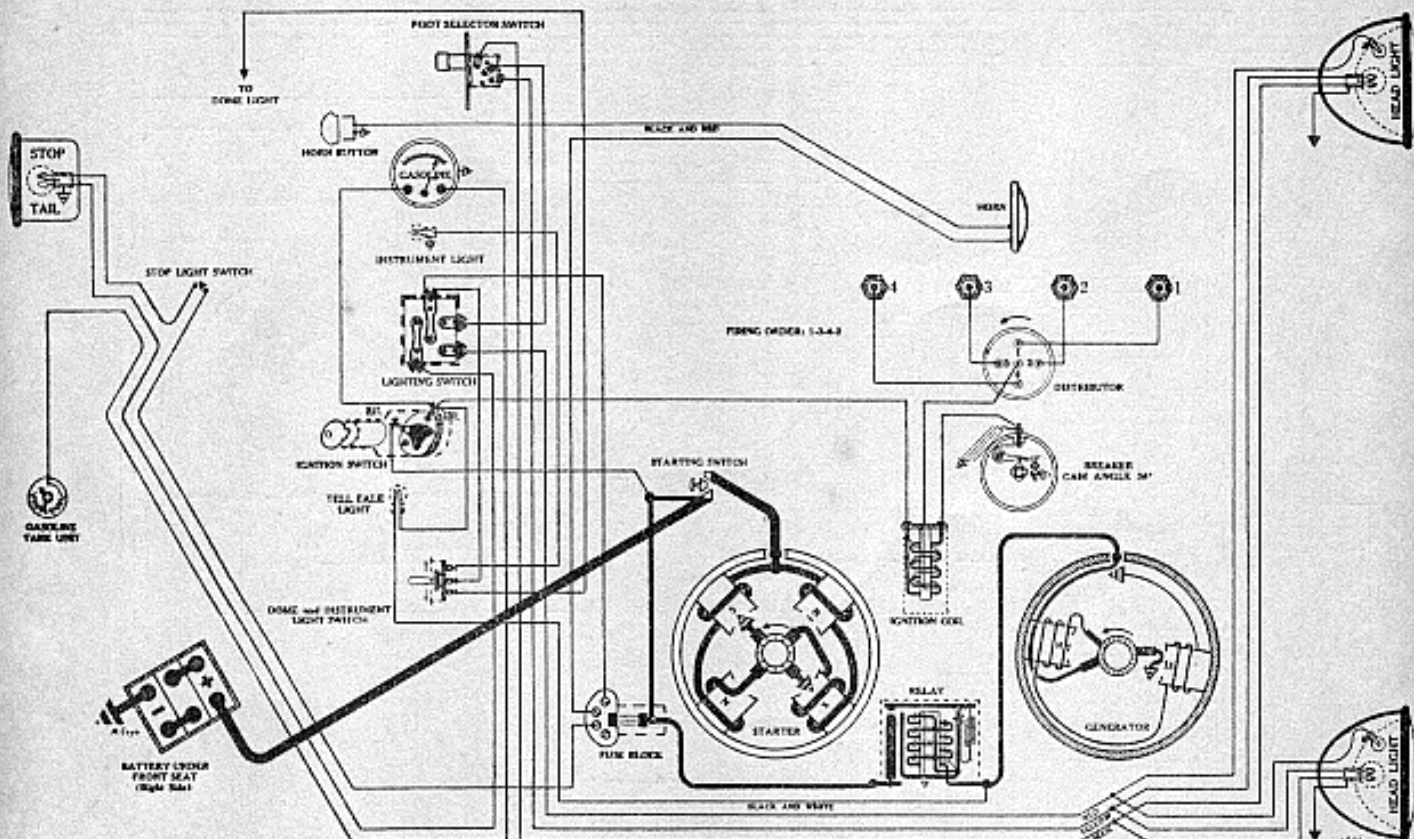


# WILLYS

Model 77, 4 cyl., (1934)

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



## BATTERY

U.S.L., A-13-A, 6 volts. Negative Terminal Grounded  
Starting Capacity—36 amps. for 20 minutes.  
Lighting Capacity—3.9 amps. for 20 hours (78 amp. hour).  
Box—Length, 9; width, 7 1/4; height, 8 3/4 inches.

