HUPMOBILE

SERIES E-3 (1927)
AUTO-LITE GENERATING, STARTING AND LIGHTING SYSTEM
DELCO-REMY IGNITION

BATTERY:—Willard, Type SJRR-6, 6 volt. Starting capacity is 160 amperes for 20 minutes. Lighting capacity is 5 amperes for 30 hours. The positive (+) terminal is grounded. Battery is mounted under the driver's seat.

IGNITION:—Coil Model 2195. Distributor Model 4027. Breaker contacts separate .0225-.0275 inch. They are made of tungsten. Resurface contacts with a fine flat contact file or on a medium hard oilstone. Distributor is semi-automatic. Manual advance is 38° (crankshaft). Automatic advance begins at 1000 R.P.M. and reaches a maximum of 21-25° at 3600 R.P.M. Breaker arm spring tension is 16-20 ounces. Distributor uses two sets of breaker contacts operating on a four sided cam and opening alternately at intervals of 45° corresponding to 90° of crankshaft rotation. This firing interval must be accurately set for correct ignition (see Timing).

Mounting:—Ignition coil is mounted on the engine side of the dash. The distributor is mounted at the right of the engine. To remove distributor, disconnect primary lead at ignition switch and remove manual advance control rod and stop screw. Then lift distributor from place.

Oiling:—Put 8 or 10 drops of light engine oil in the oiler on the side of the distributor housing every two weeks or each 500 miles. Put a small bit of vaseline on the face of the breaker cam every month.

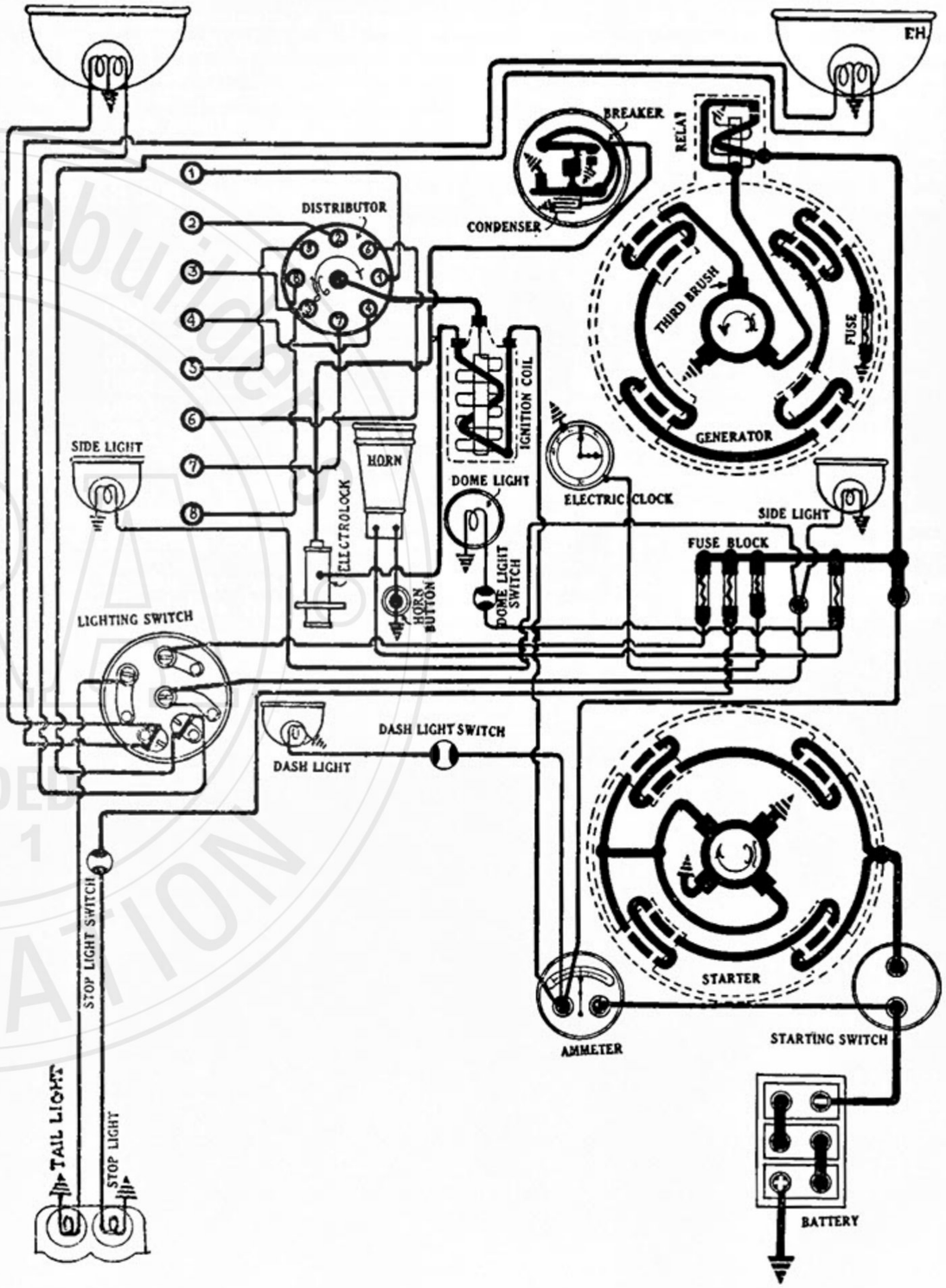
Timing:—Breaker contacts begin to separate when the piston entering power stroke reaches position 15° before top dead center with spark lever fully advanced. To check timing, crank engine until piston No. 1 enters compression stroke (the up stroke with both valves closed). Then advance manual spark control lever and continue to crank engine until piston No. 1 reaches firing position when the mark on the flywheel will be opposite the indicator on the flywheel case. The set of breaker contacts mounted on the stationary plate should begin to separate at this point. If they do not, loosen the lockscrew in the center of the breaker cam and rotate the cam until contacts begin to separate. Tighten the lockscrew. The second set of contacts should separate 45° after this point when piston No. 4 entering power stroke reaches firing position. Check firing interval with synchronizing tool which is Delco-Remy Part No. 822572. Remove regular firing cam and replace with tool placing tool on shaft so that fiber bumper of contact arm mounted on stationary plate rests in notch. If fiber bumper of second contact arm does not rest in the other notch, loosen the lockscrews and turn the eccentric adjusting screw until the fiber bumper is in the notch. Then tighten the lockscrews.

