

GRAHAM PAIGE

MODEL 615 (1929) SERIAL NUMBERS 713,001 UP
PRODUCTION STARTED JANUARY 2, 1929
DELCO-REMY GENERATING, STARTING SYSTEM
DELCO-REMY IGNITION

BATTERY:—Willard, Type WSB-15, 6 volt. The positive (+) terminal is grounded. Starting capacity (20 minute rate) is 105 amperes for 20 minutes. Lighting capacity (5 ampere rate) is 5 amperes for 20 hours. Battery is mounted under the right front seat.

IGNITION:—Coil Model 528-C. Ignition coil is mounted on the rear of the dash in the front compartment. Ignition current is 1.8 amperes at 6 volts with engine running and 4 amperes at 6 volts with engine stopped.

Distributor Model 639-W. Breaker contacts separate .018-.022 inch. Set contact gap by loosening lock screw on crescent shaped stationary contact mounting plate and turning eccentric adjusting screw until correct gap is secured 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 17-21 ounces. Distributor is full automatic with an auxiliary retard controlled by a button on the dash. Automatic advance begins at 400 R.P.M. (engine). Maximum automatic advance is 20 degrees reached at 2600 R.P.M. (engine). Manual advance is 30 degrees (engine).

Mounting:—Distributor is mounted on the cylinder head and can be removed from the left side. To remove distributor, disconnect primary lead and remove distributor 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 in place and the control wire and hold-down screw are disconnected. The distributor can then be lifted from place. In mounting distributor, make certain that the tongue on the end of the distributor shaft fits into the slot in the end of the drive shaft. The tongue is offset so that the distributor cannot be assembled incorrectly.

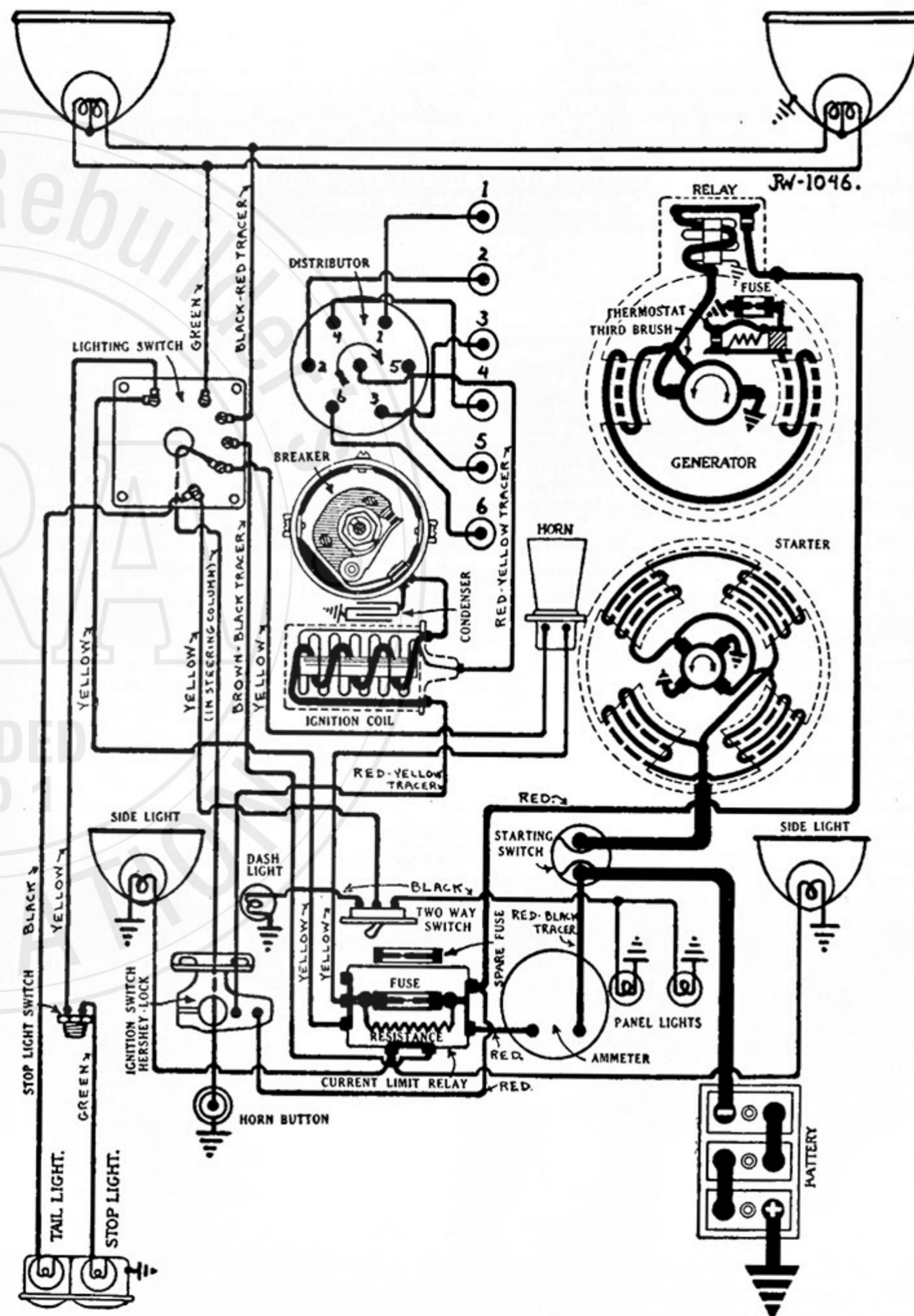
Oiling:—Fill the grease cup on the side of the distributor shaft with medium cup grease and turn down one turn every two weeks or each 500 miles. Every 1000 miles remove the distributor head and rotor and saturate the wick oiler in the center of the shaft with light engine oil and put a small bit of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

