

Facts About The
SINGLE-SIX

Models 126-133

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INDEX

SUBJECT	PAGE
Bodies (General)	3
Coupe Body (4 passenger).....	8
Coupe Body (5 passenger).....	9
Runabout Body (2 passenger).....	5
Sedan Bodies (5 and 7 passenger).....	7
Sedan Limousine Bodies (5 and 7 passenger)...	8
Touring Bodies (5 and 7 passenger).....	5
Trimming and Fittings of Bodies (open).....	4
Trimming and Fittings of Bodies (enclosed)...	6
Brief Specifications	26
Dimensions of complete cars	28
Dimensions of open bodies	29
Dimensions of enclosed bodies	30
License data	31
Mechanical Features:	
Ammeter.....	16
Battery.....	16
Bearings.....	12
Brakes.....	22
Camshaft.....	13
Carburetor.....	10
Chassis.....	19
Chassis Lubrication.....	19
Clutch.....	20
Connecting Rod.....	12
Cooling System.....	16
Crankcase.....	11
Crankshaft.....	12
Cylinders.....	11
Electrical System.....	15
Exhaust System.....	18
Fan.....	17
Frame.....	19
Front End Chain and Sprockets.....	14
Fuelizer.....	10
Gasoline System.....	9
Generator.....	16
Ignition System.....	16
Lubricating System.....	17
Load Weights of Rear Springs.....	20
Motor.....	9
Pistons.....	13
Rear Axle.....	22
Running Boards and Splashers.....	23
Spare Wheel and Tire Carrier.....	25
Speedometer.....	22
Springs.....	19
Starting Motor.....	16

INDEX—Continued

SUBJECT	PAGE
Starting Switch.....	16
Steering Mechanism.....	20
Tires.....	23
Tire Carrier.....	23
Transmission.....	21
Turning Radius.....	20
Universal Joints.....	22
Valves.....	13
Valve Rocker Levers.....	13
Valve Springs.....	14
Wheels.....	22
Wiring.....	16
Standard Equipment	
Chassis Equipment.....	25
Enclosed Bodies.....	26
Instrument Board.....	25
Open Bodies.....	25
Tires and Wheels.....	25
Standard Paint	
Enclosed Cars.....	24
Open Cars.....	23
Standard Trimming	
Enclosed Cars.....	24
Open Cars.....	24
Weights of complete cars.....	32

Body Types

(General)

There are eleven distinct body types mounted on the Single-Six chassis of 126" and 133" wheel bases. The five passenger Touring, five passenger Permanent Top Touring, Runabout, four passenger Sport, five passenger Sedan, five passenger Sedan Limousine, five passenger Coupe and four passenger Coupe are mounted on the 126 chassis and the seven passenger Touring, seven passenger Sedan and seven passenger Sedan Limousine on the 133 chassis.

The body framework is built of thoroughly air dried and kiln dried lumber of the proper species, which is reinforced by metal braces. The bent woods which are employed to obtain the correct contours are fabricated on forms and placed in dry kilns having a temperature of 100° to 120° F. and left to dry for twenty-four hours to insure their holding shape. All joints are closely fitted, screwed and glued in a thoroughly workmanlike manner. Careful selection for proper grain is made of the first quality hard wood used in all important members; such as sills, cross sills, cross bars, standing pillars, door pillars and cowl bars. After first assembly of the body panels to the wooden frame all the surfaces are either wire brushed or sanded to prevent any surface imperfection and irregularity of line in the finished product. The body panels before being finally assembled to the body framework are given a coat of primer on those surfaces which will be concealed. The joints of all panels are smoothly filed with great care. Exact symmetry of lines is adhered to in the first as well as the last operation.

The following hard woods are used in the body construction of Single-Six models: ash, birch, rock elm, maple, oak, basswood, spruce and mahogany.

A distinctly Packard designed instrument board is provided. Under one glass in the center of the board is a speedometer and clock. To the left within easy reach of the driver is mounted the combination ignition and lighting switch, and to the right conforming to the symmetry of the board is mounted an oil gauge and ammeter. All instruments are of the same general shape, with the Packard bezel. The instrument board light with an adjustable visor and controlled by a separate button on top of the switch is mounted directly over the speedometer and clock. A carburetor choke for cold weather starting is conveniently located over the ammeter.

The cowl ventilator is provided with a lever adjustment operated from the driver's seat. It is quickly and easily adjusted to four different positions. A spring makes it rattle-proof. The edges of the hole through the cowl are rolled up to prevent water leakage when the ventilator is closed.

A hand operated nickel plated windshield cleaner which folds neatly against the upper windshield sash when not in use is standard equipment on all cars.

A tool compartment is provided in all except the Sport model under the driver's seat. There is a pocket under the cowl on the right for small hand tools, gloves, rags, etc.

The Single-Six Open Bodies

Trimming and Fittings

All materials used in trimming the bodies are of the very best quality. Neatness of finish and good workmanship are most noticeable. The trimming design is of the plaited type with plaits approximately 4" wide. Marshall type cushion springs are used in all seat and seat back cushions. The upholstery material is best quality, first cut, hand buffed, long grained black leather. Templets shaped to the proper seat contour are used by Packard trimmers to maintain most comfortable riding positions.

The entire tonneau floor and heel panels are covered with horse hair carpet well fitted around the heel kick-up. The front compartment is carpeted with a very durable linoleum with the incline board cast in one piece of raised pattern aluminum. There is a suitable two-step accelerator foot rest cast integral.

The windshield slopes backward to harmonize with the body lines and eliminates objectionable light reflection. The upper windshield sash swings forward and is fitted with a weatherstrip all around the sash, which eliminates leakage between the sash and stanchions. The stanchions are substantial steel forgings and the front of the top is fastened securely to them by means of acorn-headed nuts. This makes a solid rattle-proof connection between the top and windshield. A wrench must be used to release the top. A weather-proof flap attached to the top is buttoned to the windshield by "lift the dot" fasteners. The lower windshield glass is set in felt and is stationary, which is rattle and rainproof.

The top of best quality material is fitted with a plate glass window 8" x 20" in the rear top curtain. The bows are carefully placed where there is the least danger of striking the head. Each top is rigidly inspected to insure conformity with the harmonious body lines.

The tailor-made fit of the side curtains affords absolute protection from wind and rain. An opening covered with a flap is provided in the left front curtain to permit of signaling from the driver's seat without unfastening or damaging the curtain. When not in use the curtains are stowed in the left hand door pockets where they are quickly accessible. Door curtain operating rods, made of solid bar stock to increase stiffness, are supplied for all open body doors.

All doors are fitted with outside and inside handles of standard Packard type, nickel plated. The locks are designed to unlock from the inside by either an up or down motion and the handles are so shaped that they will not catch the clothing. The door latch has the double locking feature.

