

1935 Hudson – Model GH, Big Six

Tune-up and Electrical Specifications AUTO-LITE Electrical System

MODEL IDENTIFICATION

SERIAL NUMBER: - First number, 53-101. On plate on engine side of dash. All model numbers will carry prefix '53'.

ENGINE NUMBER: - First number, 70,000. Stamped on left side of cylinder block opposite #6 cylinder.

TUNE-UP

COMPRESSION: - Ratio-6.25-1 (Standard cast-iron head). 7.0-1 (Optional aluminum-iron composite head.)

Pressure - 116 lbs. at 219 R.P.M. (6.25-1 head), 127 lbs. at 207 R.P.M. (7.0-1 head) with all spark plugs removed and throttle wide open.

VACUUM READING: - Gauge should show steady reading of 18-20", with engine idling at 350 R.P.M.

AUTOMATIC SHIFT (ELECTRIC HAND): - Bendix electro-pneumatic type optional on these cars.

IGNITION: See Coil, Condenser, and Distributor.

Breaker Gap - .020" Cam Angle 38' (closed).

Automatic Advance - 15° max. at 2000 RPM (IGB4301-A), 14° max. at 1580 RPM. (IGB-4301-B). Distributor degrees & RPM.

IGNITION TIMING: See Ignition Timing.

Std. Setting - 4½° BTDC (Before Eng. No. 73790), At TDC (After Eng. No. 73791) with flywheel mark 'UDC.1-6/1' ½" ahead (4½° setting), or at indicator (TDC setting) in left front face of housing.

CARBURETION: See Carburetor & Carb. Equipment.

Idle Setting - Idle screw ½-1 turn open. Idle speed 350 RPM or 7 MPH.

Float Level - 3/8" from gasket seat on cover to nearest point on float (top at free end).

Accelerating Pump - Center hole Normal. Inner hole (Summer), Outer hole (Winter) for temperature extremes.

Fuel Pump Pressure: 3½ lbs. maximum.

VALVES: See Valve Timing.

Tappet Clearance-.006" Intake, .008" Exhaust, Hot.

STARTING: See Battery, Starter, Generator, Regulator.

IGNITION

COIL: Auto-Lite Model IG-4616. Resistance unit mounted on distributor connected in primary circuit.

Ignition Switch - Mitchellock Model 24-B, Type 6509. Connected to coil by armored cable.

Ignition Current - 2.5 amperes idling, 4.5 stopped.

CONDENSER: Auto-Lite Part No. IGB-1025A.

Capacity - .20-.25 microfarad.

DISTRIBUTOR: Auto-Lite IGB-4301-A (first 3790), IGB-4301-B (Eng. No. 73791 up). Single breaker, 6 lobe cam, full automatic advance type.

Breaker Gap - Set at .020". Limits .018-.020'.

Cam Angle or Dwell - Closed 38°, Open 22° (distr.).

Automatic Advance-IGB-4301-A

Distributor Degrees	Engine R.P.M.	Degrees	R.P.M.
Start	400	0	800
3	720	6	1440
6	1040	12	2080
9	1360	18	2720
12	1680	24	3360
15	2000	30	4000

Automatic Advance-IGB-4301-B

Start	300	0	600
3	400	6	800
5	615	10	1230
10	1150	20	2300
14	1580	28	3160

Removal: - Mounted on right side of crankcase. To remove, take out hold-down screw in advance arm, lift out.

IGNITION TIMING

IGNITION TIMING: - Flywheel Deg. Piston Pos.
First 3790 cars 4½° or ½" BTDC .0101" BTDC.
Eng. No. 73791 up At TDC .0000" TDC

Timing (Initial Setting) -With #1 piston on compression, turn engine over until piston reaches top dead center, stop when flywheel mark 'UDC.1-6/' lines up with pointer on edge of inspection hole in left front face of flywheel housing above starter after Eng. No. 73791, or 3/8" before this point on first cars. Loosen hold-down screw in advance arm, turn distributor clockwise to limit of advance arm slot, then turn distributor slowly counter-clockwise until contacts just open, tighten hold-down screw, see that rotor is opposite #1 segment in distributor cap. Car should then be road-tested and spark advanced as much as operating conditions and fuel will allow.