## STARTER

Rotation, L. H., Com. End  
Auto-Lite, MZ-4033

Connection to Engine—Bendix Drive, Type RC10HD.  
Running Free—47 amps. at 5 1/2 volts, 4902 R.P.M.  
Cranking Engine—135 to 150 amps. at 4.2 volts.  
Lock Torque—10 pound-feet, 470 amps. at 3 1/2 volts.  
Brush Spring Tension—44 to 56 oz. on each (new brushes).  
Starting Switch—Auto-Lite, SW-4001.  
Armature—Auto-Lite, MZ-2089.

## IGNITION

Rotation, L. H., Top View  
Auto-Lite, IGB-4078  
(Full Automatic Spark Advance)

Breaker—Contact separation .020 inch.  
Cam Angles—Points closed 36 degrees; open 54 degrees.  
Contact Spring Tension—17 to 19 oz.  
Timing—Loosen screw holding flywheel inspection hole cover, located in left top side of flywheel housing, and swing cover to one side. Slowly turn engine until No. 1 piston is coming up on compression stroke. Stop when flywheel mark "Ign" is directly under pointed end of inspection plate screw. With rotor under No. 1 Dist. Cap Terminal, breaker points should just open.  
Timing with MOTOR GAUGE—Remove No. 4 spark plug, and attach MOTOR GAUGE, using adapter No. 104 and rod No. 2. Slowly turn engine until No. 4 piston is coming up on compression stroke. Stop when .006 inch before T.D.C., as indicated on Gauge.

Spark Plugs—18-MM (Champion type C-7); Gap .027 inch.

Firing Order—1-3-4-2.

Automatic Advance—12 1/2 degrees (Distributor).

Eng. R.P.M.	Dist. R.P.M.	Degrees Advance (Dist.)	Start
600	300		2
1040	520		4
1500	750		6
1940	970		8
2400	1200		10
2850	1425		12 1/2
3400 (Max.)	1700		

Ignition Coil—Auto-Lite, IG-4406.

Lock Ignition Switch—Mitchell Specialty, Type 17.

## GENERATOR

Rotation, L. H., Com. End  
Auto-Lite, GAM-4504, (Belt Drive)

Performance Data—Gen. cold.

Amps.	R.P.M.	Volts	Amps.	R.P.M.	Volts
0	700	6.4	10	1100	7.2
2	785	6.6	12	1320	7.4
6	960	6.9	16	2400 (Max.)	8.

Motoring Freely—4 1/2 to 5 amps. at 6 volts.

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

Field Test—4.2 amps. at 6 volts across field coils in series.

Brush Spring Tension—18 to 22 oz. on each (new brushes).

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-4008, (Mounted on Sub Frame)

Closes—4 1/2 to 7 1/2 volts.

Opens—1/2 to 2 1/2 amps. discharge.

Contact Gap—.025 to .035 inch.

Core Gap—.010 to .020 inch, contacts closed.

## LIGHTING

Switch—Culver-Stearns.

Location—Lower edge of instrument board, above steering wheel.

Fuses—Single 20 amp. fuse (type 3A-20) mounted on block under engine hood (right side).

