

1923 Gardner

Specifications

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Principal Chassis Specifications

Car Name and Model	Price and Passenger Cap'y	Engine Make and Model	Engine Type	Number of Cylinders	Taxable H. P.	Aver. Gasoline Mileage	Bore and Stroke	How Are Cyls. Cast	Front End Drive	Cooling System Type	Capacity Cooling Sys.	Make of Radiator	Type of Oiling System	Capac. Oil Sys. in Qts.	Mls. per Qt. Oil	Carburetor Make	Main Gas Tank Make and Capacity	Make or Type Fuel Feed	Ignition Make and Spark Control	Start'g and Light'g Make
Gardner, 5.....	965-5	Lyc	L	4	21.76	22	3 1/4 x 5	Blk*	Hel	T	5	Fedd	F & S	6	400	Cart-1	Col-13	Stew	Wshse-m	Wshse

NOTES AND ABBREVIATIONS. ENGINE MAKE: Cont. Continental; H-S. Herschell Spillman; Supl. Supreme; North. Northway; Lyc. Lycoming; R-D. Rochester Duesenberg. **ENGINE TYPE:** L. L-head; T. T-head; O. valves in head; O (x). overhead camshaft; F. intake valve in head, exhaust valve in side; K. Knight type; R. rotary valves. **HOW ARE CYLINDERS CAST?:** Blk. block; * means cylinders are not cast with upper half of crank case; f means cylinder head is not detachable. **FRONT END DRIVE:** Hel. helical; Bev. vertical shaft with spiral bevel gears; Comb. overhead spiral bevel gear with chain camshaft drive; Link. Link-Belt silent chain; Whit. Whitney silent chain; Morse. Morse silent chain. **COOLING SYSTEM TYPE:** P. pump; T. thermo-siphon; A. air; * means water thermostat control is used; f means air thermostat control is used. **MAKE OF RADIATOR:** Larn. Livingston; Fedd. Fedders; Mod. Modine; G&O. G&O Mfg. Co.; CAS. C.A.S. Products Co.; J'twn. Jamestown; E&M. English & Merdick; Hrsn. Harrison; Std. Standard; S-W. Sparks-Withington; Cand. Candler; Natl. National; Cleve. Cleveland; Mc'd-Mc. McCord; L. Long; Anst. Ansted; USC. United States Cartridge Co.; Corc. Corcoran; * means radiator shutter used. **TYPE OF OILING SYSTEM:** F&S. force and splash; F&Spr. force and spray; C-S. circulating splash. **CARBURETOR MAKE:** Strom. Stromberg; Zen. Zenith; Ray. Rayfield; Scheb. Schehler; Marr. Marvel; Hol. Holley; John. Johnson; Stew. Stewart; Till. Tillotson; Kin. Kingston; Cart. Carter; Ball. Ball & Ball. **MAIN GAS TANK MAKE:** John. W. N. Johnson; Mitch. Mitchell; Jasco. Janney, Steinmetz & Co.; Xard. Xardell; Col. Columbia Auto Brass; M-M. Motors Metal Mfg. Co.; D A S. Detroit Auto Specialty Co.; Murr. Murray; Ill. Illinois Oil Co.; Off. Off. Christian & Co.; Clay. Clayton & Lambert Mfg. Co.; Stew. Stewart. **MAKE OR TYPE FUEL FEED:** Stew. Stewart; I & M. Ireland & Matthews; G-G. Giorgio-Georgi; S-W. Sparks-Withington Co.; King. Kingston; Pres. pressure; Grav. gravity. **IGNITION MAKE & SPARK CONTROL:** A-K. Arwater-Kent; Wshse. Westinghouse; Rem-Ry. Remy; A-L. Auto-Lite; Bos. Bosch; El-e. El-emann; N-E. North East; Conn. Connecticut; Scin. Scintilla; King. Kingston; A-L. Auto Lite; Wag-Wg. Wagner; Split. Spilldorf; a. automatic control; sa. semi-automatic control; m. manual control of spark. **STARTING AND LIGHTING MAKE:** G & D. Gray & Davis; Allis-Chalmers; Leeco. Leeco Noille; Bij. Bijur; Dyn. Dyneto; see also abbreviations in ignition column.

