



*Automobiles*

CATALOGUE  
No. 209

# ELECTRIC VEHICLES



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MADE BY

STUDEBAKER BROS. MFG. CO.  
SOUTH BEND, IND.  
U. S. A.

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STUDEBAKER BROS. CO. OF N. Y., 554-556 Broadway, Corner Prince Street,	NEW YORK, N. Y.
STUDEBAKER BROS. MFG. CO., 378 to 388 Walsh Avenue,	CHICAGO, ILL.
STUDEBAKER BROS. CO. OF CALIFORNIA, Corner Market and Tenth Streets,	SAN FRANCISCO, CAL.
STUDEBAKER BROS. MFG. CO., 810-814 Walnut Street,	KANSAS CITY, MO.
STUDEBAKER BROS. CO. NORTHWEST, 328-334 E. Morrison Street,	PORTLAND, ORE.
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# STUDEBAKER ELECTRIC VEHICLES



**A**UTOMOBILES, of one description or another, have now been before the public for a number of years. While embodying a principle of great value designed to furnish a vehicle with self-impelling power, for the most part they have been crude affairs, lacking essentials of practicality and utility necessary to recommend them for general adoption. As may be imagined we have not been indifferent to the introduction of the horseless carriage. We have not, however, believed that it would be wise on our part or good faith toward the public to push upon the market an imperfect or immature product. The course that we have pursued has been to make a

systematic and thorough study of the whole situation. We have for years kept advised of the introduction of every motor vehicle of promise in this country or abroad. We have expended a large amount of time and money in experimenting and research conducted for us by experts, in order that the machine of our adoption should be such that we could recommend and not discredit our standing in the vehicle world.

The result is that we are now enabled to offer a motor vehicle in keeping with our high aim, one that is simple in construction, safe, easy to operate, free from vibration and noise, friction and resistance reduced to a minimum.

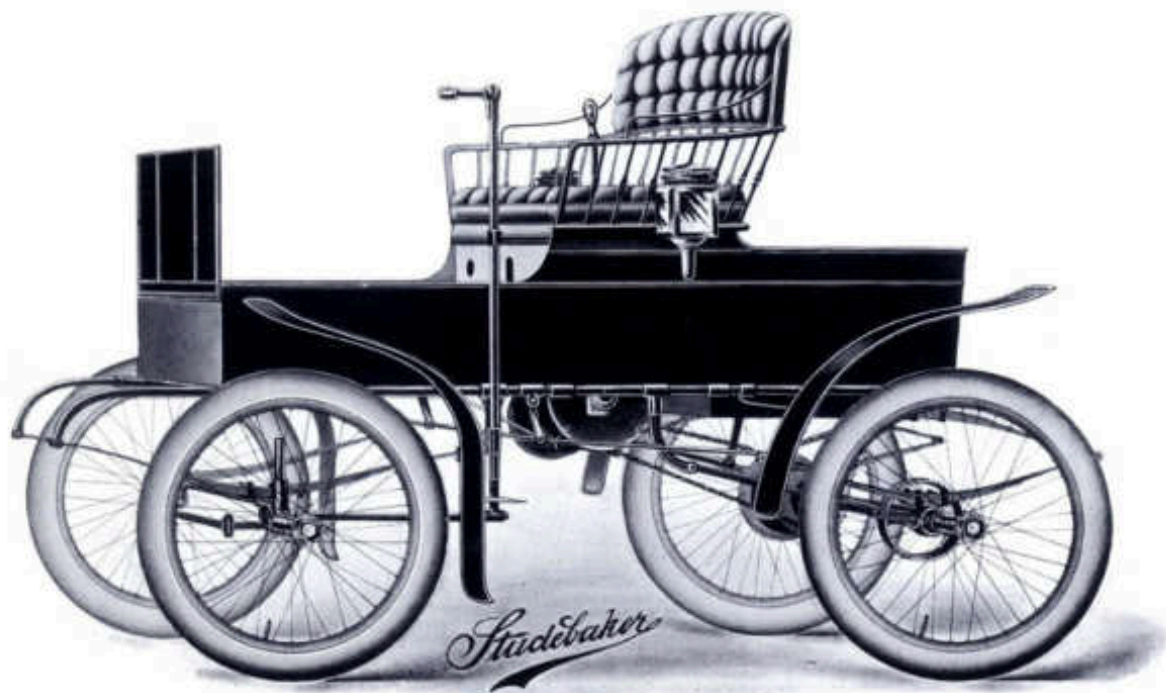
In a word

## THE STUDEBAKER ELECTRIC VEHICLE

will be found to combine durability, elegance of design and finish, convenience and comfort, whether the purpose of the user is business or pleasure. It has a structural strength necessary for making a practical vehi-

cle in any service short of the intentionally abusive. Unlike other vehicles of its class, it is serviceable on the usual rough paving and car tracks of the city streets, a consideration of importance in a vehicle.

