CADILLAC
OPERATOR'S MANUAL

1931

EDITION NO. 370-1

In ordering a duplicate of this Manual, specify the above number or the engine number of the car.

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CHAPTER I

CADILLAC SERVICE

THE owner of a Cadillac car has purchased not simply a fine piece of machinery, ingeniously designed and carefully built—he has purchased a pleasant and dependable mode of transportation. The car itself is only one factor in securing this transportation—the other factor is Cadillac Service, which is built upon *a standard policy, clearly defined to the car owner and guaranteeing him efficient service everywhere at standard prices under factory regulation.*

Cadillac-La Salle Service Stations

Cadillac Service extends wherever Cadillac and La Salle cars are sold. Service stations conducted by Cadillac distributors and dealers are designated as "Authorized Cadillac-La Salle Service Stations" and are identified by the exclusive sign illustrated on this page. Wherever this sign is displayed, the owner will find an organization prepared to service Cadillac cars. This means proper equipment, factory trained personnel, a stock of genuine replacement parts and standardized policies and methods.

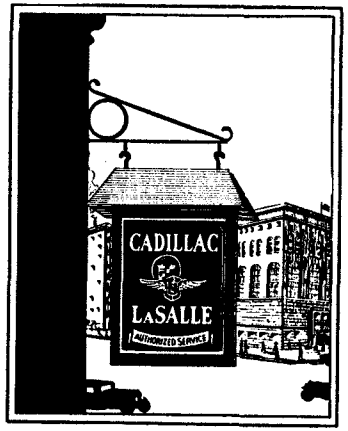

Fig. 1. Authorized Cadillac-La Salle service stations display this sign at the service entrance.

The car owner's first and most frequent contact with Cadillac Service will naturally be in the service station of the distributor or dealer who sold him the car and who therefore has the greatest interest at stake in assuring him satisfaction.

Nevertheless, he may feel perfectly free to use his car for extended travel without depriving himself of the service benefits to which he is entitled at his local service station. He will find other Authorized Cadillac-La Salle Service Stations able and willing to render the same service.

Service Card

As a means of introduction at other Authorized Cadillac-La Salle Service Stations, every purchaser of a Cadillac car is given credentials in the form of a Service Card. This card is mailed to him by the Cadillac factory immediately after the delivery of the car is reported by the distributor or dealer. It is supplied in a celluloid case, and is intended to be carried in a holder on the car.

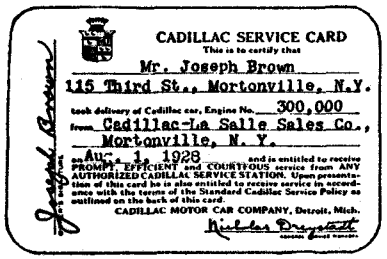
CADILLAC SERVICE CARD
This is to certify that
Mr. Joseph Brown
115 Third St., Mortonville, N.Y.
took delivery of Cadillac car, Engine No. 300,000
from Cadillac-La Salle Sales Co.,
Mortonville, N. Y.
Aug. 1, 1928
and is entitled to receive on demand PROMPT, EFFICIENT and COURTEOUS service from ANY AUTHORIZED CADILLAC SERVICE STATION. Upon presentation of this card he is also entitled to receive service in accordance with the terms of the Standard Cadillac Service Policy as outlined on the back of this card.
CADILLAC MOTOR CAR COMPANY, Detroit, Mich.
Joseph Brown

Fig. 2. The Service Card, when properly signed, identifies a Cadillac owner at any authorized Cadillac-La Salle service station.

Upon presentation of this Service Card to any Authorized Cadillac-La Salle Service Station, the car owner is entitled to uniform standard service in accordance with the Cadillac Owner Service Policy. This Policy is explained in detail in a certificate issued to each owner and mailed to him with his Service Card. Briefly, it entitles the owner to:

1. All adjustments, free of all charges, that may be required within 90 days after the original delivery date (as shown on the card), provided the mileage of the car does not exceed 3000 and the adjustments are not made necessary by accident, abuse or neglect. This includes everything except lubrication, washing and storing.

2. Free replacement of any part which has proved to the Cadillac Motor Car Company's satisfaction to be defective in material or workmanship within one year after the delivery date, provided the mileage of the car does not exceed 12,000 and that the replacement was not made necessary by accident, abuse or neglect. This includes material and labor.

The Service Card is not transferable, and the no-charge service set forth above is effective only while the car is in the hands of its original owner.

Standard Service Contract

Owners may be assured of continuous satisfactory operation and maintenance of their cars at a predetermined, economical cost by purchasing a Standard Service Contract. Two contracts are available covering complete lubrication and all adjustments and repairs made necessary by normal wear. The first Contract covers the first 12 months or 12,000 miles and the second covers the second 12 months or second 12,000 miles.

The Standard Service Contract is based on Cadillac's principle of preventive service and insures the owner the greatest amount of satisfaction with the fewest possible interruptions. This is accomplished by complete lubrication on schedule and regular inspection to anticipate the need of adjustment and repair, eliminating the necessity of service between inspections.

The Contract is recognized by all authorized Cadillac-La Salle service stations in the United States and Canada regardless of where the Contract was purchased. The owner is thus assured of all Contract service due him without additional charge wherever he may travel, the same as if the work was performed by the Service Station from which the Contract was purchased.

These Contracts are available at all Cadillac sales rooms and authorized service stations. Owners are urged to purchase Standard Service Contracts at the time of delivery of the new car.

Service Charges

Service work other than that described above is performed by Authorized Cadillac-La Salle Service Stations on a flat-rate basis. When a car enters the service station, it is promptly inspected by a tester, who then quotes the owner an exact price for the work he finds necessary. The owner authorizes the work at this price, and when he receives his bill, this is the price he pays.

Charges prevailing at Authorized Cadillac-La Salle Service Stations are based on standard schedules furnished by the Cadillac Motor Car Company. These schedules call for methods and tools approved by the same engineers who designed and built the car, assuring the highest quality of work at the lowest possible price. Standard Price Schedules are open to inspection by owners at any Authorized Cadillac-La Salle Service Station.

Repair Parts

Genuine Cadillac parts, manufactured to the same rigid specifications as the parts entering into the original assembly of the car, are carried in stock by Authorized Cadillac-La Salle Service Stations. They are sold at uniform prices throughout the United States, and are not subject to the addition of handling, excise or other supplementary charges. Printed price lists, published by the Cadillac Motor Car Company, are open to inspection by owners at any authorized Cadillac distributor's or dealer's establishment.

The Owner's Obligation

All of these service facilities are placed at the disposal of the Cadillac owner, in order that his car may be a continuous source of satisfaction and utility. This result cannot be guaranteed, however, unless the owner fulfills certain definite obligations himself, as follows:

1. To drive the car at moderate speeds for the first 500 miles.
2. To operate the car in accordance with the instructions contained in this manual.
3. To check the engine oil level every 100 to 150 miles, and add oil as often as necessary to keep the indicator at "full."
4. To check the tire pressure at least every week, and keep it up to the recommended pressure—40 pounds in front and rear—on cars driven at high speeds, 45 pounds in front.
5. To add distilled water to the storage battery every 1000 miles, and in warm weather every 500 miles, or at least every two weeks.
6. To have the car lubricated every 1000 miles, or once a month, in accordance with the lubrication schedule on page 28.
7. To take the car to an Authorized Service Station for inspection every 1000 miles, or at least once a month.

Lubrication

The first five items above are details which do not necessarily warrant a visit to the service station. For lubrication, however, the owner is urged to patronize Authorized Cadillac-La Salle Service Stations, because they are prepared to furnish this service in a manner that cannot be duplicated elsewhere. Only approved lubricants are used, the specifications of which have been worked out by Cadillac engineers to give the best possible results. Workmen who specialize on Cadillac cars know exactly where lubrication points are located and how much lubricant to apply. The charge for this lubrication service is only about half a cent a mile, which includes the cost of the lubricants.

Inspection

Preventive service is a fundamental principle of Cadillac Service. "Preventive service" is the practice of inspecting the car at regular intervals and making those adjustments that need attention before the need becomes an emergency. Inspections should be made every 1000 miles, in order to insure transportation satisfaction. Authorized Cadillac-La Salle Service Stations will make such inspections without charge, provided no dismantling of units is necessary.

The Cadillac owner is urged to take full advantage of this, not only while the car is new, but throughout its entire life.

Preventive service rendered every 1,000 miles or once a month by an Authorized Cadillac-La Salle Service Station, is the surest guarantee of long life and complete motoring satisfaction at the least possible expense.

CHAPTER II

OPERATION

One of the first things the driver of a new car should do is to familiarize himself with the various controls described in the following chapter.

Locks

Each car is equipped with two each of two different keys. The handles of one set of keys are hexagonal in shape: these keys unlock the combination ignition switch and transmission lock, the lock on the front door, the spare wheel carrier and the battery box. The keys in the other set have oval handles: these keys unlock the rear doors of chauffeur driven cars, the rear decks of roadsters and coupes, and the various package compartments.

The lock number is stamped on each key, but not upon the face of the lock. The owner should make a record of the key numbers as soon as he takes delivery of his car, so that in the event both keys are lost, a duplicate key can easily be obtained from a Cadillac distributor or dealer.

The right front door can be locked from the inside to prevent intruders from forcing their way into the car. This can be accomplished simply by turning the key to the locked position on the outside before entering the car. The door will then be locked from the outside, although it can be opened from the inside in the usual manner.

Ignition Switch Lock

The lock in the center of the instrument panel controls both the ignition switch and the transmission lock. When the key is turned, the cylinder of the lock will slide out about half an

inch, turning on the ignition and unlocking the transmission by means of a cable connection to the shifter shafts. To shut off the ignition and lock the transmission, turn the key to the locked position and push the lock cylinder all the way in. The car can be locked when the transmission is in neutral or in reverse. Do not attempt to shut off the ignition when the transmission is in any forward gear. Be sure to **remove the key** before leaving the car.

Gasoline Gauge

The gasoline gauge, marked "Fuel," is the small dial on the extreme left. This gauge indicates in gallons the quantity of fuel in the tank at the rear of the car, and is operated electrically by current taken from the ignition circuit. To read from the gauge the quantity of fuel in the tank, the ignition **must be turned on.**

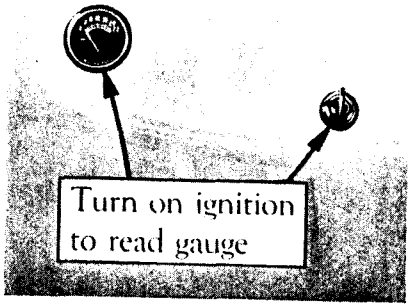

Fig. 3. The gasoline gauge is operated electrically by current from the ignition circuit.

Throttle Control

The throttles of the two carburetors are controlled by a hand lever and a foot pedal or accelerator. The normal position of the hand lever for driving the car is all the way up, to "CLOSE". In this position the throttles of the carburetors are open just enough to permit the engine to run at idling speed after it is warm. For starting, however, the lever should be moved approximately one-fourth the way down, and should be left in this position until the engine is warm enough to permit the lever to be returned to the idling position without stalling the engine. (Also see Chapter on "Cold Weather Operation.")

Carburetor Choke Control

Correct use of the choke control is essential not only to quick starting of the engine, but also to the life of the engine. The button must be pulled our far enough in starting to provide an explosive mixture quickly so that the battery is not unnecessarily discharged by useless cranking. The button must also be left out far enough during the warming-up period so that the engine will run without missing and "popping back."

On the other hand, it should not be pulled out any further or left out any longer than is necessary to accomplish these results, because some of the excess liquid gasoline in the enriched mixture does not burn and may wash off the oil on the cylinder walls, interfering with proper lubrication of the pistons. Push the button all the way in as soon as this can be done without causing "popping back."

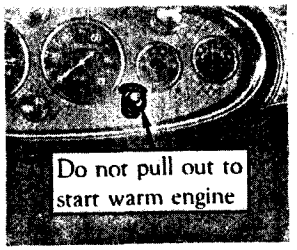

Fig. 4. The choke button must be held out while the starter is cranking the engine.

If the engine still retains heat from previous running, the choke control should not be used without first attempting to start the engine on the normal mixture. If the choke button is pulled out for starting a hot engine the mixture may be made so rich that starting will be impossible.

The choke button is not a priming device. It has no effect whatever on the fuel or the fuel mixture unless the engine is being cranked or is running under its own power. To have any effect, the button must be pulled out and kept partly out during the cranking operation.

Spark Control

Correct timing of the ignition in relation to the positions of the pistons is controlled automatically by the timer-distributor, which provides for all ordinary advancing and retarding of the spark.

A hand control is also provided. This is the button at the left on the instrument panel. This button should be pushed all the way in (full advance) for starting and for all ordinary driving. The button can be pulled partly out to retard the spark in case of "ping" caused by carbon, heavy pulling, the use of regular (not anti-knock) gasoline, or in case there should ever be occasion to crank the engine by hand.

The Cadillac V-12 engine is a high compression engine and it will perform most satisfactorily when an anti-knock fuel is used. Regular gasoline can be used, although this may necessitate driving with the spark slightly retarded to avoid "ping." The spark should be retarded just to the point where the engine "pings" slightly on rapid acceleration. This slight amount of spark knock is absolutely harmless to the engine and is an indication to the driver that the spark is set at the point that will give maximum power and economy.

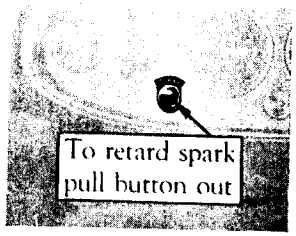

Fig. 5. Drive with spark control as far advanced as possible.

Carbon deposit, which accumulates with use in all engines, also causes spark knock and in time may require retarding the spark. Regardless of the kind of fuel or the presence of carbon, the correct setting of the spark control at any time is at the point where the engine "pings" slightly on rapid acceleration.

Starter Pedal

The starter pedal is at the right of the accelerator. Pushing this pedal forward brings into action the electric motor that cranks the engine for starting. Do not push the starter pedal when the engine is running.

The starter pedal is only one of the controls that must be manipulated to start the engine. Unless there is an explosive mixture in the cylinders and a spark to ignite it, it is useless to crank the engine. The starter pedal should not be operated, therefore, until the necessary preliminary steps have been taken. The following, in their proper order, are the various steps that must be performed when starting the engine:

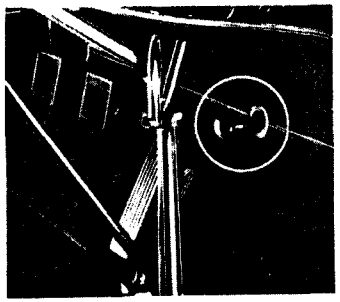

Fig. 6. The starter pedal is only one of the controls that must be used to start the engine.

1. Place the throttle lever about one - fourth the way down from the "CLOSE" position.

2. See that the spark control button is all the way in.

3. Make sure that the transmission control lever is in neutral.

4. Turn on the ignition.

5. Unless the engine is still warm, pull out the choke button. If the engine is still warm, do not pull out the choke button unless the engine fails to start on the normal mixture.

6. To start the engine, push the starter pedal forward, releasing it as soon as the engine starts. If the engine does not start readily, do not run the battery down by continuing to crank the engine, but look for the trouble and correct it. (See below for probable causes for the engine failing to start.)

7. Push the choke button in part way as soon as the engine starts, and all the way in as soon as the engine is warm enough to permit it.

8. Note whether pressure is indicated on the oil pressure gauge and stop the engine at once if no pressure is indicated.

9. Move the throttle lever up to the "CLOSE" position as soon as the engine is warm enough to permit it.

In cold weather, disengage the clutch during the cranking operation. This relieves the starter of the necessity of turning the transmission gears, which are immersed in lubricant. The additional load is small in warm weather when the lubricant is thin, but in cold weather the power required to turn the gears through the thickened lubricant adds unnecessarily to the load on the starter and the battery.

What To Do If The Engine Fails To Start

If the engine does not start readily, release the starter pedal and look for the cause.

The ignition may not be turned on.

There may be no gasoline in the tank in the rear of the car.

There may be no gasoline in the vacuum tank on the dash. If the fuel supply should give out on the road, so that the vacuum tank on the dash becomes empty, it will be necessary after refilling the tank to add gasoline to the vacuum tank.

The carburetors may be flooded by unnecessary use of the choke when the engine is warm. To get rid of the surplus gasoline in the cylinders open the throttle wide, and, with the ignition turned off, hold the starter pedal down for 10 to 15 seconds. Then return the throttle lever to the usual position for starting, turn on the ignition and try once more to start the engine.

Oil Pressure Gauge

The small dial at the left of the clock is the oil pressure gauge. This gauge does *not* indicate the *quantity* of oil in the engine. It indicates only the *pressure* under which the oil is forced to the engine bearings.

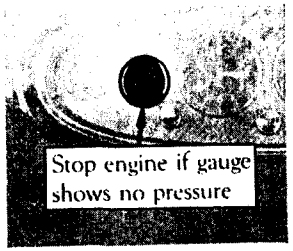

Fig. 7. The oil gauge does not indicate quantity; it only shows the pressure under which oil is forced to the engine bearings.

When the engine is not running, the pointer on the oil pressure gauge should remain at zero, but as soon as the engine is started and as long as it runs, the gauge should show pressure. If no pressure is indicated when the engine is running, stop the engine at once and determine the cause. Serious damage may be done if the engine is run without oil pressure.

Ammeter

The ammeter shows how much current the generator is furnishing the battery when the motor is running and how much the lights and ignition are drawing from the battery when the generator is not charging. It does not register the current drawn by the starting motor when starting the engine nor the total output of the generator when the lights are on.

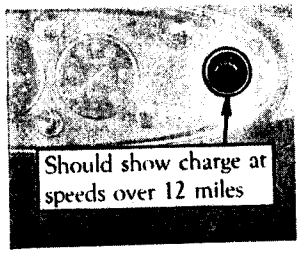

Fig. 8. The ammeter indicates the amount of electrical current flowing to or from the battery.

The ammeter should indicate on the "Charge" side most of the time, otherwise, more current will be taken out of the battery than is put into it and the battery will eventually become fully discharged.

Ordinarily, when no lights

are in use, the ammeter should show "Charge" as soon as the car is running ten or twelve miles per hour in high gear. If the ammeter should show "Discharge" with all lights off, either when the engine is not running or when the car is running more than twelve miles per hour, the cause should be investigated.

Clutch Pedal

The clutch has two uses: First, to enable the car to be started gradually and without jerk or jar; second, to permit shifting of the transmission gears. The operation of the clutch is discussed below in connection with the transmission control. Further comment is unnecessary at this point, except the following suggestions to the driver:

Do not drive with the foot resting on the clutch pedal. The Cadillac clutch operates so easily that even the weight of the driver's foot may unintentionally cause the clutch to slip.

Do not form the practice of disengaging the clutch whenever the brakes are applied. Most occasions for use of the brakes require only slowing down without stopping or even shifting gears. A skilled driver will not touch the clutch pedal until the car is just about to stop or until he is about to shift to a lower gear. It is a mistaken idea that applying the brakes with the clutch engaged is more severe on the brake lining. The opposite is actually the case, proof of which is in the fact that in coasting down grades, the resistance of the engine is used to assist the brakes in controlling the car speed.

Fig. 9. A good driver uses the clutch pedal only when shifting gears or about to stop.

It will be observed in oper-

ating the clutch pedal that the pedal offers almost no resistance until it has been moved about one inch. It is at this point that it actually begins to disengage the clutch. It is important that the pedal have this "lost motion." If the full pressure of the clutch springs is felt just as soon as the control pedal is moved, the control rod should be readjusted. Failure to make this adjustment will result in the clutch slipping.

Transmission Control

The operation of the Cadillac Syncro-mesh transmission is, in general, the same as the operation of the conventional selective sliding-gear type of transmission. The positions of the control lever for the various speed combinations are the same and the directions in which the control lever is moved are the same. It is also necessary to disengage the clutch before moving the control lever, the same as with the conventional transmission.

The only difference is in the manner of moving the control lever. With the conventional transmission, it is customary when shifting to a higher gear to hesitate momentarily in neutral and then move the lever quickly to its new position. With the Cadillac Syncro-mesh transmission there is no necessity either for the hesitation in neutral or for the rapid movement of the lever during the latter part of the shift. Instead, the movement of the control lever should be one smooth, continuous movement.

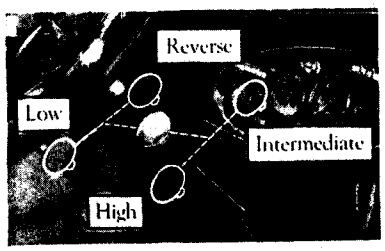

Fig. 10. **The control lever positions are the same as for the conventional type of transmission.**

The synchronizing principle applies to all shifts into intermediate or high; in other words, to the following shifts:

Low to intermediate
Intermediate to high
High to intermediate

There is no synchronizing mechanism for low or reverse gears because shifts into these gears are usually made when the car is standing still. When shifting from neutral to low or reverse, therefore, it may be necessary to await an instant after disengaging the clutch, to give the gears a chance to stop "spinning." Do not attempt to shift from intermediate to low unless the car is standing still or moving very slowly.

If, when descending a grade at high speed, it becomes desirable to shift from high to intermediate in order to use the engine as a brake, re-engage the clutch slowly after making the shift. This will bring the engine up to speed gradually and avoid the sudden load that would otherwise be imposed upon the clutch.

Coasting

In coasting down grades, it is recommended that the transmission be left in gear and the clutch engaged. With the throttle in the idling position, the car is thus made to drive the engine, the resistance of which assists the brakes and saves wear on the brake lining. It must be remembered that the brakes are subjected to much more severe use on grades than on the level, because gravity acts continuously, whereas on the level, the brakes need absorb only the momentum of the car.

Ordinarily, the resistance offered by the engine, when the transmission is in high, supplemented by moderate use of the brakes, is sufficient to control the speed of the car. On steep grades, however, the transmission control should be shifted to intermediate.

Do not turn off the ignition when coasting with the car driving the engine. Contrary to a common impression, this does not appreciably increase the resistance, and is likely to cause damage to the engine. Even with the throttle closed, some fuel is admitted to the cylinders, and if this is not burned, it condenses on the cylinder walls and washes away the oil which lubricates the pistons.

Brakes

The foot brakes are internal brakes of the shoe type, applied on all four wheels through a mechanical linkage.

When applying the brakes while driving on wet asphalt streets or slippery roads more care should be exercised and more time should be allowed for stopping the car than is necessary on dry pavements. The brakes should be applied gently while the *clutch is still engaged*. The clutch should not be released until the car has almost stopped.

Do not attempt sudden stops. Cadillac four-wheel brakes minimize the possibility of skidding under slippery conditions, but their effectiveness should not induce anyone to drive less carefully.

As the brake lining wears, the pedal must be pushed farther down to apply the brakes. Do not wait until the pedal goes all the way to the floor board before having the brakes readjusted. Readjustment is recommended as soon as the pedal must be pushed down to within one inch of the floor board. A temporary adjustment of the brakes is explained on page 46.

For parking, the brakes are operated by the hand lever at the right of the transmission control lever.

Lighting Switch

The lighting switch control is at the upper end of the steering column in the center of the steering wheel. The lever has four

positions; "PARKING," "OFF," "DOWN" and "UP." Turning the lever to "PARKING" turns on the front parking lamps and the two rear lamps. Turning the lever to "DOWN" turns on the headlamp lower beams and the two rear lamps, while turning the lever to "UP" turns on the headlamp upper beams and the two rear lamps.

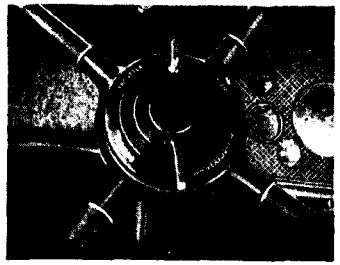

Fig. 11. The lighting switch control is at the hub of the steering wheel.

The instrument lamps are controlled by the upper button at the extreme left of the instrument panel.