The doors on all models are made flush so there will be no overlapping moldings to break up the body lines. They swing forward for the front compartment on concealed hinges. The tonneau doors swing to the rear.

Open Body Types

The Single-Six Touring Bodies (5 and 7 passenger)

The Touring body for five passengers is mounted on the 126 chassis and the seven passenger body on the 133 chassis. The top is semi-lined and designed to conform perfectly with the long graceful lines of the body.

The high narrow radiator and bonnet with distinct Packard characteristics blend into a rounded cowl and are exceptionally well proportioned to the after-part of the body. A solid robe rail is fitted to the back of the front seat. A nickel plated tubular foot rail is easily adjusted to two different positions.

The metal molding is neatly attached to the tops of the doors and body sides and continues around the face of the cowl in a graceful curve. It is of black-rubbed finish and adds the finishing touch to a well proportioned and expertly constructed body.

In the seven passenger body there are two forward folding auxiliary seats upholstered in black leather.

The Single-Six Runabout Body (2 passenger)

The Runabout body is mounted on the 126 chassis. The seat is of generous proportions for two passengers.

The rear compartment is large and roomy and is fitted with a deck light and carpet. The rear compartment lid may be opened when the top is folded as well as when it is up. Seeping of water into this compartment is prevented by a self-draining feature of Packard design.

The luggage compartment back of the front seat is easily reached from the driver's seat through a door opening on the top of the seat back.

Yale cylinder locks are fitted on the rear deck and front luggage compartment.

A rear deck mat and lugs are provided to protect the deck finish when the top is lowered.

The Single-Six Sport Body (4 passenger)

The Sport body is mounted on a special 126 chassis. A special radiator and bonnet two inches lower than standard for other models gives the job a racy appearance. The lines of the distinctly Packard radiator are blended into a rounded hood emphasizing the smartness obtained from the low radiator and body lines.

The deep front seat is mounted low and the steering wheel is situated to give a restful riding position to the driver. Tonneau fittings include a combination foot rest and tool compartment.

Provision is made for gloves and packages in a compartment in the back of the front seat.

Yale cylinder locks are fitted on the tool and glove compartments. Steel disc wheels are standard equipment.

The Single-Six Enclosed Bodies

Trimming and Fittings

The enclosed bodies are richly upholstered in the very best grade of all wool broadcloth. A plaiting design is followed on the seat and seat backs with plaits about 4" wide. Deep Marshall type springs help to account for the very fine riding quality. Comfortable arm rests are provided at each end of the rear seat. Large templates are used by Packard trimmers to maintain the proper seat contour, which gives the most restful riding position. Worsted lace is used for trimming.

The doors, roof, sides and back of the front seat are trimmed with upholstery cloth to match the seat and seat back. The head lining extends in one section, neatly covering the entire ceiling. Silk window curtains with rollers are furnished on the rear and side rear windows.

The windlace around the doors is covered with worsted material to match the trimming. There is a rubber strip fitted to the bottom of each door to prevent water leaks and air drafts.

All of the door and window moldings are of mahogany, stained a rich black walnut finish to match the steering wheel.

All doors have outside handles of a square corner design. They are opened from the inside by convenient easy operating swivel handles. Cloth covered metal pull-to fixtures are used for closing all doors from the inside.

Inside locks are provided on all except the right front door, which is provided with an outside Yale cylinder lock. The inside locking device is a button which when pushed down locks the door. The locks will not be damaged by slamming if the catch has been set when the door is ajar. On the Sedan Limousine locks are provided on both right hand doors.

The lower half of the windshield is stationary and the upper half is attached by a piano type hinge, which is rattle-proof and operates smoothly. The upper windshield glass makes a rainproof joint with the lower glass, to the top edge of which is fitted a rubber weather strip which also fits over the top of the lower windshield sash. A weather strip all around the sash prevents leakage of water between the sash and stanchions. The upper glass is adjustable from the driver's seat from closed to fully open position. Finger pulls are attached to assist in this operation.

The front pillars and stanchions are specially designed not only to have great strength, but also to give maximum vision from the driver's seat.

A windshield cleaner is standard equipment on all models and an adjustable visor is provided.

All door windows lower flush with the door belt. The two side windows at the ends of the rear seat lower sufficiently for ventilation. The door windows are operated by the rotary type window regulator. The glass in the rear window is stationary, rattle and storm proof, being set in channel rubber and securely held in place with a mahogany molding stained black walnut.

The interior hardware fittings are of an exclusive Packard design.

Enclosed Body Types

The Single-Six Sedan Bodies (5 and 7 passenger)

The Sedan body for five passengers is mounted on the 126 chassis and the seven passenger is mounted

on the 133 chassis. These bodies combine perfectly the elements of smartness and utility. Wide plate glass windows and narrow uprights insure maximum vision in all directions.

A flexible cord robe rail to match the upholstery material is conveniently mounted on the back of the front seat.

A nickel-plated foot rail folds back out of position when not required.

The Single-Six Sedan Limousine Bodies

(5 and 7 passenger)

The Sedan Limousine body for five passengers is mounted on the 126 chassis and the Sedan Limousine body for seven passengers is mounted on the 133 chassis.

This is a dual purpose car which can be converted instantly from an owner-driven to a chauffeur-driven vehicle by raising a plate glass partition between the front and rear seat compartments. This glass can be readily lowered flush with the top of the front seat back when required.

The driver's compartment below the belt is upholstered in bright finished, first cut, hand buffed, long grain, black leather.

The electric telephone for communication between the rear compartment and the driver is the auto-phone type with a portable transmitter attached to a cord and reel and is neatly stowed away out of sight in the pocket under the right arm rest in the rear compartment.

In other respects the design and construction is similar to the Sedan bodies.

The Single-Six Coupe Body (4 passenger)

The 4 passenger Coupe is mounted on the 126 chassis.

In seating space this model is one of the most commodious on the market. Three passengers can be carried with utmost comfort and when desired a forward folding auxiliary seat increases the capacity to four. The seat for two passengers is slightly behind and to the side of the driver's seat.

The very best grade of all wool broadcloth upholstery material is used throughout.

A compartment with a hinged lid is provided directly behind the driver's seat for parcels, portfolios, bags, etc. Ample luggage space is provided by a compartment in the rear deck, the lid of which is fitted with a Yale lock. Provision is made for carrying a golf bag when desired. Leakage of

water into the compartment is prevented by a concealed self-draining water trough.

The two rear side windows lower flush with the window belt by means of a rotary type window regulator.