STUDEBAKER BROS. MFG. CO.  
SOUTH BEND, IND.



NO. 1354. STUDEBAKER RUNABOUT  
STICK SEAT. NO TOP

# STUDEBAKER ELECTRIC VEHICLES

## DESIGN

Its engineering design is strictly in accordance with the latest automobile development. Principles of design are embodied which the experience of both Europe and this country have found to be the best for every day service. The detail designs have been made simple, easily accessible, direct, on conservative lines, and in consequence are readily comprehended by even the novice.

## BATTERY

The battery with which these vehicles are regularly equipped is the most durable battery produced to date. It has not the extremely high capacity per pound as some others, as it is considered that long life and serviceability with adequate capacity are better than an extremely high capacity with short life, frequent troubles and expensive repairs.

The battery consists of 24 cells which effect the best compromise between the number of rubber jars and the total energy capacity of the battery. A greater number of jars entails more rubber and less battery, and a less number of jars entails electrical trouble in the motor power equipment.

The battery is so arranged that its location is not directly over that of the motor, as is the case in many vehicles, so that in this vehicle any drippings from the battery fall to the ground.

## MOTOR

This vehicle is equipped with one motor. For a vehicle of this size a properly designed differential on the rear axle is practical which makes it possible to effect a saving by using one large motor instead of two small ones. The motor used is a Standard Westinghouse Vehicle Motor. The design is such that small rises in current produce very much greater power effect than has been heretofore attained in motors of this class. The results are that even in severe service the battery

discharges are very materially reduced. This peculiarity has another advantage in that it gives even on the slow speed very much more power effect than has ever been attained before. On grades equalling ten per cent the first speed will run the vehicle fully loaded. The motor is suspended above the spring, from the running gear on which the body rests, and is so arranged that it can be swung backward or forward and fastened in position, thus securing perfect chain adjustment. The suspension of the motor above the springs not only materially relieves shocks on it and the running gear, but contributes greatly to the life of the tires and on account of its location equalizes the load.

## TRANSMISSION

The transmission is by roller chain from counter shaft built into the motor heads to a balance gear on the rear axle. The pull of the chain is taken by distance rods attaching to the side bars of the running gear frame and the main rear axle bearings.

## CONTROLLER

The controller has four speeds and is conveniently located on the end of the seat. The motor reverses by pressing a lever with the heel. The speeds backward are the same as forward. On each speed almost full power effect can be obtained. The speeds are equally divided. The higher speed is 13 miles per hour on level road.

## EMERGENCY SWITCH

A cut-out switch is provided which is easily operated by the foot to throw off power in case of emergency. This same switch is provided with removable handle which when removed makes it impossible to operate. The handle can only be removed when in the "off" position and answers as a lock preventing others from using the vehicle. The same switch when thrown into a lower position cuts out all the



NO. 1365. STUDEBAKER RUNABOUT

PANEL SEAT, WITH LEATHER TOP IF DESIRED

# STUDEBAKER ELECTRIC VEHICLES

wiring in the vehicle except between the charging plug, the switch and the battery; thus anything desired can be done to the motor, controller or wiring while the vehicle is on charge without danger of doing any damage.

## CHARGING

Each vehicle is equipped with a charging receptacle, which will fit the standard charging plug most commonly used in this country today. A charging plug with 15 feet of cable is furnished with each vehicle.

## INDICATING METER

Instead of the ordinary volt meter and ammeter, this vehicle is equipped with an indicator which reads directly the amount of energy in the battery. Thus even the untrained in electrical matters can determine at a glance at any time the amount of charge in the batteries.

## LAMPS

Two electric side lamps are furnished, operated by switches in front of seat.

## WIRING

All wiring is acid proof, arranged very simply so as to be easily followed by even the uninformed.

## GEARS

Our gears are original in design and represent the most advanced engineering methods in this line. The frame of the gear is made of high grade tubular steel, combining lightness with strength, and so constructed as to relieve the body of the vehicle of all working strains from

the motor and power transmission. This form of gear construction has done much toward making the Studebaker Electric Vehicle the easiest riding and most durable electric vehicle on the market.

## SPRINGS

All springs are elliptical; the front three-leaf and the rear four-leaf, bolted and clipped to the axles.

## STEERING APPARATUS

The steering is effected by side lever. We have adopted this form of steering device in preference to a center steering lever for the following reasons:

By experience it has been found that the control of the vehicle is made easier for the operator, and more effective than the center steering lever.