Timing (Final Setting) - With engine at normal operating temperature, and running at 8 M.P.H. in high gear on level road, accelerate engine rapidly and note performance from 10-15 M.P.H. A slight spark knock should be noticed. If no knock is heard, loosen hold-down screw and advance distributor one graduation on scale (turn distributor counter-clockwise). If knock is too severe, retard distributor one graduation (clockwise). Repeat test until satisfactory setting is secured. Final setting must not be beyond maximum advance mark on flywheel (3/4" before mark 'UDC.1-6/).

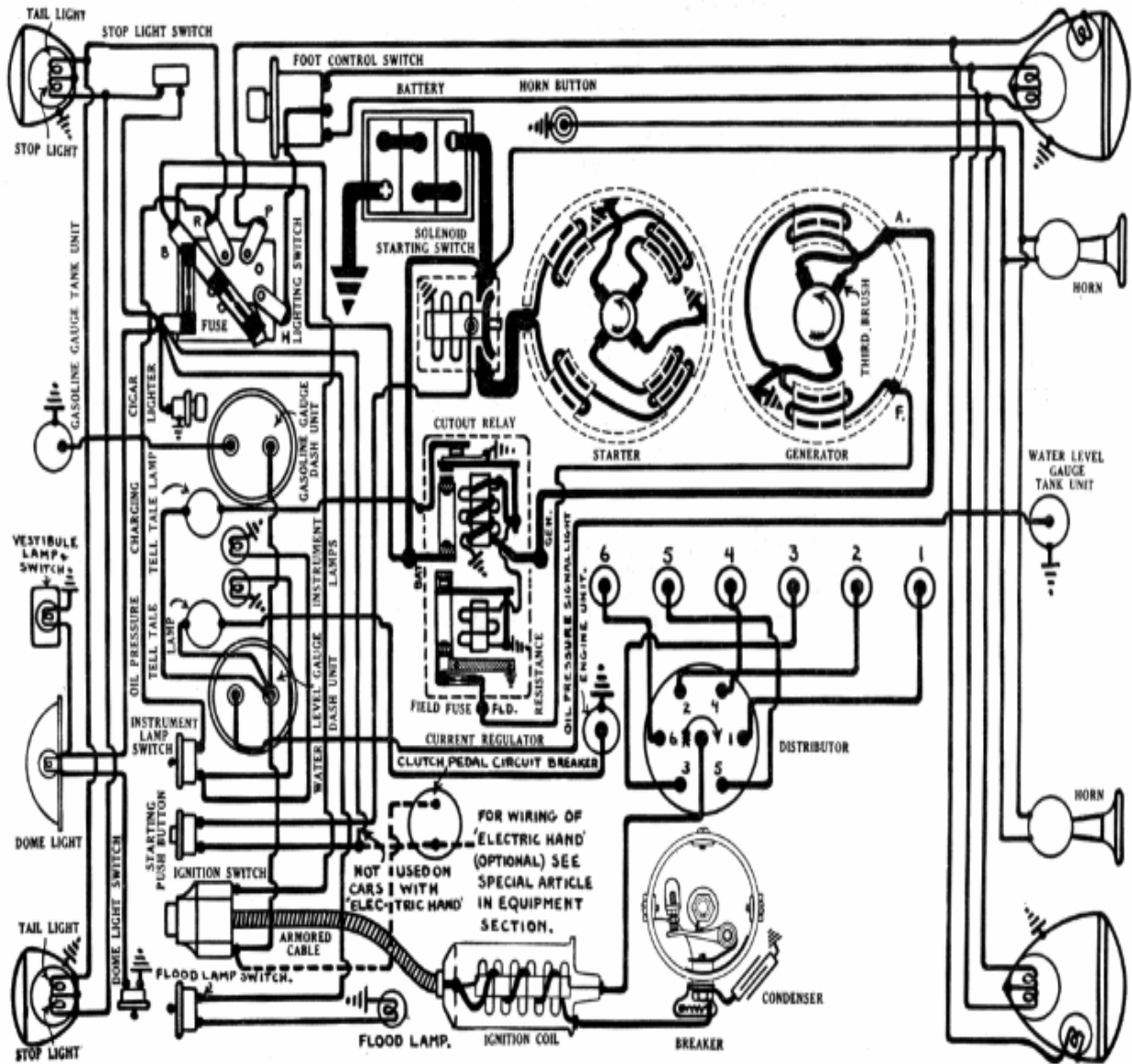
Breaker Arm Spring Tension - 16-22 ounces.

