AUTHORIZED
VALVE IN HEAD
Buick
MOTOR CARS
SERVICE

ONLY A BUICK DEALER CAN GIVE GENUINE BUICK SERVICE

Buick

OWNER'S MANUAL

1937

1937 BUICK OWNER'S MANUAL

"How the 1937 Buick operates."

"Why it operates as it does."

"What you can do to keep it operating at its best."

BUICK OWNER'S MANUAL

C.O. SERIES.

LENDRUM & HARTMAN, LTD.,
SOLE CONCESSIONAIRES,
GREAT BRITAIN & IRELAND.

SHOWROOMS & HEAD OFFICE:
BUICK HOUSE,
ALBEMARLE STREET,
LONDON, W. 1.

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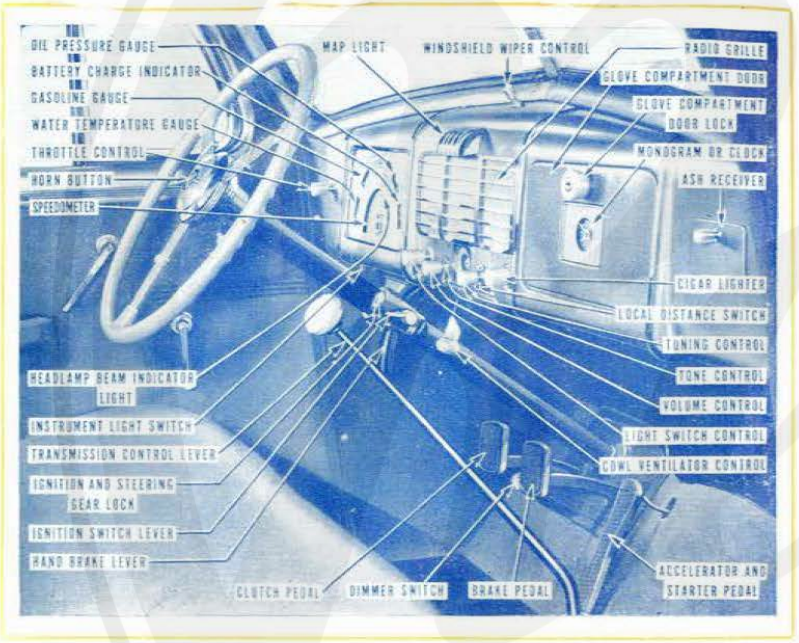
OLD OAK LANE,
WILLESDEN,
N.W. 10.



Driving Compartment

In order that you will be able to quickly pick out those items that have reference to the upkeep of your car, we have printed the service instructions in red, like this paragraph.

Some Canadian models have two different keys — separate one for cubby hole. Please make record both numbers.

BREAKING IN YOUR CAR

When breaking in your new Buick, it is advisable that you control your driving speeds during the first 1000 miles of operation in order that the closely fitted parts will be able to run in and fit together better.

It is suggested that you do not drive above 50 miles an hour for the first 250 miles of operation. For the next 250 miles, somewhat higher speeds may be used for short distances after the engine has been warmed up for a period of 10 or 15 minutes. Warming the engine up will insure uniform temperature control and better lubrication of the important working parts.

Sustained high speed driving should be avoided until after the car has been driven at least 1000 miles.

OPERATION OF LOCKS

Locks

Your Buick is equipped with two keys. These keys, however, are identical. Each of them fits the various locks illustrated at right.

You will notice that there is a small, removable, numbered disc in the top of the keys. Push out this disc and retain it in some safe place. Then, in the event you should misplace both keys, you can obtain others promptly by simply referring to that number in your order.

IMPORTANT: Always lock your car whenever you park it. The lock on the steering post, locks both the ignition and the steering wheel, thereby making your Buick doubly theft-proof.

NUMBERS ON YOUR BUICK

There are 2 numbers on your Buick that identify it as your own. You are required to record these numbers when you register your car in applying for license plates. The exact locations of these numbers are clearly shown in illustration on next page.

Top inset shows location of motor number
Lower inset shows location of serial number

Canadian chassis number to be found on brass plate mounted on the right hand forward side of dash under bonnet. Engine number also given on plate but will be found on engine as designated in book.

SERVICE OPERATIONS THAT SHOULD BE DONE REGULARLY

Have Your Buick Dealer Do These Things

EVERY WEEK—Have tires checked.

EVERY TWO WEEKS—Have battery checked.

