SERIAL NUMBER:—Stamped on plate on engine side of dash. Use engine number (X-100026 and up) stamped on boss on left side of engine block near distributor.

COMPRESSION:—Ratios and pressure as follows:

Head	Pressure at 125 R.P.M.
Std. 6.43-1	110 lbs.
Optl. 7.0-1	118 lbs.

VACUUM READING:—18-20" steady reading with engine idling at 6 M.P.H.

IGNITION:—Coil Model CE-4623. Service Coil (less switch and cable) CE-3224-ES. Mounted on bracket on side of cylinder head above distributor.

Coil Draw—½ ampere idling, 2½ amperes stopped.

Ignition Switch:—Mitchellock Model 24-B. Type 7065. Connected to coil by armored cable.

Ignition Lock—Briggs & Stratton. Mitchell No. 6760. B. & S. #50184 (cylinder). **Key Series**—P1251-P1500.

Distributor Model IGT-4004. Single breaker, 8 lobe cam, full automatic advance type with Vacuum Spark Control and Fuel Compensator or manual adjustment at distributor.
See Electrical Equipment Section for special servicing directions on these distributors.

Breaker Gap—Set at .015". Limits .0125-.0175".

Cam Angle or Dwell—27° closed, 17° open with .017" gap.

Breaker Arm Spring Tension—18-20 ounces.

Condenser—Part No. IG-2671J. Capacity .20-.25 mfd.

Automatic Advance

Distributor Degrees	Distributor R.P.M.	Engine Degrees	Engine R.P.M.
Start	300	0	600
2	660	4	1320
4	1050	8	2100
6	1430	12	2860
8	1820	16	3640
10	2200	20	4400

NOTE—Heavier advance weight spring must be mounted on spring lug which has flat auxiliary spring behind it.

Vacuum Spark Control—Vacuum unit mounted on side of distributor housing and linked directly to breaker plate. Provides additional advance for all speeds above idling except when engine is accelerated or operated with wide open throttle when spark is retarded by spring within unit.

Vacuum Spark Advance

Distr. Degrees	Eng. Degrees	Vacuum (" of HG)
Start	0°	6"
2½°	5°	9.5"
5°	10°	12.4"
7½°	15°	17"

Fuel Compensator—Manual adjustment at distributor providing advance or retard adjustment from center '0' point on scale. See Ignition Timing for setting.

Removal:—Distributor mounted on left hand side of crankcase. To remove, disconnect vacuum line, take out hold-down screw in advance arm.

IGNITION TIMING:—For all engines as follows:

Head	Flywheel Degrees	Piston Position
Std. 6.4-1	7° BTDC	.0202" BTDC.
Optl. 7.0-1	4° BTDC	.0068" BTDC.

Timing—Remove cover over timing inspection hole in left front face of flywheel housing under starter. Loosen thumbnut and set Fuel Compensator at '0', tighten thumbnut. With #1 piston on compression, turn engine over until piston reaches firing position, stop when proper graduation on flywheel before dead center mark '#1 UP DC' (see table above —each graduation on flywheel equals 2°) lines up with pointer. Loosen advance arm clamp bolt, rotate distributor until contacts begin to open, tighten clamp bolt.

NOTE—No synchronization required for this distributor.

Timing (Neon Timing Light)—White mark provided on flywheel at 7° point. Mark flywheel similarly at 4° point for high compression engines. See Electrical Equipment Section for complete instructions.

Firing Order—1-6-2-5-8-3-7-4. See diagram.

Spark Plugs:—AC. Type Y-4 or Champion. 10 M.M. Metric type.

NOTE—Y-4 discontinued by AC. Use No. 103.

