

# WILLYS KNIGHT

MODEL 66-A (1928)

## AUTO-LITE GENERATING, STARTING SYSTEM AUTO-LITE IGNITION

**BATTERY:**—U.S.L., Type 3-HVX-8X4, 6 volt. The negative (—) terminal is grounded. Starting capacity (20 minute rate) is 170 amperes for 20 minutes. Lighting capacity (5 ampere rate) is 5 amperes for 33.2 hours. Battery is mounted on right frame member.

**IGNITION:**—Coil Model IG-4065. Coil is mounted on right of engine block. Ignition current is 1-3 amperes at 6 volts with engine running and 3.4-5 amperes at 6 volts with engine stopped.

**Distributor Model IGA-4035.** Breaker contacts separate .018-.020 inch. Set contact gap by loosening lock nut on stationary contact stud and turning up stud until proper gap is secured with 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 semi-automatic. Manual advance is 10 degrees (engine). Maximum automatic advance is 10 degrees (engine).

**Mounting:**—Distributor is mounted at right of engine on top of oil pump housing. To remove distributor, disconnect manual advance rod and remove head with cables intact. Remove Electrolock switch on dash. Then take out 2 mounting cap screws and lift distributor from place. Electrolock Type 5-A is used. This must be removed with the distributor when the distributor is taken off the car.

**Oiling:**—Fill the grease cup on the side of the distributor shaft with pure vaseline and turn down one turn every 500 miles. Every 5000 miles put a small amount of vaseline on the face of the breaker cam.

**Timing:**—Breaker contacts begin to separate when the piston entering power stroke reaches a position 12 degrees before top dead center with the manual spark lever fully advanced. To set timing, crank engine until piston No. 1 enters compression stroke. This may be checked by removing all spark plugs except No. 1 and cranking engine until compression is felt. Then fully advance spark lever. Continue to crank engine until ignition mark on flywheel is opposite the indicator when the piston will be 12 degrees before top dead center. Loosen clamp screw and rotate distributor until contacts begin to open. Tighten the clamp screw and make certain that the segment opposite the rotor is connected to the spark plug in cylinder No. 1.

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

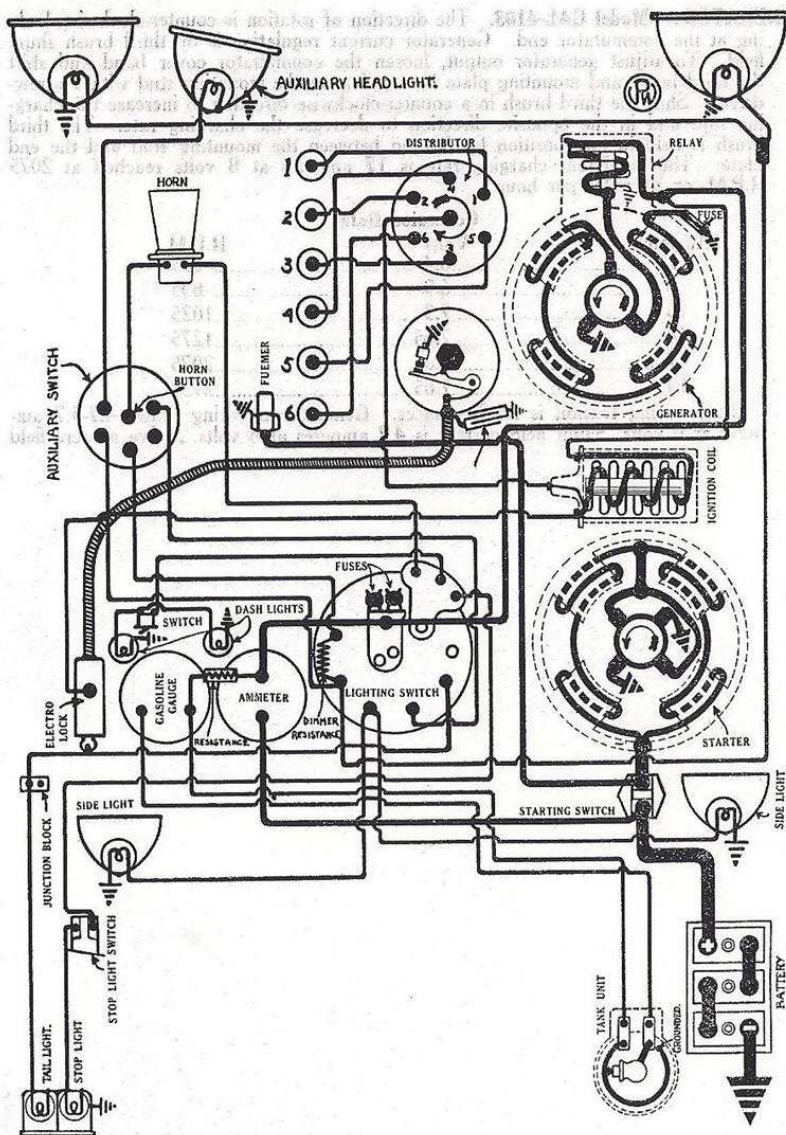
**Spark Plugs:**—Spark plugs are 7/8-18 S.A.E. Champion No. 2. Gaps are .025 inch.

