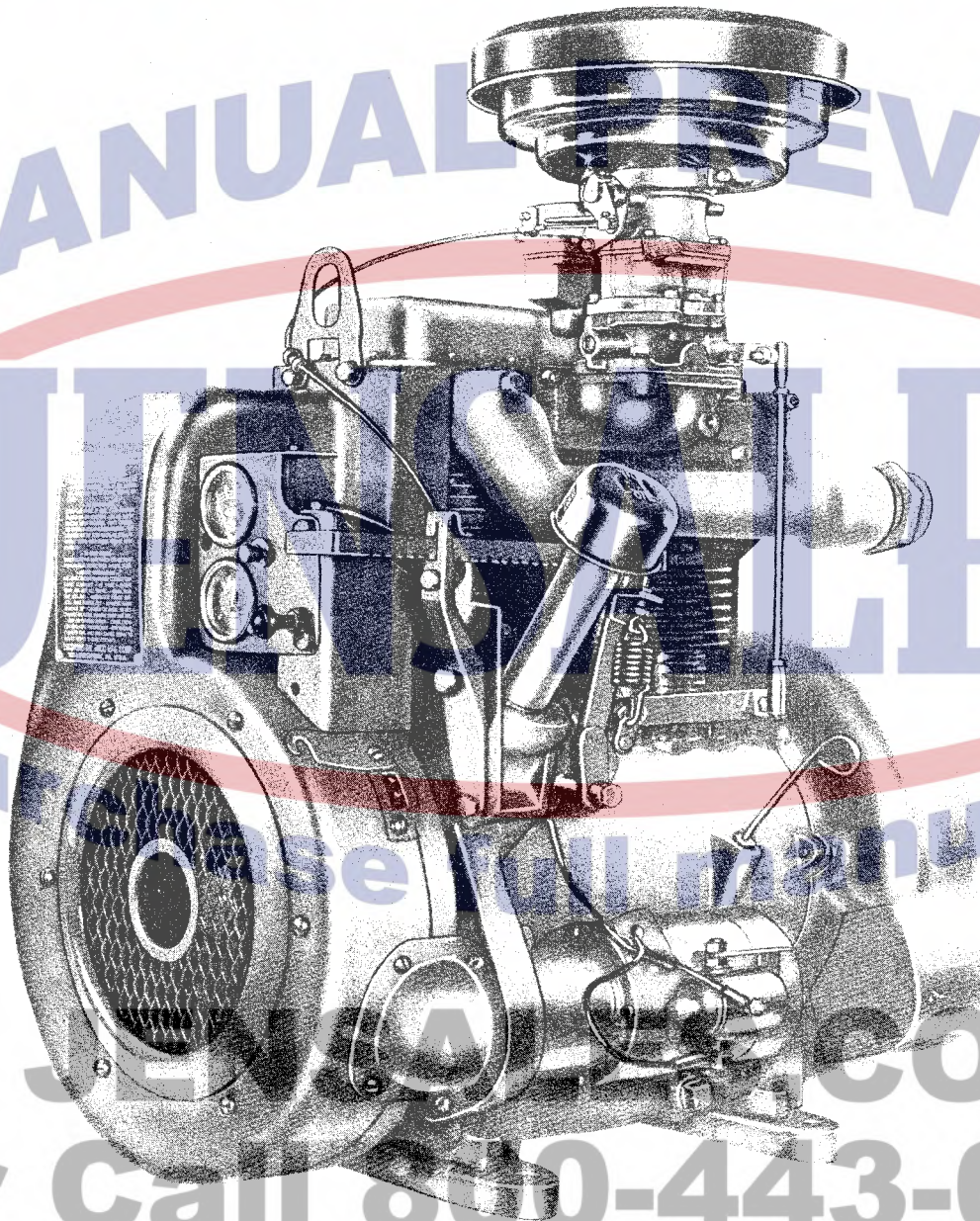


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SECTION I

- a. The First cycle is the intake stroke, at which time, when the piston is traveling downward in the cylinder, a predetermined mixture of gasoline and air is drawn through the intake valve into the cylinder.
- b. The Second cycle is called the compression stroke, and, as the piston travels upward, with the intake valve closed, the piston compresses the gasoline and air mixture into a small area at the top of the cylinder -- this small area is known as the combustion chamber. The compression of this gasoline and air mixture in a small area makes it highly combustible to produce the maximum amount of power when ignited.
- c. The Third cycle is the power stroke, and, as the piston reaches the top of the compression stroke, an electrical spark ignites the compressed mixture and the explosion forces the piston downward, thus turning the crankshaft and creating the driving force for the engine.
- d. The Fourth cycle is the exhaust stroke, and, as the piston reaches the bottom of the power stroke, the exhaust valve opens and, as the piston again travels upward, it pushes the burned gases out of the cylinder through the exhaust valve.