EVERY 1,000 MILES—Chassis lubrication. See lubrication chart at back of book or take car to Authorized Buick Service Station.

EVERY 2,000 MILES—Have transmission and rear axle checked for lubricant.

EVERY 2,000 MILES—Have air cleaner filter cleaned. (If you drive regularly on extremely dusty roads, ask your dealer about the Heavy Duty Air Cleaner).

EVERY THREE MONTHS—Have engine oil changed.

EVERY SPRING—Have transmission and differential completely drained and refilled with correct lubricant for hot weather. Have cooling system drained and cleaned. Front wheel bearings should be lubricated. Shock Absorbers and steering gear should be filled. Better see your Authorized Buick Service Station on these last two items.

EVERY FALL—Have engine conditioned for Winter driving. Have transmission and differential completely drained and refilled with correct lubricant for cold weather. Have cooling system drained and cleaned. Put in antifreeze (in freezing climates).

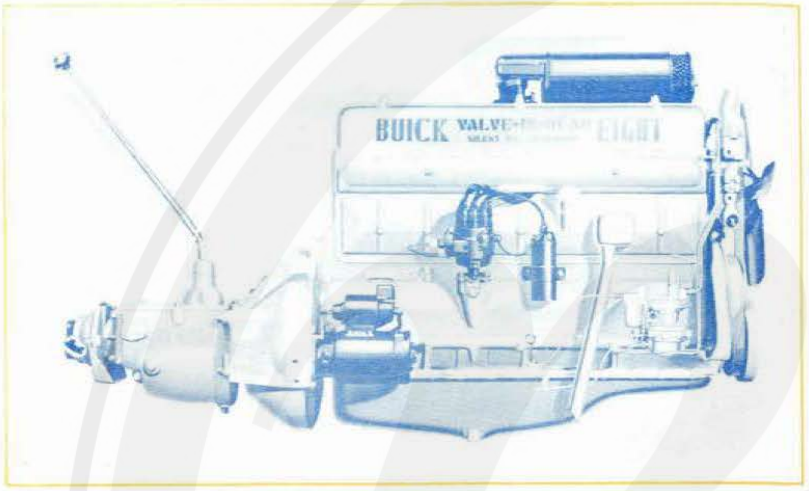
Front wheel bearings should be lubricated.

Shock absorbers and steering gear should be filled.

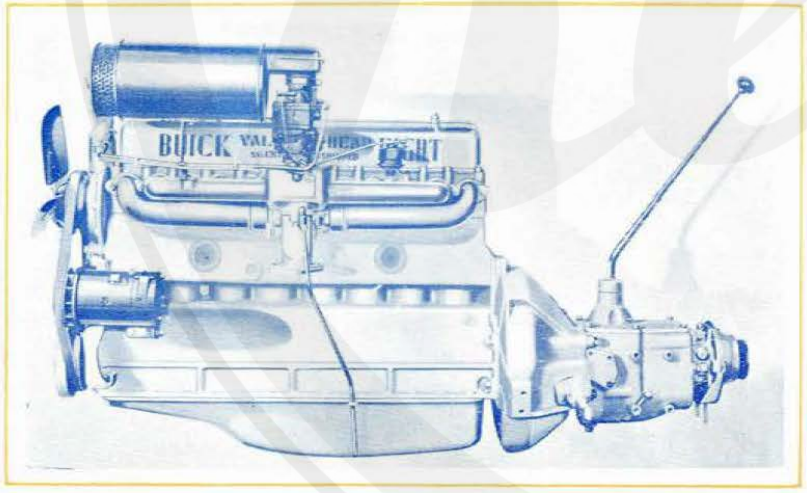
Better see your Authorized Buick Service Station on these last two items.

EVERY 5,000 MILES—An engine tune-up is advisable at about this mileage.

EVERY 10,000 MILES—Clean, adjust or renew spark plugs.



Series 60-80-90 Engine—Right Side



Series 60-80-90 Engine—Left Side

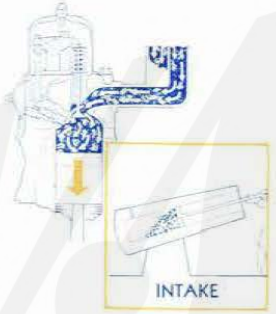
See page 24 for illustrations of 40 Series Power Plant.

THE BUICK ENGINE

The engine in your Buick is the **valve-in-head** type.