Firing Order: 1-5-3-6-2-4. See diagram.

Spark Plugs: Champion Type J-7S. 14 mm. Metric

Spark Plug Gaps: - .022"

1935 Hudson Model 53 (GH)
Electrical Diagram



1935 Hudson - Model GH (53)

Ignition Timing (Cont'd)

secured. Final setting must not be beyond maximum advance mark on flywheel (3/4" before mark 'UDC.1-6/).

CARBURETOR

Carburetor: - Carter, Model 309-S, 1 1/4", downdraft type with drop-bar type Fast Idle.

Automatic Choke - Carter Climatic Control Integral with carburetor.

CARB. EQUIPMENT

Fuel Pump: - A.C., Type R-1521540 diaphragm type.

Gasoline Gauge: - King-Seeley Electric. K-S #5200 (dash unit), #5582 (tank unit).

BATTERY

BATTERY: - National, Type ST-3-17X. 6 volt, 17, plate, 96 A.H. capacity (20 hour rate).

Starting Capacity - 120 amperes for 20 minutes. Grounded Terminal-Positive (+) terminal.

Location - On left hand side under front floor boards.

STARTER

Auto-Lite Model MAB-4060 (first cars), MAB-4074 After Serial No. 53-6449. Armature No. MAB-2114.

Starter Drive - Inboard Bendix, Type A-1588.

Rotation - Counter-clockwise at commutator end.

Brush Spring Tension - 44-56 ozs. (new brushes).

Cranking Engine - 150 R.P.M., 125 amps., 5 volts.

Performance Data

Torque	R.P.M.	Volts	Amperes
0 ft. lbs	3700	5.5	60
.6 "	1910	5.5	100
3.4 "	1100	5.0	200
6.6 "	695	4.5	300
10.15 "	420	4.0	400
15.8 "	Lock	3.0	582
22.5 "	Lock	4.0	775

Lock torque figures correct without switch.

Starting Switch: - Type SS-4001. Solenoid type switch mounted on starter field frame controlled by pushbutton switch on instrument panel.

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

GENERATOR STANDARD

Auto-Lite Model GBK-4602-1. Armature Number GBK-2055. Ventilated, third brush control type with external voltage regulation (two-step charging rate).

Charging Rate Adjustment - Use test meters to check generator output. Short out current regulator by connecting jumper wire from 'F' terminal on generator to ground. Take off commutator cover band, shift third brush by hand, counterclockwise to increase, or clockwise to decrease charging rate. Remove jumper wire.

Maximum Charging Rate - 22 amperes (cold) or 18 amperes (hot), 8.0 volts, 240,0 R.P.M., 28 M.P.H.

Performance Data

Cold-Regulator Inoperative-Hot					
Amperes	Volts	R.P.M.	Amperes	Volts	R.P.M.
0	6.4	800	0	6.4	840
4	6.7	980	4	6.8	1025
8	7.0	1085	8	7.15	1200
12	7.3	1300	12	7.5	1450
16	7.55	1500	16	7.85	1760
22	8.0	2200	18	8.0	2400

Rotation - Counter-clockwise at commutator end. Brush Spring Tension-18-22 ozs. (new brushes).