The lamp bulbs which are used are as follows:

Lamp	Voltage	Candle-Power
Headlamps	6-8	21 (Two Filament) Mazda No. 1110
Rear Lamps		
Stop Light	6-8	15 Mazda No. 87
Tail Light	6-8	3 Mazda No. 63
Parking lamps	6-8	
Instrument lamps	6-8	
Closed car lamps	6-8	
Step light	6-8	

Danger of Running Engine in Closed Garage

Every person having to do with the operation or care of a motor car should be warned of the danger that attends running the engine while the car is in a small closed garage.

Carbon monoxide, a deadly poisonous gas, is present in the exhaust of all internal combustion engines. Most people are already familiar with carbon monoxide in the form of illuminating gas, or in the gas produced by furnaces and stoves when insufficient air is supplied to give complete combustion. But

illuminating gas and coal gas have an unpleasant odor, which serves as a warning, whereas carbon monoxide, as produced in the internal combustion engine, is colorless, tasteless and almost odorless, so that the victim may be overcome before he is aware of the danger. When the engine exhausts into the open air, the carbon monoxide is so diluted that it has no effect. It is when the engine is run for a time in a closed room that the proportion of carbon monoxide in the air may increase to the point at which continued breathing of it would be fatal. The United States Public Health Service advises that the average automobile engine warming up in a single car garage will give off enough carbon monoxide in three minutes to endanger life.

Proper precaution must be taken in cold weather when the natural tendency is to keep the garage doors and windows closed. The practice of letting the engine warm up in a closed garage before opening the doors is unsafe. The risk is made greater by the fact that the enriching of the mixture by manipulation of the carburetor choke increases the amount of carbon monoxide formed.

CHAPTER III

EQUIPMENT

In addition to the controls and instruments used in driving, the car is equipped with various devices which are for the convenience and comfort of the occupants, and are used only as occasion demands. It is suggested that the driver anticipate his use of such equipment by becoming familiar at once with the directions contained in this chapter.

Windshield and Ventilation

Cadillac closed cars are equipped with a one-piece slanting windshield that can be moved up and down by means of the handle just above the windshield (Fig. 12). For the ventilation under the cowl, the windshield should be raised not more than one inch, so that the lower edge of the glass is still below the ledge over the instrument board. With the windshield in this position air is deflected into the driving compartment through an opening in the cowl just forward of the instrument board. If desired, the windshield can be raised above the level of the ledge over the instrument board, so that air can enter the car directly.

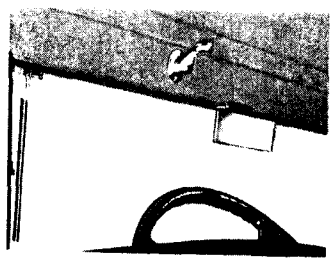

Fig. 12. The straight type windshield is controlled by the handle above the windshield.

Cowl ventilators are also provided on the closed cars to supplement the ventilation provided by the windshield. These venti-

lators are at the sides of the cowl compartment and open toward the rear, serving as outlets for the air entering under the windshield.

In warm weather, satisfactory ventilation in the front compartment cannot be expected unless the hood doors are open. Ordinarily, these should be opened at the beginning of warm weather and left open for the season. The temperature in the front compartment can thereafter be controlled by the windshield and ventilators.

Windshield Cleaner

The windshield cleaner consists of two wiper blades, operated by the suction or vacuum in the intake manifold on the engine. The cleaner is controlled by the lower button at the extreme left-hand end of the instrument board. This button, when pulled all the way out, will cause one blade to work on each half of the windshield, cleaning the entire glass. Pulling the button half way out will cause both blades to operate on the left hand half of the windshield, cleaning only the part in front of the driver.

To park both blades at the extreme left of the windshield when they are not needed to clean the glass, pull the control button half way out, wait until the left-hand blade travels over to meet the right-hand blade and returns with it to the left-hand side; then push the button all the way in.

Adjustable Seat

The front seat is adjustable on all Cadillac closed cars, except those that are intended to be chauffeur-driven. Except on the five passenger coupe, the entire front seat can be moved forward or backward. This adjustment is controlled by a handle on the center of the seat base, just above the floorboards. As the front seat on the five-passenger coupe is divided, only the driver's half of the seat is adjustable.

Cigar Lighter

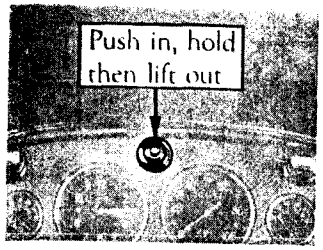

Fig. 13. The cigar lighter on the instrument panel is of the "pass around" type.

Cordless lighters are provided on the instrument panel and with the smoking sets of the various body styles. These lighters have a green translucent button through which the glow of the heating element may be seen when the lighter is ready for use. To use the lighter on the panel, press it all the way into its socket and hold it there until the glow is seen; then lift it out. The current to the lighter in the smoking sets is turned on by pressing the button beside the lighter.

Tools

The tools are carried under the front seat. When putting tools in their compartment be sure they are placed so that they do not interfere with the front seat adjusting mechanism.

The standard tool equipment is listed below:

- Hammer
- Monkey wrench
- Large screw-driver
- Small screw-driver
- Crescent adjustable wrench
- Oil can
- Spark plug wrench
- Starting crank
- Pliers
- Hub cap wrench
- Brace wrench (wood and disc wheels)
- Jack handle
- Jack
- Tool bag
- Lubrication chart
- Operator's Manual

Tires

Inflation Pressure

For normal driving, the front and rear tires should be inflated to a pressure of 40 lbs. **Important**—On cars driven at high speeds, the front tires should be inflated to 45 lbs.

The tires should be checked at least weekly, and the pressure should never be permitted to drop more than 5 lbs.

Spare Wheel Carrier

To remove a spare wheel from the carrier, unlock the lock and take it out, using the key as a handle. It may be necessary to hold on to the lock while turning the key. Then unscrew the clamping screw underneath the lock, after which the large dust shield can be removed and the wheel taken off the carrier.

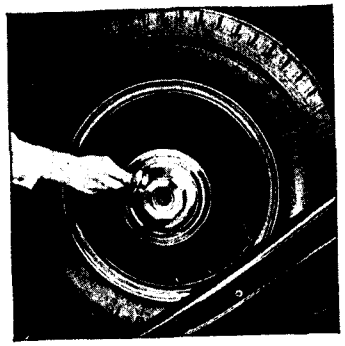

Fig. 14. To remove a spare wheel, unlock the lock, and remove the screw and the dummy hub cap.

To reinstall a spare wheel, mount it on the carrier, place the large dust shield in position and tighten the clamping screw. Then snap the lock back into place.

These instructions apply both to spare wheel carriers on the rear of the car and to carriers in the front fenders.

Spare Tire Carrier (Standard Wood Wheels)

To remove the spare tire from the carrier, unlock the lock and remove it, using the key as a handle. It may be necessary to hold on to the lock while turning the key. Unscrew the clamping screw with the brace wrench furnished in the tool equipment and remove the rim clamp, taking care not to lose the clamping screw. Remove the tire with rim, by pulling it out at the bottom and then lifting it off the carrier.

Fig. 15. To remove a spare tire, unlock the lock, remove the screw and take off the clamp.

To place a tire and rim on the carrier, reverse the above order. After tightening the clamping screw, unlock the lock and put it into place.

Changing Tires

If an inflated tire is always carried on the spare rim or wheel, the driver will seldom or never have to disassemble a tire from the rim. In case of tire trouble, it is then merely necessary to remove the rim or wheel with the flat tire and then install the spare in its place. Illustrated directions for performing this work on wire and on standard wood wheels are given on pages 26 and 27. Disc and demountable wood wheels are changed in the same manner as wire wheels except that the hub caps should not be removed.

Tire Balancing Marks

The tires are balanced to offset the weight of the valve stem. If a tire is removed, it must be re-installed in its original position with respect to the rim; otherwise the tire and wheel will be unbalanced.

A small red or black square is accordingly branded in the rubber on the side of each tire. This mark must always be in line with the valve stem.

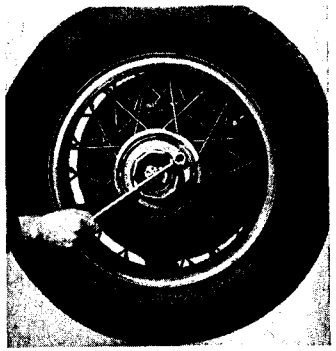

Fig. 16a. Remove the hub cap with the wrench in the tool kit. Hub caps are marked with arrows showing the direction in which they screw on and off.

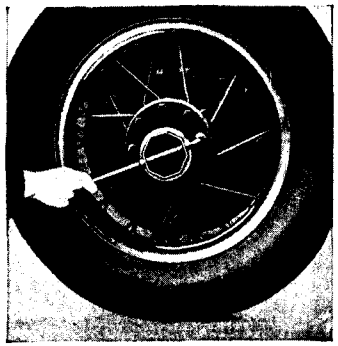

Fig. 16b. Jack up the axle until the weight of the car is off of the wheel, but with the tire still dragging. Loosen the cap screws around the wheel hub by turning them in a counter-clockwise direction with the wrench. Then jack the wheel up further, remove the cap screws and take the wheel off of the hub.

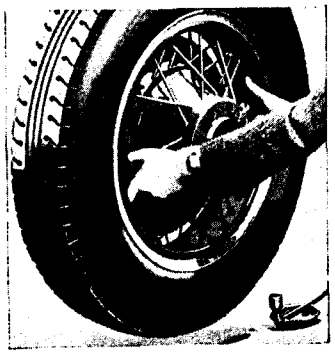

Fig. 16c. To mount a wheel simply set it up on the hub and start the cap screws by hand. Then tighten the screws with the wrench, but do not tighten them in rotation. After tightening one screw, tighten the screw directly opposite.

Fig. 16. Changing Wire Wheels

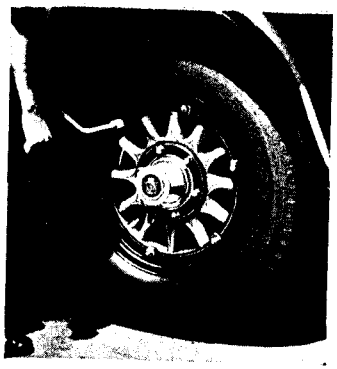

Fig. 17a. Jack up the wheel until the tire clears the ground. Remove the dust cap and clamping nut from the valve stem. Remove the six rim clamps, unscrewing them with the brace wrench supplied in the tool kit.

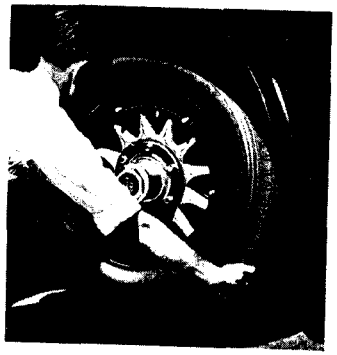

Fig. 17b. Rotate the wheel until the valve stem is at the top, and pull the bottom of the rim away from the wheel.

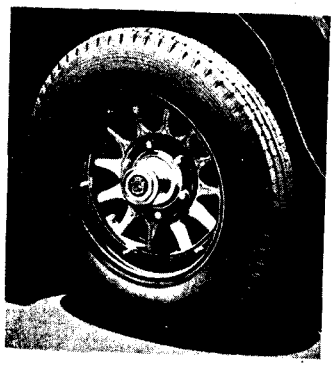

Fig. 17c. Then rotate the wheel until the valve stem approaches the bottom, when the rim and tire will roll free from the wheel and can be removed without lifting.

To mount a rim, rotate the wheel until the hole for the valve stem is in the position shown in the last illustration. Insert the valve stem and rotate the wheel, which will carry the rim with it, until the valve stem is at the top. Then push the lower part of the rim into place. Install the rim clamps over the rim and turn the nuts partly down. Go over the nuts again and tighten them firmly. Install the valve stem clamping nut and the dust cap. Be sure the clamping nut is tight.

Fig. 17. Changing Rims (Standard Wood Wheels)

LUBRICATION SCHEDULE

CADILLAC 370

OWNER'S NAME _____

ADDRESS _____

ENGINE NO. _____ DATE DELIVERED _____

DO NOT WAIT FOR SCHEDULE LUBRICATIONS BEFORE ADDING ENGINE OIL. THE OIL LEVEL SHOULD BE CHECKED EVERY 100 TO 150 MILES AND OIL ADDED IF THE INDICATOR BALL IS BELOW "FULL." THIS IS ESPECIALLY IMPORTANT ON CARS DRIVEN AT HIGH SPEEDS.

		LUBRICANT	LUBRICATION NO. AND MILEAGE AT WHICH DUE											
			1	2	3	4	5	6	7	8	9	10	11	12
			1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
LUBRICATION NOS. 1, 5, 7 AND 11	ADD LIQUID TO RADIATOR	WATER OR ANTI-FREEZE	O	O	O	O	O		O	O	O	O	O	
	ADD ENGINE OIL AS NECESSARY	ENGINE OIL	O		O		O		O		O		O	
	STARTER, GENERATOR AND DISTRIBUTOR OIL CUPS	ENGINE OIL	O	O	O	O	O	O	O	O	O	O	O	O
	BRAKE PINS AND CONNECTIONS	ENGINE OIL	O	O	O	O	O	O	O	O	O	O	O	O
	DOOR HARDWARE	ENGINE OIL	O	O	O	O	O	O	O	O	O	O	O	O
	GREASE GUN CONNECTIONS	CHASSIS GREASE	O	O	O	O	O	O	O	O	O	O	O	O
	WATER PUMP GREASE CUP	WATER PUMP GREASE	O	O	O	O	O	O	O	O	O	O	O	O
	CLUTCH RELEASE BEARING AND BRAKE ASSISTER	WHEEL BEARING GREASE	O	O	O	O	O	O	O	O	O	O	O	O
	*ADD WATER TO STORAGE BATTERY	DISTILLED WATER	O	O	O	O	O	O	O	O	O	O	O	O
	CHECK TIRE INFLATION		O	O	O	O	O	O	O	O	O	O	O	O
LUBRICATION NOS. 3 AND 9	DRAIN AND REPLACE ENGINE OIL	ENGINE OIL		O		O		O		O		O		O
	TEST OIL FILTER			O		O		O		O		O		O
LUBRICATION NOS. 6 AND 12	TRANSMISSION—ADD LUBRICANT	GEAR LUBRICANT			O			O			O			O
	REAR AXLE—ADD LUBRICANT	GEAR LUBRICANT			O			O			O			O
	STEERING GEAR—ADD LUBRICANT	GEAR LUBRICANT			O			O			O			O
	TIMER DISTRIBUTOR CAM	LIGHT ENGINE OIL			O			O			O			O
	FRONT BRAKE TRUNNIONS AND BRAKE CAM BEARINGS	CHASSIS GREASE						O						O
	WHEEL BEARINGS	WHEEL BEARING GREASE						O						O
	SPEEDOMETER DRIVE SHAFT	CHASSIS GREASE						O						O
	FAN	CHASSIS GREASE						O						O
	**REFILL SHOCK ABSORBERS	SPECIAL OIL						O						O
	**FLUSH COOLING SYSTEM							O						O
	**REPLACE OIL FILTER CARTRIDGE AND CLEAN OIL PAN AND SCREEN		EVERY 12,000 MILES											O

*IN SUMMER INSPECT BATTERY EVERY 500 MILES OR AT LEAST EVERY 2 WEEKS.
**RECOMMENDED BUT NOT INCLUDED IN LUBRICATIONS 6 AND 12.
THE FOLLOWING OPERATIONS CANNOT BE PLACED ON A MILEAGE BASIS AND ARE NOT INCLUDED IN THE ABOVE SCHEDULE:
THIN REAR AXLE AND TRANSMISSION LUBRICANT—AS REQUIRED FOR LOW TEMPERATURES.
DRAIN AND REPLACE REAR AXLE AND TRANSMISSION LUBRICANT—AT BEGINNING OF MILD WEATHER IN SPRING.

RECORD ON OTHER SIDE

Fig. 18. This is a fac-simile of the Cadillac Lubrication Schedule and Record Card. Provision is made on the back of the card for recording when and where the car is lubricated. A copy of this card can be obtained on request from Cadillac distributors and dealers.

CHAPTER IV

LUBRICATION

Lubrication Schedule

SYSTEMATIC lubrication, at regular mileage intervals, is the only kind that is effective. On page 28 is a complete lubrication schedule, which, if faithfully followed, will insure correct lubrication for each wearing surface.

The unit of the schedule is 12,000 miles, which is divided into twelve 1000-mile intervals. Corresponding to these is a series of twelve consecutive groups of lubricating operations. When the car has traveled 1000 miles, the points enumerated under Lubrication No. 1 should receive attention. At 2000 miles, Lubrication No. 2 is due, and so on until at 12000 miles, Lubrication No. 12 should be performed. At 13000 miles, the schedule begins again with Lubrication No. 1.

It will be noticed from the schedule that there are actually only four different lubrication operations, but that they are numbered according to the various times that they come due.

A metal lubrication tag in the shape of the Cadillac crest is provided on each new car for ease in determining the date, the mileage and the schedule number of the next lubrication due. This tag is mounted on the left front pillar, about four inches below the hinge as shown in the illustration.

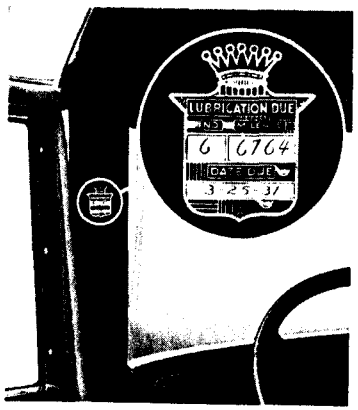

Fig. 19. This notice tells you when your car should be lubricated.

The driver can easily check this with the speedometer mileage by opening the left front door a few inches. Authorized Cadillac-La Salle service stations, after performing each schedule operation, post the number of the next operation due and the mileage at which it is due. When the mileage recorded by the speedometer is the same as the mileage marked on the notice, the car may be taken to any authorized Cadillac-La Salle service station, and, without further ordering other than specifying "schedule lubrication," the car will receive the exact lubrication necessary.

Although the schedule is expressed in terms of miles, it is intended that the car be lubricated once each month if the mileage traveled is less than 1000 since the last lubrication operation was performed. This lubrication work can be done while the car is in the service station for its regular monthly or 1000-mile inspection.

Lubrication Chart

The lubrication chart (18 x 24 inches in size) which accompanies this manual gives complete detailed instructions for lubricating the car. All of the points which require lubrication are designated on this chart, together with the kind of lubricant to be used, the method of applying it and the frequency with which it should be applied.

The operations are grouped on the chart in the same manner as on the schedule shown in Fig. 18. If the car is lubricated at an "Authorized Station," this schedule will be followed; if not, whoever does the lubrication should follow the schedule and chart exactly.

Lubricants

The selection of proper lubricants should be one of the first concerns of the owner in his attention to the lubrication of the

car. The lubricants must not only be of high quality, but their viscosity and other characteristics must be suited to the car.

The owner is urged to consult the distributor or dealer from whom he purchased his car in regard to the names of lubricants which have been tested and approved for use in the Cadillac car.

Engine Oil

The chart of engine oil recommendations given on page 32 indicates the proper grades of oil to be used for average driving and for prolonged high speed driving.

Gear Lubricant

Lubricant conforming to the specifications for Gear Lubricant must be used in the transmission, rear axle and steering gear. It is particularly important that only recommended lubricants be used in the transmission. Engine oil or soap greases will *not* perform satisfactorily.

Lubricants conforming to these specifications may be used without thinning during all weather, except winter weather below temperatures of 20° above zero. Below this temperature, thinning with kerosene is necessary, unless grease of sufficiently low pour point is used to secure easier gear shifting and proper lubrication of gears and bearings. See an authorized Cadillac-La Salle service station for recommendations on this lubricant.

Important: The Gear Lubricant known as "sulphurized" oil and designated by "E. P.," following its S. A. E. classification is **not** satisfactory for use in the transmission or rear axle on Cadillac cars and should not be used in these assemblies under any circumstances. This lubricant is injurious to bronze parts such as are used in gear assemblies of all higher quality cars and is particularly injurious to the synchro-mesh transmission.

Chassis Grease

Lubricant conforming to the specifications for Chassis Grease is recommended for all chassis points fitted with grease gun con-

nections. Do not use ordinary cup grease, as such greases are not effective enough to lubricate satisfactorily over the 1000-mile interval.

Wheel Bearing Grease

Greases approved under the specifications for Wheel Bearing Grease are suitable for lubricating the wheel bearings and the clutch release bearing.

ENGINE OIL RECOMMENDATIONS

TYPE OF SERVICE	SUMMER	WINTER	
	All Temperatures Above 32° F.	Between 32° and 15° Above	Below 15° Above Zero
AVERAGE DRIVING (No prolonged high speed driving)	S. A. E. visc. 40 or 50	S. A. E. visc. 20	S. A. E. visc. 10
		These oils are not suitable for prolonged high speed driving and if used under such conditions the oil level must be closely watched, as the rate of consumption will be higher than with heavier oils.	
PROLONGED HIGH SPEED DRIVING	CADILLAC APPROVED "HEAVY DUTY" OILS—SUMMER AND WINTER These oils have an S. A. E. viscosity of 40-50-60, and are required to meet certain specifications as to volatility in order to demonstrate their fitness for prolonged high speed driving. To make certain of using an oil approved for this service, consult your Cadillac distributor or dealer. NOTE: Approved heavy duty oils vary in their suitability for winter use. If an approved heavy duty oil with sufficiently low cold viscosity is not available and if the car is not kept in a heated garage, the lighter oils specified above for average driving must be used to avoid hard starting. In this case, be sure to watch the oil level closely as cautioned above.		

*The system used in this table to designate body or viscosity is the one recently developed by the Society of Automotive Engineers and adopted by all oil companies. It takes the place of the old indefinite method of describing oils as "Light," "Medium," "Heavy," etc. Oil should be called for by these numbers. If a filling station attendant does not know the S. A. E. numbers of his oils, the following grades can be substituted in emergency: S. A. E. 10, Extra Light; S. A. E. 20, Light; S. A. E. 40, Heavy; S. A. E. 50-60, Extra Heavy.

This grease is not recommended for chassis lubrication, as Chassis Grease is much more effective. Furthermore, Chassis Grease or ordinary cup grease should not be used in the wheel bearings as such lubricants do not have a sufficiently high melting point to render satisfactory service.

Water Pump Grease

A water-resistant calcium soap grease is recommended for use in the water pump grease cup. Only greases that meet the specifications for Water Pump Grease should be used; other greases will be dissolved into the cooling system liquid.

The owner of a Cadillac car is urged to have his car put on schedule lubrication at an authorized Cadillac-La Salle service station; in this way he is assured of having the proper lubricants used for all lubricating points at the proper mileage intervals.

Engine Lubrication

The supply of oil is carried in the cast aluminum oil pan that covers the bottom of the crankcase. The oil is circulated by a gear pump inside of the crankcase. The pump is driven by a vertical shaft, which is, in turn, driven by a spiral gear on the camshaft. The oil circulated by the pump lubricates the main and connecting rod bearings, the camshaft bearings, the cylinder walls, pistons and piston pins, the front end chains and the valve mechanism.

There are a few points on the engine that are not taken care of in the pressure system. These are the starter, generator and distributor oil cups, the fan and the water pump. Lubricating instructions for these points are given in the lubrication chart.