Thus, the four cycles of a gasoline engine are known as:

1. Intake - Gasoline and Air
2. Compression - Spark Ignited
3. Power - Expansion of Burning Gases
4. Exhaust - Burned Gases

1-4. RATING AND CHARACTERISTICS

Model C2-90 D

Number of cylinders.....	2
Type.....	Vertical, air cooled
Bore and stroke, inches.....	4 x 3-1/2
Cycle of operation.....	4 Stroke
Brake horsepower at 2200 RPM.....	29
Brake horsepower at 3000 RPM.....	34.5
Minimum full load operating speed.....	1600 RPM
Maximum full load operating speed.....	3000 RPM
Minimum no load idle speed.....	700 RPM
Piston displacement, cubic inches.....	88
Firing order.....	1 - 2
Compression ratio.....	Optional
Rotation (crankshaft) clockwise, looking at the fan or gear train end of the engine	
Cooling.....	Direct driven Sirocco fan
Lubrication	
Type.....	Pressure - wet sump
Crankcase capacity.....	(Dry) 4 quarts
Ignition	
Type.....	Optional - Magneto or distributor Optional - Electric starter and generator
Spark plugs.....	14 MM
Governed speed.....	Optional
Governor type.....	Mechanical

1-5. ENGINE SPECIFICATIONS

- a. Crankshaft
 - Number of bearings.....2
 - Bearing diameter, inches.....3
 - Bearing length, inches.....1.61
- b. Camshaft
 - Drive.....Helical gear
 - Number of bearings.....2
 - Bearing diameter, inches - front.....1.7795
 - Bearing length, inches - front......930
 - Bearing diameter, inches - rear.....1.000
 - Bearing length, inches - rear.....1.060

c.	Connecting rod	
	Number of rods.....	2
	Rod length, inches (center to center).....	6-5/8
	Small end bore, inches.....	.913 - .911
	Large end bore, inches.....	2.4235 - 2.4230
	Bearing shell diameter, inches.....	2.325
	Bearing shell length, inches.....	1.06
	Piston pin bushing, I.D. (inches).....	.8285 - .827
	Piston pin bushing length, inches.....	1.22
d.	Piston pin	
	Number of pins.....	2
	Pin diameter, inches.....	.8489 - .8486
	Pin length, inches.....	3.425 - 3.415
e.	Piston	
	Number of pistons.....	2
	Type.....	Full skirt - cam ground
	Piston diameter, at the skirt (inches).....	3.996 - 3.9975
	Piston height, over-all (inches).....	3.03
	Piston height, above the pin (inches).....	1.590
f.	Piston rings	
	Number of rings on each piston.....	3
	Ring diameter, all (inches).....	4
	Ring width, top, chrome plated, Keystone (inches).....	.0855 - .0850
	Ring width, compression, No. 2 (inches).....	.3/32
	Ring width, oil control (inches).....	.3/16
g.	Valves	
	Intake valve head diameter, inches.....	1-41/64
	Intake valve stem diameter, inches.....	.11/32
	Intake valve length, inches.....	4-5/32
	Exhaust valve head diameter, inches.....	1-9/32
	Exhaust valve stem diameter, inches.....	.11/32
	Exhaust valve length, inches.....	4-11/64
h.	Valve tappets	
	Number of valve tappets.....	4
	Valve tappet diameter, inches.....	.1
	Valve tappet length.....	1.56
i.	Valve push rods	
	Number of push rods.....	4
	Push rod diameter, inches.....	.5/16
	Push rod length, inches.....	12-25/32
j.	Valve springs	
	Spring free length, inches.....	2.11
	Spring length, valve open (inches).....	1.18 - @ 80 lb.
	Spring length, valve closed (inches).....	1.59 - @ 44 lb.
	Spring diameter, inches.....	1-1/8
k.	Cylinder head valve guide -- intake and exhaust	
	Valve guide diameter, inches.....	.502 - .5015
	Valve guide bore, inches.....	.345 - .344
	Valve guide length, inches.....	2.09
l.	Flywheel ring gear	
	Outside diameter.....	Optional
	Inside diameter.....	Optional
	Number of teeth.....	Optional
	Pitch.....	Optional
	Tooth depth.....	Optional
m.	Torque values	
	Connecting rod bolt.....	.35 ft. lbs.
	Nuts and cap screws, 1/4 inch.....	6 - 7 ft. lbs.
	Nuts and cap screws, 5/16 inch.....	12 - 14 ft. lbs.
	Nuts and cap screws, 3/8 inch.....	18 - 20 ft. lbs.
	Counterweight screws.....	35 - 40 ft. lbs.
	Starter jaw.....	200 ft. lbs.