The Single-Six Coupe Body (5 passenger)

The five passenger Coupe body is mounted on the 126 chassis. This is one of the smartest productions in the entire line. Three passengers are provided for on a generous seat which extends the entire width of the body similar to the Sedan. A well proportioned, comfortable driver's seat is provided and the capacity is increased to five by a large forward folding auxiliary seat which rests underneath the cowl when not in use.

Exceptionally large doors 31½" wide permit easy entrance or egress.

A neatly designed luggage trunk at the back lends a clever sport touch. Contained in this trunk are two medium sized suit cases and a hat box. A cover makes it proof against water or dust.

Should it prove convenient to remove the trunk and carry other luggage on the rear platform, the rear body panel is fitted with heavily nickel plated bars which protect it from scratches, and enhance the fine appearance of the car.

Mechanical Features

Motor

The motor is strictly of Packard design and manufacture. It is compact, light in weight, smooth running and exceptionally quiet. The motor has six cylinders, unit power plant, clutch and transmission integral.

Motor accessibility is very apparent from the location of the various units and method of attaching.

The fact that every driven unit has its own individual drive eliminates flexible joints and other connections which wear out and become noisy. The number of hose connections is reduced to a minimum of two, three at least being required by the usual design. The clean lines of the Single-Six motors are a result of well balanced design.

Gasoline System

A vacuum feed gasoline system is used. The main gasoline tank is located on the rear of the frame with capacity of 19 gallons. The gasoline filler is placed near the left end of tank. The vacuum feed tank is located on the front of the dash. The

gasoline shut-off is at the outlet of the vacuum tank and the gasoline strainer is located in the bottom of the carburetor body where it is readily removable for cleaning. A gasoline gauge is mounted on the main gasoline tank.

Carburetor

The carburetor and fuelizer are exclusively Packard design and are located on the right side of the motor.

The carburetor is of the automatic float feed type, with a two stage spray nozzle and a cylindrical mixing chamber.

A suction tube leads from the base of the spray mixing tube around the carburetor into the intake passage above the throttle valve. The function of this tube is to prevent flooding of the motor when it is idled or driven by the car in coasting with the clutch engaged.

Packard Fuelizer

The Packard fuelizer was developed for Packard cars to combat the trouble and inconvenience caused by the use of the less easily volatilized fuels that are on the market today. The fuelizer applies heat to the gas, being drawn into the combustion chamber, so that a much drier mixture of gasoline and air is obtained even at low throttle openings. This feature greatly improves the distribution of the gas to the various cylinders. This reduces carbonization and with the proper use of the carburetor choke on the dash materially reduces crankcase oil dilution. It adds greatly to the pleasure of driving by reducing the duration of the "warming up" period when the motor is started cold. The action of the fuelizer is as follows: A small fraction of the gasoline and air mixture passing to the engine is shunted through the throttle valve shaft into a passage in the manifold which leads to the burning chamber of the fuelizer. This mixture is ignited by the spark plug in the side of the fuelizer burning chamber and burns with a steady flame which can be viewed through the inspection glass on top of the fuelizer. The flame heats the burning chamber walls and then the hot burned gas mixes with the charge going into the engine from the carburetor. The application of heat to the ingoing mixture greatly improves its gasification which is particularly important at the lower throttle openings at which time the fuelizer supplies its maximum heat.

The action of the fuelizer is not to be compared with a hot spot manifold. In the hot spot, the most heat is furnished when the motor is turning over rapidly and when the motor does not need so much

heat. Little or no heat is furnished for initial operation in cold weather, when heat is most needed. The fuelizer furnishes the most heat when the motor is throttled down and goes out at high throttle openings. This action is automatic and is controlled by the action of the throttle valve. When this valve is partly closed there is a suction through the fuelizer, but as the valve is opened the suction through the fuelizer is reduced.

Gasoline economy is little affected one way or the other by the gasoline burned in the fuelizer, but the fuelizer makes possible the use of a light mixture which greatly increases the economy.

The remarkable combination of quick pick-up, great economy, power and speed, easy starting, rapid warming features which can be obtained only on Packard cars, is due more than anything else to the highly perfected design and construction of the Packard carburetor and fuelizer.

Cylinders

The cylinders are hard gray iron castings carefully machined and the bores are ground to size.

The motor is of the L-head type, cylinders cast en bloc with a detachable head which greatly facilitates service and permits the combustion chambers to be completely machined. The cylinder bore is $3\frac{3}{8}$ " and the stroke 5".

Crankcase

The crankcase is cast in two parts and is made of aluminum alloy castings. It is rigidly supported in the frame at three points.

The seven crankshaft and four camshaft main bearings are cast in the webs of the upper half. The lower half forms the oil reservoir. Baffle partitions located across the bottom of the crankcase retard surging of the oil. The lower half can be removed without disturbing the crankshaft bearings, the front cover or the clutch and transmission assembly.

There is an inspection opening in the upper half over the flywheel to facilitate checking the timing; also one at the front of the case for inspecting the front end chain adjustment.

The case is of the Aviation Liberty motor type, barrel shaped to give maximum strength with minimum weight. This completely ribbed bridge-like structure furnishes ample support for the seven main bearings on the crankshaft.

But few manufacturers of any priced automobiles can stand comparison of their crankcase and crankshaft with those of the Single-Six.

Crankshaft

The high carbon steel, drop forged crankshaft is supported by seven main bearings.

The shorter the distance between supports on a crankshaft, the smaller the tendency for vibration. On the Single-Six the maximum distance between bearings is $2\frac{7}{8}$ ".

This combined with the large diameters of main and crank pin bearings gives such torsional stiffness that the vibration periods (common to all gas engines) are imperceptible in the speed range of the car.

The shape of the crankshaft cheek, or the part of the shaft which connects the main and connecting rod bearings, is of vital importance. Here is a unique feature of the Single-Six. This cheek, being what is called the egg-shaped section, combines in a remarkable way the maximum of rigidity with minimum of weight off center. It tends to give the advantage of the counterbalancing without its disadvantages. The cheek, as well as the entire shaft, is machined and ground to exact dimensions so that the shaft is in perfect balance.

Oil ducts are drilled from the main bearings to each adjacent connecting rod bearing for the purpose of supplying oil under pressure to each lower connecting rod bearing.

The crankshaft thrust is taken on the rear main bearing and a special oil guard is provided at that point to minimize the leakage of oil.

Bearings

The crankshaft main bearings, seven in number, are of the bronze shell, babbitt lined type. They are $1\frac{7}{8}$ " in diameter and lengths over all as follows:

Bearing No. 1 $2\frac{9}{16}$ "

Bearing No. 2 $1\frac{1}{8}$ "

Bearing No. 3 $1\frac{1}{8}$ "

Bearing No. 4 $1\frac{7}{8}$ "

Bearing No. 5 $1\frac{1}{8}$ "

Bearing No. 6 $1\frac{1}{8}$ "

Bearing No. 7 $2\frac{1}{2}$ "

The total main bearing length on the Single-Six motor is $11\frac{1}{2}$ inches. This rigid supporting of the crankshaft assists materially in making the Single-Six motor free from vibration.