Oil Level

The normal capacity of the oil pan is nine quarts, which fills it to the level of the screen in the pan. When the oil pan contains this amount, the oil level indicator on the left-hand side

of the engine (Fig. 20) shows "Full." As the oil level descends, the indicator drops to "Fill." Oil should be added as soon as the indicator ball has dropped to "Fill." If the indicator

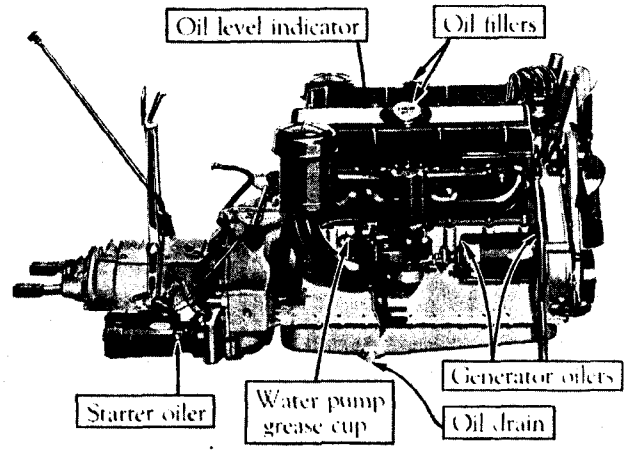

Fig. 20. Showing the location of the oil fillers, oil level indicator, oil pan drain plug and other lubrication features.

drops down to the flange of the crankcase, under no circumstances should the engine be run until oil has been added.

The mileage interval at which oil must be added depends upon individual circumstances. It is recommended that the oil level indicator be checked every one hundred to one hundred and fifty miles, although it is improbable that oil will be required as frequently as this.

Crankcase Ventilating System and Oil Filter

Cadillac V-12 engines are equipped with a crankcase ventilating system, which prevents contamination of the lubricating oil from seepage vapors; and an oil filter, which removes any dirt or solid matter from the oil.

The crankcase ventilating system is entirely automatic and functions throughout the life of the car without requiring any attention from the owner. The oil filter, however, gradually becomes filled with the solid matter taken from the oil until it becomes so clogged that it ceases to function.

As oil for lubrication of the overhead valve mechanism is taken direct from the oil filter, it is extremely important to replace the filter cartridge before it becomes so clogged that it will not readily pass oil. It is therefore recommended that the filter be tested every 2000-miles so that the cartridge can be replaced as soon as this is necessary. This test can be made by simply removing one of the oil filler covers and noting whether or not oil is dripping from the rocker arm bushings while the engine is running at idling speed. If oil does not drip from the bushings, the cartridge must be replaced.

The lubrication schedule as followed by authorized Cadillac-La Salle service stations provides for this test as part of the regular 2000 mile lubrication. Filter cartridges should be replaced at least every 12,000 miles. Replacement cartridges can be obtained from Cadillac distributors and dealers.

The oil pan and screen should be removed and cleaned with kerosene or gasoline whenever the oil filter cartridge is replaced.

Replacing Engine Oil

Although the crankcase ventilating system and the oil filter described in the preceding section greatly prolong the useful life of the oil, it is recommended that the oil be drained and replaced with fresh oil every 2000 miles.

To drain the oil, simply remove the drain plug (Fig. 20). Be sure to reinstall the drain plug before putting in the fresh oil. Nine quarts of oil are required to bring the oil level indicator ball to "Full."

CHAPTER V

COLD WEATHER OPERATION

SATISFACTORY operation of the car in freezing weather depends upon having the car prepared for cold weather and in giving it the special attention which is required at that time. In this chapter has been grouped all the information relating to care and operation of the car during cold weather. It should be reviewed just prior to the beginning of the winter season.

Preparing for Cold Weather

Anti-Freezing Solutions

The available commercial materials for preparing anti-freezing solutions for automobile radiators are denatured alcohol, methanol (synthetic wood alcohol), distilled glycerine, and ethylene glycol.

Denatured alcohol and methanol solutions are, at present, the most generally used anti-freezing solutions. These preparations are widely distributed, afford protection against freezing, and are not injurious to the cooling system.

There are two principal objections to denatured alcohol and methanol—they are lost by evaporation, and are harmful to the car finish. Any material accidentally spilled on the finish should be flushed off immediately with a large quantity of water.

Solutions of these materials in the radiator must be tested periodically and sufficient methanol or alcohol should be added to replace the loss by evaporation. Otherwise, the engine or radiator, or both, are likely to be damaged by freezing. Evaporation is much more rapid on heavy runs, and the solution should be tested more often under such circumstances.

Methanol, for anti-freeze purposes, is sold in the United States in the correct concentration to give the same protection against freezing as denatured alcohol. The table below may be used for both denatured alcohol and methanol.

Lowest Temperature Expected	Per cent by Volume	Specific Gravity (at 60° F.)		Qts. Alcohol required to make 6 gals. solution
		Denatured Alcohol	Methanol	
10 F.	30	.9668	.972	7¼
0 F.	38	.9567	.964	9¼
—10 F.	45	.9475	.957	10¾
—20 F.	51	.9350	.950	12
—30 F.	57	.9260	.944	13¾

Distilled glycerine and ethylene glycol solutions are, in first cost, more expensive than alcohol, but as they are not lost by evaporation, only water need be added to replace evaporation losses, except that any solution lost mechanically, by leakage, foaming, etc., must be replaced by additional new anti-freezing solution. These solutions under ordinary conditions are not injurious to the car finish.

The principal objections to glycerine and ethylene glycol are the tendency of these solutions to loosen the scale and iron rust which forms in the water passages of the cylinder block and head, and the difficulty of securing and maintaining tight, leakproof connections. It is absolutely necessary to thoroughly clean and flush the entire cooling system before glycerine or ethylene glycol is used.

It is also necessary to tighten or replace the cylinder head gaskets and pump packing. The cylinder head gaskets must be kept tight to prevent the solution from leaking into the crankcase where it might cause gumming and sticking of the moving parts. The pump packing must be kept tight to prevent air from being drawn into the cooling system in order to avoid foaming and other difficulties which may result when air is present.

Ethylene glycol, sold in the U. S. for anti-freezing purposes, is chemically treated to overcome the principal difficulties mentioned in the above paragraph, and under normal operating conditions with tight hose connections and cylinder head gaskets should be satisfactory for use in the cooling systems.

Glycerine or ethylene glycol should be used in accordance with the instructions and in the proportions recommended by the anti-freeze manufacturer.

In using a hydrometer to determine the temperature at which a solution will freeze, the test must be made at the temperature at which the hydrometer is calibrated. If the solution is warmer or colder, it must be brought to this temperature or correction must be made for the difference in temperature, otherwise large errors may result. Freezing point hydrometers can not be used interchangeably, a different float being required for denatured alcohol, methanol, glycerine and ethylene glycol. In some cases these errors may be as large as 30 degrees Fahrenheit.

Salt solutions, such as calcium or magnesium chloride, sodium silicate, etc., honey, glucose and sugar solutions and oils are not satisfactory for use in automobile radiators.

Capacity of Cooling System

The capacity of the cooling system is 6½ gallons when filled to the level of the overflow pipe. The cooling system may be filled to this level since the overflow pipe is connected to a condenser tank which operates automatically to prevent excessive loss of the cooling liquid.

It is important that there are no leaks in the cooling system and that the radiator cap is turned down so that it is air tight, to insure proper operation of the condenser.

Winter Lubrication

Lubrication of the car requires special attention in winter, not only to insure proper lubrication of the moving parts, but to

secure the same ease of operation in starting, steering and shifting gears as during warm weather.

The chart of engine oil recommendations on page 32 gives the proper grade of oil to be used for cold weather driving. It will be noted that lighter oils can be used for cold weather providing no prolonged high speed driving is done. For prolonged high speed driving, "Heavy duty" oils must be used. Authorized Cadillac-La Salle Service Stations are prepared with full information on winter lubrication.

The lubricant in the transmission and rear axle should be thinned with kerosene as soon as the weather is so cold that the transmission gears are hard to shift. If a sufficient amount of kerosene is added to provide for the lowest winter temperature expected, it will not be necessary to add kerosene again thereafter during the winter. Ten per cent (a little over half a pint) of kerosene, if added, will take care of temperatures down to ten below zero.

There are several lubricants on the market which have a low enough pour point so that they will not require thinning. See an authorized Cadillac-La Salle Service Station for information on these lubricants. If one has been regularly used, no kerosene should be added. Thinning of such a lubricant is not only unnecessary, but defeats the purpose of using it because it would have to be drained and replaced on return of warm weather.

Steering gear lubricant, in any case, should not be thinned as the pressure between the worm and sector will force out the thinned lubricant, resulting in excessive wear. A lubricant of low enough cold test so as not to require thinning should be used.

Storage Battery

The electrical system of an automobile has much more to do in winter than in summer. The engine is harder to crank and must usually be cranked longer before it starts. The lights are also used to much greater extent than during the long days of

summer. All this means that the battery must be ready for increased demands.

It is therefore a good plan in preparing for the winter season to see that the battery is fully charged, that the battery connections are clean and tight, and that the charging rate is sufficient to take care of the requirements of the system.

Gasoline System

The carburetors on the Cadillac engine have automatic compensation for temperature. Nevertheless it is a good plan to have the carburetor adjustment checked when cold weather arrives. This inspection should give special attention to the carburetor choke control to make sure that the enriching device is fully effective at each carburetor when the choke button is operated.

In warm weather, a small amount of water in the gasoline has little or no effect on the running of the engine. In freezing weather, however, even a small amount of water may freeze and stop the entire flow of fuel to the carburetors. One of the things to be done in preparing for winter weather, therefore, is to clean the gasoline filter and the sediment chambers in the gasoline system.

Starting the Engine

Choke Button

The first difference between starting the engine in cold weather and starting the engine in warm weather is in the greater use of the choke necessary in cold weather. Gasoline does not vaporize as readily at low temperatures, and in order to supply the cylinders with a gaseous mixture rich enough to be ignited, the proportion of liquid gasoline to air must be increased.

At the same time, it is important not to apply the choke more than is necessary. The unvaporized gasoline collects on the

cylinder walls and works down past the pistons, washing off the lubricant as it goes. Although dilution of the oil supply with this unburned gasoline is minimized by the crankcase ventilating system, it is best to avoid an excess of liquid gasoline in the combustion chambers by careful and judicious use of the choke.

The following rule should govern the use of the choke in winter weather: Pull the choke back just as far as it is necessary to start the engine, but as soon as the engine starts, return the button as far as possible without causing the engine to stop or slow down. Then push the button all the way in as soon as the engine is warm enough to permit doing so.

Priming the Carburetors

In extremely cold weather, if the engine does not start after cranking for a few seconds with the choke button fully applied, release the starter pedal. Then prime the carburetors by opening and closing the throttle once or twice rather rapidly with the accelerator. Opening and closing the throttle operates a throttle pump on each carburetor and raises the level of the gasoline in the carburetors. The carburetors should never be primed in warm weather and should not be primed unnecessarily in cold weather. Excessive priming is likely to make starting difficult rather than easy.

Position of Throttle Hand Lever

The correct position of the throttle hand lever for starting in cold weather is the same as for starting under other conditions, that is, about one-fourth the way down from the idling position. In warm weather, however, the lever may be returned to the idling position almost as soon as the engine is started. In cold weather the throttle must be left slightly open until the engine becomes warm.

Position of Spark Control

It is the practice of some drivers to retard the spark all the way whenever starting the engine. This is the correct position if the engine is to be cranked by hand, but if the engine is to be cranked with the starter, the spark button should be left all the way in or in the fully advanced position.

Use of Starter

In extremely cold weather, when the car has been standing long enough to become thoroughly chilled, it is a good plan to disengage the clutch during the cranking operation. If this is not done, the starter is called upon to turn the jackshaft gears in the transmission in addition to cranking the engine. At ordinary temperatures, the additional energy required is negligible, but in extremely cold weather, the lubricant in the transmission offers sufficient resistance to rotation of the transmission gears to increase considerably the demand upon the battery and to retard the cranking speed.

Use of Accelerator before Engine is Warm

In cold weather, after the engine has been started and before it has run long enough to become warm, the engine cannot deliver its normal power, and it should not be called upon to do so. In accelerating the engine to start the car and in accelerating the car after the transmission is in gear, do not open the throttle suddenly or too far. To do so is not only to invite "popping back" in the carburetors, but to increase the amount of excess unvaporized gasoline in the combustion chambers, both of which results are undesirable.

CHAPTER VI

GENERAL CARE

No attempt has been made to include in this manual directions for making adjustments or repairs to the car. Most Cadillac owners prefer to depend for such work on authorized Cadillac-La Salle service stations, as these stations can invariably perform the work more conveniently and economically.

Every owner should, however, know how to perform the few simple operations of general care described in this chapter. These operations are not difficult enough to necessitate a visit to the service station, although this work can also be done in the service station, if desired.

Storage Battery

The storage battery is carried in a compartment in the right-hand front fender. This compartment is enclosed by a metal cover held down by four screws.

The battery is filled with an acid solution from which the water slowly evaporates, and fresh distilled water must be added to each of the three cells at regular intervals to bring the level up to the bottom of the filling tubes. Distilled water should be added at least every 1000 miles, and in warm weather, every 500 miles, or at least every two weeks. If distilled water is not available, melted artificial ice or rain water caught in an earthenware receptacle may be used. Hydrant water or water that has been in contact with metallic surfaces will cause trouble if used. Acid must never be added to the battery.

After adding water to the storage battery in freezing weather, the car should immediately be run far enough to mix the water and acid solution thoroughly. If the car is parked immediately after adding water, the water is likely to stay on top of the acid solution and may freeze, causing extensive damage.

As the storage battery is charged and discharged, the solution reacts chemically with the plates of the battery, the specific gravity of the solution changing as the reaction proceeds. The state of charge of the battery is thus indicated by the specific gravity of the solution. As the battery is charged, the specific gravity of the solution increases, reaching 1.270 to 1.285 when the battery is fully charged. The specific gravity of the solution decreases as the battery is discharged. A fully discharged battery has a specific gravity of 1.150 to 1.165.

A hydrometer is the instrument used to measure the specific gravity of a solution. A hydrometer syringe is a hydrometer especially designed for convenience in testing the specific gravity of the acid solution in the storage battery. A hydrometer syringe can be obtained at any battery service station. Be sure and get a reliable instrument, for cheap ones may be in error as much as 25 or 30 points.

The specific gravity of the acid solution should never be tested immediately after adding distilled water. If the solution is below the plates, so that it cannot be reached with the syringe, add the necessary amount of water, then drive the car for a few hours before taking the hydrometer reading.

Cooling System

The cooling system should be kept filled with 6½ gallons of water, except in freezing weather, when a suitable anti-freezing solution, such as those described on page 36, must be used.

The drain valve for the cooling system is in the water inlet elbow at the bottom of the water pump on the right side of the crankcase.

The cooling system should be drained and flushed every 6000 miles. If possible, this should be done at a Cadillac service station, or where there are facilities for reversing the flow of water through the radiator. If this is not possible, use the following method:

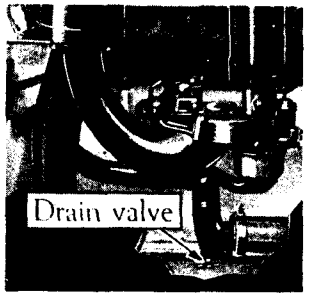

Fig. 21. The entire cooling system can be drained by opening this one valve.

Run the engine until the opening of the radiator shutters indicates that the engine is warm. Stop the engine and immediately open the drain valve.

After the liquid has drained off, refill the cooling system with hot water and repeat the operation described above. If, in draining the second time, the water is very dirty, it may be advisable to repeat the flushing operation a third time, placing one or two handfuls of sal-soda in through the radiator filler. The sal-soda must not be permitted to get on the finish of the hood or radiator. If sal-soda is used, the cooling system must be drained and flushed again before refilling for use.

Gasoline Filter

A gasoline filter (Fig. 22) is provided at the bottom of the vacuum tank. The filter has a glass bowl through which the accumulation of water and sediment can be easily seen. The bowl should be removed and the gauze screen should be cleaned as soon

as any accumulation appears in the bowl. This can be done as follows:

First shut off the gasoline by turning clockwise the small T-handle valves at each side of the filter. Then unscrew the thumb nut under the bowl, after which the yoke supporting the bowl can be swung to one side and the bowl can be removed. If the screen does not come off with the bowl, it can be removed by pulling it straight down.

In putting back the bowl, make sure that it seats properly against the cork gasket in the top of the filter before tightening the thumb screw. Do not forget to turn the gasoline on by opening both valves.

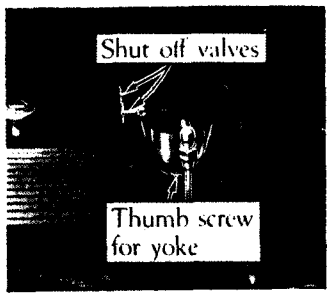

Fig. 22. The gasoline filter should be removed and cleansed regularly.

There is also a strainer in the vacuum tank at the point where the gasoline enters the inner chamber. This strainer should be removed and cleaned occasionally. It is accessible after disconnecting the feed pipe and unscrewing the inlet elbow.

Temporary Brake Adjustment

It is recommended that all adjustments of the brakes be done at an authorized Cadillac-La Salle service station. In an emergency, however, the following temporary adjustment can be made by the driver.

Each brake is fitted with an adjusting nut on the cam lever, as shown in Fig. 23. To tighten the brake adjustment turn all

four adjusting nuts half a turn clockwise. These adjusting nuts lock each sixth of a turn.

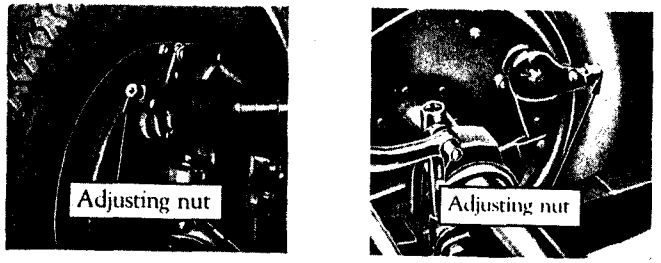

Fig. 23. A temporary brake adjustment can be secured by turning the adjusting nut on each brake clockwise one-half turn. The front brake is shown above at the left, the rear brake at the right.

Body

Care of Finish

The lacquer finish of Cadillac bodies can be kept new and lustrous with the simplest care. The car should merely be wiped off every few days with a soft dry cloth. An occasional polishing with some recognized lacquer polish (for sale by all Cadillac distributors and dealers) will prove beneficial.

If the finish receives this attention at regular intervals, it will not need to be washed, except when it has accumulated a considerable amount of mud or dust. When washing the car, use plenty of clean cold water. Do not use hot water, and do not wash the hood while it is hot, as this will in time destroy the luster. Do not use soap.

If a hose is used in washing, do not use a nozzle, but let the water flow gently from the hose and flush off the dirt gradually. A soft wool sponge can be used to advantage in removing dirt.

After the washing is completed, squeeze the sponge as dry as possible and pick up all water from crevices. Then thoroughly

wet a clean soft chamois, wring it as dry as possible and dry the finish. The finish can then be rubbed with a clean soft cloth to bring out the luster.

Care of the Top

Ordinary dust can be removed from the top with a soft dry cloth. Grease spots, stains and dirt film can be removed by washing with a mild, neutral soap. Rinse thoroughly with clear water to remove all traces of the soap, then dry with a chamois or cloth. Gasoline, naphtha, kerosene and fabric cleaners should not be used for cleaning the top, as such preparations are likely to dull the luster and damage the fabric, causing leaks.

Cleaning Upholstery

To keep the upholstery in closed cars in the best condition, it should be cleaned thoroughly at least once a month with a whisk broom and vacuum cleaner. Dirt and grit accumulating in the fabric wear it out faster than use.

Spots on the upholstery may be cleaned with any good dry cleaner but care should be taken not to apply too much. The use of too much or too strong a cleaner may dissolve the rubber backing of plush upholstery, causing the nap to loosen. When the cleaner has thoroughly evaporated, apply a hot flatiron wrapped in a wet cloth. Steaming the fabric and rubbing lightly against the nap will raise the nap on plush fabrics to its normal position.

Door Hardware

Many owners who give careful attention to lubrication of the chassis do not give the same attention to the lubrication of door locks and hinges. If the door hardware is to operate properly, it must be lubricated regularly. Directions for this lubrication are included in the lubrication chart, and these directions should be followed as faithfully as the rest of the chart.

CHAPTER VII

STORING CAR

If the car is not to be used for a period of several months, it should be protected from deterioration during the period when it is not in use by carefully preparing it for storage.

Engine

To prepare the engine for storage, proceed as follows: Run the engine until opening of the radiator shutters indicates that the engine is warm. This may be done by driving on the road or by running the engine idle. In the latter case, care should be taken that there is sufficient ventilation to avoid personal injury from carbon monoxide poisoning. (See page 19). After the engine is warm, place the car where it is to be stored and stop the engine.

Remove the spark plugs. Inject two or three tablespoonfuls of engine oil into each spark plug hole, and before replacing the plugs, crank the engine three or four revolutions with the ignition switched off. This will tend to distribute the oil over the cylinder walls. The engine should not be started again after injecting the oil. If it is started, it will be necessary to repeat the treatment.

Drain the cooling system.

Storage Battery

If the car is to be stored during the winter, the storage battery should have special treatment in order to protect it against freezing.

Shortly before the car is used for the last time, distilled water should be added to bring the level of the solution up to the

bottom of the filling tubes. (See page 43.) After the water added has had an opportunity to mix thoroughly with the acid solution by running the car or engine, the specific gravity should be tested with a hydrometer. If the specific gravity of the solution is above 1.270, there will be no danger of the acid solution freezing. If, however, the specific gravity is below 1.270, the battery should be removed and charged. Unless the battery is fully charged, or nearly so, it is probable that the acid solution will freeze and cause extensive damage.

The battery ground connection should in all cases be disconnected during storage, as a slight leak in the wiring will discharge the battery and lower the specific gravity to the point where the solution may freeze.

If possible, the storage battery should be removed and charged from an outside source every two months during the storage period.

Tires

During the storage of the car, it is best to remove the tires from the rims and to keep the casings and tubes in a fairly warm atmosphere away from the light. The tubes should be inflated slightly after the tires have been removed.

If it is not convenient to remove the tires from the car, and the car is stored in a light place, cover the tires to protect them from strong light, which has a deteriorating effect on rubber.

The weight of the car should not be allowed to rest on tires during the storage period. If tires are not removed, the car should be blocked up, so that no weight is borne by the tires. The tires should also be partly deflated.

Body and Top

A cover should be placed over the entire car to protect it from dust. In storing an open car, the top should be up.

Taking Car out of Storage

In putting into use again a car that has been stored, it is advisable, unless the storage battery has been removed and charged at periodic intervals, to remove the battery from the car and give it a fifty-hour charge at a four-ampere rate. If the battery has received periodic charges, or if the specific gravity is above 1.200, simply add distilled water to the proper level and connect the leads. If there is a greenish deposit on the terminals of the battery, remove this with a solution of bicarbonate of soda (common cooking soda) and water. Do not allow any of this solution to get into the battery.

Before starting the engine, drain the oil from the oil pan and remove and clean the oil pan and screen. After reinstalling the oil pan, add eight quarts of fresh engine oil. Fill the cooling system, being sure to use anti-freezing solution in freezing weather. Remove the spark plugs and inject two or three tablespoonfuls of engine oil into each cylinder. Reinstall the spark plugs and, with the ignition switched off, crank the engine a few seconds with the starter to distribute the oil over the cylinder walls.

Start the engine in the usual manner. As soon as the engine starts, push the choke button as far forward as possible without causing the engine to stop or slow down materially, and then open the throttle until the ammeter reads approximately 10 with all lights switched off. Release the choke button entirely as soon as the engine is warm enough to permit it.