Motoring-4.56-5.04 amperes at 6.0 volts.

Field Current - 3.94-4.36 amperes at 6.0 volts.

Field Fuse - 5 amperes in knurled cup on side of regulator case.

Removal: - Pivot mounted at left front of engine with fan belt drive. To remove, take out two pivot bolts, one clamp bolt.

Belt Adjustment: - Loosen pivot bolts and clamp bolt, pull generator out from engine until slack on belt midway between crankshaft and generator pulleys is 1 1/4" (measure from straightedge across pulleys), tighten mounting bolts.

REGULATOR

Auto-Lite Model TC-4304-A. Consists of Cutout Relay and Current Regulator (Two-rate relay) in a single case on the dash. See Equipment Section for complete article on these units. Cutout relay has extra set of ground contacts for generator charging tell-tale signal light control.

Cutout Relay Cuts In - 6.5-7.25 volts.

Cuts out - .5-2.5 ampere discharge current.

Relay Contact Gap - .015-.045" (with upper or ground contacts closed-ground contacts must be open with main contacts closed).

Air Gap - .010-.030" with contacts closed.

Current Regulator

Contacts Open - 8.0-8.50 volts at 70° F.
Contacts Close - 1.2-1.4 volts below opening point.
Contact Gap--.005" minimum.
Air Gap - .045" with contacts closed.

LIGHTING

LIGHTING: - Soreng-Manegold Switch Model 5770-A.
R.B.M. Foot Control Switch, Model 1076,A. Foot switch used to control Country Driving (high) and City (low) beams with lighting switch in driving or second position. Headlight bulbs are pre-focused type.

Bulb Specifications

Position	Candlepower	Mazda No.
Headlights	32-21	2320-C
Parking, Instrument	3	63
Signal Lights	3	64 (DC)
Stop & Tail	21-2	1158
Dome	15	87

MISC. ELECTRICAL

SIGNAL LIGHTS: - Battery Charge Tell-tale and Oil Pressure Tell-tale lights mounted on instrument panel.
HORNS: - Auto-Lite Type HA-4003, 4004 (Std), Klaxon Model KQ-26-M, Type 1716 (high note), 1717 (low note) matched tone, twin horns (optional).
FUSES: - Lighting - Two 20 ampere capacity on switch.
Generator Field - 5 ampere in regulator.

ENGINE

ENGINE: - Own. Six cylinder, 'L' head type.
Bore - 3". Stroke-5".
Piston Displacement - 212.058 cubic inches.
Rated Horsepower - 21.6.
Developed Horsepower - 93 at 3800 R.P.M. (Standard 6.25-1 head), 100 at 3800 R.P.M. (7.0-1 head).
Compression Ratio - 6.25-1 (Standard cast-iron head), 7.0-1 (optional composite aluminum-iron head).
Compression Pressure 116 lbs. at 219 R.P.M. (6.25-1 head), 127 lbs. at 207 R.P.M. (7.0-1 head) with all spark plugs removed and throttle wide open.
NOTE - High-octane type fuel must be used in engines with 7.0-1 ratio composite head.
Vacuum Reading - Gauge should show steady reading of 18-20", with engine idling.
Pistons: - Own, Lo-Ex silicon-aluminum alloy, 'T' slot, cam ground type. Use refinished replacement pistons when reconditioning engine. See Reconditioning paragraph.

Pistons (cont'd)

Weight - 10.88 ozs. stripped, 12.99 ozs. with rings and pin.

Length - 3-3/16".

Removal - Pistons and rods removed from above.

Clearance - Top .016'. Bottom .001".