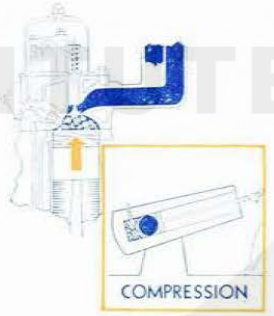
It is interesting to see why this valve-in-head design develops more power than other types of engines. You will find a simple explanation in the step-by-step diagrams and descriptions below.

In the valve-in-head engine the mixture drops freely from the manifold down into the combustion chambers through unrestricted intake passages. It is, of course, much easier for fuel mixture to travel downward than it is to lift it against gravity.



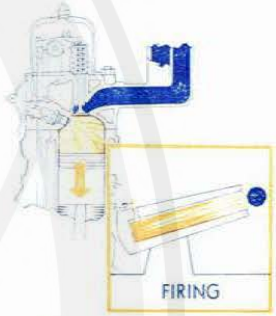
In a cannon, the charge is dropped directly into the combustion chamber

The combustion chambers are so compact that they reduce heat loss to a minimum.



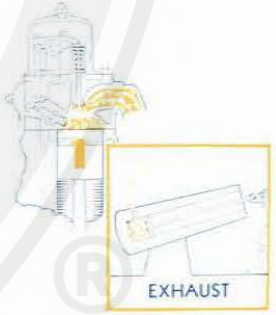
In a cannon, the charge is packed directly behind the ball

In the valve-in-head engine, full force of the exploding gases are concentrated directly on top of piston. Naturally, the full force of a blow has the greatest driving power.



Likewise in a cannon, full force of exploding charge gives ball greatest driving power

The exhaust valves are also directly above the piston. As a result the spent gases escape quickly and completely, thus preventing dilution of the incoming charge.



Also in a cannon, because of the absence of sharp bends, spent gases are quickly removed

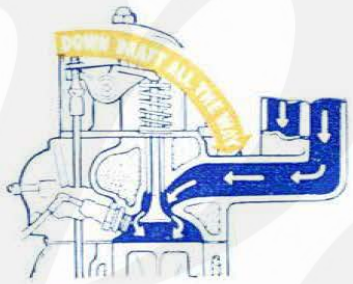
The above illustrations have clearly shown how the valve-in-head engine "breathes" easily and deeply and why it develops approxi-

mately ten per cent more power than other engines of equal size and compression.

The gasoline engine derives its power from the heat developed through the burning and expansion of the gas in its cylinders. Therefore, it is obvious that the engine which utilizes the most heat units in each charge of fuel will show the greatest efficiency and economy in service.

This is where the valve-in-head engine has the "edge" over other types of gas engines.

Ordinary engine manifolding



Valve-in-head engine manifolding

All records of speed and durability for land, air and sea are held by vehicles powered by valve-in-head engines

STARTING THE ENGINE

Buick starting is automatic. You simply turn on the ignition, step on the accelerator and the engine starts immediately. Or, if both feet are engaged, the engine can be started by pulling out the throttle on the instrument panel.

There is no choke lever to handle. Consequently, it is practically impossible to starve or flood the engine when it is cold.

This automatic starting is provided by the following units: Solenoid Starter Engagement (with dual control accelerator pedal and hand throttle), Automatic Choke, Automatic Idle Control and Automatic Heat Control.

ACCELERATOR AND HAND THROTTLE—DUAL CONTROL

In depressing the accelerator pedal or pulling out the hand throttle, a solenoid automatically meshes the starter gear with the teeth on the flywheel, before the starter operates. This positive starter engagement eliminates the danger of chipping or burring the flywheel and starter teeth.

When the ignition switch is in "off" position, the starter mechanism is inoperative. Therefore, it is impossible to use the starter to move the car and thus run down the battery. Likewise, as soon as the engine starts, the solenoid control circuit is automatically opened, permitting the starter gear to disengage from the flywheel.

Should the engine stall for any reason with the accelerator depressed, lift your foot completely off the pedal before restarting the engine. This allows the vacuum switch to return to position and make the starting contact. The same is true when operating the starter from the hand throttle—it must be pushed in fully before another start can be made. This is to prevent engagement of the starter with the engine running.

You can see from the above that just as soon as the engine is firing regularly and evenly the starter gear is disengaged automatically. So it is not necessary for the driver to withdraw his foot from the accelerator pedal, except to regulate the speed of the engine.