CHAPTER VIII

SPECIFICATIONS AND LICENSE DATA

Type of engine	12 cyl. V-type
Diameter of cylinder bore	3⅛ in.
Length of stroke	4 in.
Piston displacement	368 cu. in.
Horsepower (N. A. C. C. rating)	46.9
Engine number	See below
Capacity of gasoline tank	21 gals.
Capacity of engine lubricating system	9 qts.
Capacity of cooling system	6½ gals.
Capacity of transmission	3 qts.
Capacity of rear axle	3 qts.
Wheelbase	140-143 in.
Tires, standard wood wheels	7.00 x 19
Tires, demountable wheels	7.50-18
Spark plug setting	.025-.028 in.
Contact point setting	.018-.024 in.
Generator charging rate, maximum	15-17 amps. cold 8-10 amps. hot

Engine and Unit Assembly Numbers

Each Cadillac car, when shipped, carries an engine number, which is also a serial number. This is the number to be used in filling out license and insurance applications and in general reference of the car. The engine number is stamped on the right hand side of the crankcase just below the water inlet.

The various units, such as the transmission, steering gear, etc., also carry unit assembly numbers. These are located as described below. It is important in ordering parts to give, not only the

engine number of the car, but also the unit assembly number of the unit to which the part belongs.

Transmission number—on the upper left-hand edge of the flange by which the transmission is bolted to the crankcase.

Steering gear number—on the steering gear housing next to the grease plug.

Generator number—on the right-hand side of the generator.

Starting motor number—on the right-hand side of the starter, just below the switch.

Front axle number—on the upper surface of the right-hand spring pad, just outside of the car spring.

Rear axle number—on the rear surface of the axle housing just to the right of the cover plate.

Chassis (frame) number—on the flange of the first channel cross-member, next to the left front engine support.

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1931

PRELIMINARY
SERVICE INFORMATION

SERIES 370

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October, 1930

Service Department
CADILLAC MOTOR CAR COMPANY
DETROIT, MICHIGAN

CONTENTS

Cadillac V-12
Preliminary Service Information
Series 370

Axles

Front Axle

The V-12 front axle is similar to the 355 but is not interchangeable with it because the springs used on the V-12 are 2¼" wide while those on the 355 are only 2" wide.

The caster on the V-12 is from 2½° to 3½°, the same as the 345 and 355, and is obtained by using a 1° wedge plate with the thick end toward the rear.

All parts of the V-12 front axle except the I-beam and steering knuckles are interchangeable with those on the 355 type and the same service operations apply to both axles.

Rear Axle

The V-12 rear axle is the same as the 355 and is interchangeable with it. Although the V-12 springs are wider than those on the 355, this does not affect the interchangeability of the housings.

The differential gear ratios are:

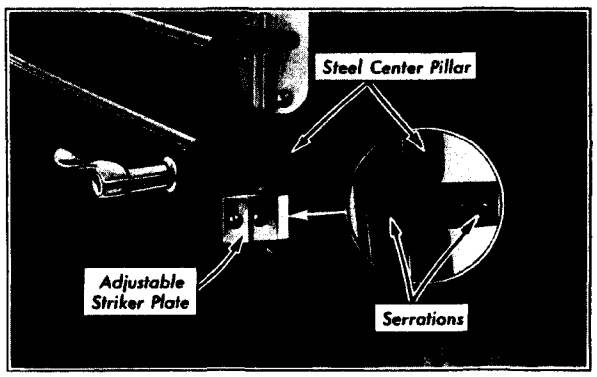
Nominal	Actual
4.00 to 1	4.07 to 1
4.50 to 1	4.54 to 1
5.00 to 1	4.91 to 1

These ratios are the same as are now used on the 355 and the 345, and the differential carrier assembly is interchangeable with the 355, 345 and 340.

Body

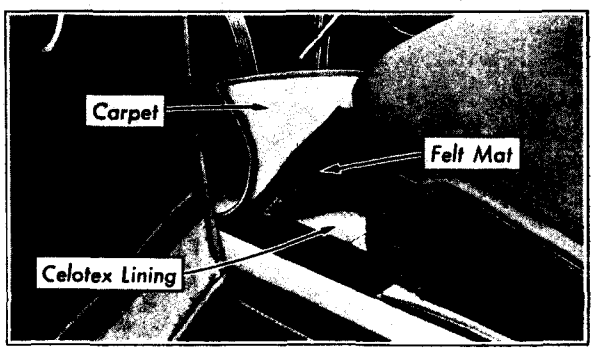
The bodies on the V-12 are of the same construction and design as those on the Cadillac 355.

The floor boards are heat insulated by a heavy felt mat in addition to the Celotex lining on the floor boards themselves, and the dash has two layers of heavy felt, one on each side, held in place by dash covers.



To adjust the striker plate, loosen the screws and move the plate one notch at a time.

The windshield header-board is held in place by screws located the same as in previous models, but concealed by the upholstery. To get at these screws, simply take off the chromium plated strip along the bottom of the header-board and pull out the tacks holding the upholstery so that it can be lifted away from the screw heads.



An Ozite mat is used in addition to the Celotex lined floor boards to insulate the body from the heat of the engine.

The striker plates on the steel center pillars are adjustable. Serrations on the back of the plate and on the pillar hold the plate firmly in position.

The cowl and front pillar are in one piece with a heavy reinforcement welded in place at the base of the pillar. This will eliminate the possibility of Duco chipping at this point. At the front corners of the roof, the header-board, top bracket and pillar brace are welded into one piece and are fastened in place so that they cannot get loose.

Brakes

The arrangement of the brakes on the V-12 is practically the same as on the V-16.

The inside diameter of the brake drums on the V-12 is 15" and the brake lining is 2¼" wide, the same as on the 355.

The brake drums are made of a special formula gray cast-iron that is much less liable to score than steel. This drum also dissipates the heat more readily than the steel drum. Hycoe semi-moulded lining is used on the V-12 as on the 355 and 345.

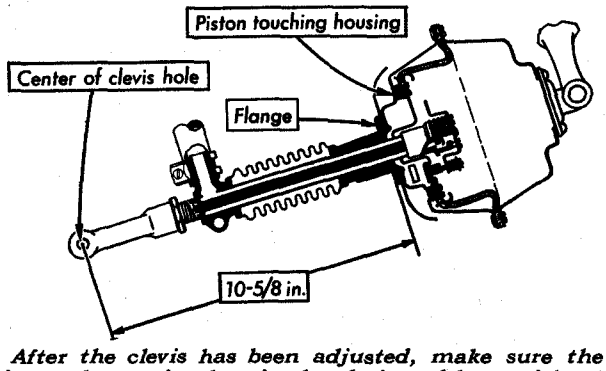
Brake Assister

The vacuum brake assister is the same as on the V-16 and is fully interchangeable with it. Because of the smaller diameter of the brakes and the lighter weight of the V-12, however, only one intake manifold, the one on the left, is connected to the assister.

The brake assister is provided with a grease cup to lubricate the operating rod bearings. This grease cup should be turned down about three turns and refilled every 1000 miles. Too much grease used at this point is liable to get into the assister housing and cause the rubber diaphragm to deteriorate rapidly.

Brake Adjustment

The adjustment of the brakes is the same as on the V-16. Before attempting to adjust the assister, disconnect the brake pull rod and the assister operating rod from the pedal lever and check up the brake rods and cam levers to see that they are in proper adjustment and that the levers are all the way back against the stops.

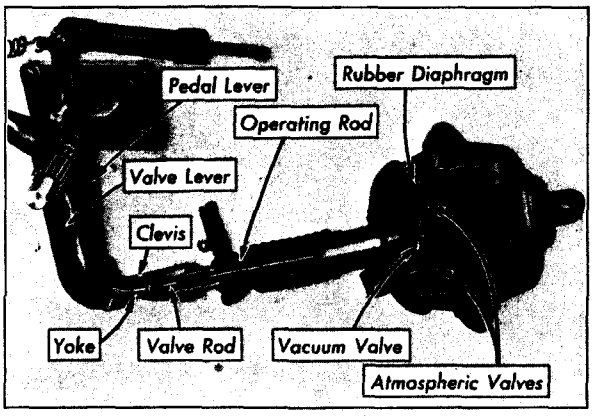


After the clevis has been adjusted, make sure the pin can be put in place in the clevis and lever without turning the clevis.

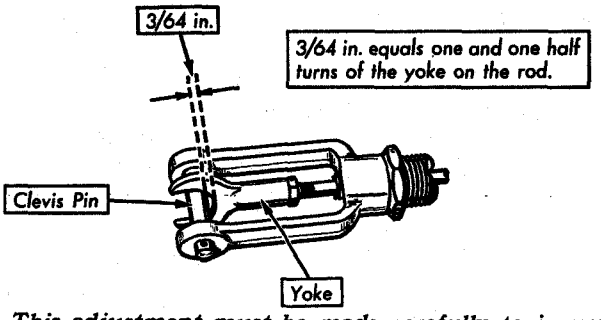
When adjusting the brake assister the following instructions should be followed:

1. Adjust the clevis on the assister operating rod so that the center of the clevis pin hole is exactly 10⅝" from the flange on the front of the assister housing when the rod is pulled all the way forward with the piston touching the inside of the housing.

Be careful when tightening the clevis lock nut on the operating tube to see that the clevis pin hole lines up with the hole in the pedal lever so that the pin will go into place easily without turning the operating rod. This is important, because if the operating rod is turned it will distort the rubber diaphragm in the assister and cause a snapping noise when the brakes are used.



This sectional view of the brake assister shows the relation of the various parts such as valves, rods, diaphragms, etc.

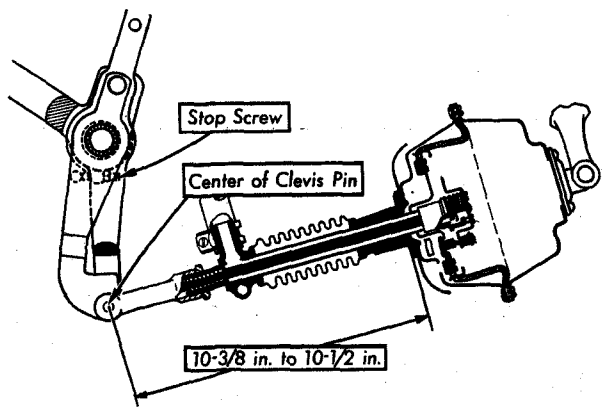


This adjustment must be made carefully to insure clearance between the piston and the front of the cylinder.

2. Adjust the valve rod so that there is 3/64" clearance between the valve rod yoke and the clevis pin. This adjustment must be made with the assister disconnected. Put the pin in place in the clevis and after loosening the yoke lock nut on the valve rod, turn the rod until the yoke just touches the pin. Then remove the pin and while holding the rod stationary, turn the yoke exactly one and one half turns farther onto the rod. If this adjustment is made correctly it will give the required 3/64" clearance between the yoke and the pin.

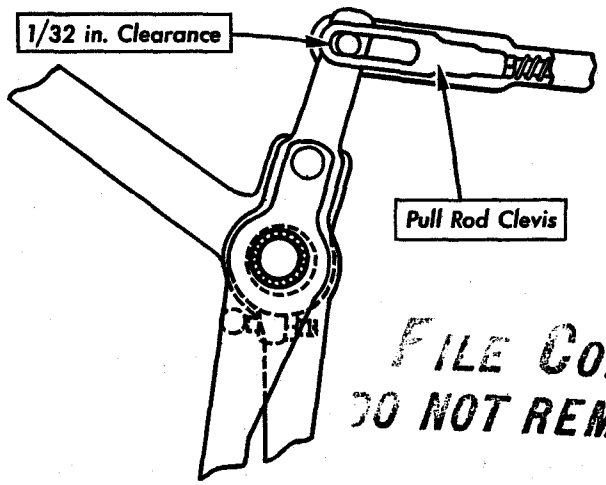
3. Reconnect the brake assister to the pedal lever and adjust the pedal stop screw so that the distance from the center of the clevis pin to the flange on the assister housing is 10⅜" to 10½".

4. Adjust the clevis on the pull rod so that there is $\frac{1}{32}$" clearance at the front of the slot in the clevis to permit the necessary free movement at the lower end of the valve lever.



When the pedal stop screw is properly adjusted, there should be ½ in. to ¾ in. clearance between the pedal and the toe board.

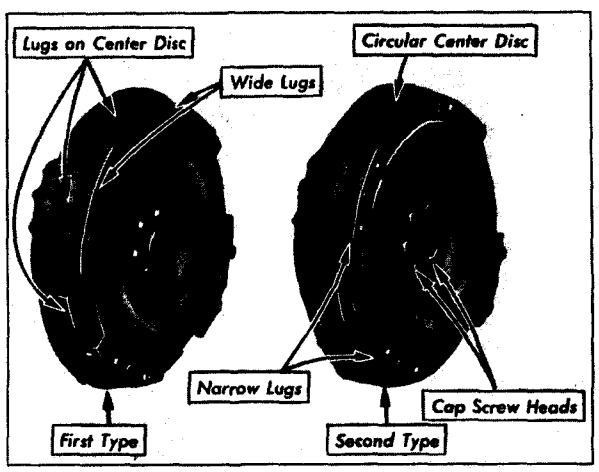
5. The pull rod should be connected at the lowest hole in the upper end of the pedal lever. Check the pull rod adjustment by alternately depressing and releasing the brake pedal slightly. There should be $\frac{5}{32}$ to $\frac{3}{16}$" forward and backward movement at the bottom of the valve lever, while the pedal lever is stationary.



There must be at least $\frac{1}{32}$ in. clearance at the front of the pull rod clevis to insure proper valve action.

Clutch

The V-12 clutch is similar to the latest V-16 type with the heavier driving plates and new driven disc facings, but is not interchangeable with it because of the heavier clutch springs used on the V-16.



The first type is the earlier V-16 clutch and the second type is the V-12 and the later V-16 clutch.

The new facing on the driven discs, together with the heavier driving plates and their improved heat dissipation, will effectively prevent scoring and warping.

The illustration on this page shows that the V-12 type clutch can be identified by the narrower lugs on the front driving plate and by the circular center driving plate.

It will be noted in the illustration that on the V-12 type clutch the heads of the cap screws holding the discs to the hub are toward the flywheel. This is necessary with the greater thickness of this clutch, to provide clearance between the cap screws and the flywheel retaining studs. When installing new driven discs in these clutches, always be sure, therefore, to put these cap screws in place with the heads toward the flywheel.

The bearing for the clutch release yoke has a grease cup instead of an Alemite fitting as in the past. This grease cup should be turned down about three turns and refilled every 1000 miles. This will prevent over-lubricating the yoke and injury to the clutch, due to an excess of grease getting into the flywheel housing and onto the clutch discs.

Cooling System

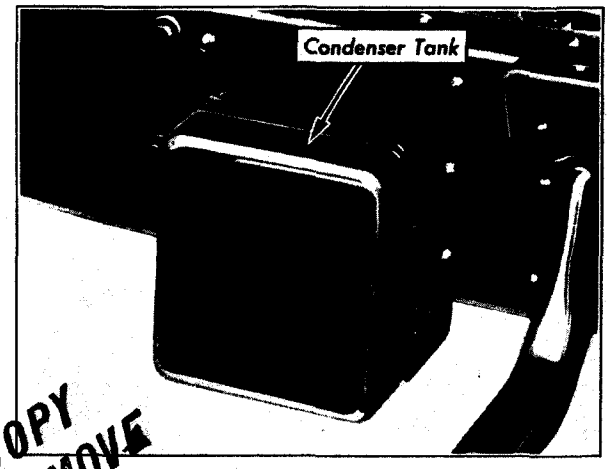
The arrangement of the cooling system is similar to that on the V-16. The capacity of the cooling system is 6½ gallons. The radiator is shaped like the V-16 but it is not interchangeable with it.

The pump is slightly smaller than that on the V-16 because of the smaller V-12 engine, but has ample capacity for proper circulation of water. The pump is located in the same place as on the V-16—just back of the right-hand carburetor—and is lubricated by a grease cup close to the carburetor intake pipe.

Caution—When taking up the water pump gland nut, it should never be drawn up so tight that the pump shaft cannot be rocked by hand. If the packing is too tight on the pump shaft, the springs in the laminated generator drive are liable to twist or break.

The fan belt is adjusted in the same manner as on the V-16. This adjustment is best checked with a spring scale. When properly adjusted, it should require a pull of eight to ten pounds, midway between the pulleys, to bring one side of the belt to a distance of 5″ from the other side.

The condenser in the cooling system is of a different shape from that on the V-16 and is mounted farther back on the frame, on account of the wheel carrier support and the new location for the battery.

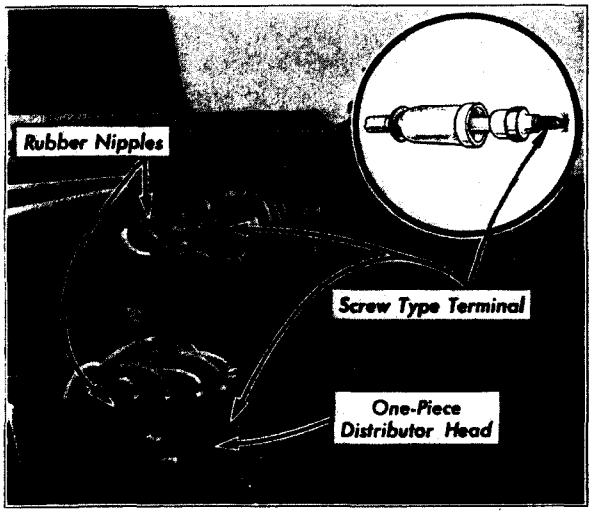


The condenser tank is between the dust shield and the frame on the left side of the car.

Electrical System

Generator

The generator is the same as the later type V-16 and is interchangeable with it. It is driven through a laminated spring driver attached to the armature shaft in the same manner as on the later V-16 type engine. With this type of generator drive the laminated driving springs can be replaced by simply removing the generator. On the earlier V-16's having the laminated drive installed through the generator drive sprocket, it was necessary to remove the front cover to replace the driving springs.



The features shown here make the high tension circuit proof against weather and loose connections.

Horns

Two horns, similar to those on the V-16 but a little smaller, are used on the V-12. Service operations on these horns are exactly the same as on the V-16.

Ignition System

The ignition system is similar to that on the V-16 excepting that it is arranged for a twelve cylinder engine instead of a sixteen.

Ignition—Distributor

The distributor is similar to the V-16 type and has the same type of automatic advance mechanism.

The pilot on the lower end of the distributor cam shaft is longer than on the V-16 distributor and extends down into the hollow main shaft about 1⅝″, insuring proper alignment of the shafts at all times.

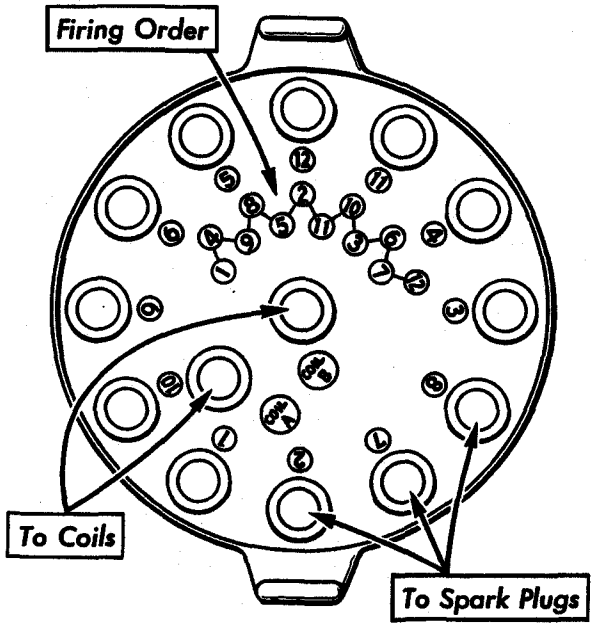
The distributor head is in one piece, and all high tension terminals at the head and at the coils are of the screw type, eliminating the possibility of loose connections at these points. Rubber nipples are used on all of these connections, at both the distributor and the coils, and these nipples together with the one piece distributor head make the entire high tension circuit weather proof.

The contacts at the end of the distributor rotor are not exactly 180° apart, because of the alternate 45° and 75° firing intervals of this engine. A 45° interval (on the crankshaft) comes after each of the right-hand cylinders fires and a 75° interval comes after each of the left-hand cylinders fires.

Firing Order

The cylinders are numbered in the same manner as on the V-16, with the odd numbered cylinders on the left-hand side and the even numbered cylinders on the right-hand side, as shown below.

Front R. H.— 2 4 6 8 10 12
L. H.—1 3 5 7 9 11



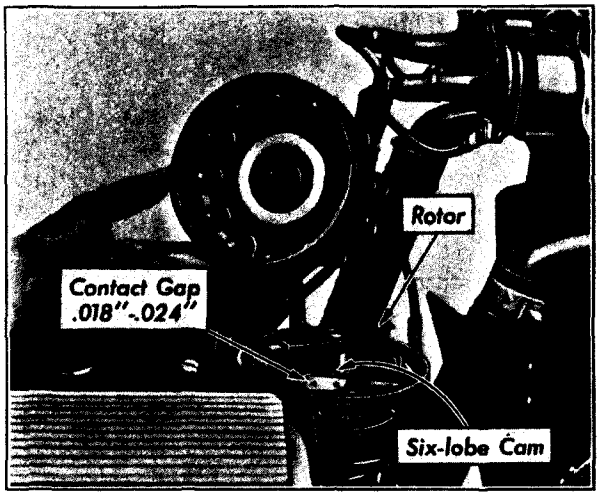
The firing order as well as the high tension connections are shown on the distributor head.

The firing order is given on the top of the distributor head as shown in the accompanying illustration, and the numbers found there refer to the location of the cylinders.

This firing order is: 1-4-9-8-5-2-11-10-3-6-7-12

Breaker Mechanism

The breaker cam on the V-12 has only six lobes, of course, instead of eight as on the V-16. The shape of this cam has been designed to give better operation and longer life to the rubbing blocks on the contact arms. The breaker contacts are arranged the same as on the V-16 and operate alternately. The right-hand arm and left-hand coil furnish ignition for the left-hand or odd numbered cylinders. This arm is on the stationary post while the left-hand arm which, with the right-hand coil furnishes ignition for the right-hand cylinders, is carried on the adjustable plate.



The contact gap on the V-12 is .018 in. to .024 in.

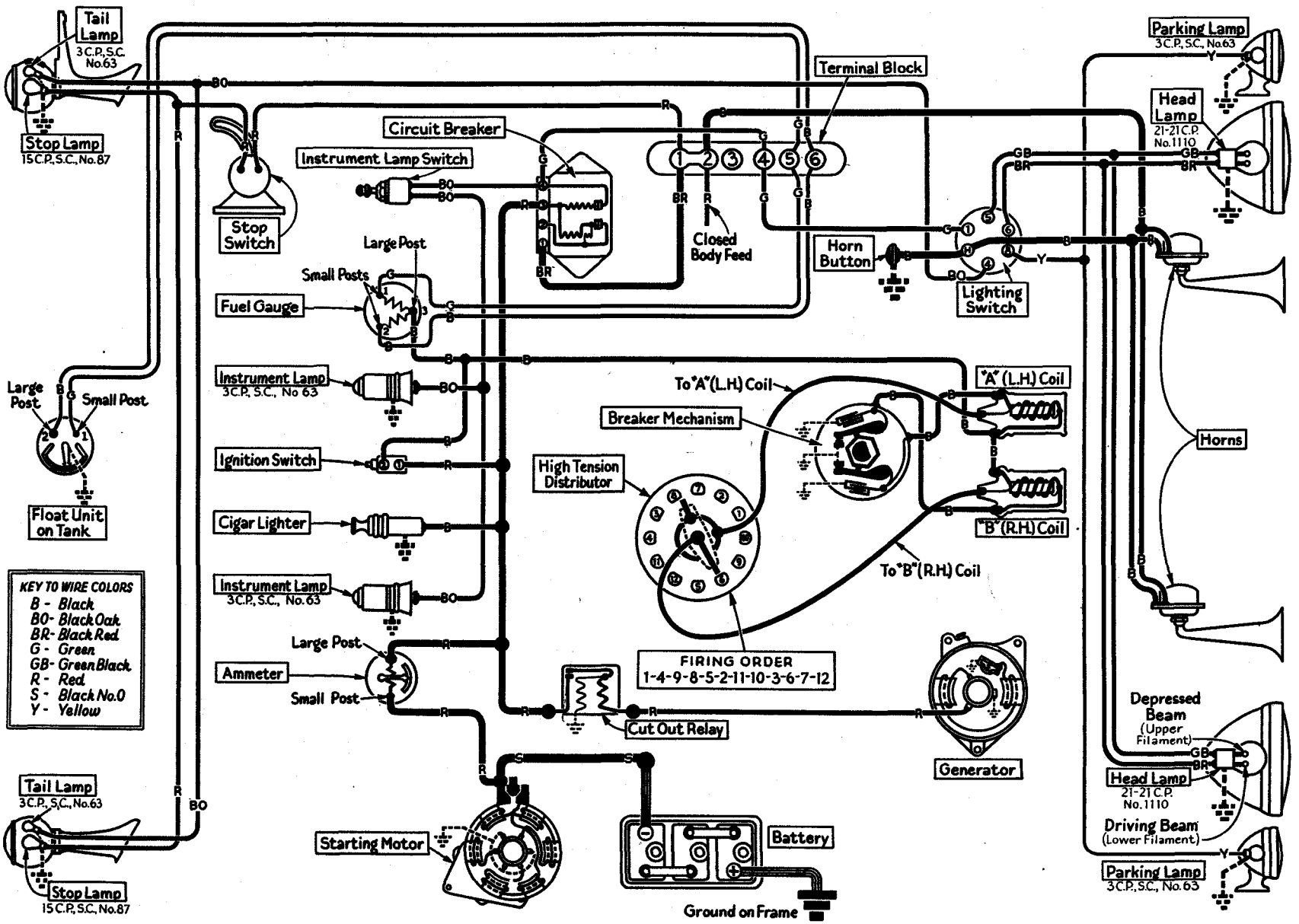
The correct contact gap on the V-12 is .018″ to .024″. The condensers and breaker contacts are interchangeable with those on the V-16.

