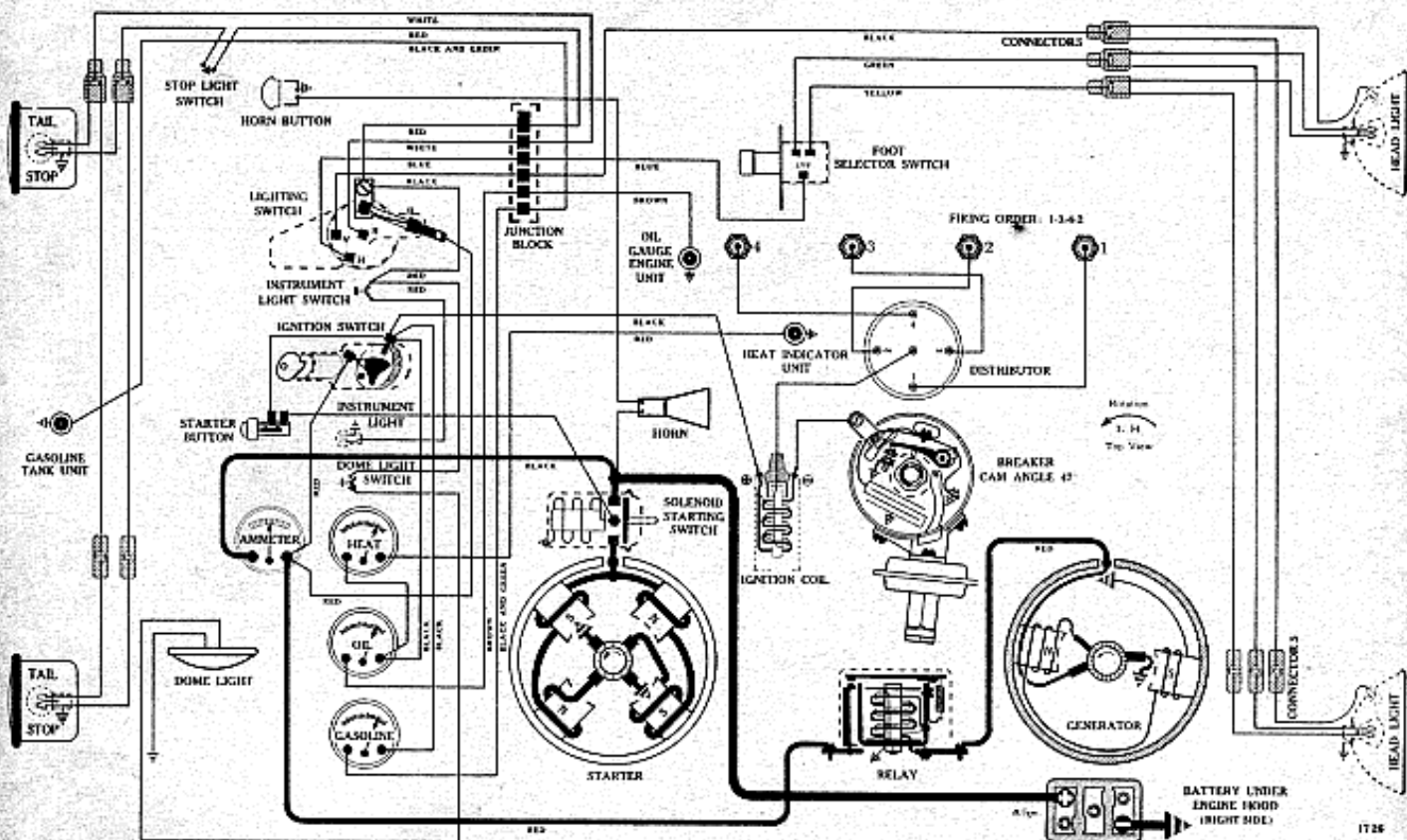


# WILLYS

Engine { Bore 3-1/8  
Stroke 4-3/8

Model 48, 4 cyl., (1939)



## BATTERY

U.S.L., A-13, 6 volts.  
Negative Terminal Grounded.

Starting Capacity—96 amps. for 20 minutes.  
Minutes of Discharge at 300 Amps., Zero Degrees F.—1.9  
Lighting Capacity—3.9 amps. for 20 hours (78 amp. hour).  
Case—length, 8-7/8; width, 7; height, 8-5/8 inches.

## STARTER

A-L Test 162 - Rotation, L. H., Com. End  
Auto-Lite, MZ-4049

Connection to Engine—Bendix Drive, Type RC10HD.  
Running Free—70 amps. at 5-1/2 volts, 4300 R.P.M.  
Stall Data—7.8 pound-feet, 420 amps. at 3 volts.  
Brush Spring Tension—42 to 53 ounces on each (new brushes). Brush spring tension should be measured by a scale hooked under the brush spring at the bend just beyond the brush, and the reading taken at moment spring leaves the brush. The pull should be exerted at right angles to force exerted by the brush spring.