of the 1923 Passenger Cars

Clutch Type and Size	Transmission Locat'n and No. of Speeds	Gear Ratios		Final Gear Ratio	No. Prop. Shrt. Univ.	Rear Axle Type	Brakes Location	Brakes, Length and Width of Lining		Drive and Torque Thrgh	Wheel Base	Tire Type and Sizes	Wheels, Type	Rear Springs Type and Length	Make Chassis Lubri-cator	Steering Type	Weight Touring Car	Car Name and Model
		First	Sec'nd					Hand or Emer-gency	Service or Foot									
Disc-10	M-3	3.07	1.75	4.80	2	34-Flt	R W T	20 3/4 x 1 1/4	38 x 2	Hotch	112	C-32 x 4	Wood	51 1/4-Semi	Alem	W & W	2640Gardner, 5

NOTES AND ABBREVIATIONS: CLUTCH TYPE: M-D. multiple disc, wherein there are more than three discs. R-Ch. reversed cone. **TRANSMISSION LOCATION:** M. gearset in unit with motor to form a unit power plant; S. separate or amidship location for gearset; A. gearset on rear axle; T. gearset on forward end of torque tube. **GEAR RATIOS, FIRST AND SECOND SPEEDS:** The figures here given show the ratios between the driving and the driven gears in the transmission; if multiplied by the final gear ratio, the motor to wheel ratio will be obtained; * means third speed in four-speed gear box. **FINAL GEAR RATIO:** f means two-speed axle. **REAR AXLE TYPE:** Float. full floating; Semi. semi-floating; 3/4-Flt. three-quarter floating. **LOCATION OF BRAKES:** RW. rear wheels; RWT. rear wheels and transmission; RWP. rear wheels and propeller shaft; FW. brakes on all four wheels; FWP. four wheels and propeller shaft. **DRIVE AND TORQUE:** Hotch. Hotchkiss type in which torque reaction is taken by the springs; T-T. torque tube; T-A. torque arm; R-R. radius rods. **TIRE TYPE:** C. cord; F. fabric. **REAR SPRINGS TYPE:** Full. full elliptic; Semi. semi-elliptic; 3/4-El. 3/4-elliptic; Cant. cantilever; D-Cant. double cantilever; D-1/2-Ct. double semi-cantilever; Plat. platform; Trans. transverse; DIT. double inverted transverse. **MAKE OF CHASSIS LUBRICATOR:** Alem. Alemite; Emp. Bowen Empress; Kipp. Madison-Kipps; I&M. Ireland & Matthews; Kell. Kellogg; Rimt. Rimco. **STEERING TYPE:** S & N. screw and nut; W & W. worm and wheel; W & S. worm and sector; Plan. planetary; Bev. bevel gear, internal sector and pinion.

Technical Details, Important Dimensions and Equip

Car Name and Model	Number of Cylinders	Bore and Stroke	Piston Displacement	B.H.P. and Curve Peak	Compression Ratio	Crankcase Material	Make of Cylinder Head Gasket Where Head Is Detachable	Cyl. Bore Finish	Lower Rod Bearings	Make Bearing Shims	Valve Material		Valve Diameter In the Clear	Valve Spring Pressure		Piston Material	Piston Clearance		Are Oil Holes Used?	Number and Make of Piston Rings	Width and Depth of Piston Rings
											Head	Stem		Int.	Exh.		Top	Bot.			
Gardner, 5	4	3 1/4 x 5	213.6	43 at 2150	3.90	CI	Victor	Grind	1 1/2 x 2 1/8	None	CI	Cbn-S	1 3/8	45	45	Alum.	.020	.0035	No	3-Rex-Ind	1 1/8 x 3/4