Ignition Timing

Before attempting to time the ignition, see that the contacts are in good condition and properly adjusted for a gap of .018″ to .024″. The distributor should be removed from the engine and the contacts synchronized. Synchronizing tool, 109224, for the eight cylinder engines can be adapted to the V-12 as well as to the V-16, by marking the quadrant properly.

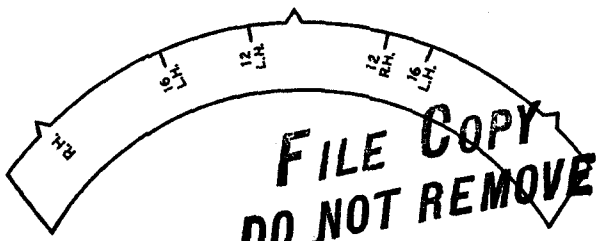
The Service Man for October 15, 1930 contains a template and full instructions for adapting this tool.

When synchronizing the points on the V-12, adjust the synchronizing fixture so that the right-hand or stationary contacts just separate when the pointer is moved away from the farthest indicating point on the quadrant. Synchronize the left-hand contacts so that they separate just as the pointer passes the "12 L. H." mark, which is 37½° from the point at which the right-hand contacts separate. Moving the pointer still further



The V-12 Electrical Circuits are arranged as shown in this Wiring Diagram.

the right-hand contacts should separate again at the "12 R. H." mark, just below the center indicating point on the quadrant. This mark is 60° from the farthest point.



The markings shown on this sketch are for the V-12 and the V-16 as well as for the V-8 engines.

To insure accuracy in the synchronizing operation the test lamp should be used in the same manner as on the V-16, connecting one lamp to the ground and the other to the binding post for the contacts being timed.

After synchronizing the points, reinstall the distributor and time the ignition in the same manner as on the V-16. The IG/A marks on the V-12 flywheel, are different, however, and do not specify the cylinder numbers to which they apply. Each mark is $1\frac{27}{32}$" ahead of center and in bringing the IG/A mark for No. 1 cylinder in line with the indicator at the timing inspection opening, turn the engine until the mark $\frac{C}{2\text{-}12}$ can be seen in the opening and No. 1 piston is coming up on the compression stroke. The IG/A mark for No. 1 cylinder is $3\frac{11}{16}$" beyond this mark. Continue to turn the engine very carefully until this IG/A mark appears in line with the indicator.

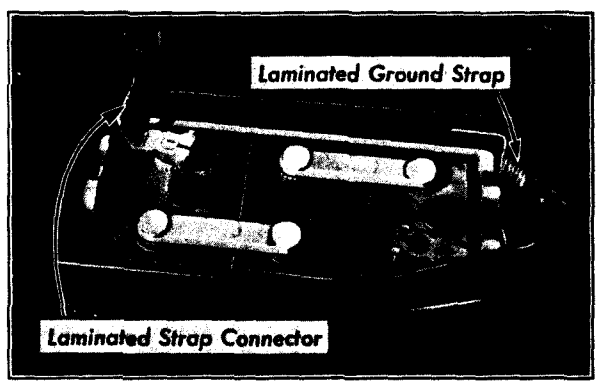
When timing the ignition, the distributor should be at the fully advanced position. Be sure that the control rod is properly adjusted so that when the spark control button on the dash is pushed all the way in, the rear stop screw on the distributor is at the extreme right-hand end of its slot in the quadrant. Loosen the set screw in the middle of the breaker cam and turn the cam clockwise until the right-hand contacts just separate, with the terminal from the center of the rotor in line with No. 1 insert on the distributor head.

Ignition Coils

The ignition coils are of the same type as those on the V-16 but are not interchangeable with them because of the difference in the high tension connections. The V-12 coils, are mounted with their binding posts vertical instead of horizontal, and have their posts connected by a wire instead of strap, as on the V-16. The connections from these coils to the distributor are the same as on the V-16, with the "A" or left-hand coil connected to a ring contact in the distributor, while the "B" or right-hand coil is connected to the center contact in the cover.

Spark Control

The manual control is the same as on the Cadillac V-16 and is operated by a rod and rocker arm mounted on the dash. The spark control button on the instrument panel is held in position by a ratchet and spring as on the 355.



To install the battery correctly, remember that the positive binding post must always be at the front.

Spark Plugs

The spark plugs and wires are concealed by a cover plate over the "V" between the cylinder blocks, in the same manner as on the V-16. The connections at the spark plugs are of the "slip-on" type.

The same spark plugs, AC Type G-8, are used as on the V-16. The standard spark gap for these plugs is .025" to .028" on both cars.

Starting Motor

The starting motor is the same type as used on the V-16 and is interchangeable with it.

Storage Battery

The storage battery is located between the frame and the right-hand front fender, just in front of the dash. The cover over the battery is held in place by two slotted cap screws at the frame side bar and one at the front outside corner of the cover.

The battery is an Exide type 3-LX-15-1R, of the same capacity, 130 amp. hr. as on the V-16. The cells in this battery are of the same size as on the V-16 but are arranged side by side, instead of end to end. The nut on the clamping bolt that holds the storage battery in its support is accessible from the outside of the battery box.

The storage battery on this car is connected in a different manner from that on previous models, having a laminated strap connector between the

negative binding post and the starter cable. These are connected together through the upper flange of the frame at the side of the engine, as shown in the accompanying illustration, and are insulated from the frame by a fibre block and washers.

Because of the use of two flexible straps there is a possibility of connecting the battery incorrectly. To eliminate this possibility, remember that the positive or grounded binding post should always be toward the front of the car.

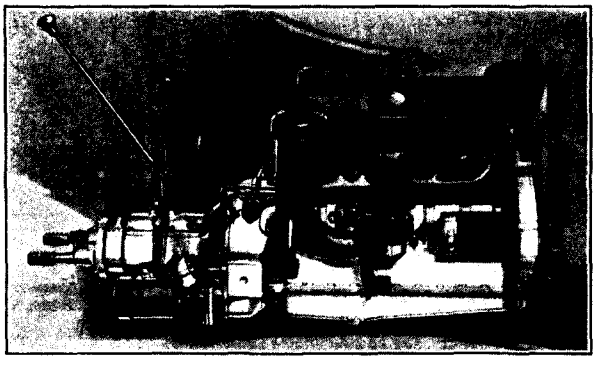
Wiring

The arrangement of the chassis wiring is shown in the accompanying wiring diagram. These circuits are practically the same as on the V-16. This diagram shows the latest hook-up of the cigar lighter, which is now attached direct to the lead from the ammeter instead of at the circuit breaker.

In making the connections at the ammeter, the fuel gauge on the instrument panel and the tank unit of the fuel gauge, make sure that the connections are made exactly according to the diagram, with the smaller terminals on the smaller posts and the larger terminals on the larger posts. These terminals and binding posts are of different sizes so that it will be easier to make these connections correctly.

Engine

The engine is a 12-cylinder "V" type engine with the cylinder blocks mounted at 45° allowing the use of the same type of overhead valve mechanism which has proven so satisfactory on the V-16. It also permits mounting the carburetors and manifolds on the outside of each block as on the V-16 without making the hood as bulky as it would be if the cylinders were at 60° which is the theoretically correct angle. With the greater number of cylinders on this engine overlapping far more than on any 8-cylinder engine, the difference in the intervals between the power impulses is not noticeable.



The V-12 engine is similar to the V-16 and many of the parts are interchangeable.

The principal specifications of the V-12 engine are;

Bore	3⅛″
Stroke	4″
N. A. C. C. Rating	46.9 H. P.
Actual Brake H. P.	135 at 3400 R. P. M.
Piston Displacement	368 cu. in.

The V-12 engine is mounted in the same manner as the V-16, with one support at each side of the front cover, one at each side of the flywheel housing and one at the rear of the transmission.

Engine Supports

The supports at the front cover are exactly the same as on the V-16. The adjustment of the support bolts should be made in the same manner by turning the nuts down until there is no more play in the bolts and then turning them down exactly one and one-half turns further before putting the cotter pins in place. The supports at the flywheel housing are of the same design as those on the Cadillac 355. The rear support at the ball joint socket back of the transmission is the same as on the V-16 and the 355.

Crankcase Ventilator

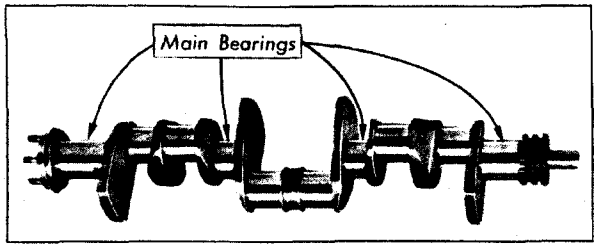
The crankcase ventilator is the same type as used on the V-16. It is thermostatically controlled, closing at 180° and opening at 170°.

The intake screen which prevents particles of dust and dirt from entering the crankcase should be removed for cleaning about every 6000 miles. This screen can be lifted out after removing the cover holding it in place.

Crankshaft, Connecting Rods and Pistons

The crankshaft has four main bearings of the same steel backed interchangeable type as used on the V-16. The front and rear main bearings are the same dimensions as on the V-16 and are interchangeable with them. The intermediate main bearings are the same dimension as the center main bearing on the V-16 and are interchangeable with it. This interchangeability of bearings is but another step toward reducing the actual number of parts necessary to properly service Cadillac and La Salle cars.

The crank pins each take two connecting rods side by side, the same as on the V-16. The lubrication of the connecting rod and piston pin bearings is taken care of in exactly the same manner as on the V-16.



The steel-back bearings for the V-12 crankshaft are interchangeable with V-16 main bearings.

Excepting for the diameter of the piston and the length of the piston pin, the piston and connecting rod assembly is the same on both models, with three compression rings above the piston pin and one oil ring below. All service operations on the connecting rods and pistons are the same as on the V-16 and the same precautions must be observed when reinstalling the connecting rods on the crankshaft, to see that the flanged side of the rods are next to the crankshaft cheeks. Make sure the pistons are assembled to the rods so that the piston pin lock screw is on the same side of the rod as the flange, as on the V-16.

The harmonic balancer on the V-12 is identically the same as that of the later V-16 and the same service operations apply on both models.

Cylinders

The general arrangement of the cylinders and cylinder heads is identical with that on the V-16. The method of attaching them to the crankcase is the same on both cars and the service operations are identical.

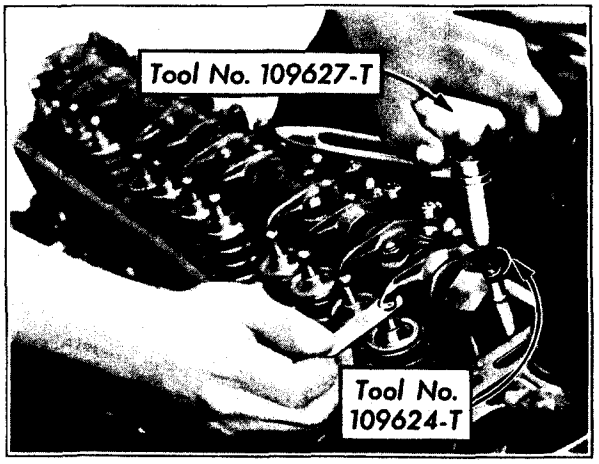
The right-hand and left-hand cylinder heads on the V-12 are interchangeable as on the V-16 provided the cover for the water and ventilator outlet is installed at the rear. The right-hand and left-hand cylinder blocks are also interchangeable if the plug in the oil hole leading to the valve mechanism is installed at the front.

Manifolds

Each intake manifold is in one piece as on the V-16 while the exhaust manifolds are in two sections, connected with an expansion joint. The front section of the exhaust manifold also carries a part of the intake header, the other part being cast integrally with the intake manifold. The method of removing and installing the manifolds is the same as on the V-16.

Camshaft and Timing Chain

The V-12 camshaft has four bearings. These bearings are the same dimensions as those used on the V-16 and are interchangeable with them. The timing chain arrangement on the V-12 is exactly the same as on the later type V-16. The V-12 timing chain is the same width as the V-16, but is shorter. It is a No. 766 Duplex with 112 links. The same automatic chain adjuster is used on the V-12 as on the V-16 and the service operations on this adjuster are identical on both cars.



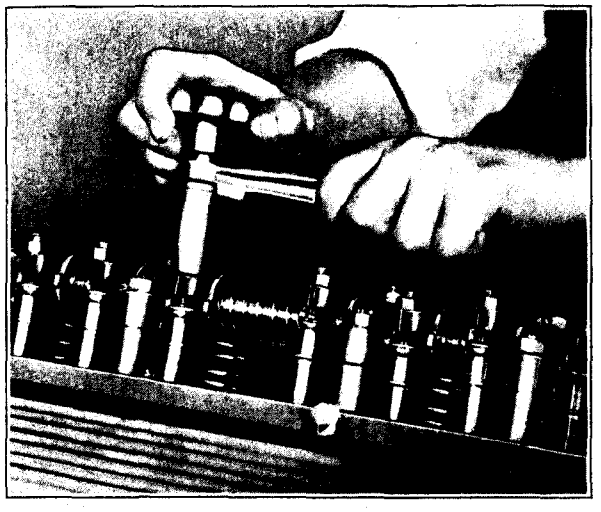
With this combination wrench and screw-driver, a complete adjustment of a valve can be made while the engine is running without moving the tool.

No manual adjustment is provided for the timing chain. The generator mounting flange and the sprocket support flange no longer have the slotted holes as used on the first V-16 model. The automatic takeup will maintain proper adjustment throughout the life of the chain. When the takeup reaches the end of its travel it is time to install a new chain.

Valves

The valves and all parts of the valve mechanism except the rocker shafts are identically the same as on the V-16, and are interchangeable on both cars. All service operations on the V-12 should be performed in exactly the same manner as on the V-16. The accompanying illustration shows the correct method of adjusting the rocker arms for proper tappet clearance. In these illustrations, the special tool No. 109627-T is used for making these adjustments. This tool is a combination wrench and screw driver and was fully described in the Service Man for June 15, 1930. With this tool it is possible to unlock the adjustment, make any necessary changes and relock the adjustment without removing the tool. The same general instructions for valve adjustments should be observed as on the V-16, using Tool

109624 to hold the plunger down at the bottom of the dash pot while adjusting the valves. The clearance between the rocker arm and the valve stem should be .030" when the plunger is held down



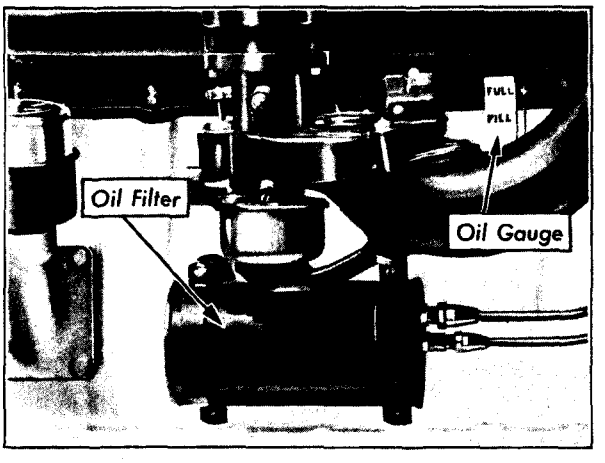
The adjustment lock nuts should be drawn up tight after stopping the engine.

as described. Make all valve adjustments while the engine is running, and then stop the engine and tighten the lock nuts one at a time, while holding the adjusting screw from turning by means of the knob at the top of the tool.

Front Cover

The removal of the front cover is the same as on the V-16. After removing the front support bolts the rear motor support must be disconnected by removing the through bolts holding the rear support arms to the support shaft, before the front end of the engine can be jacked up enough so that the cover can be taken off.

As on the V-16, the harmonic balancer must also be removed before the front cover is taken off.



The oil filter and the oil gauge are on the left-hand side of the engine.

Lubrication

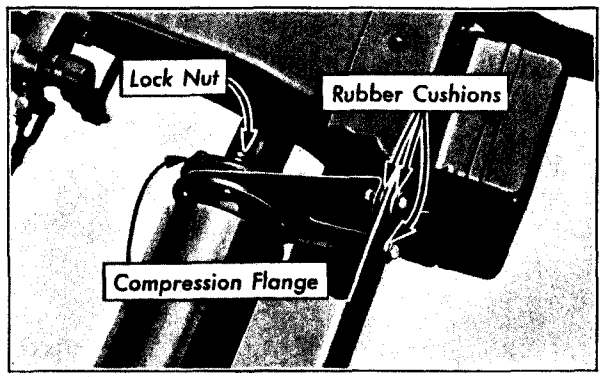
The lubricating system on the V-12 engine is exactly the same as on the V-16 except for the location of the oil filter. On the V-12 engine the filter is mounted on the crankcase at the left side of the engine, just below the carburetor. The filter is similar to that used on the V-16, and uses the same refill cartridge.

Exhaust System

The arrangement of the exhaust system on the V-12 is the same as on the V-16. The V-12 exhaust manifolds, however, have only two sections instead of three. These sections are connected by tight fitting leak-proof sleeves that allow for expansion.

The exhaust pipes are connected to the muffler by a new type of compression coupling as shown in the accompanying illustration. As will be seen, the studs holding the muffler to the front bracket also hold the compression sleeve for this connection. The nut on each side of the muffler flange and bracket should be drawn up tight and the nuts next to the flange on the compression sleeve should be drawn up evenly, to compress the asbestos ring within the joint and make the joint leak-proof. After drawing up these nuts, the lock nuts should be tightened against them and locked, to prevent the flange from loosening up.

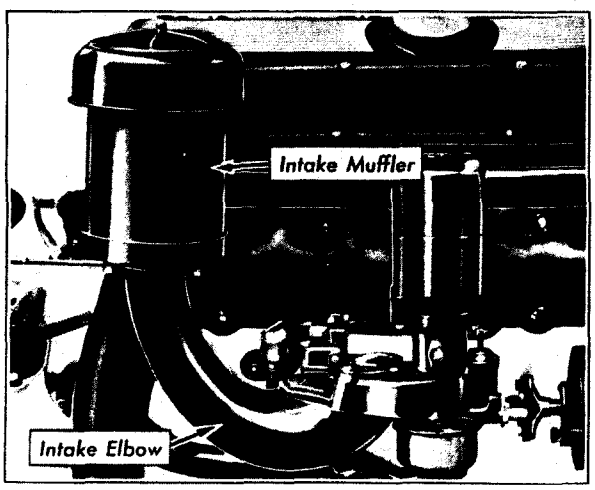
Rubber cushions are used between the muffler support brackets and the frame to prevent the vibrations of the exhaust being transmitted to the body. These rubber cushions are shown in the accompanying illustration. The nuts on the support bolts should be tightened only enough to partially flatten the lockwashers. It is better to have these nuts a little loose than too tight.



The muffler is rubber insulated from the frame and has a compression connection at the front.

Gasoline System

The general arrangement of the V-12 gasoline system is similar to that on the V-16. An intake muffler is used on each carburetor, however, and there is only one vacuum tank on the V-12.



The V-12 intake mufflers are similar to those used on the 355 and 345 but are smaller.

The vacuum pump for the fuel system is the same as on the V-16 and is interchangeable with it. The fuel tank at the rear of the car has a capacity of 21 gallons and the gas line from the fuel tank to the vacuum tank is carried inside of the left-hand frame side bar.

Carburetors

Two carburetors are used on the V-12, the same as on the V-16. They are the same general type as those on the V-16, but are turned around with the auxiliary air valves toward the dash to permit the installation of the intake mufflers at the rear, where there is sufficient space without making the hood wider.

The auxiliary air valve chamber on these carburetors is designed differently to take care of the intake elbow and muffler mounting. These carburetors are not interchangeable with any other carburetors, or with each other.

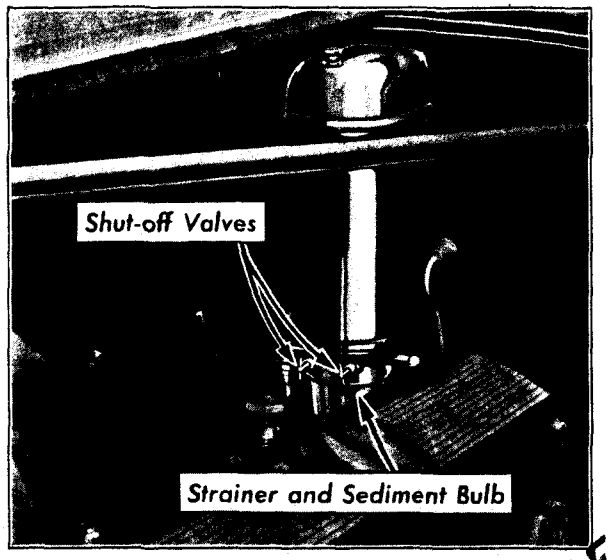
A Number 19 spray nozzle is used in each carburetor. The method of adjusting the carburetors is the same as on the V-16 and is described in detail under "Carburetor Adjustments."

Vacuum Tank

Because of the smaller piston displacement on the V-12, only one vacuum tank is necessary.

This vacuum tank is mounted in the center of the dash and is of special design, having a supplementary chamber in the center of the lower tank from which the fuel for the right-hand block of cylinders is taken. The fuel for the left-hand cylinders is taken from the main section of the lower tank. This arrangement insures an initial supply of

fuel to either carburetor, in the event that the other carburetor should flood and drain off all of its available supply of gasoline.



The vacuum tank on the center of the dash is of a special design.

The fuel from the supplementary chamber passes through the strainer and sediment bulb at the bottom of the vacuum tank. The outer portion of the tank from which fuel is taken for the left-hand cylinders, is fed by the overflow from the supplementary chamber.

This chamber acts as a sediment bulb, and on all but a few of the first cars shipped, a strainer is provided above it through which the fuel must pass to the outer portion of the tank.

Intake Mufflers

The intake mufflers used on the V-12 are of the same design as those on the 355 and 345, but are smaller. As there are no moving parts, nor baffle plates to become clogged on these mufflers, they require no attention in service.

Carburetor Adjustments

The carburetor adjustments are made in exactly the same manner as on the V-16. Both carburetors must not only be carefully adjusted but must be equalized also. To make the complete adjustment proceed as follows:

Check the adjustment of the choke rods to make sure that when the choke button is pulled all the way out, the levers on both carburetors are against the stops.