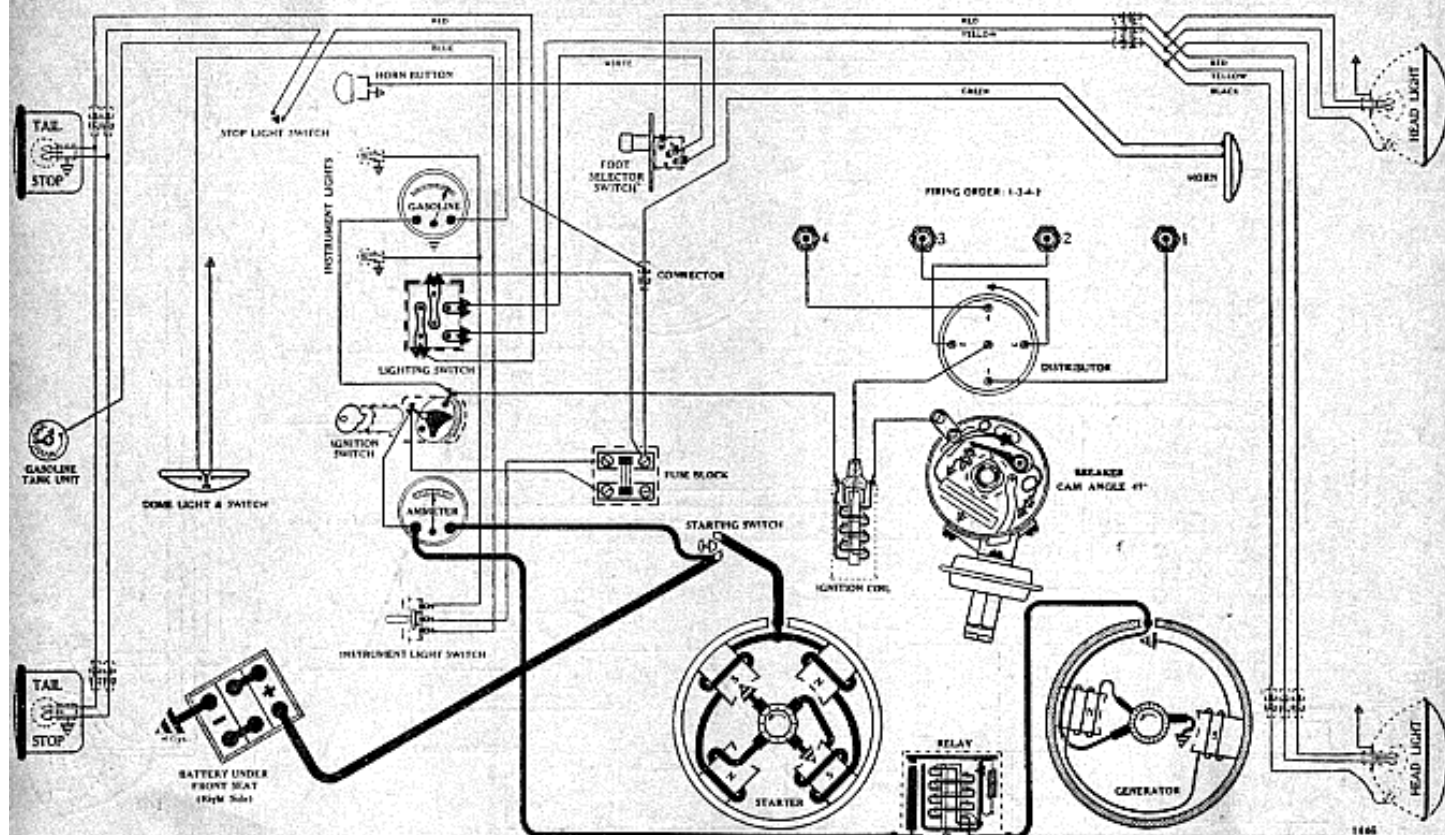
Foot Selector Switch—Soreng-Manegold, No. A2100-A.

Lamps—See Lamp Table, Sec. AA. HEAD—1110; PARK—63; INSTRUMENT—68; GENERATOR SIGNAL—64; DOME—63; STOP AND TAIL—1158.

# WILLYS

Engine (Bore 3-1/8  
Stroke 4-3/8)

Model 77, 4 cyl., (1936)



## BATTERY

U.S.L., A-13-A, 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).  
Box—Length, 9; width, 7; height, 8 5/8 inches.