NOTES AND ABBREVIATIONS: COMPRESSION RATIO—Definition: Ratio of total cylinder volume to combustion chamber volume. CRANKCASE MATERIAL—CI, cast iron; S S, semi-steel; Alum, aluminum; Lyn, Lynite; Brnz, bronze; * means upper half of crankcase and cylinder block are one casting. MAKE BEARING SHIMS—Lam, Laminated Shlm Co.; H-S, Herschell-Spillman; Lgc, Lycoming; Dettr, Detroit. VALVE MATERIAL—N-S, nickel steel; CI, cast iron; Chr-V, chrome vanadium; Sil-Chr, silicon chrome; Cbn-S, carbon steel; Cob-Chr, cobalt chrome; Tung, tungsten; L Tung, low tungsten; H Tung, high tungsten; Chr-S, chrome steel; Van-S, vanadium steel. Where two metals are given, one beneath the other, the bottom reference is to the exhaust valves and the top to the inlet valves. The same procedure is followed where the inlet and exhaust valve diameters are different. VALVE SPRING PRESSURE—* means inner valves where double valve springs are used; † means outer valves. PISTON MATERIAL—SS, semi-steel; CI, cast iron; NI, nickel iron; Lyn, Lynite; Mag, Magnalite; Alum, aluminum. MAKE OF PISTON RINGS—Qual (Quality), Piston Ring Co.; Am-Ham, American Hammered; H-S, Herschell-Spillman; Eco, Eco Co.; Super, Superior P. R. Co.; Ind, Indiana P. R. Co.; Ped (Pedrick), Wilkening Mfg. Co.; Kurtz, W. H. Miller; Penn, Pennsylvania; Imp, Imperial; Wass, W. Wasson P. R. Co.; U S, U. S. Hammered P. R. Co.; P P, Pressure Proof P. R. Co.; D S, Double Seal Ring Co.; Vic, Victory.

ment of the Engines in 1923 Passenger Cars

Diam. and Length of Wrist Pin	Crankshaft Material	Material of Camshaft Timing Gears and Sprockets	No. Crankshaft Br'gs Is Crankshaft Drilled for Oil?	Make Oil Gauge or Indicator	Main Bearing Sizes			Cooling Fan Make	Fan Belt			Water Hose Diameter and Length		Ignition Make	Spark Plugs, Make and Size	Carburetor Make	Car Name and Model	
					Front D. & L.	Inter. D. & L.	Rear D. & L.		Make	Type	Length	Upper	Lower					
1 1/8 x 2 3/4	Cbn-S	CI	5	Yes	Lyc	2 1/8 x 2 5/8	2 1/8 x 1 1/2 (2) 2 1/8 x 1 1/2 (C)	2 1/8 x 2 5/8	Oakes	Gdyr	Flat	1 1/4 x 36	2 1/4 x 8 1/2	2 1/4 x 15	Wshse	Champ	Cart-1Gardner, 5