Connecting Rod

The Packard Single-Six connecting rod is designed with extreme care to give maximum strength

with minimum weight. It is of the I-beam drop-forged type, and the rods are selected so that each rod in any motor varies less than one-quarter of one ounce in weight from its mates. Both of the connecting rod bushings are broached in place to a perfectly true and smooth surface, which, when lubricated by the motor oiling system, assures noiseless operation for an almost indefinite period.

The connecting rod lower end bearing is $1\frac{3}{4}$ " in diameter and $1\frac{1}{2}$ " long.

The crankshaft bearings and connecting rod bearings on Packard cars have long been famous for their wonderful durability and efficiency, and the Single-Six bearings not only maintain the Packard reputation but enhance it.

Pistons

The pistons are cast iron with three rings at the top. The piston pin is securely locked in place so that it cannot loosen and damage the cylinder walls.

Camshaft

The camshaft is a steel forging with twelve integrally forged cams, all of which are case hardened and accurately ground. A spiral gear is forged and machined in the center of the shaft for the purpose of driving the gear oil pump below and the ignition distributor above. The shaft is drilled and forms an oil lead to the camshaft bearings. The four camshaft bearings are aluminum permanent mold castings except the front one which, being subjected to much greater loads than the others, is babbitt lined bronze.

Valves

The valves are made of a special alloy steel, which withstands high temperatures, giving maximum service before re-grinding. They are made of round bar stock with the head upset on them which gives radial grain to the metal and adds strength. In this construction the valve and valve head are all one piece which reduces tendency to warp and depreciate in service or fail by rupture of a weld between the head and stem.

The valve diameter is $1\frac{1}{2}$ ".

Valve Rocker Levers

The camshaft operates the valves through the intermediary of the valve rocker levers and adjustable valve tappets. This is a distinct feature of quietness on the Packard Single-Six.

The hole in the lever is for a stationary shaft which forms a fulcrum. A case hardened surface near the center is in contact with the cam on the camshaft and another case hardened surface at the end engages with the pushrod which in turn actuates the valve.

With the valve finger design, the side thrust comes on the shaft at the hub of the finger, which is lubricated by the main oil circulating system. Wear on these parts is reduced to a minimum. This design also makes it possible to use lighter and more easily removable valve tappets, all of which means maximum quietness, minimum wear and lower service costs.

Moreover, the valve rocker levers give an additional advantage by their use in that it is possible to move the valves over close to the pistons, and thus make the combustion chamber more compact. The spark plug is located in the center of this compact combustion chamber.

Valve Springs

Valve springs are given 100 per cent inspection to insure sufficient strength. Best grade of spring steel is used to give long life.

Front End Chain and Sprockets

On all gasoline engines it is necessary to drive auxiliary units on shafts other than the crankshaft. On the Packard Single-Six a silent chain $1\frac{1}{2}$ " wide is used for this work.

The chain drive has only three sprockets and is but $29\frac{1}{2}$ " long. This minimizes the tendency to stretch. The smaller sprocket which drives the generator also incorporates an adjustment feature whereby the chain may be adjusted with extreme care without disturbing any other parts.

This chain pitch line, approximating an equilateral triangle in shape, and being as short as the requirements will permit, has been referred to by authorities as being about as near to the ideal chain layout as has yet been designed.

No attempt has been made to reduce the weight of the sprockets because some flywheel action is desirable. There are holes tapped in the crankshaft sprocket for removal purposes, and the splines in the inside of the generator sprocket are ground perfectly true for engagement with those on the generator shaft.

While considering the drive of the various auxiliary units on the Single-Six motor, it is important

to note that every unit is removable without disturbing another. The distributor is at the top of the cylinder block and is driven from the camshaft, the oil pump from a downward extension of the distributor drive, the water pump from the fan belt, the generator by the front end chain, and, of course, the starter motor drives the flywheel.

To adjust the chain, loosen the three nuts on the generator flange studs. The lower stud pivots the generator, making it merely necessary to move the top of the generator away from the motor until the chain has been properly adjusted. The proper tension can be determined by adjusting until a slight humming noise develops, and then slacking or backing up the adjustment until this noise disappears. Then tighten the three nuts. A total deflection of one-eighth to one-quarter inch of the chain will result from this adjustment.

Electrical System

The electrical system is of the single wire or grounded return type. The source of current is the generator which charges the battery. The positive battery terminal is grounded.

The wiring is enclosed in junction boxes and conduits and is out of sight entirely. Binding posts have been provided in front of the dash which facilitates removal of all wires and conduits when the body is removed.

At the back of the dash binding posts are provided for the connection of the coils and switches.

The electric lighting system is protected by means of a circuit breaker which is located at the back of the lighting switch on the instrument board. If a short circuit should develop in the lighting system, the circuit breaker automatically operates and gives warning by means of a buzzing noise which continues to buzz until the short circuit is removed.

The horn is fastened to the left side of the crankcase and the connections to it are very accessible.

The lighting system includes two main headlights, two auxiliary headlights for city driving, tail light, instrument board lamp, and dome lights in enclosed cars.

The headlights comprise lights of two degrees of illumination. Lights of 21 candlepower situated in the principal focus of the reflector furnish a high degree of illumination when needed; for city driving auxiliary lights of 4 candlepower furnish a well diffused and ample illumination.

The headlights are supported by brackets fastened to the front fender brackets and reinforced by a cross bar which strengthens the fender bracket and at the same time holds the lamps in line. The headlight lenses are non-glare. The tail light is supported from a bracket on the frame.

Ignition System

The Packard Delco Ignition unit is mounted directly on the motor cylinder head between number three and number four cylinders and is driven from the camshaft by means of spiral gears. The coil is located on the rear of the dash.

Wiring

High tension wiring is carried through a tube along the top of the cylinder blocks. All wiring is housed and protected.

Battery

The battery is supported inside of the frame and can be easily removed or inspected by removing the floor board. It is common to the ignition, starting and lighting systems and is composed of three cells. The voltage is 6 volts and the capacity 100-ampere hours.

Generator

The generator is supported on the right front corner of the motor crankcase with provision for adjustment of the chain to compensate for chain stretch. The cutout relay is mounted on top of the generator.