## STARTER

A-L Test CU-162 Rotation, L. H., Com. End  
Auto-Lite, MZ-4033  
Connection to Engine—Bendix Drive, Type RC10HD.  
Running Free—47 amps. at 5 1/2 volts, 4902 R.P.M.  
Cranking Engine—96 amps. at 5.1 volts.  
Engine Cranking Speed—120 R.P.M.  
Stall Data (on car)—300 amps. at 2.9 volts.  
Lock Torque (for test bench use)—10 pound-feet, 470  
amps. at 3 1/2 volts.  
Brush Spring Tension—44 to 56 oz. on each (new  
brushes).  
Starting Switch—Auto-Lite, SW-4001.  
Armature—Auto-Lite, MZ-2089.

## IGNITION

A-L Test 466 Rotation, L. H., Top View  
Auto-Lite, IGS-4007  
(Full Automatic Spark Advance in conjunction with  
Auto-Lite IGT-1028-AS Vacuum Chamber. This  
chamber controls position of Breaker Plate Assembly  
No. IGS-2044, which is stamped with the figure 10).  
Breaker—Contact separation .020 inch.  
Cam Angles—Points closed 47 degrees; open 43 de-  
grees.

Contact Spring Tension—18 to 20 oz.  
Timing—5 degrees 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. Slowly turn engine until No. 1 piston comes up  
on compression stroke and starts down on the power  
stroke. Stop when the flywheel mark "IGN" (located  
5 degrees after T.D.C.) is directly under pointed end of  
inspection plate screw. With rotor under No. 1  
Dist. Cap Terminal, breaker points should just open.  
Spark Plugs—18-MM (Champion type C-7); Gap .025  
inch.

Firing Order—1-3-4-2.  
Vacuum Chamber (Auto-Lite, IGT-1028-AS; Test No.  
467)—10 degrees (Dist. advance). Starts with  
vacuum of from 2 1/2 to 4 1/2 inches of mercury. Re-  
quires a vacuum of 15 inches for full travel.  
Vacuum Advance Table (Auto-Lite, IGT-1028-AS Vac-  
uum Chamber).

3.5	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

Automatic Advance—14 degrees (Distributor).  
Eng. R.P.M. Dist. R.P.M. Degrees Advance (Dist.)

500	250	Start
600	300	2
700 (Intermediate)	350	4
1240	620	6
1780	890	8

# WILLYS

Model 77, 4 cyl., (1936)

2320.....	1160.....	10
2860.....	1430.....	12
3400 (Max.) .....	1700.....	14

Condenser—Auto-Lite, IG-2671-K.

Ignition Coil—Auto-Lite, IG-4090.

Lock Ignition Switch—Mitchell Specialty, Type 17.

## GENERATOR

Rotation, L. H., Com. End

Auto-Lite, GAM-4504 (Belt Drive)

Performance Data—Gen. Cold.

0.....	700.....	6.4
2.....	785.....	6.6
6.....	960.....	6.9
10.....	1100.....	7.2
12.....	1320.....	7.4
16.....	2400 (Max.) .....	8.

Motoring Freely—4½ to 5 amps. at 6 volts.

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

Field Test—4.2 amps. at 6 volts across field coils in series.

Brush Spring Tension—22 oz. Max. on each (new brushes).

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-4008 (Mounted on Sub Frame)

Points Close—6.5 to 7.25 volts.

Points Open—.5 to 3.0 amps. discharge.

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

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

## LIGHTING

Switch—Culver-Stearns.

Location—Lower edge of instrument board, above steering post.

Fuses—Single 20 amp. fuse (type 3A-20) in fuse block on dash board under cowl (driver's side).

Foot Selector Switch—Soreng-Manegold, No. A2100-A.

Lamps—Refer to "Lamp Data" in Technical Section.  
HEAD—1110; PARK—63; INSTRUMENT—63;  
DOME—63; STOP AND TAIL—1158.