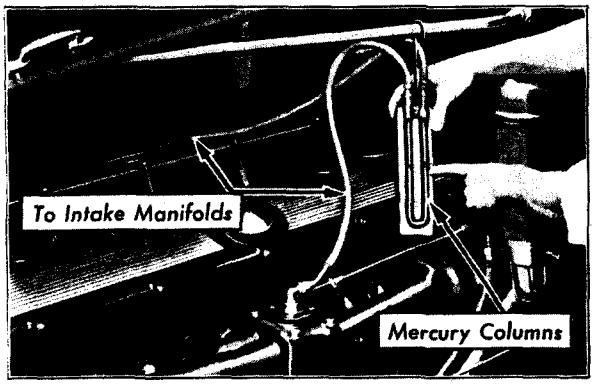
Check the adjustment of the auxiliary air valve after removing the intake muffler and elbow. Note the free opening of the valve to see that it is $\frac{1}{16}$" to $\frac{3}{32}$" when the choke is held all the way on. This must be done at room temperature.

Adjust the accelerator pedal stop screw so that when the throttle levers are in the wide open position, and against the stops on the carburetor, the accelerator pedal rests against the screw. The adjustment of this stop screw is very important because if the accelerator pedal is pushed down too far, it will bend or break the throttle levers on the carburetor.

Air Valve and Throttle Adjustment

The use of equalizing gauge, 109626, is recommended for making carburetor adjustments. It is practically impossible to satisfactorily adjust and equalize the carburetor without this gauge.

Before adjusting the carburetor, run the engine until it is thoroughly warmed up and disconnect the throttle rod to the right-hand carburetor. Disconnect the brake assister vacuum line from the left-hand manifold and temporarily replace the screw plug in the right-hand manifold with a fitting



The equalizing gauge should be used when adjusting the V-12 carburetors.

to which the equalizing gauge may be connected. Hang the equalizing gauge on one of the radiator tie rods near the dash and connect the gauge to the fitting on the intake manifolds with the longer hose connected to the farther manifold. The gauge must hang straight so that the mercury columns are at the same level when the engine is not running.

Make a preliminary adjustment of the air valves and throttles on both carburetors in the same manner as on the 353, to bring the idling speed at approximately 320 R. P. M.

(To determine whether or not the engine is running at the correct idling speed, remove the oil filler cap from one of the valve covers and hold a finger on one of the valve rocker arms so that the movements of the rocker arm may be counted. At

320 R. P. M. the valve will open forty times in fifteen seconds.)

Make sure that the gauge hangs straight and check the level of the mercury in the tube. When the air valves and throttle stop screws are properly adjusted, both columns of mercury should be at the same height and the engine should run smoothly at 320 R. P. M.

If the columns of mercury are not at the same level and the engine speed is too fast, reduce the speed by backing off the throttle stop screw on the side on which the mercury column is the lower. If the speed is too slow, turn the throttle stop screw in a little on the side on which the mercury column is higher.

If the mercury columns are at the same level and the engine speed is too fast or too slow, adjust both throttle stop screws, turning them exactly the same amount to secure the correct idling speed and at the same time keeping the mercury columns at the same level.

Re-check the air valve adjustment on each carburetor. (For accurate results be sure to use the following method: turn the adjusting screw clockwise, until the engine slows down from a rich mixture, then turn it counter-clockwise, counting the number of notches carefully until the engine slows down from a lean mixture, and finally turn the screw clockwise again just one-half the number of notches counted.)

After this adjustment has been made on both carburetors, recheck the idling speed, making sure that the mercury columns are maintained at the same level.

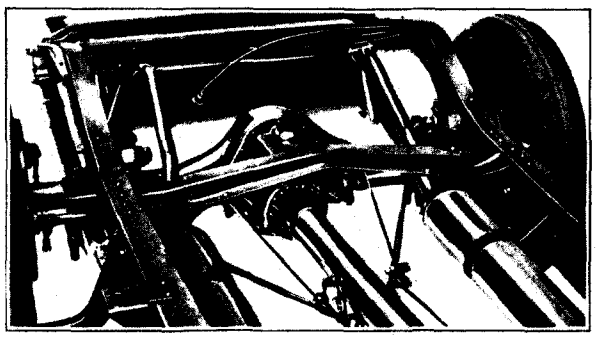
Adjust the right-hand throttle control rod to exactly the right length so that the clevis pin can be slipped into place without changing the engine speed.

A further check should be made on the throttle adjustment by running the engine at approximately 1000 R. P. M. and noting the mercury level in the gauge. If the columns are not practically level, a slight readjustment of the right-hand throttle control rod will be necessary. Finally run the engine again at idling speed and check the mercury columns again. A very slight readjustment of the throttle control rods may be necessary to bring them to the proper level again.

After a satisfactory adjustment of both carburetors has been made, reconnect the brake assister vacuum line to the left-hand intake manifold and install the screw plug in the right-hand manifold.

Springs

The general arrangement of the V-12 springs is the same as on the Cadillac 355. All of the springs are 2¼" wide, and have metal spring covers with a rebound clip near each end.



The rear springs are directly underneath the frame as on the 355.

The left front spring has the same reinforcement at the front end as the Cadillac 355, and the rear springs are directly beneath the frame.

Shock Absorbers

The shock absorber mounting on the V-12 is the same as on the 355, with the front shock absorbers attached under the spring clip nuts. The available metering pin and relief valve equipment for the V-12 shock absorbers is as follows:

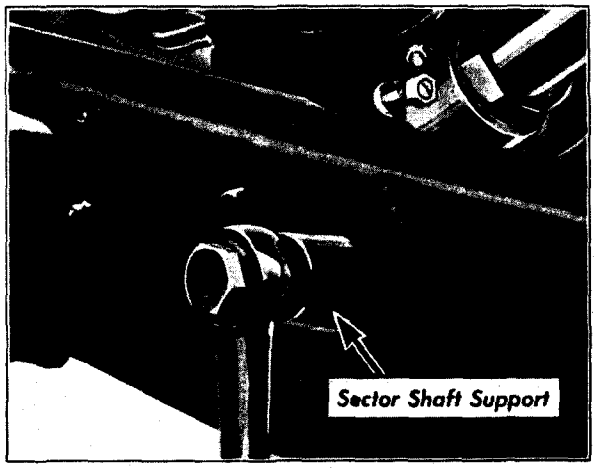
Metering Pins	Very Soft	Soft	Std.	Hard	Very Hard
Front Bumper	26	33	33	33	33
Front Snubber	24	34	34	34	38
Rear Bumper	27	27	27	26	26
Rear Snubber	25	36	36	35	37
Relief Valves					
Front Bumper	G	E	E	G	L
Front Snubber	G	J	L	L	P
Rear Bumper	J	G	G	G	L
Rear Snubber	G	J	L	P	P

While the standard equipment will take care of the average requirements, special equipment to meet individual needs will be furnished where necessary.

Ordinarily it should not be necessary to check the oil level in the shock absorbers more often than every 6,000 miles. When adding oil, use only enough to bring the level to the lower edge of the filler hole.

Steering Gear

The V-12 steering gear is of the hour-glass worm and sector type used on the other current models of Cadillac and La Salle cars, but is not interchangeable with them. This gear has an automatic take-up for the worm and sector back-lash. While this automatic take-up does not eliminate entirely the need for manual adjustment of the back-lash, it makes such frequent adjustments unnecessary. Ordinarily it should not be necessary to make a manual adjustment of the back-lash more often than 20,000 or 25,000 miles. This automatic take-up provides the same easy steering and freedom from steering wheel nervousness throughout the entire period between adjustments. A brief description of the automatic take-up will give the service man a better idea of its operation, so that he can make the necessary adjustments more satisfactorily.



The steering gear is of the hour-glass type with an automatic take-up for the worm and sector back-lash.

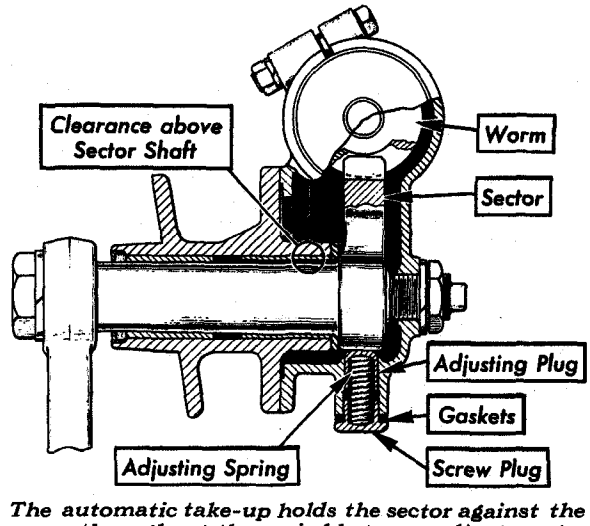
The inner bushing for the sector shaft is reamed out .004" larger than the shaft itself, and a spring actuated plug below the sector keeps the worm and sector in contact at all times. In making a manual adjustment of the back-lash, the sector support is moved toward the worm by means of an eccentric, as on the earlier type gears, until the sector shaft rests against the bottom of the bushing and all the clearance is above the shaft. As wear takes place between the worm and the sector, the spring and plunger keep raising the sector until it rests against the top of the bushing. During this period a perfect adjustment of the back-lash is maintained so that the steering gear is free from nervousness.

As further wear takes place it will be necessary to readjust the eccentric to raise the sector shaft support so that the shaft again rests against the bottom of its bushing.

Spring pressure on the bottom of the sector is controlled by two gaskets under the head of the screw plug which holds the spring in place. When the contact surfaces of the worm and sector are new, the normal pressure of the spring would cause hard steering. To prevent this a steel washer is used in addition to the two gaskets at this point when the steering gear is originally adjusted at the factory. After the first 1000 miles the worm and sector will have become worn sufficiently to permit full spring pressure on the bottom of the sector, and this steel washer should therefore be removed.

1000-Mile Inspection

The removal of the steel washer under the adjusting plug should be made a part of the first 1000 mile inspection. To remove this steel washer, first unfasten the rear end of the left-hand splash pan and unscrew the hex head plug below the adjusting spring. Be careful not to allow the adjusting plug to drop out also, as this would allow the lubricant to run out of the housing. Remove and discard the steel washer, making sure that both copper gaskets are under the head of the plug when it is put back and tightened up.

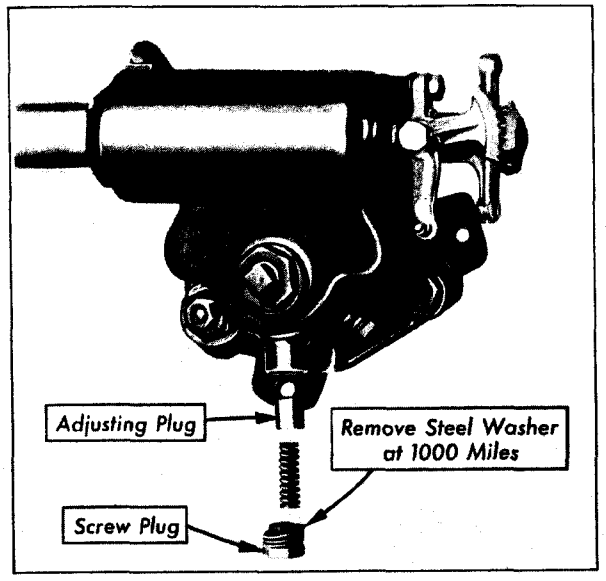


The automatic take-up holds the sector against the worm throughout the period between adjustments.

Steering Gear Adjustment

The adjustment of this steering gear is made in practically the same manner as on the previous type without the automatic feature. Before attempting to adjust the steering gear, however, be sure to disconnect the steering connecting rod from the steering gear arm and back off the screw plug below the adjusting spring far enough to relieve all

spring pressure on the adjusting plug. If any adjustment of the sector shaft end-play is necessary, it should be made in the same manner as on V-16 and 355 gears.



The steel washer should be used only when the worm and sector are new and must be removed at the end of the first 1000 miles.

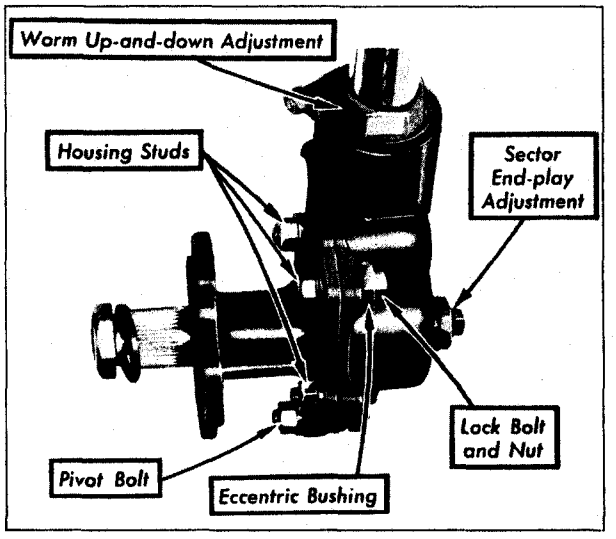
The method of adjusting the worm up-and down play is the same as on the 355 and V-16. The amount of drag on the steering wheel is different, however, than on either of these models. The worm adjusting nut should be tightened until it requires a pull of 2 to 3 pounds to turn the steering wheel when the sector is well off the high spot. Be sure to recheck the pull with the spring scale after tightening the clamping bolt.

Although the worm and sector back-lash adjustment is made in a slightly different manner than before, this adjustment is controlled by a split eccentric, the same as on the later type V-16 gears and the 355 gears. Turn the eccentric until it requires more than a 3 pound pull on the spring scale to turn the steering wheel through the high spot of the sector and then back off the eccentric very carefully to a point where the pull on the spring scale is 2 to 3 pounds. When adjusted in this manner the worm and sector are just touching each other and there should be no perceptible backlash between them. After tightening the lock bolt on the eccentric, the drag on the steering wheel should again be checked to make sure that it has not changed.

After completing the eccentric adjustment, the screw plug should be tightened again, making sure that the two copper gaskets are in place under its head, and that the steel washer originally installed at the factory has been removed. This steel washer is used only when the worm and sector are new.

With the plug tightened to bring the automatic adjustment into operation again it should require a pull of four to six pounds to turn the steering wheel through the high spot. If the spring scale registers more than six pounds, an additional copper gasket should be installed under the head of the plug to reduce the spring tension slightly.

When reconnecting the steering connecting rod to the steering gear arm, check the length of the rod in the usual manner to make sure that the front wheels are exactly in the straight ahead position when the sector is on the high spot. If necessary, readjust the length of the steering connecting rod in the same manner as before, by means of the interchange of spacers.



The adjustments for the steering gear are the same as on the 355 and the later V-16 types.

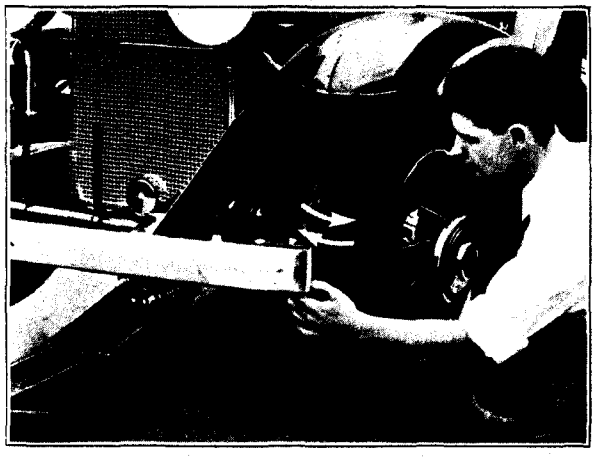
Steering Gear Complaints

In case of complaints on hard steering or nervousness, always check the front tires to see that they are properly inflated.

Hard steering is more often caused by incorrectly adjusted steering connections than by improper steering gear adjustment. Therefore, before adjusting the steering gear to take care of a complaint of hard steering, be sure to check the steering knuckles and connections to make sure that they are perfectly free.

Steering wheel nervousness is in many cases due to improper adjustment of the steering modulator. In a case of this complaint, therefore, always inspect this adjustment before attempting to adjust the steering gear itself.

To check up on the steering modulator action, jack up the front axle so that both wheels are off the ground and turn the steering wheel to the straight ahead position. Then grasp the left front tire with one hand at the front and the other hand at the rear, and wiggle the wheel from right to left noting the action of the modulator shackles and the steering gear arm. Under this test the modulator shackle should move readily but the steering gear arm should remain practically stationary.



The steering modulator shackle should move freely but the steering gear arm should be practically stationary when the front wheel is rocked in this manner.

If any of the modulator springs are weak or broken, a complete new set of four should be installed. The nuts on the modulator spring studs should be turned up just flush with the ends of the studs.

If the modulator appears to be properly adjusted, check also to see that the steel washer has been removed from under the head of the plug, as directed under the 1000 mile inspection.

If either of these operations do not correct the difficulty, the steering gear should be readjusted as directed under "Steering Gear Adjustments."

Transmission

The V-12 transmission is the same as that used on the V-16, the 355 and the 345 and it is fully interchangeable with them. The transmission gear ratios are the same on all these models and all transmissions ordered from the Parts Division for service will be shipped without the ball joint socket at the rear end.

Speedometer Pinions

On a few of the first cars shipped, the 4.40 to 1 ratio was used in place of the 4.50 to 1 and the 4.75 to 1 was used in place of the 5.00 to 1. In each case only the later type will be furnished for service. It is always necessary to make sure when installing the new differential carrier assembly, that the correct speedometer drive pinion is used.

The speedometer drive pinions for the various rear axle gear ratios on the V-12 are as follows:

	Tire Size	
Gear Ratio	7.00 x 19	7.50 x 18
4.00 to 1	18	18
4.40 to 1	19	19
4.50 to 1	20	20
4.75 to 1	21	21
5.00 to 1	22	21

Wheels

Wood wheels with demountable rims are standard equipment on the V-12. 7.00 x 19 tires are used on these wheels. Demountable wood, wire or disc wheels are optional equipment at extra cost. 7.50 x 18 tires are used on all cars with demountable wheel equipment.

The V-12 demountable wheels have 6" rims.

The tire inflation pressure is the same as on all current models; 45 lbs. for the front tires and 40 lbs. for the rear.

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ENGINE

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Number of Cylinders	8	8	12	16
Valve arrangement	L Head	L Head	Overhead	Overhead
Bore and Stroke	3⅜" x 4 15/16"	3⅜" x 4 15/16"	3⅛" x 4"	3" x 4"
Engine Mounting	Bolts thru rubber	Bolts thru rubber	Bolts thru rubber	Bolts thru rubber
Number of Points of Suspension	3	5	5	5
Make	Own	Own	Own	Own
Cylinder arrangement	90° Vee	90° Vee	45° Vee	45° Vee
Cylinder Bore finish	Honed	Honed	Honed	Honed
Cylinder Head finish	Cast	Cast	Machined	Machined
Number of Cylinders Cast Enbloc	4	4	6	8
Crankcase Integral	No	No	No	No
Crankcase Material, upper half	Silicon-Aluminum	Silicon-Aluminum	Silicon-Aluminum	Silicon-Aluminum
Crankcase Material, lower half	Pressed Steel	Pressed Steel	Pressed Steel	Aluminum Alloy
Piston Displacement (cu in.)	353	353	368	452
Taxable Horse Power	36.45	36.45	46.9	57.5
Maximum Brake Horse Power at RPM	95 @ 3000	95 @ 3000	135 @ 3400 RPM	165 @ 3400 RPM
Brake Horse Power cu. in. Displacement	.269	.269	.366	.366
Maximum Brake Torque at RPM	225′ lbs. @ 1000	225′ lbs. @ 1000	250′ lbs. @ 1200	300′ lbs. @ 1400
Maximum B.M.E.P. at RPM	97 lbs. sq. in. @ 1000	97 lbs. sq. in. @ 1000	102 lbs. sq. in. @ 1200	102 lbs. sq. in. @ 1400

ENGINE (Continued)

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Compression Pressure at RPM	108 lbs. sq. in. @ 1000	108 lbs. sq. in. @ 1000	111 lbs. sq. in. @ 1000	108 lbs. sq. in. @ 1000
Standard Compression Ratio	5.35 to 1	5.35 to 1	5.27 to 1	5.11 to 1
Optional Compression Ratio	5.26 to 1	5.26 to 1	.....	5.36 to 1
Engine Weight dry with Flywheel less Transmission and Clutch all accessories in place	700 lbs.	700 lbs.	880 lbs.	1080 lbs.
Extra cost for optional Head	None	None	None available	None

PISTONS AND RINGS

Piston Make	Own	Own	Own	Own
Piston Material	Molybdenum Cast Iron	Molybdenum Cast Iron	Molybdenum Cast Iron	Molybdenum Cast Iron
Piston Weight, ounces (without rings, pin or bushing)	24 oz.	24 oz.	21¼ oz.	19 11/16 oz.
Number of Piston Rings used	4	4	4	4
Is lower Oil Groove drilled radially?	Yes	Yes	Yes	Yes
Number of Oil Rings used per Piston	2	2	1	1
Width of Oil Ring	One 3/16" One 1/8"	One 3/16" One 1/8"	3/16"	3/16"
Number of Compression Rings	2	2	3	3
Width of Compression Rings	One 3/16" One 1/8"	One 3/16" One 1/8"	One 3/16" Two 1/8"	One 3/16" Two 1/8"

PISTONS AND RINGS (Continued)

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Piston Ring make	Perfect circle	Perfect circle	Perfect circle	Perfect circle
Number of Rings above Pin	3	3	3	3

CONNECTING RODS AND WRIST PINS

Wrist Pin dia.	7/8"	7/8"	3/4"	3/4"
Is Wrist Pin locked in Rod or Piston or floating?	Locked in Piston	Locked in Piston	Locked in Piston	Locked in Piston
Wrist Pin locking method	Lock screw	Lock screw	Lock screw	Lock screw
Wrist Pin Hole finish	Diamond Bored	Diamond Bored	Diamond Bored	Diamond Bored
Connecting Rod length, center to center	10½"	10½"	9¼"	9¼"
Connecting Rod material	Dropped Forged Chrome Molybdenum Steel	Dropped Forged Chrome Molybdenum Steel	Dropped Forged Chrome Molybdenum Steel	Dropped ForgedChrome Molybdenum Steel
Connecting Rod Bearing material	Babbitt	Babbitt	Babbitt	Babbitt
Connecting Rod Bearing finish	Diamond Bored	Diamond Bored	Diamond Bored	Diamond Bored
Connecting Rod Bearing type of shim	None	None	None	None
Connecting Rod Bearing Poured or Separate Poured	Poured	Poured	Poured	Poured
Crank Pin Journal diameter and length	2⅜" x 1⅜"	2⅜" x 1⅜"	2½" x 1⅛"	2½" x 1⅛"

CRANKSHAFT

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Vibration Dampener used?	No	No	Yes	Yes
Front Flywheel used?	No	No	No	No
Is Crankshaft completely machined?	Yes	Yes	Yes	Yes
Vibration Dampener type	.....	.....	Spring controlled inertia	Spring controlled inertia
Crankshaft Counter Weights used, No. of	4 bolted to shaft	4 bolted to shaft	4 Forged integral	4 Forged integral
Length of Crankshaft to Outer Ends of front and rear Bearings	$23\frac{25}{32}$"	$23\frac{25}{32}$"	31"	$39\frac{3}{4}$"
Which Main Bearing takes thrust?	Rear	Rear	No. 3	Center
Main Bearing material	Babbitt-Bronze backed	Babbitt-Bronze backed	Babbitt Steel backed	Babbitt Steel backed
Main Bearing, No. of	3	3	4	5
Main Bearing, Interchangeable?	Yes	Yes	Yes	Yes
No. 1 Main Bearing dia. and length	$2\frac{3}{8}$" x $1\frac{5}{8}$"	$2\frac{3}{8}$" x $1\frac{5}{8}$"	$2\frac{5}{8}$" x $2\frac{3}{16}$"	$2\frac{5}{8}$" x $2\frac{3}{16}$"
No. 2 Main Bearing dia. and length	$2\frac{3}{8}$" x $1\frac{5}{8}$"	$2\frac{3}{8}$" x $1\frac{5}{8}$"	$2\frac{5}{8}$" x $1\frac{1}{2}$"	$2\frac{5}{8}$" x $1\frac{3}{8}$"
No. 3 Main Bearing dia. and length	$2\frac{3}{8}$" x $2\frac{7}{8}$"	$2\frac{3}{8}$" x $2\frac{7}{8}$"	$2\frac{5}{8}$" x $1\frac{1}{2}$"	$2\frac{5}{8}$" x $1\frac{1}{2}$"
No. 4 Main Bearing dia. and length	.....	.....	$2\frac{5}{8}$" x $3\frac{9}{16}$"	$2\frac{5}{8}$" x $1\frac{3}{8}$"
No. 5 Main Bearing dia. and length	.....	.....	.....	$2\frac{5}{8}$" x $3\frac{9}{16}$"
Crankshaft material	No. 1045 Steel	No. 1045 Steel	No. 1045 Steel	No. 1045 Steel
Crankshaft Weight	$68\frac{1}{8}$ lbs.	$68\frac{1}{8}$ lbs.	$83\frac{1}{2}$ lbs.	130 lbs.