Push Button Starting Switch—H. A. Douglas Mfg. Co., No. 5617.

Solenoid Starting Switch—Auto-Lite, SS-4001.

Armature—Auto-Lite, MZ-2089.

## IGNITION

A-L Test 466 - Rotation, L. H., Top View  
Auto-Lite, IGS-4007-A

NOTE:—If IGS-4007-B refer to 1939 Overland for data.

(Full Automatic Spark Advance in conjunction with Integral Vacuum Chamber.)

Breaker—Contact separation .020 inch.

Cam Angle—47 degrees.

Percentage of Dwell—52%.

Contact Spring Tension—16 to 20 ounces.

Timing—5 degrees or .0103 inch piston travel past top dead center. Loosen screw holding flywheel inspection hole cover, located in left top side of flywheel housing, and swing cover to one side. Flywheel mark "IGN" (located 5 degrees after T.D.C.) should register with the pointed end of inspection plate screw.

Spark Plugs—18-MM (Champion type C-7); Gap .025 inch.

Firing Order—1-3-4-2.

Vacuum Chamber (Auto-Lite, 1G7-1028-AS; Test No. 467)—10 degrees advance (Dist.). Starts with vacuum of 3-1/2 inches of mercury. Requires a vacuum of 15 for full travel.

## Vacuum Chamber Advance Table—

Inches of Mercury	Degrees Dist. Advance	Start
3.50.....		Start
4.65.....		1
5.80.....		2
6.95.....		3
8.10.....		4
9.25.....		5
10.40.....		6
11.55.....		7
12.70.....		8
13.85.....		9
15.00.....		10

# WILLYS

Model 48, 4 cyl., (1939)

## Automatic Advance—14 degrees (Distributor).

Eng. R. P. M.	Dist. R. P. M.	Degrees Advance (Dist.)
600.....	300.....	Start
680.....	340.....	1
760.....	380.....	2
840.....	420.....	3
920.....	460.....	4
1000 (Intermediate)	500.....	5
1266.....	633.....	6
1532.....	766.....	7
1798.....	899.....	8
2066.....	1033.....	9
2332.....	1166.....	10
2598.....	1299.....	11
2866.....	1433.....	12
3132.....	1566.....	13
3400 (Max.).....	1700.....	14

Breaker Plate—Auto-Lite, IGS-2044 (stamped with the figure 10).

Condenser—Auto-Lite, IG-2671-K.

Contact Point—Auto-Lite, IGP-33.

Breaker Lever and Point—Auto-Lite, IGP-3028-L.

Rotor—Auto-Lite, IG-1657.

Distributor Cap—Auto-Lite, IG-1324.

Flexible Lead (Insulated)—Auto-Lite, IGS-78.

Ignition Coil—Auto-Lite, IG-4090.

Ignition Switch—H. A. Douglas Mfg. Co., No. 2975.

## GENERATORS

Rotation, L. H., Com. End

(Two Different Generators Used)

Auto-Lite, GAM-4504-A or GAM-4504-B

Performance Data—Gen. cold.

Amps.	R. P. M.	Volts
0.....	700.....	6.40
2.....	785.....	6.60
6.....	960.....	6.90
10.....	1100.....	7.20
12.....	1320.....	7.40
16.....	2400 (Max.).....	8.00

Motoring Freely—4.08 to 4.52 amps. at 6 volts.

Max. Stall Current—18 to 20 amps. at 6 volts.

Field Test—3.89 to 4.31 amps. at 6 volts across field coils in series.

Brush Spring Tension—18 to 22 ounces on each (new brushes). Brush spring tension should be measured by a scale hooked under the head of the brush holding screw, and close up to the brush. The pull should be exerted at right angles to force exerted by the brush spring.

Armature—Auto-Lite, GAM-2055.

Third Brush Adjustment—Loosen cover band. Shift third brush by hand. Mounting plate held in any position by friction clamp washers.

## RELAY

Auto-Lite, CB-4025 (Mounted on Sub Frame)

Points Close—6.4 to 7.0 volts.

Points Open—.5 to 2.5 amps. discharge.

Contact Gap—.015 inch minimum (points open).

Armature Air Gap—.034 to .038 inch (points open).

## LIGHTING

Switch—H. A. Douglas Mfg. Co., No. 5400-C.

Location—Behind instrument board.

Fuse—Single 20 amp. fuse (type SFE-20) on switch back. Protects all lighting circuits.

Foot Selector Switch—H. A. Douglas Mfg. Co., No. 5530.

Lamps—HEAD--2320; PARK--55; INSTRUMENT--63; DOME--63; STOP AND TAIL--1158.