

# GRAHAM PAIGE

MODEL 827 (1929) SERIAL NUMBERS 713,001 UP  
 MODEL 837 (1929) SERIAL NUMBERS 848,001 UP  
 PRODUCTION STARTED JANUARY 2, 1929  
 DELCO-REMY GENERATING, STARTING SYSTEM  
 DELCO-REMY IGNITION

**BATTERY:**—Willard, Type WSB-17, 6 volt. The positive (+) terminal is grounded. Starting capacity (20 minute rate) is 125 amperes for 20 minutes. Lighting capacity (5 ampere rate) is 5 amperes for 22.5 hours. Battery is mounted under the driver's seat on the left side.

**IGNITION:**—Coil Model 528-C (2 used). Coils are mounted on the back of the dash. Ignition current is 3.6 amperes at 6 volts with engine running and 8 amperes at 6 volts with engine stopped.

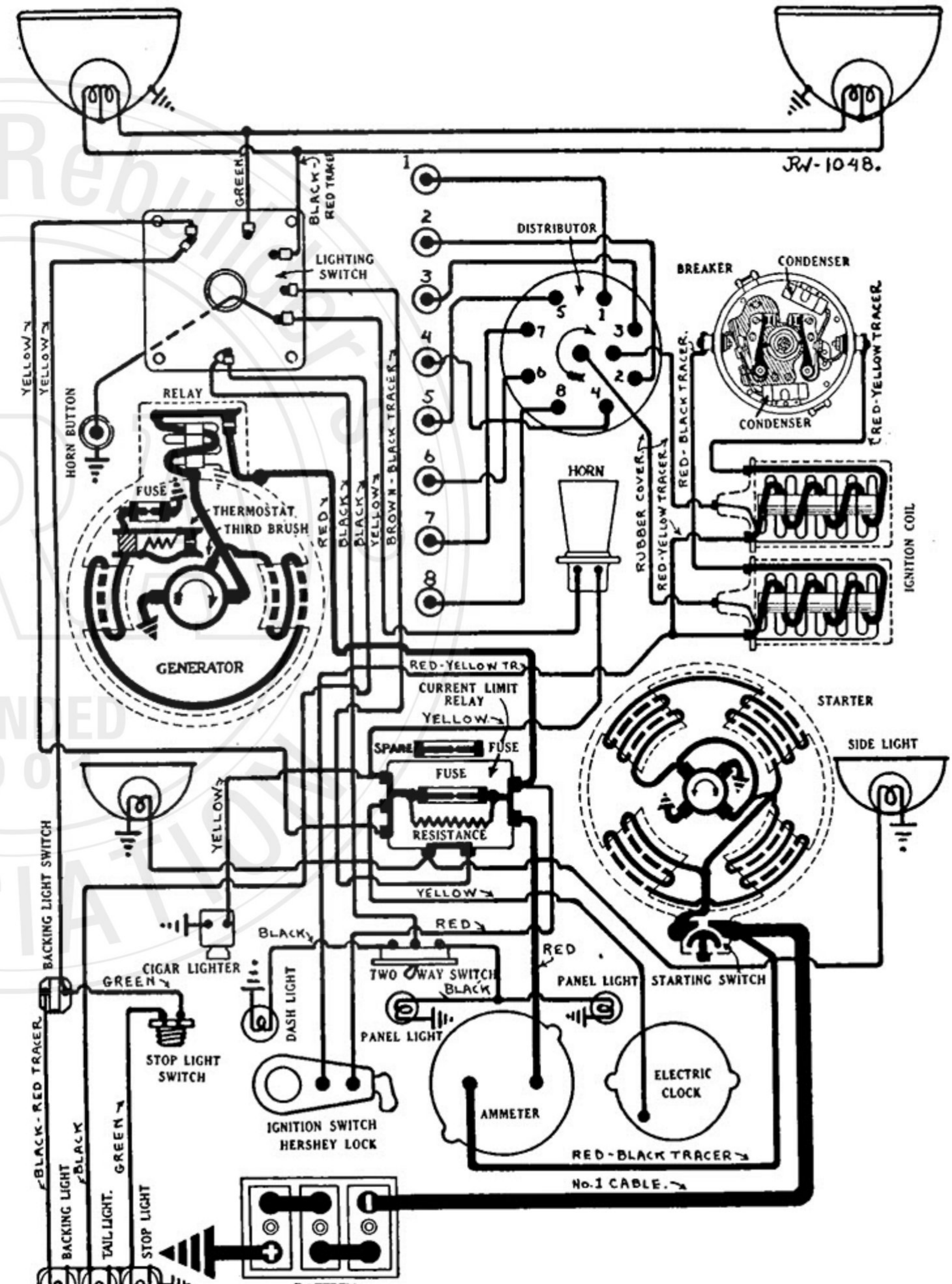
**Distributor Model 668-D.** Breaker contacts separate .022 inch. Adjust contacts by loosening lock screw on stationary contact mounting plate directly behind breaker arm and turning eccentric adjusting screw until correct gap is obtained with breaker arm on lobe of cam. Resurface contacts when necessary with a fine flat contact file or on a medium hard oilstone. Breaker arm spring tension is 18-21 ounces. Breaker has two sets of contacts operating on a four sided cam. Each set of contacts controls one coil and fires the spark plugs in four cylinders. Contacts open alternately at intervals of 45 degrees corresponding to 90 degrees of crankshaft rotation. This is the correct firing interval for the Graham Paige engine and contacts must be synchronized for correct performance. See Timing. Distributor is full automatic with an auxiliary retard controlled by a button on the dash to prevent engine laboring under load and to provide retard for starting. Automatic advance begins at 400 R.P.M. (engine). Maximum automatic advance is 22 degrees reached at 2600 R.P.M. (engine). Manual advance is 15 degrees (engine).