CAMSHAFT

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Camshaft Drive	Chain	Chain	Chain	Chain
Camshaft Bearings, No. of	4	4	4	5
Timing Chain make	Morse	Morse	Morse	Morse
Timing Chain width	$1\frac{3}{4}$"	$1\frac{3}{4}$"	$1\frac{1}{2}$"	$1\frac{1}{2}$"
Timing Chain pitch	$\frac{1}{2}$"	$\frac{1}{2}$"	$\frac{3}{8}$"	$\frac{3}{8}$"
Timing Chain adjustment	None	None	Automatic	Automatic
Camshaft location	At top of crankcase in center of Vee	At top of crankcase in center of Vee	At top of crankcase in center of Vee	At top of crankcase in center of Vee

VALVES

Valve Action	Thru roller cam slide follower	Thru roller cam slide follower	Roller cam follower, push rods and rocker arms	Roller cam follower, push rods and rocker arms
Intake Valve make	Thompson-Rich	Thompson-Rich	Thompson-Rich	Thompson-Rich
Exhaust Valve make	Thompson-Rich	Thompson-Rich	Thompson-Rich	Thompson-Rich
Intake Valve material	Tungsten Steel	Tungsten Steel	Silichrome Steel	Silichrome Steel
Exhaust Valve material	Silichrome Steel	Silichrome Steel	Silichrome Steel	Silichrome Steel
Intake Valve clear dia.	$1\frac{1}{2}$"	$1\frac{1}{2}$"	$1\frac{5}{16}$"	$1\frac{5}{16}$"
Exhaust Valve clear dia.	$1\frac{1}{2}$"	$1\frac{1}{2}$"	$1\frac{5}{16}$"	$1\frac{5}{16}$"
Angle of Intake Valve Seat	30°	30°	45°	45°

VALVES (Continued)

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Angle of Exhuast Valve Seat	45°	45°	45°	45°
Valve Stem end style	Split tapered keeper	Split tapered keeper	Split tapered keeper	Split tapered keeper
Valve Lift, Intake and Exhaust	23/64"	23/64"	11/32"	11/32"
Are Valve Guides removable?	Yes	Yes	Yes	Yes
Operating Tappet Clearance, Intake at 35 MPH	.006"	.006"	0	0
Operating Tappet Clearance, Exhaust at 35 MPH	.004"	.004"	0	0
Valve Timing Intake Opens	9° BTC	9° BTC	TDC	TDC
Valve Timing Exhaust Opens	46.5° BBC	46.5° BBC	39° BBC	39° BBDC
Valve Timing Intake Closes	58° ABC	58° ABC	44° ABC	44° ABC
Valve Timing Exhaust Closes	7° ATC	7° ATC	5° ATC	5° ATDC

LUBRICATION

Lubricating System type	Pressure	Pressure	Pressure	Pressure
Oil Pressure to Main Bearings?	Yes	Yes	Yes	Yes
Oil Pressure to Connecting Rod Bearings?	Yes	Yes	Yes	Yes
Oil Pressure to Wrist Pins?	Yes	Yes	Yes	Yes
Oil Pressure to Camshaft Bearings	Yes	Yes	Yes	Yes

LUBRICATION (Continued)

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Timing Gear Lubrication	Overflow from pressure regulator	Overflow from pressure regulator	Overflow from pressure regulator	Overflow from pressure regulator
Oil Pump type	Gear	Gear	Gear	Gear
Oil Grade recommended (S.A.E. Visc.) Summer	40-50	40-50	40-50	40-50
Winter	20	20	20	20
Normal Oil Pressure, lbs. @ MPH	30 lbs. @ 30 MPH	30 lbs. @ 30 MPH	30 lbs. @ 60 MPH	30 lbs. @ 60 MPH
Capacity of Oil Reservoir, Qts.	8	8	9	10
Oil Pressure Gauge make	AC	AC	AC	AC
Change Oil every—	2000 miles	2000 miles	2000 miles	2000 miles
Type of Oil Drain	Plug	Plug	Plug	Plug
Oil Reservoir Gauge type	Float	Float	Float	Float
External Oil Filter make	AC	AC	AC	AC
Chassis lubrication type	High pressure	High pressure	High pressure	High pressure
Chassis lubrication make	Alemite	Alemite	Alemite	Alemite
Crankcase Ventilating System	Yes	Yes	Yes—Thermostatic control	Yes—Thermostatic control

FUEL

Gasoline Tank make	Own	Own	Own	Own
Gasoline Tank Capacity, Gallons	23 Gals.	21-22 Gals.	21-22 Gals.	25 Gals.

FUEL (Continued)

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Fuel Feed type	Vacuum Tank and Auxiliary Pump	Vacuum Tank and Auxiliary Pump	Vacuum Tank and Auxiliary Pump	Vacuum Tank and Auxiliary Pump
Fuel Feed make	Stewart-Warner Vac. Tank and own Pump	Stewart-Warner Vac. Tank and own Pump	Stewart-Warner Vac. Tank and own Pump	Stewart-War'r Vac. Tank and own Pump
Gasoline Filter make	Gascolator	Gascolator	Gascolator	Gascolator
Carburetor make	Own	Own	Own	Own
Carburetor size	2″	2″	2-1½″	2-1½″
Carburetor type	Air valve	Air valve	Air valve	Air valve
Intake Mixture heated, how?	Manifold Header	Manifold Header	Exhaust hot-spot	Exhaust hot-spot
Heat adjustment	Automatic	Automatic	None	None
Carburetor Muffler make	AC	AC	AC	None
Exhaust Pipe dia.	2½″	2½″	2½″	2½″
Muffler make	Oldberg	Oldberg	Oldberg	Oldberg
Manifolds: Intake—	2-2 Port Cast Iron 1½″	2-2 Port Cast Iron 1½″	2-1⅝″ 3 Port Cast Aluminum	2-1⅝″ 4 Port Cast Aluminum
Exhaust—	2-4 Port Cast Iron "Y" Connection	2-4 Port Cast Iron "Y" Connection	2-2 Piece 6 Port Cast Iron	2-3 Piece 8 Port Cast Iron

COOLING

Cooling Circulation, type	Pump	Pump	Pump	Pump
Water Pump type	Centrifugal	Centrifugal	Centrifugal	Centrifugal

COOLING (Continued)

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Water Pump Drive	Chain	Chain	Chain	Chain
Radiator Shutter make	Own	Own	Own	Own
Radiator Shutter Control	Thermostatic	Thermostatic	Thermostatic	Automatic
Radiator Core type	Cellular	Cellular	Cellular	Cellular
Radiator Core make	Harrison	Harrison	Harrison	Harrison
Cooling System Capacity, Gallons	6 Gals.	6 Gals.	6½ Gals.	7 Gals.
Fan make	Own—Six Blades	Own—Six Blades	Own—Six Blades	Own—Six Blades
Fan dia.	21″	21″	21″	21″

IGNITION

Ignition Unit make	Delco Remy	Delco Remy	Delco Remy	Delco Remy
Ignition Coil make	Delco Remy	Delco Remy	Delco Remy	Delco Remy
Distributor, Manual Advance	19°	19°	14°	9°
Distributor, Automatic Advance	28°	28°	30°	32°
Distributor Breaker Gap	.018-.022	.018-.022	.018-.024	.015-.020
Distributor Number of Contact Arms	Two—4 lobe Cam	Two—4 lobe Cam	Two—6 lobe Cam	Two—8 lobe Cam
Spark Plug Thread	18 mm Metric	18 mm Metric	18 mm Metric	18 mm Metric
Spark Plug make	Type G 10 AC	Type G 10 AC	Type G 10 AC	Type G 10 AC
Spark Plug Gap	.025-.028	.025-.028	.025-.028	.025-.028

BATTERY

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Battery make	Delco	Delco	Exide	Exide
Battery Capacity, Ampere Hours	120	120	130	130
Battery Voltage	6	6	6	6
Battery, which Terminal is Grounded	Positive	Positive	Positive	Positive
Battery Case	Moulded composition	Moulded composition	Moulded composition	Moulded composition
Battery location	Under Rt. Fr. Seat	Under Rt. Fr. Seat	In Rt. Fr. Fender	In Rt. Dust Shield

LAMPS

Candle Power of Headlights	21 Mazda	21 Mazda	21 Mazda	21 Mazda
Candle Power of Fender lights	3 Mazda	3 Mazda	3 Mazda	3 Mazda
Candle Power of Tail lights	3 Mazda	3 Mazda	3 Mazda	3 Mazda
Candle Power of Stop lights	15 Mazda	15 Mazda	15 Mazda	15 Mazda
Candle Power of Dash lights	3 Mazda	3 Mazda	3 Mazda	3 Mazda
No. of Tail lights	1	2	2	2
No. of Stop lights	1	2	2	2
Are double Filament Bulbs used?	Yes	Yes	Yes	Yes
How are headlights dimmed?	Depressed beam	Depressed beam	Depressed beam	Depressed beam
Headlight reflector type	Parabolic	Parabolic	Parabolic	Parabolic

LAMPS (Continued)

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Are Tail and Dash lights in Series?	No	No	No	No
Horn type	Vibrator	Vibrator	Vibrator	Vibrator
Horn make	Delco Remy	Delco Remy	Delco Remy	Delco Remy
No. of Horns used	1	2	2	2

GENERATOR

Generator make	Delco Remy (2 Pole)	Delco Remy (2 Pole)	Delco Remy (2 Pole)	Delco Remy (2 Pole)
Generator Driven by	Front end Chain	Front end Chain	Front end Chain	Front end Chain
Generator Voltage Regulation, type of	3rd brush	3rd brush	3rd brush	3rd brush
Generator Thermostat Opening temperature	175°	175°	175°	175°
Cutout Relay make	Delco Remy	Delco Remy	Delco Remy	Delco Remy
Voltage at Cutout closing	7.5 amps. approx.	7.5 amps. approx.	7.5 amps. approx.	7.5 amps. approx.
Car speed at Cutout closing	8 to 10 MPH	8 to 10 MPH	8 to 10 MPH	8 to 10 MPH
Generator Maximum Normal Charging Rate, Cold	18 amps.	18 amps.	18 amps.	18 amps.
Car speed for Maximum Normal Charging	19 MPH	19 MPH	28 MPH	30 MPH
Voltage at Maximum Normal Charging	7.3-7.7 Volts	7.3-7.7 Volts	7.3-7.7 Volts	7.3-7.7 Volts
Ratio of Generator RPM to Engine RPM	1½ to 1	1½ to 1	1½ to 1	1½ to 1
Ammeter make	AC	AC	AC	AC

STARTING MOTOR

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Starting Motor make	Delco Remy (4 Pole)	Delco Remy (4 Pole)	Delco Remy (6 Pole)	Delco Remy (6 Pole)
Starting Motor type of drive	Overrunning Clutch	Overrunning Clutch	Overrunning Clutch	Overrunning Clutch
Flywheel Teeth integral, or Steel Ring	Steel Ring	Steel Ring	Steel Ring	Steel Ring
Gear Ratio between Starter Armature and Flywheel	25 to 1 approx.	25 to 1 approx.	25 to 1 approx.	25 to 1 approx.
Normal Engine Cranking speed, RPM	90-100 RPM	90-100 RPM	80 RPM	75 RPM

CLUTCH

Clutch make	Own	Own	Own	Own
Clutch type	2 Plate	2 Plate	2 Plate	2 Plate
Clutch vibration installation or neutralizer	None	None	None	None
Number of Clutch Driving Discs	3	3	3	3
Number of Clutch Driven Discs	2	2	2	2
Clutch operates in Oil or Dry	Dry	Dry	Dry	Dry
Clutch Facing inside dia.	7″	7″	7″	7″
Clutch Facing outside dia.	10″	10″	10″	10″
No. of Clutch Facings required	4	4	4	4
Total Area of Clutch Facing	226.20 sq. in.	226.20 sq. in.	226.20 sq. in.	226.20 sq. in.

CLUTCH (Continued)

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Is Clutch adjustable?	No	No	No	No
Is Clutch Brake fitted?	No	No	No	No

TRANSMISSION

Transmission make	Own	Own	Own	Own
Transmission location	Unit power plant	Unit power plant	Unit power plant	Unit power plant
Number of forward speeds	3	3	3	3
Gear Ratio in high, standard 5-Pass. 4-Door Sedan	4.54	4.54	4.54	4.39
Transmission, ratio in second	1.5 to 1	1.5 to 1	1.5 to 1	1.5 to 1
Transmission, ratio in low	2.5 to 1	2.5 to 1	2.5 to 1	2.5 to 1
Transmission, ratio in reverse	3.0 to 1	3.0 to 1	3.0 to 1	3.0 to 1
Transmission Oil Capacity pounds or quarts	3 qts.	3 qts.	3 qts.	3 qts.
Torque taken through	Torque tube and radius rods	Torque tube and radius rods	Torque tube and radius rods	Torque tube and radius rods
Drive taken through	Torque tube	Torque tube	Torque tube	Torque tube

REAR AXLE

Rear Axle make	Own	Own	Own	Own
Rear Axle type	¾ Floating	¾ Floating	¾ Floating	¾ Floating

REAR AXLE (Continued)

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Minimum road clearance under center of axle—tires inflated	7 23/32"	7 23/32"	7 23/32"	8 3/8"
Rear Axle Oil capacity, pounds or quarts	3 qts.	3 qts.	3 qts.	3 qts.
Type of final Gearing	Spiral bevel	Spiral bevel	Spiral bevel	Spiral bevel
Gear ratio standard 5-Pass. 4-Door Sedan	4.54	4.54	4.54	4.39
Optional Gear ratios	4.07 and 4.91	4.07 and 4.91	4.07 and 4.91	4.07 and 4.75
How is Pinion adjusted	Shims	Shims	Shims	Shims
Wheels, type, std.	Artillery	Artillery	Artillery	Artillery
Wheels, type, optional	Wire, Disc, Demountable Wood	Wire, Disc, Demountable Wood	Wire, Disc, Demountable Wood	Wire, Disc, Demountable Wood
Rim dia. std.	19"	19"	19"	19"
Rim width, std.	5"	5"	5"	5"
Rim width, wire wheels only	5"	5"	6"	6"
Tire make	U.S.	U.S., Firestone, Goodyear	U.S., Firestone, Goodyear	U.S., Firestone, Goodyear
Tire Size, std.	6.50 x 19	6.50 x 19	7.00 x 19	7.50 x 19
Tire Size, optional wheel equipment	6.50 x 19 except on seven passenger closed cars which take 7.00 x 18	7.00 x 18	7.50 x 18	7.50 x 19

REAR AXLE (Continued)

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
No. of Plies in Tire	6	6	6	6
Front Tire inflation pressure	45 lbs.	45 lbs.	45 lbs.	45 lbs.
Rear Tire inflation pressure	40 lbs.	40 lbs.	40 lbs.	40 lbs.

SPRINGS

Front Spring type	Semi-elliptic	Semi-elliptic	Semi-elliptic	Semi-elliptic
Front Spring length	38"	38"	40"	42"
Front Spring width	2"	2"	2¼"	2¼"
Front Spring number of leaves, 5-Pass. Sedan	9	9	9	10
Front Spring shackled front or rear	Rear	Rear	Rear	Rear
Rear Spring type	Semi-elliptic	Semi-elliptic	Semi-elliptic	Semi-elliptic
Rear Spring length	58"	58"	58"	60"
Rear Spring width	2"	2"	2¼"	2½"
Rear Spring number of leaves 5-Pass. Sedan	11	11	11	10
Spring Leaves lubricated with	Graphite & Grease	Graphite & Grease	Graphite & Grease	Graphite & Grease
Spring Shackles (rear) type	Compression	Compression	Compression	Tension
Spring Shackles make	Own	Own	Own	Own
Spring Cover, type—(make)	Metal (Anderson)	Metal (Anderson)	Metal (Anderson)	Metal (Anderson)

STEERING

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Steering Wheel, dia.	18″	18″	19″	19″
Steering Gear, type	Hour Glass Worm & Sector	Hour Glass Worm & Sector	Hour Glass Worm & Sector	Hour Glass Worm & Sector
Steering Gear Ratio	17 to 1	17 to 1	17 to 1	17 to 1
Car turning dia., tire wall, right	48′ 9″	51′ 9″	53′ 8″	55′
left	44′ 6″	46′ 6″	53′ 3″	54′ 5″
Car turning dia., fender sweep, right	50′ 9″	53′ 8″	56′ 1″	56′ 2″
left	46′ 6″	48′ 8″	55′ 8″	55′ 7″
Castor Angle	1½°	1½°	2½°—3½°	2½°
Camber Angle	1½°	1½°	1½°	1½°
Toe In	3/16″	3/16″	3/16″	3/16″
Front Axle make	Own	Own	Own	Own
Front Axle section type	I-Beam	I-Beam	I-Beam	I-Beam
Front Axle end type	Reverse Elliot	Reverse Elliot	Reverse Elliot	Reverse Elliot

BRAKES

Foot Brakes make	Own	Own	Own	Own
Number of complete Brakes	4	4	4	4
Foot Brake, type of mechanism	Internal articulated shoe	Internal articulated shoe	Internal articulated shoe	Internal articulated shoe
Foot Brake, method of application	Mechanical	Mechanical	Mechanical with Vacuum assister	Mechanical with Vacuum assister

BRAKES (Continued)

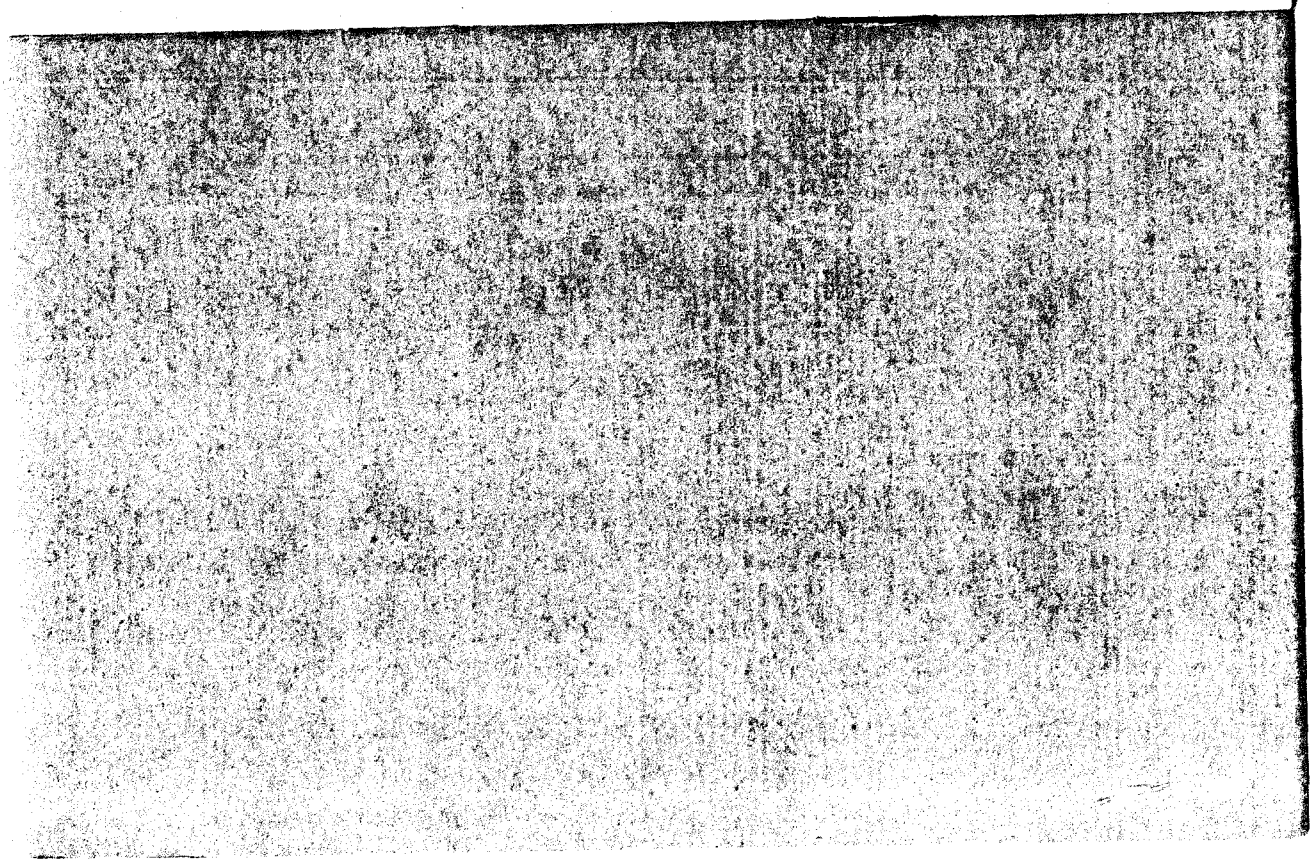
	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Location of Service Brakes	Front & Rear	Front & Rear	Front & Rear	Front & Rear
Brake Lining make	Hycoe Semi-moulded	Hycoe Semi-moulded	Hycoe Semi-moulded	Hycoe Semi-moulded
Rear Brake Drum dia.	15″	15″	15″	16½″
Rear Brake, internal or external	Internal	Internal	Internal	Internal
Rear Brake Lining width	2″	2″	2″	2¼″
Front Brake Drum dia.	15″	15″	15″	16½″
Front Brake, internal or external	Internal	Internal	Internal	Internal
Front Brake Lining width	2″	2″	2″	2¼″
Per cent Braking power on Rear Wheels	50%	50%	50%	50%
Hand Brake location	Rear	Rear	Rear	Rear
Hand Brake	Rear Service	Rear Service	Rear Service	Rear Service

FRAME

Frame material	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
Frame depth	8″	8″	8″	9″
Frame thickness	5/32″	5/32″	5/32″	5/32″
Frame Flange width	3″ at Top—2¼″ at bottom	3″ at Top—2¼″ bottom	3″ at Top—2¼″ bottom	3¼″ at Top—2¼″ bottom
Wheelbase	134″	134″	140″—143″	148″

FRAME (Continued)

	LaSalle 345	Cadillac 355	Cadillac 370	Cadillac 452
Tread, front	57¼"	57¼"	57¼"	57¼"
Tread, rear	59½"	59½"	59½"	59½"
Overall length of car with Bumpers and Spare Tires in Fenderwells	202 21/32" 203 15/16" with rear tire carrier	202 21/32" 203 15/16" with rear tire carrier	210"—213" 215½"—218½" with fenderwells and trunk rack	219¾" approx. 222½" with rear tire carrier



La Salle V-8, Series 345

(134-inch Wheelbase)

Style	List	Delivered
2-Passenger Coupe	$2195.00	———
2-Passenger Roadster	2245.00	———
2-Passenger Convertible Coupe	2295.00	———
5-Passenger Coupe	2295.00	———
5-Passenger Sedan	2295.00	———
5-Passenger Town Sedan	2345.00	———
7-Passenger Touring	2345.00	———
7-Passenger Sedan	2475.00	———
7-Passenger Imperial	2595.00	———
5-Passenger Sedanet	3245.00	———
5-Passenger Sedanet Cabriolet	3245.00	———
5-Passenger All-Weather Phaeton	3245.00	———
Chassis 134-inch Wheelbase	1900.00	———

Standard wheel equipment: Wood; tire size 6.50 x 19.