Starting Motor

The starting motor is located on the left side of the motor close to the cylinder block and attached to the front face of the flywheel housing by means of a long pilot and one dowel screw, so that the starting motor can be easily removed for inspection. The starting motor is engaged with the flywheel by means of a standard Bendix drive and is enclosed and protected from dirt.

Ammeter

The ammeter and oil pressure gauge are mounted under one glass on the instrument board.

Starting Switch

The starting switch is located on the right of the accelerator pedal under the inclined toe-board.

Cooling System

The distinctly Packard radiator is of the ribbon type. It is made with a detachable shell. The core is supported on the front cross member and is completely connected so that all of its functions

are performed without the shell. This is important from a standpoint of manufacturing and service. The heart of the thermostat, which is mounted on the cylinder head, is the "sylphon," which is an accordion-shaped brass drum filled with a volatile fluid. This drum expands when heated just like pulling out an accordion, and automatically contracts when cooled. Bronze valves are fastened on one end, and are arranged so that, when the motor is cold, the circulating water goes through the by-pass lead instead of through the radiator, which means that the cooling water in the cylinder jackets is rapidly heated up so as to obtain motor efficiency quickly after starting from cold. Just as soon as it is heated up the passage to the radiator is then opened and the by-pass closed. This feature insures a quick warming up of the entire motor.

The feature of the water pump assembly is its simplicity. Mounted on the front of the cylinder block, it forces the water by centrifugal force through the cylinder water jackets, cylinder head jackets and thence to the radiator.

This construction permits the use of only one packing, which is very accessible, and only two hose connections, thus reducing the probability of leaks to a minimum. The water pump also incorporates the fan drive and the provision for adjusting the fan belt. The fan end of the water pump shaft turns in a roller bearing which is lubricated by a lubricator connector.

The Single-Six Cooling System is a model of simplicity and features extreme accessibility of the really very small number of parts used.

The capacity of the cooling system is approximately $4\frac{1}{2}$ gallons.

Fan

A greatly improved steel blade built-up fan is used which provides a maximum draft of air together with ample clearance.

After testing numerous types of fan belts the Packard Motor Car Company has adopted the compound "V" shaped belt. The leather surfaces fit snugly into the groove of the fan and camshaft pulleys. Wear and stretch is minimized by the steel and fibre links in the center. These belts will run thousands of miles and require only occasional adjustment. Fan belt adjustment is easily accomplished on the Packard Single-Six.

Lubrication System

The oil supply is obtained by pouring oil directly into the crankcase through the filler on the left

side of the motor. Keep the crankcase filled to the pet cock level.

The oil is drawn from the crankcase reservoir through the strainer located at the pump housing. It is then pumped under 20 to 35 pounds pressure for normal running to the main oil distributing manifold which is supported from the crankshaft bearing caps. From this manifold the oil is supplied to the seven main crankshaft bearings through holes drilled in the bearing caps.

Independent oil passages in the crankshaft, leading from the main bearings, carry the oil to the connecting rod lower end bearings.

All camshaft bearings are lubricated by oil which is forced to the hollow camshaft from the oil lead running from the crankshaft rear bearing to the camshaft rear bearing.

After passing through the hollow camshaft and lubricating the four camshaft bearings, the oil passes out through the holes in the camshaft sprocket onto the chain. The chain carries oil to the generator shaft bearing. After these bearings are supplied with oil, the surplus drains back into the crankcase oil reservoir.

The cylinder walls and piston pin bearings are lubricated by oil spray thrown from the lower end connecting rod bearings.

Holes drilled in the crankcase allow the oil mist to rise into the valve compartments and lubricate the valve mechanism.

Exhaust System

Special attention has been given the design of the Exhaust System to approach as near as possible silent discharge of gases into the atmosphere. Rigid construction and mounting, complete damping of resonance of metal parts and proper provision for the expansion of gases, both in muffler and at the exit to the atmosphere require proper treatment to accomplish this purpose.

To obtain rigidity the muffler is securely fastened by means of heavy brackets. The muffler in turn acts as the support for the exhaust pipe ends entering the muffler. The front muffler joint is of the gland type packed with asbestos rope. The rear muffler connection is a flange joint, the flange being pinned and brazed to the tail pipe. The muffler itself is of very rigid construction, the outside and inside shells are beaded at intervals to give stiffness and the entire assembly is held together by five long bolts passing into and clamping all parts rigidly together, forming non-leakable joints.

Fitted to the rear of the tail pipe and acting as its support is a specially designed casting, rigidly fastened to the frame. This fitting acts as an exit for the gases to the atmosphere, the mouth being of such shape that gradual expansion takes place with exceptional quietness.

Resonance is reduced by carefully lagging the muffler with asbestos which stamps out any vibration set up in the shell of the muffler. Proper expansion of gases in the muffler has been obtained after careful research to determine the exact areas and openings necessary to take care of the volume of exhaust gases emitted from the engine.

Chassis

There is one type Single-Six chassis built in two wheelbase lengths—126-inch for the five-passenger bodies or less and 133-inch for the seven-passenger bodies.

Chassis Lubrication

Grease cups have been eliminated and a patented system of grease lubrication is being used. All points requiring grease such as spring bolts, rear axle bearings, steering connections, etc., are fitted with connectors to which a flexible metallic hose and a high pressure grease gun can be quickly and easily attached. The grease gun plunger being threaded, a few turns of the handle forces the lubricant through the hose and into the bearings under very high pressure.

Frame

The frame has been designed to give maximum strength. This has been obtained by using a $7\frac{1}{2}$ inch depth of the side member, and by tapering the frame from the front and rear end so that all offsets are eliminated. The frame steel is $\frac{1}{8}$ inch thick. Rigid forgings at each end of the frame are fitted with cross tubes which are riveted in place. These, in addition to the regulation cross members, form a very strong and rigid construction.

Springs

The front springs are semi-elliptical, 38 inches long and 2 inches wide and are shackled at the rear end by compression shackles, the bolts being well supported where these extend through the frame. The rear springs are semi-elliptical, 54 inches long and $2\frac{1}{4}$ inches wide and are shackled in tension at the rear end. Both front and rear springs are parallel to the tapered frame and solidly mounted to the axles which forms a strong and safe construction.

Load Weights of Rear Springs

Lbs.

850 Runabout.

1050 Five-passenger Touring, Four-passenger Sport, Four-passenger Coupe and Five-passenger Coupe.

1150 Five-passenger Sedan, Sedan Limousine and Seven-passenger Touring.

1300 Seven-passenger Sedan and Sedan Limousine.

Steering

The steering gear is of the worm and split nut type. A ball thrust bearing is mounted at the upper end of the steering gear case, and is adjustable to take up wear. It is therefore very accessible and very easily lubricated. The outer end of the steering yoke shaft is made with integral tapered serrations which match with the tapered serrations in the upper end of the steering lever. This lever is drawn up to place by a nut, which makes a very rigid fastening. The lower end of the steering lever is fitted with a ball joint between it and the steering connection rod rear end. This eliminates a complicated block joint.