Timing:—Breaker contacts begin to separate when the piston entering power stroke reaches a position 1 degree or $\frac{1}{8}$ inch (on standard $14\frac{1}{8}$ inch flywheel) before top dead center with the spark control button in the fully advanced position (pushed all the way in to the dash). To set timing, crank engine over until piston No. 1 enters compression stroke (the up stroke with both valves closed). Fully advance spark control button and make certain that distributor housing is rotated counter-clockwise as far as possible. Then continue to crank engine until flywheel mark 'Spark Full Advance' is opposite the indicator in the peephole in the front face of the flywheel housing on the left of the engine. Loosen advance arm clamp screw and rotate distributor housing until contacts begin to open. Tighten the clamp screw and connect the terminal directly opposite the rotor to the spark plug in cylinder No. 1. Connect the remaining spark plugs in order 5-3-6-2-4 clockwise around the distributor head.

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

Spark Plugs:—Spark plugs are $\frac{7}{8}$ -18 S.A.E. Standard. Gaps are .023-.025 inch.

VALVE TIMING:—INLET VALVES:—Head diameter, $1\frac{9}{16}$ inches. Stem diameter, .340 inch. Stem length, $5\frac{1}{2}$ inches (end of stem to top of seat). Valve lift, .3125 inch. Spring pressure, 50-55 pounds (valve closed). Tappet clear-



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ance, .006 inch (cold). Inlet valves open at top dead center and close 40 degrees or 4.931 inches on the flywheel after lower dead center with piston .4125 or 13/32 inch up on compression stroke.

EXHAUST VALVES:—Head diameter, 1 15/32 inches. Stem diameter, .340 inch. Stem length, 5 1/2 inches (end of stem to top of seat). Valve lift, .3175 inch. Spring pressure, 50-55 pounds (valve closed). Tappet clearance, .010 inch (cold). Exhaust valves open 40 degrees or 4.931 inches on the flywheel before lower dead center with the piston .4125 or 13/32 inch from the bottom of the power stroke and close 10 degrees or 1.232 inches on the flywheel after top dead center with the piston .0422 or 3/64 inch down on inlet stroke. Flywheel distances are correct for standard 14 1/8 inch diameter flywheel. Valve stem guides are removable. Oversize valves are not made.

STARTER:—Model 718-E. Starter is connected to the engine through an out-board Bendix drive. The direction of rotation is counter-clockwise, viewed from the commutator end. Brush spring tension is 24-28 ounces. Starter cranks the engine at 120 R.P.M. drawing 150-200 amperes.

Starter Data			
Torque	R.P.M.	Volts	Amperes
0 lb. ft.	6000	5	65
15 "	Lock	3.15	570

Mounting:—Starter is flange mounted at right of engine on forward side of flywheel housing. To remove starter, disconnect cable 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-B. The direction of rotation is counter-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 generator output, remove the commutator cover band and loosen the small round headed screw on the generator end plate. Then shift the third brush in a counter-clockwise direction to increase the charging rate and in the oppo-

site direction to decrease the charging rate. Tighten the screw after making the adjustment. With standard car setting the maximum charging rate is 10.5 amperes (hot) reached at 1650 R.P.M. or 26 miles per hour.

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

Shunt field current is 4-6.1 amperes at 6 volts. Brush spring tension is 14-18 ounces.

Mounting:—Generator is cradle mounted at right of engine and is driven by extension of 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 each of the generator bearing oilers 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. Contacts separate .015-.025 inch. Air gap is .014-.020 inch with contacts closed.

LIGHTING:—Lighting switch is mounted at the lower end of the steering column. Double filament headlight bulbs are used 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. Dome light is 6-8 volt, 6 cp. S.C. Mazda 81. Instrument board lights and tail light are each 6-8 volt, 3 cp. S.C. Mazda 63.

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.