

# ESSEX

## NEW SUPER SIX (1931) AUTO-LITE GENERATING, STARTING SYSTEM AUTO-LITE IGNITION

**BATTERY:** - Exide, Type 3-XI-13-1G. 6 volt, 105 ampere hour. The negative (-) terminal is grounded. Starting capacity (20 minute rate) is 98 amperes for 20 minutes. Lighting capacity (5 ampere rate) is 5 amperes for 17 hours. Battery is mounted on the left frame member under the driver's seat.

**IGNITION:** - Coil Model CE-4015. Coil is mounted on the engine cylinder head. Ignition current is 2 amperes at 6 volts with engine running and 5 amperes at 6 volts with engine stopped. The ignition switch is a Type 9-B Electrolock. The Electrolock must be removed with the distributor as a unit.

**Distributor Model IGB-4033.** Breaker contacts separate .018-.020 inch. Set contact gap by loosening lock nut on stationary contact mounting stud and turning up stud until correct gap is secured with the breaker arm on lobe of cam. Resurface contacts with a fine flat contact file or on a medium hard oilstone. Breaker arm spring tension is 16-20 ounces. Distributor is full automatic. Maximum automatic advance is 10 degrees.

**Mounting:** - Distributor is mounted on accessory drive bracket at right of engine. To remove distributor, disconnect Electrolock at dash and remove distributor head with cables intact. Then take out hold-down screw in advance arm and lift distributor from place.

**Oiling:** - Fill the oiler on the side of the distributor housing with light engine oil every 2000 miles. At the same time remove the distributor head and rotor and put a few drops of oil on the breaker arm pivot pin and coat the face of the breaker cam with a light film of vaseline or grease.

**Timing:** - Breaker contacts begin to separate when the piston entering power stroke reaches top dead center with the breaker assembly in the fully retarded position. To set timing, crank engine over until piston No. 1 enters compression stroke (the up stroke with both valves closed). Loosen clamp screw in advance arm slot and rotate distributor clockwise as far as possible. Continue to crank engine over until the flywheel mark 'DC 1&6' is directly opposite the pointer in the inspection hole in the flywheel case at the right of the engine. Then loosen advance arm clamp bolt and rotate distributor counter-clockwise until the contacts begin to open. Check to see that the segment directly opposite the rotor is connected to the spark plug in cylinder No. 1 and connect the remaining spark plugs in order 5-3-6-2-4 clockwise around the distributor head.

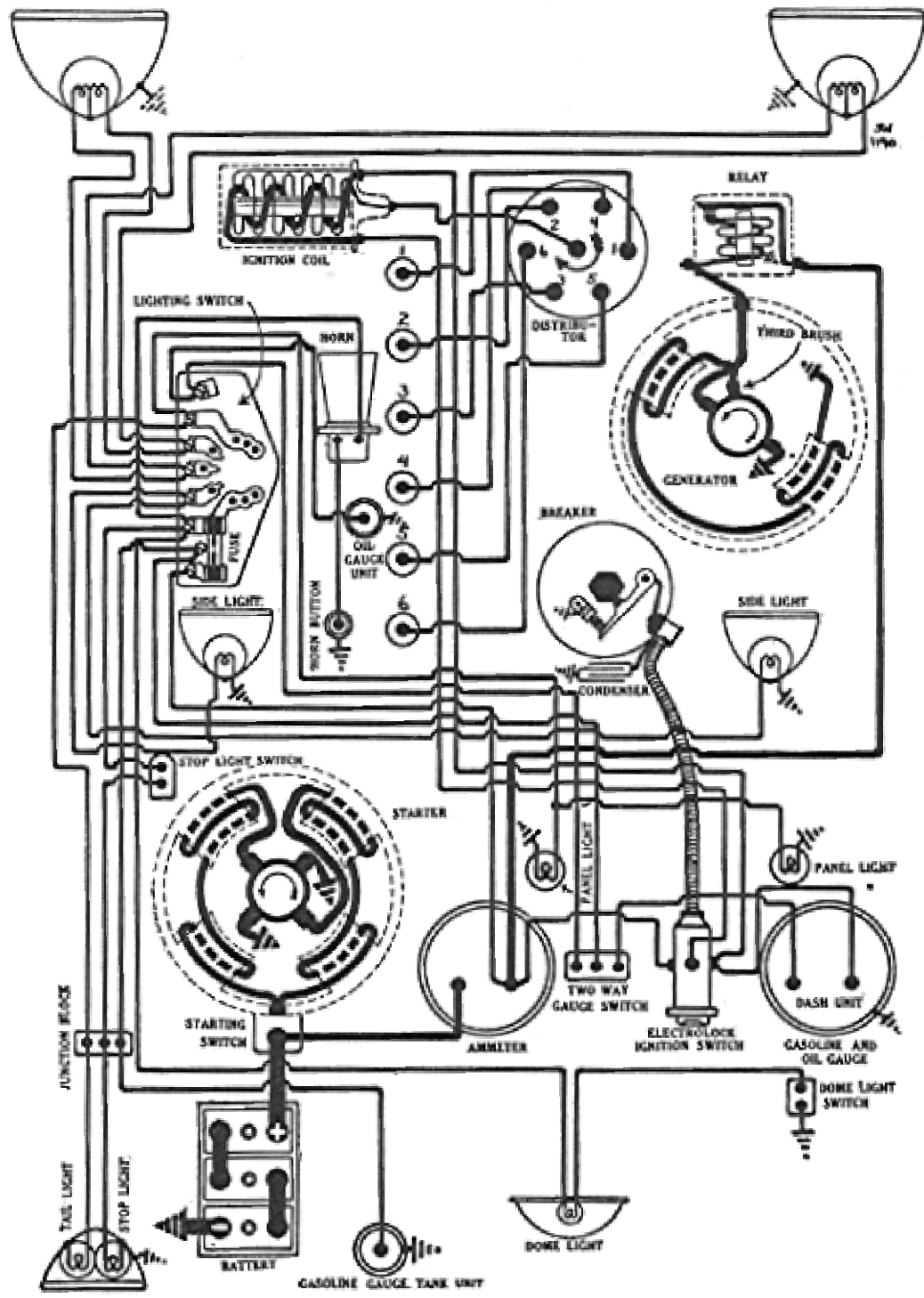
**Firing Order:** - The firing order is 1-5-3-6-2-4.