The steering sockets come above the balls, preventing the collection of water and dirt in the ball joints, and greatly increasing their life. The steering column is at an angle of $40^{\circ} 41'$ on all models, except the Sport model. The upper end of the column is supported by brackets attached to the instrument board, which makes a very firm construction. The spider which supports the control lever sector has been constructed so that it can be readily removed and the steering wheel taken off without disturbing any other parts. The steering wheel is 17" in diameter with an oval section notched rim.

The electric horn button is in the center of the steering wheel and there is a fixed quadrant above the wheel for the spark and throttle control. The ignition and light switches are placed on the instrument board where they can be readily reached by the driver.

Turning Radius

The turning radius of the Single-Six is 21' 1" for the 126 model and 22' 2" for the 133 model.

Clutch

The clutch assembly is mounted in a separate compartment at the front of the clutch and transmission case. This construction thoroughly pro-

protects the clutch from dirt, oil and water. The clutch shaft is mounted on an oilless bushing in the motor crankshaft and on a roller bearing in the transmission case. The direct drive and constant mesh gear is forged integral with it.

The clutch spider is machined all over and is reduced in weight to a minimum. It is the light weight of the driven clutch parts which makes the clutch gear shift action on the Single-Six so beautifully smooth and easy.

The plates which drive the spider are of special steel, are finished perfectly smooth, and have gear teeth cut in them which engage with the gear teeth on the spider. This gives a multiple and accurate gear tooth contact which helps materially to make the clutch action easy and prevent wear and noise. The other clutch plates which carry linings also have gear teeth cut in them, but these slide on the inside of the flywheel drum. There are four of the plain plates turning with the spider, and five of the plates with linings turning with the flywheel, giving eight bearing surfaces. This assures smooth action, long life and ample capacity to transmit the entire power of the motor to the rear wheels even under the most difficult circumstances.

No adjustments are necessary as the wear is automatically compensated for by the clutch springs. The position of the clutch pedal is regulated by a nut which is placed in easy reach upon lifting the floor board.

Transmission

Selective sliding gear type, three speeds forward and reverse with positive interlocking control. Both the main shaft and the counter shaft are short and stiff and mounted on anti-friction bearings. The case is designed to minimize resonance. All gears used in changing speeds are carefully chamfered to insure easy meshing when shifting. All gears are very carefully heat-treated to insure maximum strength and wearing qualities of the teeth.

Gears with stripped teeth are practically unheard of in Packard cars. This is true because of the chrome nickel steel and the careful manufacturing processes used in their production. Packard transmission gears are not case hardened or brittle.

The change speed lever is made to present a neat appearance and the ball at the upper end is convenient to reach without stooping forward. The speeds have the following ratios:

Transmission Gear Ratios

First or low.....	15.69 to 1
Second or intermediate.....	8.28 to 1
Third or high.....	4.66 to 1
Reverse.....	19.87 to 1

Speedometer

The speedometer drive is placed at the rear of the transmission and driven by a special gear from the transmission shaft. This gives a very quiet drive and is perfectly lubricated at all times.

The speedometer is mounted on the instrument board and is of the flush type, the clock being included and built into one unit.

Universal Joints

The propeller shaft is of the tubular type, fitted with metal type universal joints at both ends.

Rear Axle

The rear axle is of the semi-floating type. The housing is made of pressed steel. The torque of the rear axle is taken up by a torque arm of rugged construction made of a steel stamping with ends securely riveted in place. Driving forces are transmitted through the rear axle springs.

The pinion shaft is mounted on adjustable tapered roller bearings specially designed for taking thrust loads.

The rear axle shafts are mounted on single row, deep groove ball bearings which definitely locate them in the housing.

Rear axle gear ratio 4.66 to 1.

Wheels

The wheels are designed to take 33"x4½" tires and are made with hickory spokes and pressed steel felloes. On the front wheels the inner bearing dust closure is effected by means of a stamping which eliminates the right and left hand threading and therefore makes it possible to use the front wheels interchangeably on both right and left sides. All wheels have 12 spokes.

Brakes

The service brake is of the external contracting type and the emergency brake is of the internal expanding type.

The brake bands are lined with wire woven asbestos lining, and act on a pressed steel drum 14" in diameter, which is securely bolted to the rear wheels with twelve bolts.

The service brakes are equipped with equalizers and the connections are kept from rattling by separate retracting springs, anchored to brackets, riveted to the frame.

Running Boards and Splashers

The running boards are tapered to match the frame. This gives wider running boards under the front doors and therefore gives a little extra room at the points where the room is needed. They are carpeted with battleship linoleum bordered with aluminum strips.

The running board splashers are tapered to match the frame and body lines. Leather liners are used between the frame splashers and running boards.

The radiator front splasher is very readily detachable. It is made to enclose the front spring, front bracket and also forms a very neat joint at the inner edge of the bonnet frame ledge.

The crankcase splashers are made readily removable and form mud tight joints between the crankcase and frame.

Tires

For the front wheels straight side Cord tires with ribbed treads. For the rear straight side Cord with non-skid tread. All tires are size 33" x 4½".

Tire Carrier

A new design of tire carrier is used on the Single-Six. It is bolted rigidly to the frame rear cross member and cross tube, and is of the dummy rim type. One of the best features of the carrier is the self-contained cylinder lock. A turn of the key in the locking device, which is a part of the carrier and not an attachment, is all that is required to effect a secure locking of the spare rim and tire to the carrier rim.

Standard Painting

Open Cars

Body and door panels—Town Car Blue Medium, striped with Gold.

Moldings—Black.

Wheels—Town Car Blue Medium, striped with Gold.

Bonnet—Town Car Blue Medium, louvers striped with Gold.

All bright metal parts—Nickel Plated.

All other parts—Black.

Enclosed Cars

Body and door panels—Packard Blue, striped with Gold with Black molding.

Upper body—Black.

Wheels—Packard Blue, striped with Gold.

Bonnet—Packard Blue, louvers striped with Gold.

All bright metal parts—Nickel Plated.

All other parts—Black.

Standard Trimming

Open Cars

Seats—Long grain first cut leather. Plaited style trimming, plaits approximately 4 inches wide.

Garnish moldings are black, rubbed finish, and steering wheel is walnut in semi-gloss finish.

Floor and rear panel in tonneau are covered with horse-hair carpet. Pockets in all doors. Pockets in left doors especially constructed and used for storing storm curtains. Pocket under cowl on right side for small tools, etc.