NOTES AND ABBREVIATIONS: CRANKSHAFT MATERIAL—Cbn-S, carbon steel; Chr-N, chrome nickel; N-S, nickel steel; Man-S, manganese steel. MATERIAL OF TIMING GEARS OR SPROCKETS—SS, semi-steel; CI, cast iron; Fab, Fabrol; Mio, Micarta; N-S, nickel steel; Cbn-S, carbon steel; Cond, Condensite; Text, Textol; Bak, Bakelite; Comp, composition; Lyn, Lynite. NUMBER OF CRANKSHAFT BEARINGS—* means bearing shims are used. MAKE CRANKCASE QUANTITY OIL GAUGE—Sup, Supreme; Roch, Rochester; H-S, Herschell-Spillman; Anst, Ansted; Lgc, Lycoming; Natl, National; R-D, Rochester Dusenber. BEARING SIZES—Unless otherwise noted the intermediate bearings in 4, 5 and 7 bearing shafts are the same size; C refers to center bearing in five- and seven-bearing shafts. FAN MAKE—S-W, Sparks-Withington Co.; A B Co., American Blower Co. FAN BELT MAKE—HLB, Hilde Leather Belting Co.; Lthr, leather (where make is not given); Rie Nie, Durkee-Atwood Co.; B-Cat, Bear Cat; Gdyr, Goodyear; Gdrh, Goodrich; Casco, Chas. A. Schieren Co.; G&K, Graton & Knight; U & G, United & Globe Rubber Co.; Var, various makes; D L W, Detroit Leather Works; M & R, Mitchell & Smith; A-B-C, American Brake-Lining Co.; Mnger, Mesinger Mfg. Co. WATER HOSE DIAMETER AND LENGTH—Where two lengths occur (as 1 1/4 x 3 1/2-6 (2)) the diameter of both sections of hose is the same. IGNITION MAKE—A-K, Atwater Kent; Wshse, Westinghouse; Conn, Connecticut; A-L, Auto-Lite; Else, Elsemann; N-E, North East; Scin, Scintilla; King, Kingston; Wag, Wagner; Split, Splitdorf; Rem, Remy. SPARK PLUGS MAKE AND SIZE—Beth, B. Bethlehem; A-C, A-C Spark Plug Co.; Flint, Mich.; Champ, Chp, Champion Spark Plug Co.; Toledo, O.; Split, Splitdorf; Bsh, Bosch; Var, Various; unless otherwise noted all plugs are 3/8 regular; L, long; Ex, extra long. CARBURETOR MAKE—Strom, Stromberg; Zen, Zenith; Ray, Rayfield; Scheb, Schebler; Marv, Marvel; Hol, Holley; John, Johnson; Stew, Stewart; Till, Tillotson; Cart, Carter; Ball, Ball & Ball.

Important Units of Standard

Car Name and Model No.	Brake Lining	Tires	Rims	Speedometer	Heater	Tire Pump	Clock	Top Material	Upholstery	Shock Absorbers
Gardner, 5	Thermoid	Goodyear	Hayes	Stewart	Perfection	Hand	None	Drednaut	Leather	None

NOTES & ABBREVIATIONS: BRAKE LINING: Ray, Raybestos; Ther, Thermoid; JMI, Johns-Manville; US, United States Asbestos Co.; Mtl, Multibestos. TIRES: Gdyl, Goodyear; Gdh, Goodrich; Fstn, Firestone. RIMS: KL, Kelney; Hys, Hayes. HEATERS: * means standard equipment; Bvy, Bovey; Frasco, Francisco. TIRE PUMP: * means certain models. CLOCK: C, closed cars; P, phaeton; S, sedan. TOP MATERIAL: Nvlk, Neverleek; Panta, Pantasote; Drex, Duretex; Fab, DuPont; Fabrikoid; Bbank-Blak, Burbank; Dred, Chase Drednaut; Spt, sport model. SHOCK ABSORBERS: Gabriel* means that car frame is drilled to take Gabriel snubbers; Wtsn, Watson; F, front end; C, closed cars only; Hlrd, Hartford.

Equipment Used in 1923 Cars

Motor Meter	Gasoline Gauge	Make Type and Car Lock	Bumper	Spot Lamp	Rear View Mirror	Windshield Cleaner	Traffic Light	Trunk	Cigar Lighter	Jack	Priming Device	Visor	Car Name and Model No.
Boyce	Natl-T	None	None	None	Outlook	Outlook	None	None	None	Moon	None	Own-CGardner, 5