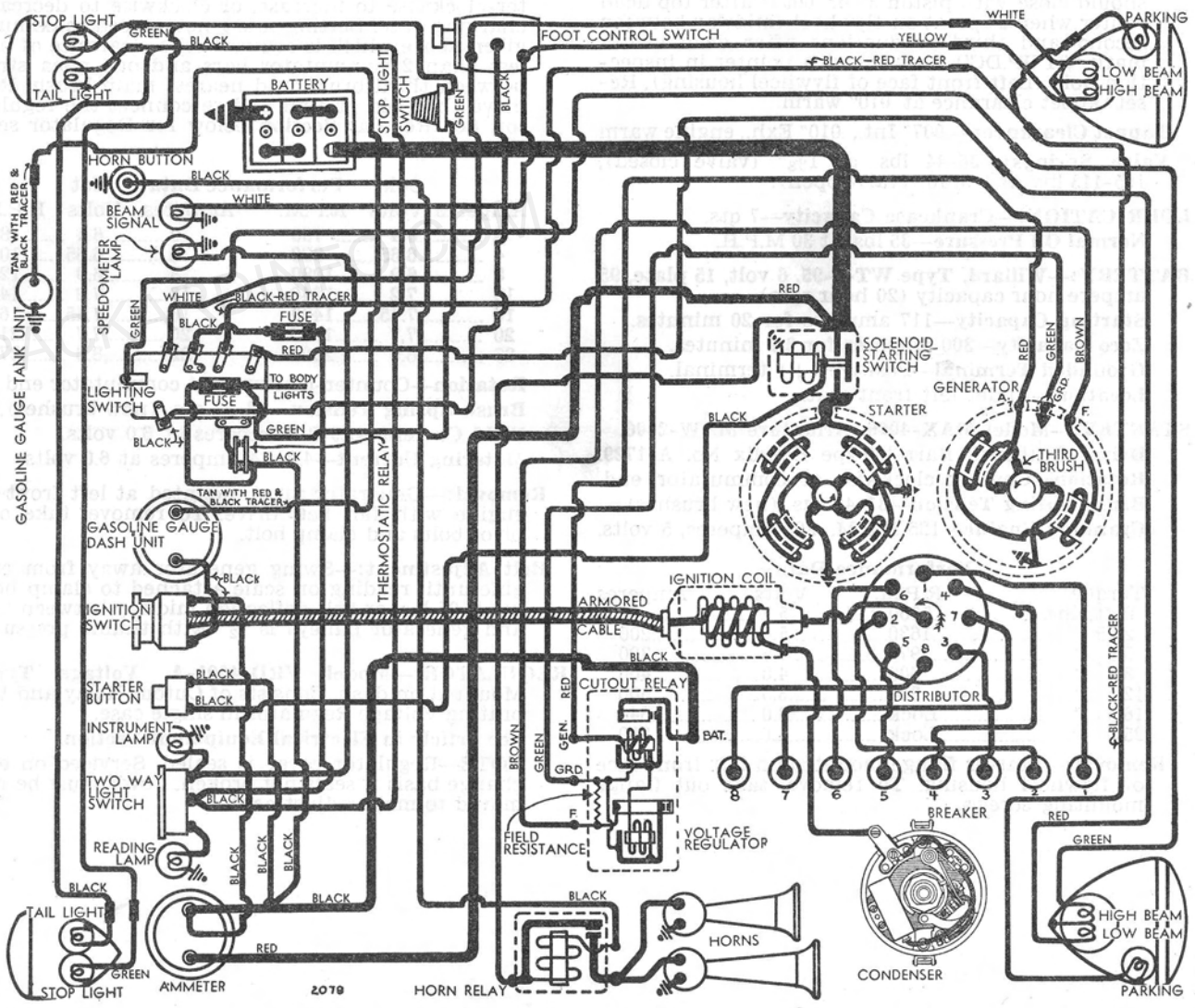
NOTE—This is new type small plug. Use only thumb-and-finger pressure on 4½" wrench to tighten plugs.

Spark Plug Gaps—.026-.030".

CARBURETION:—Carburetor—Stromberg Model EE-14 (first cars), Carter Model WDO Type 366-S (later cars). 1" Duplex or double barrel downdraft type. **See Article in Carburetion Section for data.**

Idle Adjustment (All Models)—Warm up engine so that Automatic Choke and Fast Idle are inoperative. Set throttle lever stopscrew so that engine idles at 300 R.P.M. or 6 M.P.H. Turn inner idle adjusting screw in until engine begins to miss, then out until engine begins to roll, finally turn screw in slowly until engine fires smoothly. Readjust throttle stopscrew for correct idling speed.