Extras

5 Wire wheels	$ 60.00
6 Wire wheels, fender wells, 2 spare tires and trunk rack	190.00
5 Demountable wood wheels	50.00
6 Demountable wood wheels, fender wells, 2 spare tires and trunk rack	190.00
5 Disc wheels	50.00
6 Disc wheels, fender wells, 2 spare tires and trunk rack	190.00

Above extra equipment carries 6.50 x 19 tires except La Salle 7-Passenger Touring, 7-Passenger Sedan and Imperial. For La Salle 7-Passenger Touring, 7-Passenger Sedan and Imperial use Cadillac V-8 extra equipment prices and tire sizes. Black side wall tires.

Cadillac V-8, Series 355

(134-inch Wheelbase)

Style	List	Delivered
2-Passenger Coupe	$2695.00	———
5-Passenger Coupe	2795.00	———
5-Passenger Sedan	2795.00	———
2-Passenger Roadster	2845.00	———
5-Passenger Town Sedan	2845.00	———
2-Passenger Convertible Coupe	2945.00	———
5-Passenger Phaeton	2945.00	———
7-Passenger Sedan	2945.00	———
7-Passenger Imperial	3095.00	———
5-Passenger All-Weather Phaeton	3795.00	———
Chassis 134-inch Wheelbase	2000.00	———
Chassis 152-inch Wheelbase	2200.00	———

Standard wheel equipment: Wood; tire size 6.50 x 19.

Extras

5 Wire wheels	$ 70.00
6 Wire wheels, fender wells, 2 spare tires and trunk rack	210.00
5 Demountable wood wheels	50.00
6 Demountable wood wheels, fender wells, 2 spare tires and trunk rack	190.00
5 Disc wheels	50.00
6 Disc wheels, fender wells, 2 spare tires and trunk rack	190.00

Above extra equipment carries 7.00 x 18 tires. Black side wall tires.

Cadillac V-12, Series 370

(140—143-inch Wheelbase)

Style	List	Delivered
2-Passenger Coupe	$3795.00	———
5-Passenger Coupe	3895.00	———
5-Passenger Sedan	3895.00	———
2-Passenger Roadster	3945.00	———
5-Passenger Town Sedan	3945.00	———
5-Passenger Phaeton	4045.00	———
2-Passenger Convertible Coupe	4045.00	———
7-Passenger Sedan	4195.00	———
7-Passenger Imperial	4345.00	———
5-Passenger All-Weather Phaeton	4895.00	———
Chassis 140-inch Wheelbase	3100.00	———
Chassis 143-inch Wheelbase	3200.00	———

Interiors all body styles by Fleetwood.

Standard wheel equipment: Wood; tire size 7.00 x 19. Black side wall tires.

Extras

5 Wire wheels	$ 70.00
6 Wire wheels, fender wells, 2 spare tires and trunk rack	240.00
5 Demountable wood wheels	50.00
6 Demountable wood wheels, fender wells, 2 spare tires and trunk rack	230.00

Above extra equipment carries 7.50 x 18 tires, white side wall, with black side wall tires optional.

Cadillac V-16, Series 452

(148-inch Wheelbase)

Fleetwood Custom Bodies

Style No.		List	Delivered
4302	2-Passenger Roadster	$5350.00	
4260	5-Passenger Phaeton	6500.00	
4380	All-Weather Phaeton	5750.00	
4476	2-Passenger Coupe	5800.00	
4276	2-Passenger Coupe	6850.00	
4381	5-Passenger Coupe	5950.00	
4235	2-Passenger Convertible Coupe	6900.00	
4361-S	5-Passenger Club Sedan	5950.00	
4161-S	5-Passenger Club Sedan	6950.00	
4330-S	5-Passenger Sedan	5950.00	
4330	5-Passenger Imperial (opera seats)	6300.00	
4130-S	5-Passenger Sedan	6950.00	
4130	5-Passenger Imperial (opera seats)	7300.00	
4355-S	5-Passenger Sedan Cabriolet	6125.00	
4355	5-Passenger Imperial Cabriolet (opera seats)	6350.00	
4155-S	5-Passenger Sedan Cabriolet	7125.00	
4155	5-Passenger Imperial Cabriolet (opera seats)	7350.00	
4375-S	7-Passenger Sedan (FF aux. seats)	6225.00	
4375	7-Passenger Imperial (FF aux. seats)	6525.00	
4175-S	7-Passenger Sedan (FF aux. seats)	7225.00	

Cadillac V-16—Continued

Style No.		List	Delivered
4175	7-Passenger Imperial (FF aux. seats)	$7525.00	
4312	Town Cabriolet (opera seats)	6525.00	
4212	Town Cabriolet (opera seats)	8750.00	
4320	Town Cabriolet (quar. windows)—(FF aux. seats)	6525.00	
4220	Town Cabriolet (quar. windows)—(FF aux. seats)	8750.00	
4325	Town Cabriolet (full leather quar.)—(FF aux. seats)	6525.00	
4225	Town Cabriolet (full leather quar.)—(FF aux. seats)	8750.00	
4391	Limousine Brougham (FF aux. seats)	6525.00	
4291	Limousine Brougham (FF aux. seats)	8750.00	
4264	Town Brougham (opera seats)	9200.00	
4264-B	Town Brougham (special cane work)	9700.00	

Standard wheel equipment: Wood; tire size 7.50 x 19. White side wall tires standard.

Extras

5 Wire wheels	$ 70.00
6 Wire wheels, fender wells, 2 spare tires and trunk rack	300.00
5 Demountable wood wheels	50.00
6 Demountable wood wheels, fender wells, 2 spare tires and trunk rack	280.00
5 Disc wheels	50.00
6 Disc wheels, fender wells, 2 spare tires and trunk rack	280.00

PRINTED IN U.S.A.

PRICE LIST

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La Salle V-8
Cadillac V-8
Cadillac V-12
Cadillac V-16

October 15, 1930

All prices f.o.b. Detroit

Subject to change without notice

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CADILLAC MOTOR CAR COMPANY

Detroit, Michigan, U.S.A.

All fenders and chassis black.

In addition, Fleetwood bodies in a variety of rich colors, lighter in shade, will be brought through periodically for stock. Bulletins will announce these.

Colors available on open types, All-Weather types, and Sedanette types will be announced periodically.

UPHOLSTERY

EIGHT rich exclusive Fleetwood Doeskin Suede broadcloths by Wiese in subdued colorings harmonizing with any exterior color.

Exclusive Fleetwood Wiese broadcloths:

Weise 2969	Green Gray
Weise 2970	Maroon Taupe
Weise 2971	Tan
Weise 2972	Silver Gray
Weise 2973	Blue Gray
Weise 2994	Tan Taupe
Wiese 3288	Dark Gray
Wiese 3363	Dark Taupe

Optional in all enclosed drive and transformable types.

Three special Venetian mohairs of short nap.

Exclusive Fleetwood Venetian mohairs:

108-T	Green
109-T	Gray
110-T	Taupe

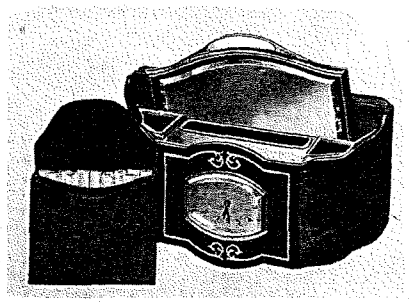
Optional in all enclosed drive and transformable types.

The first two blend well with complementary body colors, Taupe, because of its neutral shade, going well with any color.

Fifteen special exclusive Fleetwood Aero leathers by Radel. These are lightweight, soft, pliable, and luxurious, four being specified for stock with the balance optional without extra charge, with a reasonable added time allowance.

Special Radel Aero leathers:

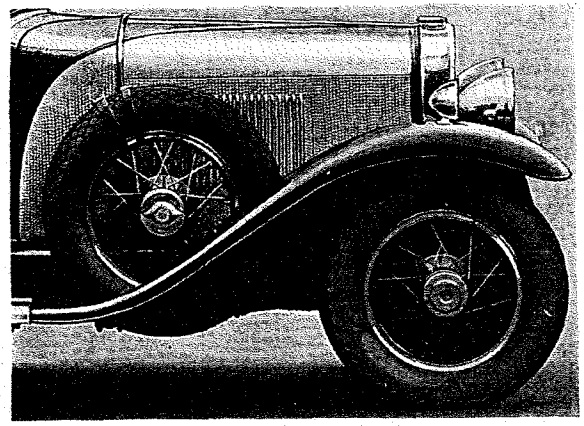
5885	Silver Gray
451	Pearl Gray
2646	Blue Gray
5897	Green Blue
68	Blue (Standard)
6016	Dark Blue
9205	Deep Maroon
5875	Rich Maroon
4339	Green (Standard)



Vanity cases are designed exclusively for Fleetwood bodies and contain 8-day clock, mirror, leather cigarette case, and two ash receivers

6019 - - - - - - - - - - - - - Soft Green
6012 - - - - - - - - - - - - - Dark Green
9128 - - - - - - - - - - - - - Light Brown
9131 - - - - - - - - - - - - - Dark Brown
743 - - - - - - - - - - - - - Tan (Standard)
2645 - - - - - - - - - - - - - Black (Standard)

Optional in All-Weather Phaeton, Sedanette, and open types.



This picture shows a hood with damaskeen finish, a unique and attractive treatment

Six weatherproof Bedford cords by Wiese. The corded fabrics are used for seats with plain material to match for head linings. The waterproof feature of these materials makes them especially desirable for All-Weather types.

Special waterproof Wiese Bedford cords:

Wiese 2659-F, 2759-F - - - - - - - Green Gray
Wiese 2661-F, 2761-F - - - - - - - Brown Gray

Wiese 2662-F, 2762-F - - - - - - - - - Gray
Wiese 2663-F, 2763-F - - - - - - - - Blue Gray
Wiese 2665-F, 2765-F - - - - - - - Maroon Taupe
Wiese 2666-F, 2766-F - - - - - - - - Tan Taupe

Optional in All-Weather Phaeton and Sedanette types.

With the wide variety offered in the regular exclusive Fleetwood upholstery materials, we recommend that cloths be selected from Wiese collection No. 61 *only when absolutely necessary*, as there will be delays involved in securing curtains and other trimming materials to match. These delays are avoided in the case of the regular Fleetwood materials.

Enclosed drive types and transformable types.

Eight exclusive Fleetwood Wiese broadcloths—optional.

Three exclusive Venetian mohairs—optional.

Any material in current Wiese Collection No. 61—optional.

All-Weather and Sedanette types:

Fifteen Fleetwood Radel Aero leathers—optional.

Six weatherproof Fleetwood Wiese Bedford cords—optional.

Open types:

Fifteen Fleetwood Radel Aero leathers—optional.

(In the case of All-Weather Phaetons, Sedanettes, and open types, four of the exclusive Fleetwood Radel Aero leathers in the sample book will be specified for stock. The balance are optional with reasonable added time allowance.)

CADILLAC 370 · CONDENSED SPECIFICATIONS

POWER PLANT

ENGINE—Compensated, twelve-cylinder, valve-in-head, V-type. Forty-five-degree angle between cylinder blocks. Engine and transmission in unit; five-point suspension; all supports mounted in rubber. Piston displacement, 368 cubic inches. Bore, 3⅛ inches. Stroke, 4 inches. Horsepower, N.A.C.C. rating, 46.9; actually, 135.

CRANKCASE—Aluminum alloy.

CRANKSHAFT—Diameter, 2⅝ inches; length to outer ends of front and rear bearings, 31 3/16 inches. Supported on four steel-backed babbitt main bearings. Crank throws, 120 degrees apart. Provided with compensators and vibration dampener.

CYLINDERS—Cast in blocks of six, with detachable heads. High-compression heads standard.

PISTONS—Molybdenum cast iron; four rings, three above wrist pin and one below; two lower rings, special oil regulating type.

CONNECTING RODS—Chrome molybdenum steel; side by side, two on each crank pin. Rods are gun drilled for pressure lubrication of wrist pins. Bearings, 2½ inches by 1⅛ inches. Babbitt in rods at lower ends.

CAMSHAFT—Single, hollow shaft with 24 cams, supported on four bearings. Driven from crankshaft by silent chain.

VALVES—Intake, 1 5/16 inches clear diameter, silichrome steel; exhaust, 1 5/16 inches clear diameter, silichrome steel, 11/32-inch lift. Mechanism enclosed, fitted with automatic valve silencers. Valve stems automatically lubricated.

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GASOLINE SYSTEM

CARBURETORS—Two separate induction systems, one for each bank of cylinders, Cadillac design and manufacture, equipped with intake mufflers. Uniform distribution with maximum efficiency and economy. Automatic thermostatic mixture control. Intake headers exhaust heated.

SUPPLY—Twenty-two gallon tank. Vacuum feed. Vacuum created by a special vacuum pump to insure positive feed under all conditions. Large accessible strainer on vacuum tank.

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COOLING SYSTEM

WATER COOLING—Capacity, 6½ gallons. Forced circulation by centrifugal pump driven by a silent chain from the crankshaft. Cylinder blocks independently fed from double-outlet pump.

TEMPERATURE CONTROL—Thermostatically controlled by radiator shutters with vertical balanced shutter blades.

RADIATOR—Copper with cellular core of latest design with short fins and deflected centers. Casing, chromium plated on polished nickel.

FAN—Diameter, 20⅝ inches; six blades; belt driven by pulley mounted on end of crankshaft. Fan bearing lubricated through high-pressure alemite fitting.

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LUBRICATING SYSTEM

ENGINE LUBRICATION—Pressure system with gear pump conveys oil under pressure to all main bearings, connecting rod bearings, wrist pins, camshaft bearings and valve gear. Pressure is controlled by an automatic pressure regulator. Oil level indicator is located on left-hand side of crankcase at center.

CRANKCASE VENTILATION—An exclusive Cadillac thermostatically controlled system which prevents dilution of lubricating oil from unburned gasoline and from condensation of water vapors produced in combustion. Ventilator discharges below engine mud pans.

OIL FILTER—An effective filtering device which removes from the oil any impurities in solid form.

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ELECTRICAL SYSTEM

IGNITION—Incorporates two circuits, one for each block of cylinders. Cadillac-Delco-Remy high-tension system with two timer contact arms actuated by six-lobed cam. Jump-spark distributor.

IGNITION LOCK—Coincidental theftproof ignition and transmission lock, operated from instrument board.

GENERATOR—Two-pole Cadillac-Delco-Remy type, mounted at the front of the engine at the right of the crankcase. Positive drive by chain from crankshaft. Thermostatic and third brush control of charging current.

STARTING MOTOR—Cadillac-Delco-Remy separate six-pole unit; double reduction between motor and flywheel. Mounted along right side of transmission.

BATTERY—Delco, 130-ampere hour, 15-plate, six-volt, three-cell. Mounted on right side of car in battery box set into front fender alongside frame side member.

HORNS—Two high-frequency vibrator horns of exceptional tone carried on head lamp brackets at each side of radiator. Concealed connections.

LIGHTING EQUIPMENT—Two head lamps with tiltable light beams controlled from steering wheel, fluted lenses, 21-c.p. double-filament bulbs. Parking lamps, 3-c.p. bulbs. Parking lamps mounted on top of front fenders. Two combination stop and tail lamps at rear, one located on each rear fender. Step lights light automatically with opening of doors.

OPERATING CONTROLS

CLUTCH—Dry disc plate type. Two steel driven discs, ten inches in diameter, faced with compressed asbestos fabric, driven by three cast-iron plates to which are attached all springs, levers, and other parts of clutch, with exception of clutch thrust bearing, which is supported by a sleeve bolted to the transmission case.

TRANSMISSION—Special Cadillac Syncro-Mesh transmission, giving noiseless, smooth gear shifting at all speeds. Selective type with three speeds forward and one reverse. Nickel steel gears and shafts. Faces of gear teeth ground on special grinding machine to obtain silent operation. Mechanism contained in cast-iron case.

GEAR SHIFT—Center gear shift.

SERVICE BRAKES—Safety-mechanical brakes. Special design. Entirely enclosed, giving maximum efficiency in all weather. Mechanically operated, mechanism mounted on 15 roller bearings, internal on both front and rear wheels. Division of pedal pull automatically proportioned between front and rear systems. Front brakes equalized when straight ahead, outer brake released on turn. All brakes are 15 inches in diameter. Vacuum brake assister.

HAND BRAKES—Internal on rear wheels.

STEERING GEAR—Cadillac design, hourglass worm-and-sector, completely adjustable. Mounted on tapered roller bearings. Reduction, 17 to 1. Steering wheel, 19 inches in diameter, of special safety type, employing a die-cast aluminum rim and spider with steel reinforcement, pyralin finish. Steering system completely harmonized by means of special modulator at the forward end of the left front spring, consisting of a flexible shackle held by four coil springs, completely eliminating all shimmy, front end tramp, and road shocks.

ENGINE CONTROLS—Accelerator at right of brake pedal. Hand throttle built into central portion of steering wheel. Spark control, pull type on instrument board.

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MISCELLANEOUS

AXLES—Rear axle: Cadillac make, ¾-floating with special alloy steel axle shafts and gears; spiral bevel gears mounted on large bearings. Front axle: reverse Elliott type, drop-forged steering spindles and arms; steering spindles have adjustable bearings at both ends. Parallel rod has spring compensated ball-and-socket connections at end.

DRIVE—Hollow steel drive shaft, 2½-inch diameter in center, tapering to $2\frac{1}{16}$ inches at each end, turns in torque tube which completely seals assembly. Rear end of drive shaft rigidly connected to rear axle by splined sleeve; front end to transmission shaft through universal joint. Torque tube is bolted to differential carrier at rear, and front end pivoted in ball-and-socket joint at rear of the transmission. Transmits drive of rear wheels to chassis and absorbs torque reactions due to acceleration and brakes.

FRAME—Side bar channel section with wide top flange, carbon steel; maximum depth, 8 inches; width, 29 inches in front, 44¼ inches in rear; flange width at top, 3 inches; at bottom, 2¼ inches.

SPRINGS—Semielliptic system of suspension with rear springs underslung. All shackles of rear springs, compression type. Front springs, 40 inches by 2¼ inches; rear, 58 inches by 2¼ inches. Double-action shock absorbers of hydraulic type, front and rear, with both upward and downward dampening action, give greatly improved riding qualities.

GEAR RATIOS—Standard, 4.54 to 1. Optional, 4.91 to 1 and 4.07 to 1.

WHEELS—Artillery type, twelve hickory spokes with steel felloe. Adjustable ball bearings at front, demountable hot-rolled, split-type rim with six lugs. Large steel hub with twelve bolts. Disc, wire, or demountable wood wheels obtainable at additional cost.

TURNING RADIUS—At tires, 26 feet 8 inches.

WHEEL BASES—140 inches and 143 inches. Tread: rear, 59½ inches; front, 57¼ inches.

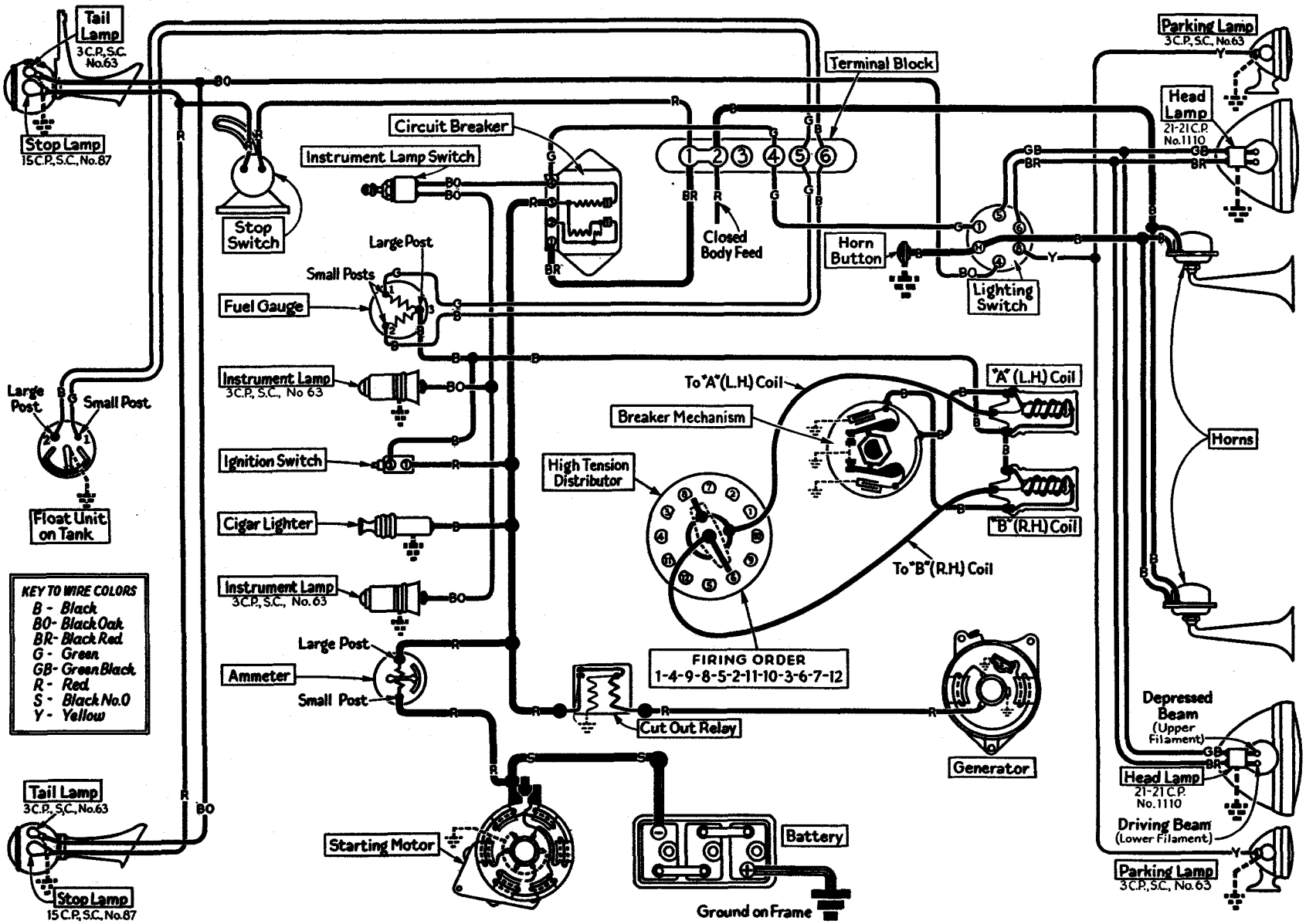
TIRES—7.00-19. (Disc, wire, and demountable wood wheels, 7.50-18.)

TOOLS—Complete set of tools in special fabric holder, placed in rainproof box.

INSTRUMENT BOARD—Instruments arranged in group assembly. Fitted with windshield wiper control, spark control, oil-pressure gauge, button-controlling carburetor enriching device, switch for instrument board lighting independent of switch on steering column, speedometer, ammeter, electrically operated gasoline gauge, 8-day clock, coincidental transmission and ignition lock, engine temperature indicator, and cigar lighter.

FENDERS—One-piece, full-crown, wide type.

SECURITY-PLATE GLASS—Is fitted in all models, both open and closed, for all windshields, doors, and windows.



The V-12 Electrical Circuits are arranged as shown in this Wiring Diagram.