NOTES & ABBREVIATIONS: MOTOR METER: Boyce, Boyce Moto-Meter; Hobbs, Borg & Beck; Radimeter, National Gauge & Equipment Co.; * means standard equipment on certain models; Spt, sport model. GASOLINE GAUGE: Roch, Rochester; Natl, National; Tasco, Akron-Selle Co.; Gscpe, Gascope; Trmph, Boston Auto Gage Co.; Cole, Stemco Engineering Co.; T, tank gauge; D, dash gauge. MAKE AND TYPE CAR LOCK: Drstn, Durston; B&S, Briggs & Stratton; Fergn, Ferguson; I, ignition lock; Sh, shift (transmission) lock; FW, free wheel lock. BUMPER: Bldr, Badger; CG, C.G. Spring Bumper Co.; Flrwood, Fleetwood; Spt, sport model only; SPOT LAMP: Mlpx, Multiplex; S & M, S & M Lamp Co.; Hwe, Howe Lamp & Mfg. Co.; Kauf, Chas. Kaufman & Sons; Cmba, Columbus Auto Brass Co.; REAR VIEW MIRROR Jhnson, Sam Johnson Mfg. Co.; Doug-Loni, Douglas & Lomason Co. WINDSHIELD CLEANER: Out, Outlook Co.; Fol, Folberth Auto Specialty Co. TRUNK: Tay, C. A. Taylor Trunk Works; B & S, Beal & Selkirk; Lamtec, McKane, Lins & Co.; Spt, sport model; Sdt, sedanette; * means certain models. CIGAR LIGHTER: * means certain models. JACK: A-Tas-co, American Tube & Stamping Co.; Natl, National Jack Co. or National-Standard Co.; Rpbic, Republic Auto Parts Co. VISOR: L B & G, Lamb Brothers & Greene; McKln, McKinnon Dash Co.; OBCo, Ohio Body Co.; W, Walker Body Co.

Chassis Units Employed in 1923 Cars

Car Name and Model No.	Engine	Clutch	Transmission	Universals	Rear Axle	Differential	Front Axle	Springs	Steering Gear	Wheels	Frame	Body
Gardner, 5	Own	B & B	Mech	Mech	Flint	B-Lipe	Flint	Chp/Std	Ditwiler	Hayes	Hyd	CAB/OBB/Moline

NOTES AND ABBREVIATIONS: **ENGINE:** H-S, Herschell-Spillman; Cont, Continental; Supr, Supreme; Wisc, Wisconsin; Lye, Locomotive; Weid, Weidley; Anst, Ansted. **CLUTCH:** B & B, Borg & Beck; B-Lipe, Brown-Lipe; War-Gr, Warner-Gear Co.; M & E, Merchant & Evans; DG&M, Detroit Gear & Machine Co.; DAI, Detroit Accessories Corp. **TRANSMISSION:** T W W, T. W. Warner; War-Gr, Warner Gear Co.; G-Lees, Grant-Lees Gear Co.; B-Lipe, Brown-Lipe; Mech, Mechanics Machine Co.; DG&M, Detroit Gear & Machine Co. **UNIVERSALS:** Htrord, Hartford Automotive Parts Co.; M&E, Merchant & Evans; Univer, Universal Machine Co.; Thlemer, Universal Drive Shaft Co.; Detroit, Universal Products Co.; T-H, Thermoid-Hardy; Mech, Mechanics Machine Co.; BBB, Blood Brothers Machine Co. **AXLES:** Colbia, Columbia; Salls, Sallsbury. **DIFFERENTIAL:** Wr-G, Warner Gear Co.; B-L, Brown-Lipe; NPG, New Process Gear Co.; S-Equip, Standard Equipment Co. **SPRINGS:** DSP, Detroit Steel Products Co.; Per, Perfection Spring Co.; Std, Standard Steel Spring Co.; Row, W. & H. Rowland; S-Perch, Spring-Perch Co.; Chp, Champ Spring Co.; Arm, Armstrong. **STEERING GEAR:** C.A.S., C. A. S. Products Co.; War Gr, Warner Gear Co.; Record'g, Recording Devices Co. **WHEELS:** MWC, Motor Wheel Co.; Imp, Imperial Wheel Co.; Dis (Disreel), Detroit Pressed Steel Co.; Hk (Houk), Wire Wheel Corp. of America; Bim, Bimel Spoke & Auto Wheel Co.; Fors, Forsyth Bros. Co.; HP&D, Hoopes Bros. & Darlington; Hys, Hs, Hayes Wheel Co.; Kel, Kelsey Wheel Co.; R-W, Rudge-Whitworth; WWC, Wood Wheel Corp.; Sch, Schwarz Wheel Co.; Prudd, Prudden. **FRAME:** P&B, Parish & Bingham; Par, Parish Mfg. Co.; Hyd, Hydraulic Pressed Steel Co. (includes Savage); DPS, Detroit Pressed Steel Co.; Mich, Michigan Stamping Co.; Shar, Sharon Pressed Steel Co. **BODY:** E-G, Erdman-Gulder Co.; Grls, Griswold Motor & Body Co.; Sid, Sidney Mfg. Co.; M&I, Millsapugh & Irish; Flt, Fleetwood Metal Body Co.; Bnt, Bridgeport Body Co.; OBB, Ohio Body & Blower Co.; Wlkr, Walker Body Co.; Cen, Central Mfg. Co.; Jcq, Jacques Mfg. Co.; Ionia, Hayes-Ionia Co.; Amer, American Motor Body Co.; Thomp, E. J. Thompson Co.; SicF, McFarlan; Sprd, Springfield; Buff, Buffalo; CAB, Commercial Auto Body Co.

