

GARDNER

MODEL 85 (1928) LYCOMING GS ENGINE

SERIAL NUMBERS GRL057 UP

DELCO-REMY GENERATING, STARTING AND LIGHTING SYSTEM

DELCO-REMY IGNITION

BATTERY:—Prest-O-Lite, Type 615-JFK, 6 volt, 15 plates. The positive (+) terminal is grounded. Starting capacity (20 minute rate) is 120 amperes for 20 minutes. Lighting capacity (5 ampere rate) is 5 amperes for 20 hours. Battery is mounted on frame under right front floor boards.

IGNITION:—Coil Model 550-A. Ignition current is .6-2.5 amperes at 6 volts with engine running and 4.5 amperes at 6 volts with engine stopped. Coil is mounted on the back of the instrument board with the switch extending through to the driving compartment.

Distributor Model 658-B. Breaker contacts separate .022 inch with breaker arm on lobe of cam. Set contact gap by loosening lock screw on stationary contact plate and turning eccentric adjusting screw until proper setting is secured. Resurface contacts with a fine flat contact file or on a medium hard oilstone. Breaker arm spring tension is 17-21 ounces. Breaker uses two sets of contacts on a single four sided cam. Contacts open alternately at intervals of 45 degrees corresponding to 90 degrees of crankshaft rotation. This is the correct firing interval for the Gardner engine and breaker must be accurately set. See Timing. Distributor is semi-automatic. Maximum manual advance is 15 degrees (engine). Automatic advance begins at 500 R.P.M. and reaches a maximum of 17.5 degrees (engine) at 2000 R.P.M.

Mounting:—Distributor is mounted in well on top of cylinder head. To remove distributor, disconnect manual advance rod and breaker lead. Remove distributor head with cables in place. Remove manual advance stop screw and lift distributor out.

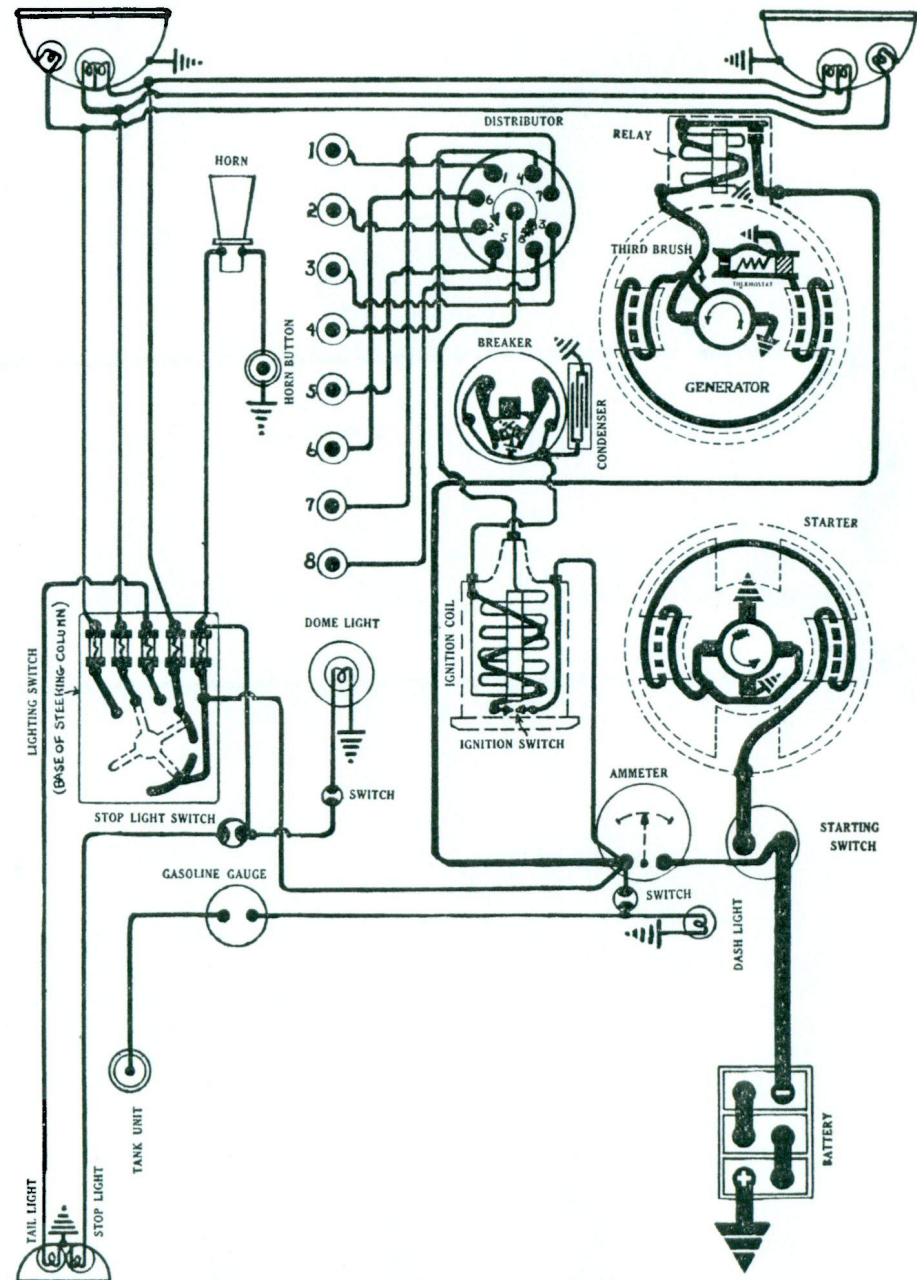
Oiling:—Fill the grease cup under the distributor head with medium cup grease and turn down one turn every two weeks or each 500 miles. Every 5000 miles remove the rotor and saturate the wick oiler in the center of the shaft with light engine oil. Place a small bit of vaseline on the face of the breaker cam under the fiber bumper of the contact arm.