Valve Timing:—INLET VALVES open 4° past top dead center and close 51° past lower dead center. EXHAUST VALVES open 47° before lower dead center and close at top dead center.

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

Spark Plugs:—Spark plugs are 7/8-18 S.A.E. Gaps are .025-.028 inch.

STARTER:—Model MR-4101. Starter is connected to the engine through an outboard Bendix drive. The direction of rotation is counter-clockwise, looking at the commutator end. Starter switch is Model SW-4001. Brush spring tension is 1¼-1½ pounds each. Starter cranks the engine at 140 R.P.M. drawing 100 amperes at 6 volts.



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Starter Data

Torque	R.P.M.	Volts	Amperes	
0 lb. ft.	Free	5.9	60	(Without Bendix)
0 "	Free	5.8	70	(With Bendix)
1.5 "	1225	5.7	100	
6 "	700	5.4	200	
12.5 "	450	4.95	300	
18.5 "	300	4.5	400	
44 "	Lock	4.0	820	

Mounting:—Starter is barrel mounted at right of engine on rear of flywheel housing. To remove starter, disconnect starter cable and remove large taper pilot mounting screw and locknut. Then slide starter to rear and lift from place.

Oiling:—Starter bearings are oilless. They require no attention.

GENERATOR:—Model GXB-4201. The direction of rotation is counter-clockwise, looking at the commutator end. Generator current regulation is by third brush shunt field. To adjust generator output, loosen commutator cover band and shift third brush by tapping on third brush mounting stud with a screwdriver. Shift the third brush in a counter-clockwise direction to increase the charging rate and in the opposite direction to decrease the charging rate. The third brush is held in any desired position by friction between the mounting stud and the generator endplate. Maximum charging rate is 18 amperes (cold) at 8 volts reached at 1200 R.P.M. or 21.2 M.P.H.

Generator Data (Car Setting)

Cold Test			Hot Test		
Amperes	Volts	R.P.M.	Amperes	Volts	R.P.M.
2	6.6	550	2	7.2	620
5	7.0	650	5	7.4	700
10	7.3	780	10	7.7	900
16-18	7.7	1200	14	8.2	1600

Generator motoring draws 5.3 amperes at 6 volts. Shunt field draws 2.5 amperes at 6.2 volts directly across field terminals. Each coil draws 10 amperes at 6.2 volts when tested separately. Brush spring tension is 1¼-1½ pounds each.

Mounting:—Generator is flange mounted at right of engine on rear side of timing chain case. Generator drive is from timing chain which is adjusted by shifting generator in mounting slots. To adjust chain loosen the three flange mounting cap screws and shift generator around screw nearest engine block as a pivot until proper adjustment is secured. A set screw is provided to hold adjustment. The timing chain must not be too tight. To remove generator, disconnect generator lead and water pump coupling. Then loosen timing chain adjustment set screw and remove three flange mounting cap screws. Slide generator to rear and lift from place.

RELAY:—Model CB-4009. Relay is mounted on the generator. Relay closes at 550 R.P.M. of the generator when the voltage reaches 7-7.5 volts and opens with a discharge current of .5-2.5 amperes. Charging current at closing of contacts is 2 amperes. Relay contacts separate .025-.035 inch. Air gap between relay armature and coil core is .010-.030 inch, contacts closed.

LIGHTING:—Clum Switch Model 10612. Switch is mounted at base of steering column. Head lamps are 6-8 volt, 21 cp. double filament using second 21 cp. filament instead of dimming. Stop lamp is 6-8 volt, 15 cp. S.C. Side lamps are 6-8 volt, 3 cp. S.C. Dash, tail, dome and corner lamps are each 6-8 volt, 3 cp. S.C.

FUSES:—Generator field fuse is 5 amperes. Lighting fuses are 10 amperes.