By means of a knuckle-joint the steering lever can be thrown back, making an arrangement much more convenient when passengers are entering or leaving the vehicle than the center steering lever construction.

The steering lever is tubular and reinforced at its upper end to give special strength where the knuckle is keyed in.

## DIFFERENTIAL GEAR

Our differential or compensating gear is original in design and construction, is composed of straight spur gears and made of bronze. The case is dust-proof, made of pressed steel in two pieces and bolted together. The sprocket wheel is held in place by these same bolts.

## BRAKE

Each vehicle is fitted with a band brake on rear axle, operated with foot lever working in a ratchet. They are also fitted with an



NO. 1367. STUDEBAKER TRAP  
WITH LEATHER TOP IF DESIRED

# STUDEBAKER ELECTRIC VEHICLES

auxiliary brake operating directly on the shaft of the motor and controlled by a **hand lever**.  
**foot lever**.

## AXLES

The front axle is tubular, reinforced its entire length. The steering axles or spindles are made of solid steel of high carbon, forged out of one piece and are of sufficient strength to carry the load and prevent the wheels from spreading at the bottom. The rear axle is one solid bar of steel, running from one wheel to the other, and fitted with a short sleeve on one side to get the necessary differential effect. Each bearing has a double row of large diameter balls made especially for automobile use.

## WHEELS AND TIRES

The wheels are ball-bearing, fitted with 30 x 3 inch double tube pneumatic tires. Each wheel has forty heavy swedged spokes of high tensile strength. All hubs are flanged and fitted with dust-proof washers. The track is 4 feet 6 inches center to center of tire.

## BEARINGS

All bearings at the wearing joints have been made very large in order to avoid wearing loose at these points which is so universally the case in most vehicles. All bearings are made long so as to avoid all overhanging on the parts receiving severe thrusts.

## BODIES

The designs of all our bodies have been studied from every standpoint known to the vehicle builder, combined with knowledge and experience of motor vehicle experts, and are now produced in four different styles. The bodies are hung low and easy of ingress and egress. The batteries occupy the part in the rear of seat, over the top

of which is neatly fitted a boot, giving a finished appearance and completely protecting them, also providing an opening so that the batteries can be properly cared for without removal from battery compartment. The front under each seat is removable, making access easy to the electrical parts. Perfect ventilation is provided to allow fumes to escape when charging. The seats are comfortable and roomy and trimmed with a fine quality of leather, cloth or whipcord.

## PAINTING

In the painting and finishing only the very best material is used. The bodies are painted black, the gears red or dark green.

## TOPS

We supply tops with any of the vehicles when shown open (except the stick-seat runabout) when so ordered at usual extra price. In ordering please state if close stanhope or buggy top with loose curtains is desired.

## SHIPPING

We ordinarily ship batteries dry without electrolyte. Where desired, however, the batteries can be filled with electrolyte and charged before shipment. It is safer to ship dry, as it avoids spilling acid in unloading from the cars at inconvenient places. We test each vehicle thoroughly before preparing for shipment.

## PRICES

All prices are subject to change without notice and are net f. o. b. cars at factory for the vehicle crated, covered and packed for shipment. Responsibility for damage ceases when delivered to the railroad company in good order.



NO. 1358. STUDEBAKER STANHOPE

# STUDEBAKER ELECTRIC VEHICLES

## DETAILED DATA FOR STUDEBAKER ELECTRIC RUNABOUT CATALOG No. 1354

### DIMENSIONS

Track	- - - - -	54 inches
Wheel Base	- - - - -	61 "
Wheel diameter (both)	- - - - -	30 "
Tires	- - - - -	30 x 3 "
Body Length	- - - - -	73 "
Body Width	- - - - -	29 "
Seat Width	- - - - -	33 "
Floor Height	- - - - -	28 1/2 "

Weight of vehicle complete as illustrated, 1,350 lbs.

### EQUIPMENT

**RUNNING GEAR**—Complete and independent.  
**MOTOR**—24 amp. 40 volt, Westinghouse.  
**CONTROLLER**—Four speeds, foot press reverse.  
**BATTERY**—24 cells, capacity 96 ampere hours. Total weight, 550 lbs. arranged in two battery trays.  
**CUT-OUT SWITCH**—Four pole complete cut-out. Three positions, "power," "off," "charging."  
**BATTERY INDICATOR**—Standard Westinghouse, direct reading.  
**CHARGING RECEPTACLE**—Standard Westinghouse, fitting all standard plugs.  
**SIGNAL BELL**—Standard, operated by waterproof foot press.