**STARTER:**—Model MAB-4001. Starter is connected to the engine through a Bendix drive. The direction of rotation is counter-clockwise, looking at the commutator end. Brush spring tension is 1 3/4-2 1/4 pounds each. Starter cranks the engine at 1400 R.P.M.

Starter Data

Torque	R.P.M.	Volts	Amperes
.6 lb. ft.	1900		100
3.5 "	1100		200
6.6 "	700		300
10.2 "	410		400
24 "	Lock	4	725

**Mounting:**—Starter is sleeve mounted at right of engine on forward side of flywheel case. To remove starter, disconnect cable and remove large pilot screw from housing directly above starter sleeve. Then pull starter forward and lift from place.





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

**GENERATOR:**—Model GRE-4207-A. 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, remove commutator cover band and shift third brush and mounting bracket by tapping 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 mounting plate is held in any position by friction between the mounting stud and the end plate. Maximum charging rate is 18.5 amperes at 8 volts reached at 1200 R.P.M.

### Generator Data

Cold Test			Hot Test		
Amperes	Volts	R.P.M.	Amperes	Volts	R.P.M.
2.....	6.75.....	440	2.....	6.9.....	530
5.....	7.0.....	500	5.....	7.1.....	620
10.....	7.2.....	620	10.....	7.5.....	820
13.....	7.5.....	710	13.....	7.8.....	1045
18.....	7.85.....	1240	14.....	8.0.....	1360

Brush spring tension is 20-24 ounces. Generator motoring draws 5.5 amperes at 6 volts. Shunt field current is 4.4.5 amperes at 6 volts. A five ampere field

fuse is mounted on top of the generator.

**Mounting:**—Generator is cradle mounted at right of engine. To remove generator disconnect lead and remove clamp band. Then pull generator to rear to disengage coupling and lift from place.

**Oiling:**—Put 8 or 10 drops of light engine oil in each of the generator oilers every 1000 miles.

**RELAY:**—Model CB-4007. Relay is mounted on the generator. Relay closes at 450-500 R.P.M. of the generator when the voltage reaches 7-7.5 volts and opens at 400 R.P.M. with a discharge current of .5-2.5 amperes. Charging current at closing of contacts is approximately 3 amperes. Relay contacts separate .025-.035 inch. Air gap is .015 inch with contacts closed.

**LIGHTING:**—Briggs and Stratton Switch. Switch is mounted on the instrument board. An auxiliary switch on the side of the steering column controls the head light dimming resistance on the lighting switch and the auxiliary head light at the front of the car. Head lights are 6-8 volt, 21 cp. S.C. Mazda No. 1129. Auxiliary head light is 6-8 volt, 32 cp. S.C. Mazda No. 1133. Stop light is 6-8 volt, 15 cp. S.C. Mazda No. 87. Side, dash, tail, dome, corner and step lights are each 6-8 volt, 3 cp. S.C. Mazda No. 63.

**FUSES:**—Generator field fuse is 5 amperes. Lighting fuses on switch are 20 amperes capacity.