Reconditioning Cylinders-Size of original bore indicated by letter stamped on lower edge of valve chamber opposite cylinder as follows: A - 3.000"; B - 3.0005"; C - 3.001"; D - 3.0015"; E - 3.002"; AO - 3.010"; BO - 3.0105"; CO - 3.011"; DO - 3-0115"; EO - 3.012". Recondition cylinder to standard oversize for which replacement piston and rings are available (see piston and ring data below).

Replacement Pistons - Standard and oversize pistons marked by letter on head available for cylinder bores of size indicated:

'B' - 3.000 & 3.0005", 'D' - 3.001 & 3.0015", 'F' - 3.002 & 3.0025", 'J' - 3.004-, 'L' - 3.005". 'BO' - 3.010 & 3.0105", 'DO' - 3.011 & 3.0115", 'FO' - 3.012 & 3.0125", 'LO' - 3.015", 'BB' - 3-020", 'DD' - 3.021, 'FF' - 3.022".

All pistons installed in engine must be of same weight as indicated by mark on head.

Fitting New Pistons - Use feeler gauge .0015-.002" thick to check clearance. It should be possible to withdraw feeler from between piston and cylinder wall on side opposite slot when grasped between thumb and forefinger with 3-4 lbs. pull.

Installing Pistons - Slot should be to left or away from valves.

Piston Rings: - Two compression rings, one oil control ring above pin, one oil control ring below pin. Lower ring groove drilled radially with oil drain holes.

Ring	Width	End Gap	Wall Thickness
Comp.	.093"	.006-.016"	.123"
Oil Cont.	.187	.006-.016 "	.128"

NOTE - Use standard or oversize rings of size indicated for replacement pistons (see Replacement Piston section above); 3.000" - B, D, F; 3.003" - J; 3.005" - L; 3.010" - BO, DO, FO; 3.015" - LO; 3.020" - BB, DD, FF. If rings are filed, clearance at pin must be kept uniform with end gap.

Piston Pin: - Diameter 3/4". Length 2-7/16". Pin floats in piston and rod. Held by retaining rings.

Pin Fit in Piston - Snug fit with piston at 200° F.

Clearance in Rod Bushing - .0003".

Connecting Rod: - Weight 28.96 ozs. Length 8-3/16".

Crankpin Journal Diameter - 1-15/16".

Lower Bearing - Spun babbit-lined type.

Clearance - .001". Sideplay .006-.010'.

Adjustment - Shims (laminated type). Do not file rod or caps.

Connecting Rod (cont'd)

Installing Rods - Connecting rod lower bearings are offset. Install rods with right hand offset (widest half of bearing toward rear) in cylinders #1, 2, 4, and rods with left hand offset (widest half of bearing toward front) in cylinders #3,5,6.

Crankshaft: - Three bearings. Integral counterweights.

Journal Diameters - #1 - 2-11/32", #2 - 2-3/8", #3 - 2-13/32".

Bearing Type - Removable bronze-backed, babbitt-lined.

Clearance - .001".

Adjustment - Laminated shims. Do not file caps.

End Thrust - Taken by #2 (center) bearing. Endplay .006-.012".

Camshaft: - Three bearing. Gear driven.

Timing Gears - Crankshaft gear steel. Camshaft gear GE. Bakelite.

1941 Type Timing Gear Set can be installed on these models (tooth angle redesigned to provide quieter operation). Refer to Hudson Shop Notes.

End Thrust - Taken by spring-loaded plunger in camshaft gear and thrust plate on gear cover.

Camshaft Setting - Gears are marked. Mesh marked tooth on crankshaft gear between two marked teeth on camshaft gear.

Valves: - Head Diameter	Stem Diameter	Length
All Valves	1-3/8"	5/16"

	Seat Angle	Lift	Stem Clearance
Intake	45°	11/32"	.0015-.003"
Exhaust	45°	11/32"	.003-.005"

Valve Springs: - Dampeners originally used on bottom of all springs. Car manufacturer recommends that they be omitted when servicing valves.