**Mounting:**—Distributor is mounted on the cylinder head. To remove distributor, disconnect primary lead and remove head with cables intact. Then loosen advance arm clamp screw and lift distributor from place. Distributor can be removed without disturbing timing if the advance arm is left clamped to the distributor and the manual advance wire is disconnected and the hold-down screw in the advance arm is removed. When replacing distributor make certain that the tongue on the end of the distributor shaft is engaged in the slot in the drive shaft. The tongue and slot are offset so that the distributor can not be assembled incorrectly.

**Oiling:**—Fill the grease cup on the side of the distributor shaft with medium cup grease and turn down one turn every two weeks or each 500 miles. Every 1000 miles remove the distributor head and rotor and saturate the wick oiler in the center of the shaft with light engine oil. Put a small bit of vaseline on the face of the breaker cam.

**Timing:**—Synchronization of Contacts. Use special Delco-Remy Tool and follow directions on Page S-31 to synchronize contacts. Contacts can be synchronized without tool after distributor is timed to engine by cranking engine over 90 degrees when piston No. 6 will reach firing position. If the second set of contacts do not separate at this point, loosen the two lock screws on breaker plate and turn eccentric adjusting screw 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 outside limits of .018-.024 inch, reset at .022 inch and repeat synchronization.

**Timing Distributor to Engine:**—Breaker contacts begin to separate when piston No. 1 entering power stroke reaches a position 8 degrees before top dead center when the flywheel mark 'Spark Full Advance' is opposite the indicator in the peephole in the front face of the flywheel on the right of





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the engine with the manual spark control button in the fully advanced position or pushed in toward the dash. To set timing, crank engine over until piston No. 1 enters compression stroke (the up stroke with both valves closed). Place spark control button in fully advanced position. Continue to crank engine until flywheel mark is opposite the indicator. Then loosen advance arm clamp screw and rotate distributor until one set of contacts begin to open. Tighten the clamp screw and connect the terminal opposite the rotor contact which is connected to the center terminal in the distributor head to the spark plug in cylinder No. 1. Connect remaining spark plugs in order 3-2-4-8-6-7-5 clockwise around the distributor head.

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

**Spark Plugs:**—Spark plugs are 18 MM. Metric. Gaps are .023-.025 inch.

**VALVE TIMING:**—**INLET VALVES:**—Head diameter, 1 $\frac{5}{8}$  inches. Stem diameter, .371 inch. Stem length, 5  $\frac{7}{16}$  inches (end of stem to top of seat). Spring pressure, 39-49 pounds (valve closed). Valve lift, .370 inch. Tappet clearance, .008 inch (cold). Inlet valves open 2 degrees or .277 inch on the flywheel after top dead center and close 47 degrees or 6.51 inches on the flywheel after lower dead center.