Bearings—Makes and Sizes Used in 1923 Chassis

Car Make and Model No.	CLUTCH		TRANSMISSION			FRONT AXLE		REAR AXLE	DIFFERENTIAL	
	Pilot Throw Out	Thrust	Main Shaft, F Main Shaft, R	Countr. Sh., F Countr. Sh., R	Rev. Idler Stm. or Pkt.	Pivot Pin	Inner Hub Outer Hub	Inner Hub Outer Hub	Right Side Left Side	Pin. Shrt., F Pin. Shft., R
Gardner, 5	ND-1205 Ball	Ball	ND-1207 ND-1306	Plain Plain	Plain	Plain	Tim-2785 Tim-1751	Hy-49395†	Hy-26469 Hy-26469	Tim-319 Tim-348

NOTES AND ABBREVIATIONS: Faf, Fafnir Bearing Co.; Fed, Federal Bearings Co.; Gur, Gurney Ball Bearing Co.; Gill, Gilliam Mfg. Co.; HB, Hess-Bright Mfg. Co.; Hy, Hyatt Roller Bearing Co.; ND, New Departure Mfg. Co.; SKF, Skayef Ball Bearing Co.; SRR, Standard Steel & Bearings, Inc.; Strom, U. S. Ball Bearing Mfg. Co.; Tim, Timken Roller Bearing Co.; Sha, Shafer Bearing Corp.; Bow, Bower Roller Bearing Co.; Nee, Nee Ball Bearing Co.; BB, Bound Brook Oilless Bearing Co.; Star, The Bearings Co. of America; B&B, Borg & Beck Co. * means semi-floating type of axle; † means three-quarter floating type of axle. The numbers of Timken bearings refer to the cone, and the cup numbers are omitted; Mon, Monarch.

Complete Electrical Equipment of the 1923 Cars

Car Name and Model No.	Starting Lighting Make	Head Lamps Make	Side Lamps Make	Tail Lamp Make	Headlight Lens Make	Ammeter Make	Horn Make	Storage Battery Make	Storage Battery Volts & Capacity	BULBS			Dimm'r or Side
										Head	Dash	Tail	
Gardner, 5	Wshse	Victor	None	Victor	National	Wshse	E A	Willard	6-94	21-6	2-6	2-6

NOTES AND ABBREVIATIONS: STARTING AND LIGHTING MAKE: G & D, Gray & Davis; Wshse, Westinghouse; U S L, U. S. Lighting; Heating, A. L. Auto-Lite; N East, North East; A K, Atwater-Kent; Wag, Wagner. LAMPS MAKE: G & D, Gray & Davis; Corcolite, Thomas J. Corcoran Lamp Co.; Victor, Corcoran-Victor Co.; E & J, Edmunds & Jones Corp.; Adlake, Adams & Westlake Co.; Americo, American Auto Accessories Co. HEADLIGHT LENS MAKE: H & L, Henschel & Lomb Optical Co.; C-Ze, Smith-Hall-Cortright Co.; Patterson, Warner-Patterson Co.; Conaphore, Corning Glass Works. HORN MAKE: E A, E. A. Laboratories, Inc.; Hinz, Heinz Electric Co. BULBS: All lamp bulbs are single contact unless marked *, which signifies double contact.