Timing:—Synchronization of Contacts:—Use Delco-Remy Tool, Part No. 820738, and follow directions on Page S-25. of the National Manual. Contacts can be synchronized without tool after distributor has been timed to engine by cranking engine over 90 degrees from firing position of piston No. 1 when piston No. 6 will reach firing position. The second set of contacts should separate at this point. If they do not, loosen lock screws and turn eccentric adjusting screw on breaker plate until contacts begin to open. Tighten the lock screws and check the contact gap with the breaker arm on the lobe of the cam. If it is not within the limits of .018-.024 inch reset at .022 inch and repeat synchronization operation.

Timing Distributor to Engine:—Breaker contacts begin to separate when the piston entering power stroke reaches a position 6 degrees (on the flywheel) before top dead center with the spark lever fully advanced. To set timing, crank engine over until piston No. 1 enters compression stroke. This is the upstroke with both valves closed. Fully advance spark lever. Continue to crank engine until a point approximately 1.6 teeth on flywheel before top dead center mark is opposite the indicator on the flywheel case. Then loosen clamp screw on advance arm and rotate distributor until one set of contacts open. Tighten clamp screw and connect segment opposite rotor to spark plug in cylinder No. 1. Connect remaining plugs in order 6-2-5-8-3-7-4 counter-clockwise around the distributor head.

Firing Order:—The firing order is 1-6-2-5-8-3-7-4.

Spark Plugs:—Spark plugs are $\frac{7}{8}$ 18 S.A.E. Standard. Gaps are .030 inch.



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VALVE TIMING:—INLET VALVES:—Head diameter, $1\frac{3}{8}$ inches; stem diameter, $11/32$ inch; stem length, $5\frac{7}{8}$ inches. Tappet clearance, .006 inch (hot). Spring pressure, 50 pounds closed. Valve lift, $11/32$ inch. Intake opens at top dead center and closes 45 degrees past lower dead center.

EXHAUST VALVES:—Head diameter, $1\frac{1}{4}$ inches; stem diameter, $11/32$ inch; stem length, $5\frac{7}{8}$ inches. Tappet clearance, .008 inch (hot). Spring pressure, 50 pounds (closed). Valve lift, $11/32$ inch. Exhaust opens at 50 degrees before lower dead center and closes at 10 degrees after top dead center. The stem guides are removable. Oversize valve stems are made.

STARTER:—Model 716-A. Starter is connected to the engine through a Bendix drive. The direction of rotation is counter-clockwise, looking at the commutator end. Starter brush tension should be 24-28 ounces. Starter switch is Model 406-D.

Starter Data

Torque	R.P.M.	Volts	Amperes
0 lb. ft.	3000	5	70
15 "	Lock	3.7	450

Mounting:—Stater is flange mounted at left of engine on the forward side of the flywheel housing. To remove starter, disconnect cable and starting pedal rod. Then remove 3 cap screws on flange. Lift starter forward and out.

Oiling:—Put 4 or 5 drops of light engine oil in the oiler on the starter every 1000 miles. The drive end bearing is oilless.

GENERATOR:—Model 949-C. The direction of rotation of the generator is counter-clockwise, looking at the commutator end. Current regulation is by the third brush system, combined with a thermostat. The thermostat contacts open at 150 degrees F. To adjust the generator output, loosen the screw on the generator end plate and shift the third brush mountig plate in a counter-clockwise direction to

increase the charging rate and in the opposite direction to decrease the charging rate.

Generator Data

Cold Test			Hot Test		
Amperes	Volts	R.P.M.	Amperes	Volts	R.P.M.
19-21	8.5	1450	9-12	7.5	2000

Generator motoring draws 5.5 amperes at 6 volts. Shunt field current is 5 amperes at 6 volts. Generator brush spring tension is 24-28 ounces.

Mounting:—Generator is flange mounted at right of engine on rear of timing chain case. To remove generator, loosen mounting bracket screws; push generator and water pump towards crank case, pry off belt. Remove water connections to pump, take out generator mounting screws, lift out generator and pump assembly. Radiator must be drained before the pump can be removed.

Oiling:—Put 4 or 5 drops of light engine oil in the generator oiler every 1000 miles.

RELAY:—Model No. 265-B. Relay is mounted on the generator. Relay contacts close voltage of 6.57 volts. Contacts open with a discharge current of 2.5 amperes. voltage of 6.57 vots. Contacts open with a discharge current of 2.5 amperes. Relay contacts separate .015-.025 inch. Air gap between relay armature and coil core is .014-.021 inch with contacts closed.

LIGHTING:—Deco-Remy Lighting Switch Model 420-Q. Switch is mounted on the lower end of the steering column. Head lights are 6-8 volt, 21-21 cp. (double filament-double contact base using 21 cp. filament instead of dimming) Mazda No. 1110. Parking lights are 6-8 volt, 3 cp. S.C. Mazda No. 63. Side lights are 6-8 volt, 6 cp. S.C. Mazda No. 81. Dash lights are 6-8 volt, 3 cp. S.C. Mazda No. 63. Tail lights are 6-8 volt, 3 cp. S.C. Mazda No. 63. Stop light is 6-8 volt, 15 cp. S.C. Mazda No. 87. Dome light is 6-8 volt, 3 cp. D.C. Mazda No. 64.

FUSES:—There are five 10 ampere fuses mounted on the lighting switch.