Front compartment floor boards, linoleum carpeted board with aluminum molding. Inclined floor board and accelerator foot rest is an aluminum casting.

Robe rail stationary and nickel plated.

Enclosed Cars

Front seat of Sedan special Packard upholstery cloth.

Front and rear seats plaited style trimming.

Rear seat of Sedan special Packard upholstery, matches interior trimming.

Driver's seat of Coupe special Packard upholstery cloth to match interior.

The passenger seat of Coupe special Packard upholstery cloth.

Front compartment of five and seven-passenger Sedan Limousine trimmed in leather to belt line, above belt line trimmed in special Packard upholstery cloth.

The entire rear compartment, including roof, sides, seat backs and doors trimmed in special Packard upholstery cloth.

Floor and rear compartment of Sedan and Sedan Limousine carpeted to match upholstery.

Two rear side windows and direct rear window fitted with roller silk curtains to match upholstery. Finishing strips and steering wheel stained walnut in semi-gloss finish.

Front level floor boards linoleum carpeted with aluminum molding.

Inclined front floor board and toe rest is an aluminum casting.

Flexible silk and worsted braided cord robe rail to match trimming.

Standard Equipment

Chassis Equipment

Electric starter.

Electric generator and storage battery.

Electric head and auxiliary lights, equipped with non-glare lenses.

Electric tail lamp and electric license tag illuminator.

Electric horn.

Tool roll with complete equipment of tools, one-ton jack, and spare tire carrier.

Tire carrier lock.

Tire changing tools.

Snubbers.

Motometer.

~~Bumpers front and rear.~~

Cowl ventilator.

Gasoline tank gauge.

Instrument Board Equipment

Ignition and lighting switches.

Speedometer clock combination.

Speedometer includes miles per hour, trip and total odometers.

Ammeter.

Oil pressure gauge.

Carburetor dash adjustment.

Instrument board lamp with adjustable visor.

Tires and Wheels

Cord tires, straight side 33 x 4½ inch ribbed tread front and non-skid rear.

Wood wheels for 33 x 4½ inch tires all round.

Open Bodies

Packard one man top with enclosing curtains.

Four door curtain opening attachment.

Packard windshield.

Robe rail stationary.

Folding foot rest.
Folding auxiliary seat in seven-passenger models.
Windshield cleaner.

Enclosed Bodies

Window regulators.
Dome lights.
Cloth robe rail.
Folding foot rest.
Inside locks on left doors of Coupe, Sedan and Sedan Limousines and rear right rear door on Sedan.
Outside cylinder locks on right doors of Coupe and Sedan, Limousines and right front doors only of Sedan.
Folding seat in seven-passenger Sedan and Sedan Limousines.
Windshield cleaner.

Specifications in Brief

Engine

Six cylinders cast en bloc.
Removable cylinder head.
Seven bearing crankshaft.
Piston displacement 268.4 cubic inches.

Fuelizer

Exclusive Packard feature—standard equipment.

Cylinders

L-head type, bore $3\frac{3}{8}$ inches, stroke 5 inches.

Horsepower

27.34 SAE rating—block test actually develops over 54 H. P.

Ignition

Generator, battery and Packard Delco distributor.

Gasoline System

Vacuum feed. Tank capacity 19 gallons.

Frame

Pressed steel.
Rigid torsion tubes at front and rear and cross channels prevent frame weaves.
Depth $7\frac{1}{2}$ inches.

Springs

Front semi-elliptical 38 inches long and 2 inches wide.

Rear semi-elliptical 54 inches long and $2\frac{1}{4}$ inches wide.

Lubrication

Pressure feed, 20 to 25 pounds pressure for normal running, increasing with power requirements.

Clutch

Multiple disc, drive plate clutch.

Five line driving plates, four steel driven plates.

Transmission

Three speeds forward, one reverse—selective type.

Brakes

Internal emergency and external service brakes on 14 inch drums.

Starting System

Individual starting motor with automatic engagement to flywheel.

Lighting System

Headlights with combination auxiliary driving lights.

Instrument board light and tail light.

Current for lighting supplied to battery by individual 6-volt generator.

Cooling System

Capacity $4\frac{1}{2}$ gallons with thermostat regulating temperature of water.

Steel fan.

Wheel Base

126 inches and 133 inches.

Tread

56 inches.

Turning Radius

21' 1" for 126" wheel base.

22' 2" for 133" wheel base.

DIMENSIONS AND CAPACITY OF PACKARD SINGLE-SIX CARS

All Measurements are in Inches

Type Number		Length Over All Top Down	Width Over All	Height Over All Top Up
220	Touring 5 Passenger (126)	179 $\frac{7}{8}$	68 $\frac{1}{8}$	76
223	Runabout 4 Passenger (126)	178 $\frac{3}{8}$	68 $\frac{1}{8}$	73 $\frac{1}{2}$
225	Touring 7 Passenger (133)	187 $\frac{5}{8}$	68 $\frac{1}{8}$	76
222	Coupe 4 Passenger (126)	178 $\frac{3}{8}$	68 $\frac{1}{8}$	77 $\frac{1}{2}$
230	Coupe 5 Passenger (126)	178 $\frac{3}{8}$	68 $\frac{1}{8}$	77 $\frac{1}{2}$
221	Sedan 5 Passenger (126)	178 $\frac{3}{8}$	68 $\frac{1}{8}$	77 $\frac{1}{2}$
231	Sedan Limousine 5 Passenger (126) . .	178 $\frac{3}{8}$	68 $\frac{1}{8}$	77 $\frac{1}{2}$
228	Sedan 7 Passenger (133)	185 $\frac{3}{8}$	68 $\frac{1}{8}$	77 $\frac{1}{2}$
229	Sedan Limousine 7 Passenger (133) . .	185 $\frac{3}{8}$	68 $\frac{1}{8}$	77 $\frac{1}{2}$