Accelerating Pump Setting—Not adjustable on either carburetor model.



Fast Idle:—Integral with carburetor. Stromberg type not adjustable. On Carter models, hold choke valve tightly closed, adjust fast idle lever screw so that throttle opening is .018" as measured on side opposite idle ports.

See Article in Carburetion Equipment Section.

Automatic Choke:—Stromberg type integral with Carburetor. Carter Climatic Control mounted on carburetor.

See Article in Carburetion Equipment Section.

Air Cleaner:—AC. #1526714 Heavy Duty oil-bath type standard.

Fuel Pump:—AC. Type AJ #1523202 combination fuel-and-vacuum pump.

See Article in Carburetion Equipment Section.

Gasoline Gauge:—AC. Electric type. No. 1515326 (dash unit), 1515443 (tank unit).

See Article in Carburetion Equipment Section.

VALVE TIMING:—To Check Timing—Set tappet clearance #1 exhaust valve at .013" (or set at .017" and insert .004" feeler to check closing). This valve should close with piston 5° or .0103" after top dead center when 5° point on flywheel (midway between second and third graduations after dead center mark '#1 UP.DC') lines up with pointer in inspection hole (left front face of flywheel housing). Reset tappet clearance at .010" warm.

Tappet Clearance:—.007" Int., .010" Exh., eng. warm.

Valve Springs—36-44 lbs. at 1⅝" (valve closed), 105-113 lbs. at 1 5/16" (valve open).

LUBRICATION:—Crankcase Capacity—7 quarts.

Normal Oil Pressure—35 lbs. at 30 M.P.H.

BATTERY:—Prest-O-Lite, Hi-Level Type HR2-17. 6 volt, 17 plate, 144 ampere hour capacity (20 hour rate).

Starting Capacity—133 amperes for 20 minutes.

Zero Capacity—300 amperes for 3.5 minutes.

Grounded Terminal—Positive (+) terminal.

Location—Under front seat on left side.

Delco Battery Type 17-K. 6 volt, 17 plate, 110 ampere hour capacity (20 hour rate).

Starting Capacity—131 amperes for 20 minutes.

Zero Capacity—300 amperes for 4.4 minutes.

STARTER:—Model MAX-4006. Armature MAW-2006.

Drive—Outboard Barrel Type Bendix No. A-1729.

Rotation—Counter-clockwise at commutator end.

Brush Spring Tension—31-42 ozs. (new brushes).

Cranking Engine—125 R.P.M., 200 amperes, 5 volts.

Performance Data

Torque	R.P.M.	Volts	Amperes
0 ft. lbs.	5300	5.5	65
2.75 "	1630	5.0	200
5.5 "	970	4.5	300
8.7 "	600	4.0	400
12.0 "	300	3.5	500
16.5 "	Lock	3.0	640
25.0 "	Lock	4.0	880

Removal:—Starter flange mounted on left front face of flywheel housing. To remove, take out flange mounting screws.

Starting Switch:—Model SS-4001. Magnetic type. Mounted on starter and controlled by pushbutton on instrument panel. See article in Electrical Equipment Section.

Switch Specifications

Closes with terminal voltage of 4 volts or less. Remains closed until voltage drops to .75-2.0 volts. Current draw, 3 amperes at 6.0 volts.

GENERATOR:—Model GCJ-4801-A. Armature GCJ-2006. Third brush control type with external voltage regulation. Ventilated by fan on drive pulley.

Maximum Charging Rate—25 amperes (cold), 22 amperes (hot), 8.0 volts, 2500 R.P.M. Actual charging rate controlled by Voltage Regulator and dependent on battery condition.

Charging Rate Adjustment—Maximum charging rate controlled by third brush. To check charging rate, disconnect regulator 'F' lead, ground field terminal 'F' on generator. Shift third brush counter clockwise to increase, or clockwise to decrease charging rate. Setting must not exceed maximum given above which is equivalent to clearance of not less than 2 commutator bars and one mica strip between third brush and nearest main brush. Remove the field ground and re-connect the regulator. See Regulator Section below for Regulator setting.