**Spark Plugs:** - Spark plugs are 18MM. Metric. A.C. Type G-10. Gaps are .022 inch.

**VALVE TIMING:** - INLET VALVES. Head diameter, 1½ inches. Stem diameter, .3085 inch. Stem length, 5<sup>1</sup>/<sub>32</sub> inches. Valve lift, <sup>5</sup>/<sub>16</sub> inch. Spring pressure, 50 pounds (valve closed). Tappet clearance, .003-.005 inch (hot).

**EXHAUST VALVES:** Head diameter, 1<sup>3</sup>/<sub>8</sub> inches. Stem diameter, .3085 inch. Stem length, 5<sup>1</sup>/<sub>32</sub> inches. Valve lift, <sup>21</sup>/<sub>64</sub> inch. Spring pressure, 50 pounds (valve closed). Tappet clearance, .005-.007 inch (hot). Valve stem guides are removable. Valves with oversize stems are not made.

**Valve Timing.** To check valve timing, set tappet clearance of No. 1 inlet valve at correct figure and then turn engine over until the inlet opening mark on the flywheel 'IO' which is 7 degrees past the top dead center



1931 Essex Super-Six Electrical Diagram

mark 'DC 1&6' is directly opposite the pointer in the inspection hole in the front face of the flywheel housing at the right of the engine. The tappet clearance should be entirely taken up and Inlet valve In No. 1 cylinder should begin to open at this point.

**STARTER: - Model MAJ-4009.** Starter is connected to the engine through an inboard Bendix drive. The direction of rotation is counter-clockwise, viewed from the commutator end. Starter cranks the engine at 125 R. P. M. drawing 125 amperes at 5.5 volts. Brush spring tension is 2½-3 pounds. The starter switch is mounted on the starter field frame and is operated through a flexible control by a button on the dash.

**Starter Data**

Torque	R.P.M.	Volts	Amperes
0 lb. ft	3000-5000	6	50
3 " "	1350	5	200
5.5 " "	900	4.5	300
13.5 " "	Lock	3	550

**Mounting:** - Starter is flange mounted at left of engine on forward face of flywheel housing. To remove starter, disconnect cable and lead to ammeter. Remove starter switch control wire. Then take out three flange mounting cap screws. Pull starter forward to clear drive and lift from place.

**Oiling:** - Put 3 or 4 drops of light engine oil in the oiler at each end of the starter armature shaft every 1000 miles of operation.

**GENERATOR: - Model GAM-4102.** The direction of rotation is counter-clockwise, viewed from the commutator end. Generator current regulation is by third brush shunt field. To adjust generator output, loosen the commutator cover band and shift the third brush by tapping on the brush mounting plate 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 brush and mounting plate are held in position by friction between the mounting stud and the end plate. With standard car setting, the maximum charging rate is 14-16 amperes (cold) at 8 volts reached at 1900 R. P. M. or 23 miles per hour.

**Generator Data**

Amperes	Volts	R. P. M.
0	6.5	620
2	6.9	710
5	7.1	830
10	7.8	1090
14	7.9	1490
15	8.0	1900

Shunt field current is 6.5 amperes at 6 volts. Generator motoring draws 5.5 amperes at 6 volts. Brush spring tension is 1¼-1½ pounds.

**Mounting:** - Generator is cradle mounted at right of engine and is driven through a flexible hose coupling from the accessory drive shaft. To remove generator, disconnect lead and drive coupling and loosen mounting clamp band. Then slide generator from place.

**Oiling:** - Put 3 or 4 drops of light engine oil in the oiler at each end of the generator every 1000 miles.

**RELAY: - Model CB-4016.** Relay is mounted on the generator end plate. Relay closes at 900 R.P.M. or 11 M.P.H. when generator voltage reaches 7 volts and opens with a discharge current of 0-2.5 amperes. Charging current at closing of contacts is approximately 2 amperes. Relay contact gap is .025-.035 inch. Air gap is .010-.030 inch with contacts closed.

**LIGHTING: - Soreng-Manegold Lighting Switch.** Lighting switch is mounted at lower end of steering column. The lighting fuse is mounted on the switch and two extra terminals are provided which serve as junctions for the oil and gasoline gauge lines. Headlights are fitted with double filament bulbs using a second 21 cp. filament instead of dimmer.

Headlights	6-8 volt	21-21 cp.	D.C.	Mazda 1110
Parking lights or side lights	6-8 volt	3 cp.	S.C.	Mazda 63
Dash and tail lights	6-8 volt	3 cp.	S.C.	Mazda 63
Stop light	6-8 volt	15 cp.	S.C.	Mazda 87

**FUSES: -** Lighting fuse mounted on lighting switch is 20 ampere capacity.