DIMENSIONS OF PACKARD SINGLE-SIX OPEN BODIES

All Measurements are in Inches

	220 TOURING BODY	225 TOURING BODY	223 RUNABOUT BODY
Length over all (at belt)	111 $\frac{1}{16}$	118 $\frac{1}{16}$	105 $\frac{1}{16}$
Length—dash to front of front seat	26 $\frac{3}{8}$	26 $\frac{3}{8}$	26 $\frac{3}{8}$
*Length—back front seat to front rear seat	25 $\frac{7}{8}$	31 $\frac{3}{4}$	13 $\frac{1}{16}$
Width over all (at belt—panel to panel)	55 $\frac{1}{8}$	55 $\frac{1}{8}$	51 $\frac{3}{4}$
Greatest width floor in tonneau	44 $\frac{1}{2}$	44 $\frac{1}{2}$	41 $\frac{3}{4}$
Front door width	22 $\frac{3}{4}$	22 $\frac{3}{4}$	22 $\frac{3}{4}$
Rear door width	22 $\frac{3}{4}$	22 $\frac{3}{4}$	
SEATS:			
Front: Depth	17 $\frac{5}{8}$	17 $\frac{5}{8}$	17 $\frac{5}{8}$
Height—floor to top of cushion	12	12	12
Height—of seat back	17 $\frac{13}{16}$	17 $\frac{13}{16}$	19 $\frac{13}{16}$
Rear: Depth	21	21	
Width	47	47	
Height—floor to top of cushion	14	14	
Height of seat back	19 $\frac{1}{2}$	19 $\frac{1}{2}$	
Folding: Depth	29	15 $\frac{3}{16}$	
Width		13 $\frac{7}{8}$	
Height—floor to top of cushion		15 $\frac{1}{8}$	
Height of seat back		14	
†Head Room:—distance from top of seat cushion to headlining of top—front	36 $\frac{7}{8}$	36 $\frac{7}{8}$	37 $\frac{7}{8}$
to headlining of top—rear	37 $\frac{3}{4}$	37 $\frac{3}{4}$	

*Measured 20" from Floor.

†Measured from Point 5" Ahead of Seat Back Cushions.

DIMENSIONS OF PACKARD SINGLE-SIX ENCLOSED BODIES

All Measurements are in Inches

	221 SEDAN	231 SEDAN LIMO.	222 COUPE	230 COUPE	228 SEDAN	229 SEDAN LIMO.
Length over all (at belt)	111 $\frac{1}{8}$	111 $\frac{1}{8}$	105 $\frac{1}{8}$	107 $\frac{1}{8}$	118 $\frac{1}{8}$	118 $\frac{1}{8}$
Length—dash to front of front seat	26 $\frac{3}{8}$	26 $\frac{3}{8}$	26 $\frac{3}{8}$	26 $\frac{3}{8}$	26 $\frac{3}{8}$	26 $\frac{3}{8}$
*Length—back of front seat to front of rear seat	27 $\frac{1}{2}$	27 $\frac{1}{8}$		10 $\frac{1}{8}$	34 $\frac{1}{8}$	34 $\frac{1}{8}$
*Distance from partition to front of folding seat			25 $\frac{11}{16}$	27	9 $\frac{3}{4}$	10 $\frac{3}{4}$
*Distance from front of rear seat to folding seat			7	14 $\frac{3}{4}$	7 $\frac{3}{4}$	6 $\frac{1}{4}$
Distance from partition to front of rear seat	27	27 $\frac{1}{8}$	49 $\frac{3}{4}$	10 $\frac{1}{8}$	34 $\frac{1}{8}$	34 $\frac{1}{8}$
Width over all (at belt—panel to panel)	58 $\frac{3}{4}$	58 $\frac{3}{4}$	60	58 $\frac{3}{4}$	58 $\frac{7}{8}$	58 $\frac{7}{8}$
Greatest width of floor in tonneau	44 $\frac{1}{2}$	44 $\frac{1}{2}$	40	42	44 $\frac{1}{2}$	44 $\frac{1}{2}$
Height of rear compartment	51	51	50 $\frac{3}{4}$	50 $\frac{3}{4}$	51	51
Front door width	25	25	25	29	27 $\frac{3}{8}$	27 $\frac{3}{8}$
Rear door width	25 $\frac{1}{8}$	25 $\frac{1}{8}$			27 $\frac{1}{2}$	27 $\frac{1}{2}$
SEATS:						
Front:						
Depth	17 $\frac{3}{8}$	16 $\frac{7}{16}$	18 $\frac{1}{2}$	18 $\frac{1}{2}$	17 $\frac{5}{8}$	16 $\frac{7}{16}$
Width	44	44	21	23	44	44
Height—floor to top of cushion	12	11	12 $\frac{3}{8}$	12 $\frac{3}{8}$	12	11
Height of seat back	19 $\frac{5}{8}$	19 $\frac{5}{16}$	19	19 $\frac{1}{4}$	19 $\frac{5}{8}$	19 $\frac{1}{2}$
Rear:						
Depth	21	21	21	20	21	21
Width	47	47	38	47	47	47
Height—floor to top of cushion	14	14	14	14	14	14
Height of seat back	20 $\frac{7}{8}$	20 $\frac{7}{8}$	20 $\frac{1}{2}$	19 $\frac{3}{4}$	20 $\frac{7}{8}$	20 $\frac{7}{8}$
Folding:						
Depth			15	17	15 $\frac{1}{16}$	15 $\frac{1}{16}$
Width			13 $\frac{7}{8}$	15 $\frac{1}{2}$	13 $\frac{7}{8}$	13 $\frac{7}{8}$
Height—floor to top of cushion			11 $\frac{1}{8}$	12 $\frac{1}{4}$	15 $\frac{1}{8}$	14 $\frac{1}{2}$
Height of seat back			14 $\frac{5}{8}$	16 $\frac{3}{4}$	14	14
†Head Room:—Distance from top of seat cushion						
to headlining of top—front	39 $\frac{1}{2}$	39 $\frac{1}{2}$	39 $\frac{1}{8}$	39 $\frac{1}{8}$	39 $\frac{1}{2}$	39 $\frac{1}{2}$
to headlining of top—rear	38 $\frac{1}{4}$	38 $\frac{1}{4}$	38 $\frac{1}{8}$	37 $\frac{7}{8}$	38 $\frac{1}{4}$	38 $\frac{1}{4}$

*Measured 20" from Floor.

†Measured from Point 5" Ahead of Seat Back Cushion.

License Data

Number of Cylinders.....6, $3\frac{3}{8}$

Cylinder Bore.....~~3 1/2~~ in.

Horsepower (N. A. C. C. rating).....27.34

Piston Displacement.....268.4 cu. in.

Stroke.....5 in.

Shipping Weights

	126	133
Touring	3225 lbs.	3355 lbs.
Roadster	3030 lbs.	
Permanent Top Touring	3360 lbs.	
Coupe (4 passenger)	3305 lbs.	
Coupe (5 passenger)	3360 lbs.	
Sport	3165 lbs.	
Sedan	3455 lbs.	3555 lbs.
Sedan Limousine	3525 lbs.	3680 lbs.
Chassis	2495 lbs.	

If the weight of a car ready for the road is desired, approximately 200 lbs. should be added to the above weights to cover water, oil and gasoline.

Size of Tires.....33 x 4 $\frac{1}{2}$ in.

Road Clearance.....10 in.

Wheel Base.....126 - 133 in.

Vehicle number on manufacturer's patent plate.

Motor number on right front crank case—upper half.