**EXHAUST VALVES:**—Head diameter, 1  $\frac{9}{16}$  inches. Stem diameter, .371 inch. Stem length, 5  $\frac{7}{16}$  inches (end of stem to top of seat). Valve lift, .370 inch. Spring pressure, 39-49 pounds (valve closed). Tappet clearance, .008 inch (cold). Exhaust valves open 43 degrees or 5.96 inches on the flywheel before lower dead center and close 2 degrees or .277 inch on the flywheel after top dead center. Flywheel distances are correct for standard 15 $\frac{7}{8}$  inch flywheel. Valve stem guides are removable. Oversize valves are not made.

**STARTER:**—Model 725-G. Starter is connected to the engine through a manual pinion shift interconnected with the starter switch. The direction of rotation is counter-clockwise, viewed from the commutator end. Starter cranks the engine at 90 R.P.M. drawing 150-200 amperes. Brush spring tension is 24-28 ounces.

| Starter Data |        |       |         |
|--------------|--------|-------|---------|
| Torque       | R.P.M. | Volts | Amperes |
| 0 lb. ft.    | 6000   | 5     | 60      |
| 16 "         | Lock   | 3.2   | 600     |

**Mounting:**—Starter is flange mounted at right of engine on forward side of flywheel housing. To remove starter, disconnect cable and pedal rod linkage and remove nuts on flange mounting studs. Then pull starter forward and lift from place.

**Oiling:**—Put 8 or 10 drops of light engine oil in the oiler on the commutator end of the starter every two weeks or each 500 miles. The drive end bearing is oilless.

**GENERATOR:**—Model 957-C. The direction of rotation is clockwise, viewed from the commutator end. Generator current regulation is by third brush shunt field and thermostat. Thermostat contacts open at 165° F. cutting the resistance across the thermostat contacts in series with the shunt field and reducing the output approximately 40%. To adjust the charging rate, remove the commutator cover band and loosen the small round headed screw on the generator end plate. Then shift the third brush in a clockwise direction to increase the charging rate and in the opposite direction to decrease the charging rate. Tighten the screw after making the adjustment. With standard car setting, maximum charging rate is 10.5 amperes (hot) reached at 1425 R.P.M. or 25 M.P.H.

## Generator Data

| Cold Test |       |        | Hot Test |       |           |
|-----------|-------|--------|----------|-------|-----------|
| Amperes   | Volts | R.P.M. | Amperes  | Volts | R.P.M.    |
| 18-20     | 8.5   | 1300   | 10.5     | 7.5   | 1300-1500 |

Motoring, generator draws 5.5 amperes at 6 volts. Shunt field current is 4-6.1 amperes at 6 volts. Brush spring tension is 14-18 ounces.

**Mounting:**—Generator is cradle mounted at left of engine and is driven by an extension of the water pump shaft. To remove generator, disconnect lead and drive coupling and loosen mounting strap. Then lift generator from place.

**Oiling:**—Put 8 or 10 drops of light engine oil in the oiler at each end of the generator every two weeks or each 500 miles.

**RELAY:**—Model 265-B. Relay is mounted on the generator. Relay contacts close when the voltage of the generator reaches 7-7.5 volts and open with a discharge current of 0-2.5 amperes. Relay contacts separate .015-.025 inch. Air gap is .014-.020 inch with contacts closed.

**LIGHTING:**—Lighting switch is mounted at lower end of steering column. Headlights have double filament bulbs instead of dimmers. Headlights are 6-8 volt, 21-21 cp. D.C. Mazda 1110. Side lights are 6-8 volt, 3 cp. S.C. Mazda 63. Stop light is 6-8 volt, 15 cp. S.C. Mazda 87. Backing light is 6-8 volt, 21 cp. S.C. Mazda 1129. Instrument board lights, ignition switch light and tail light are each 6-8 volt, 3 cp. S.C. Mazda 63. Corner lights are 6-8 volt, 6 cp. S.C. Mazda 81.

**CURRENT LIMIT RELAY:**—This device is connected in the lighting lines. It consists of a fuse block mounted on the dash with a fixed resistance connected across a 20 ampere capacity fuse. When the current of the lighting lines reaches 20 amperes the fuse will blow out causing the current to flow through the resistance. The resistance will limit the current flow to 30 amperes.

**FUSES:**—Generator field fuse is 6 ampere capacity. Lighting fuse mounted on block on dash is 20 ampere capacity.