	Spring Pressure	Length
Valve Closed	44 lbs.	2"
Valve Open	102 lbs.	2-1/32"

VALVE TIMING

Tappet Clearance - .006" Intake, .008" Exhaust, engine hot.

Valve Timing - See Camshaft Setting (above)

Intake Valves - Open 10°40' BTDC. Close 60° ALDC.

Exhaust Valves - Open 50° BLDC. Close 18° 44' ATDC.

Valve Timing (cont'd)

To Check Valve Timing - Set tappet clearance #1 intake valve at .010". This valve should open with piston 10°40' or .0562" before top dead center when a point on the flywheel approximately 3.17 teeth before the dead center mark 'UDC.1-6' lines up with the pointer on the housing. No flywheel mark provided.

LUBRICATION

Lubrication: - DuoFlow (splash) system with positive pump feed to oil troughs and timing gears. Oscillating plunger type oil pump mounted on right side of crankcase.

Normal Oil Pressure - 3 lbs.

Oil Pressure Relief Valve - Operates at 3 lbs. Located on right hand side of crankcase at rear (combined with oil pressure signal light switch).

Capacity and Oil - 5 quarts (refill), 6 quarts (dry). Use SAE. #30 (above 40°F.), #20-W (40. to 0°F.), #10-W (0° to -15°F.).

CLUTCH

CLUTCH: - Own make. Single plate type operating in oil. No adjustment for wear required.

Clutch Pedal Adjustment - Free movement of clutch pedal must 1-1/2". To adjust, loosen lock nut on clutch pedal connecting link, remove clevis pin at lower end of link, turn clevis until free movement of pedal is 1-1/2", replace pin and tighten lock nut. See adjustment for Automatic Clutch linkage below.

Automatic Clutch Control - On cars with Automatic Clutch, check control linkage whenever clutch pedal is adjusted. Depress accelerator pedal, pull back on clutch control unit cable (left side of engine), check clearance between back of slot in cable yoke and clevis pin which attaches it to operating lever. This clearance should be 7/8".

Clutch Lubrication - Oil in clutch should be drained and replaced at 5000-15000 mile intervals. To drain oil, turn flywheel until filler plug is visible in inspection hole (left hand front face of flywheel housing), remove plug, turn flywheel until star stamped on flywheel is visible in inspection hole, allow at least one minute in this position for draining, turn flywheel until filler plug hole is visible, insert 1/3 pint Hudsonite Clutch Compound, replace filler plug.

Clutch Facings - Driven plate is 5-3/8" I.D., 8-5/8" O.D., .203" thick. Facing consists of 90 cork inserts mounted on driven plate.

FRONT SUSPENSION

Front Suspension: Consists of conventional "I" beam section front axle with Elliott type ends and semi-elliptic springs (standard), or Axle-flex articulated axle (optional). Data and adjustments for both types are the same.

Kingpin Inclination - 7° crosswise.

Caster - 3-1/4-3-3/4°. Adjust by inserting wedge shims between springs and spring pad on axle.

Camber - 1/2°. No adjustment. Axle may be bent cold to correct camber.

Toe In - 1/8" measured 10" above ground. Adjust by loosening tie rod end clamp bolts and rotating tie rod in direction that wheels revolve to increase toe-in, or in opposite direction to decrease toe-in.

NOTE - End thrust on kingpin is taken by five ball bearings in plug above kingpin. Bearing lower race is machined directly in kingpin end.

STEERING GEAR

Steering Gear: - Gemmer Worm-and-Sector type.

BRAKES

BRAKES: - Service - Bendix mechanical, Duo-Servo, Single anchor type. Hand lever applies all service brakes.

Drum Diameter - 9".

Lining - Moulded type. Width 2-1/4". Thickness 3/16". Length per wheel 19-3/16".

Clearance - .014" heel, .008", toe, between lining and drum for each shoe.

MISC. MECHANICAL

AUTOMATIC SHIFT (ELECTRIC HAND): - Bendix electro-pneumatic type optional on these cars.