Performance Data

Cold			Hot		
Amps.	Volts	R.P.M.	Amps.	Volts	R.P.M.
0	6.4	760	0	6.4	850
4	6.65	920	4	6.65	1020
8	6.9	1080	8	6.9	1240
12	7.2	1240	12	7.2	1400
16	7.45	1400	16	7.45	1650
20	7.7	1580	20	7.7	2100
25	8.0	2500	22	8.0	2700

Rotation—Counter-clockwise at commutator end.

Brush Spring Tension—23-27 ozs. (new brushes).

Field Current—1.9-2.1 amperes at 6.0 volts.

Motoring Current—4.0-4.4 amperes at 6.0 volts.

Removal:—Generator pivot mounted at left front of engine with fan belt drive. To remove, take out pivot bolts and clamp bolt.

Belt Adjustment:—Swing generator away from engine until reading on scale attached to clamp bolt lug is 25 lbs. or belt deflection midway between fan and generator pulleys is ½" with thumb pressure.

REGULATOR:—Model VRD-4001-A. Voltage Type. Mounted on dash. Consists of Cutout Relay and Vibrating Voltage Regulator in single case.

See Article in Electrical Equipment Section.

NOTE—Regulator cover is sealed. Serviced on exchange basis if seals not broken. Cover must be removed to make adjustments.

Cutout Relay

Cuts In—6.4-7.0 volts Cold.

Cuts Out—.5 ampere Min., 3.0 amperes Max. Cold.

Contact Gap—.015" minimum.

Air Gap—.034" Min., .038" Max. with contacts open. Measure at hinge end of core.

Voltage Regulator

Setting—7.5-7.8 volts at 70°F. (Before Serial No. 8R-000001), 7.3-7.6 volts at 70°F. (After 8R-000001). **See Electrical Equipment Section for complete settings and changes.**

To Check—Connect ammeter in charging line at 'B' terminal on regulator (use short heavy leads), connect voltmeter between regulator 'B' and 'GD' terminals. Operate generator, charging fully charged battery, at speed equivalent to 30 M.P.H. car speed until voltage is steady. Voltmeter reading should be within limits of 7.4-7.9 volts (Before No. 8R-000001), 7.3-7.6 volts (cold 70°), 7.1-7.4 volts (hot 140°) after No. 8R-000001. **See Setting above.**

To Adjust—Change regulator armature spring tension by bending lower spring hanger. See Electrical Equipment Section for complete instructions.

Contact Gap—.010" Min., .020" Max. with armature against stop pin.

Air Gap—.0595-.0625" with contacts just opening.

LIGHTING:—Headlamps—Hall 'Flex-Beam' Pre-focused type with special non-interchangeable lenses marked Right and Left. Passing beam (upper beam right hand headlamp, lower beam left hand headlamp) obtained by foot selector switch.

Switches

Lighting—Delco-Remy Model 480-L, Y.
Foot Selector—Delco-Remy Model 471-T.

Bulb Specifications

Position	Candlepower	Mazda No.
Headlamps	32-32	2330-L
Parking, Fender (Optl)	1½	55
Instrument, Reading, Spdmtr.	1½	55
Clock, Indicator, Radio	1	51
Stop	15	87
Tail	3	B63

FUSES:—Accessory—20 ampere on back of lighting switch.

Tail Light—20 ampere in lamp lead near light switch.

THERMOSTATIC RELAY:—Thermostatic arm type current limit relay. Mounted on light switch, protects headlamp circuits. Not adjustable. Contacts open with current load of 38 amperes at 70°F.

HORNS:—Sparton or Klaxon. Vibrator type, twin horns operated by horn relay.

Horn Relay:—R.B.M. Model 10072. Current draw .4-.55 amperes at 6.0 volts. Coil resistance 11-14 ohms. Contacts must close with 4 volts across contacts when relay inverted.