### CAPACITY

**MILEAGE**—One charge, two passengers, - - - 40 miles.  
**SPEEDS**—3, 5, 9 and 13 miles per hour on level with two passengers.

### TOOLS AND PARTS

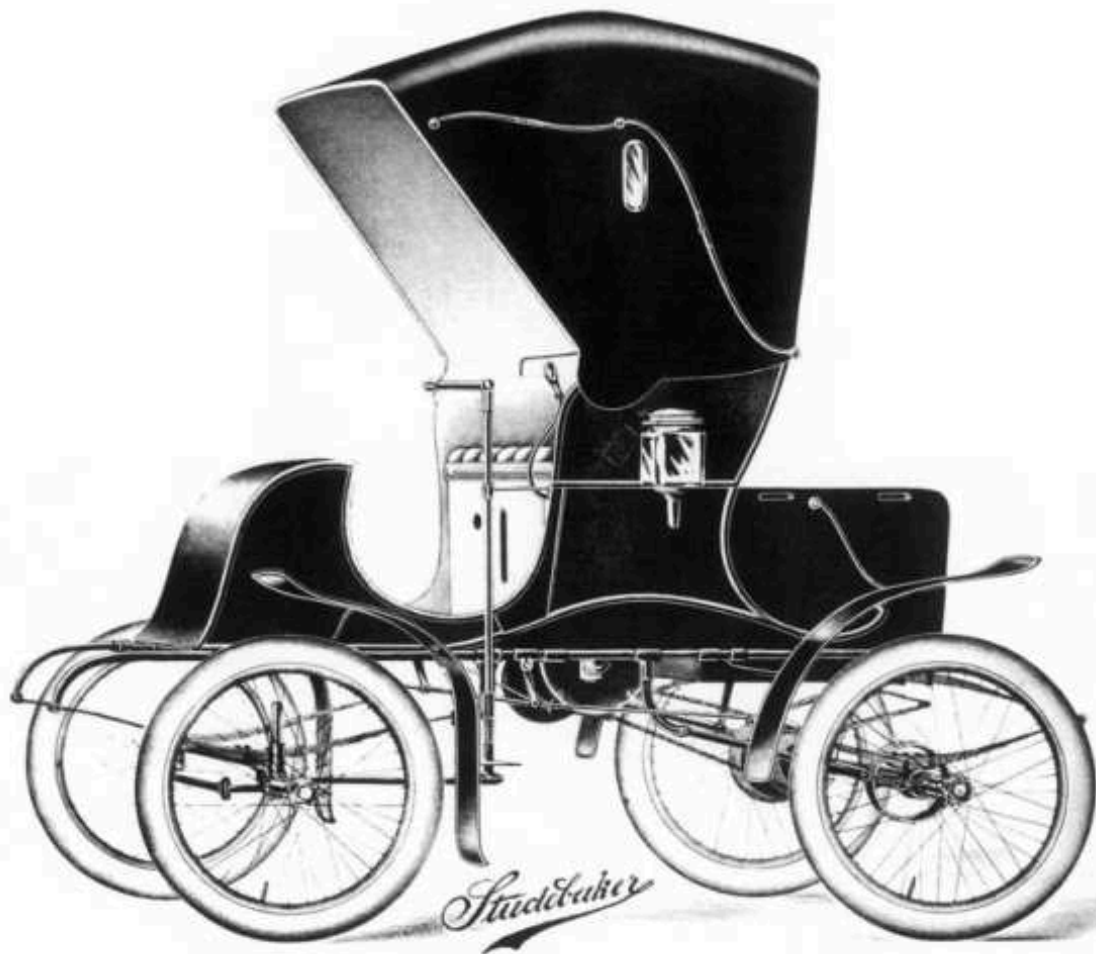
We furnish free with each vehicle, the following tools and parts:

- One combination axle cap and axle nut wrench.
- One combination general purpose wrench.
- One charging plug with 15 foot cable.
- One set tire removers.
- One quick tire repair outfit.
- One tire pump.

The difference in weight and in the body dimensions on the several vehicles shown is so small that we do not consider them of sufficient value to give herein. Accurate weights and measurements of each vehicle, if desired, will be furnished on request.

If batteries of greater capacity are desired than those regularly supplied they can be furnished at extra price.

STUDEBAKER BROS. MFG. CO.,  
SOUTH BEND, IND., U. S. A.



NO. 1363. STUDEBAKER STANHOPE

# SIX PAN-AMERICAN AWARDS



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STUDEBAKER  
VEHICLES &  
HARNESS

WERE AWARDED

4 GOLD MEDALS &  
2 BRONZE MEDALS

BY THE JUDGES OF THE



PAN-AMERICAN EXPOSITION

BUFFALO, NEW YORK  
1901