THE BUICK AUTOMATIC CHOKE

Another important feature of Buick's starting system is the Automatic Choke. This simple device eliminates all bothersome manual choking and automatically measures the air fuel mixture strictly in accordance with the engine's needs.

A thermostat located in the choke body on the side of the carburetor automatically controls the opening and closing of the choke valve.

When the engine is cold it gives a rich mixture and when the engine warms up the thermostat opens the choke valve to give best mixture for efficient engine operation.

The Buick Automatic Choke not only makes starting easier and quicker but also gives protection against fuel waste and excessive engine wear.

For example, too rich a mixture causes excessive fuel consumption. Furthermore, if the mixture is too rich, unburned gasoline will run

past the pistons, removing the lubricant from the cylinder walls. On the other hand, a lean mixture makes the engine stall, and causes excessive drain of the battery through frequent starting. The Buick Choke automatically prevents the mixture from becoming too rich or too lean.

You probably have noticed there is no spitting or choking when you accelerate your new Buick, even before the engine is warmed up. This is due to the operation of the Automatic Choke which furnishes a real safeguard for smooth operation at all times and under all condition.

AUTOMATIC IDLE CONTROL

Automatic Idle Control of the throttle is a feature on all Series of the 1937 Buicks. This unit, which is thermostatically operated, furnishes a fast idling speed for a cold engine and a normal idling speed for a warm engine. This feature greatly contributes to the ease of cold weather starting by insuring correct idling speed under all operating temperatures.

AUTOMATIC HEAT CONTROL

The Automatic Heat Control on the intake manifold is also thermostatically operated. This unit quickly warms up the intake manifold riser in cold-weather operation and maintains efficient mixture temperatures of the manifold under all driving conditions.

It pre-heats and vaporizes the inrushing gas, which, in turn, gives better engine performance and economy of operation.

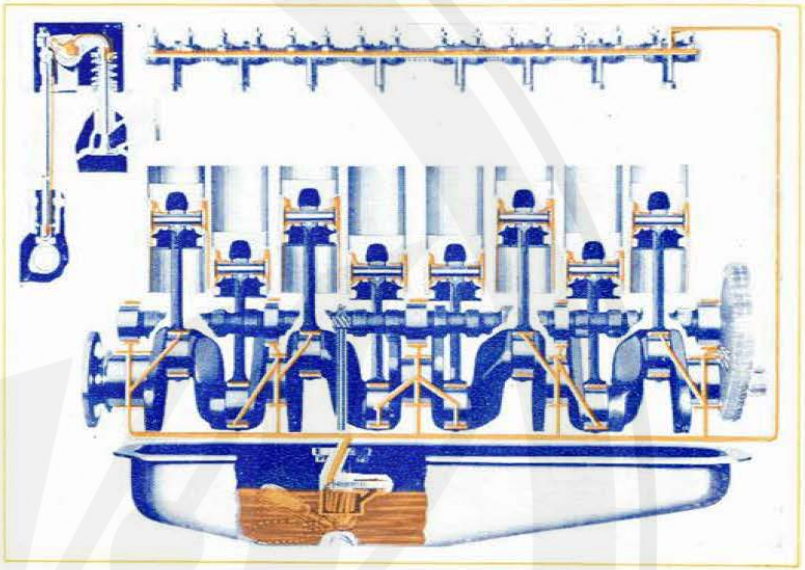
CAUTION: The exhaust fumes of all gasoline motors contain an extremely poisonous gas known as carbon monoxide. It is colorless, tasteless and odorless.

Open your garage doors before starting your engine and always keep them wide open whenever the engine is running.

ENGINE LUBRICATION

As the power and speed of engines have increased, a greater need has developed for better lubrication, lubrication that will positively protect the hundreds of tighter-fitting, faster-moving engine parts.

The burden of this vital job necessarily falls on the system by which oil is distributed throughout the engine. Therefore, to assure your Buick engine giving long life and dependable service, Buick engineers have taken special pains to develop an oiling system that does a more than adequate job.



Buick's Efficient Pressure Oiling System

Buick uses what is known as a pressure type oiling system—that is, one in which oil is forced by a gear driven pump to all main bearings, connecting rod bearings, camshaft bearings and rocker arm shaft bushings. In addition, it forces oil in a positive flow to such parts as the timing chain, piston pins and bushings and valve lifter mechanism, thus cushioning every rotating and moving part with a film of oil.

Floating Oil Pump Screen and Inlet Pipe

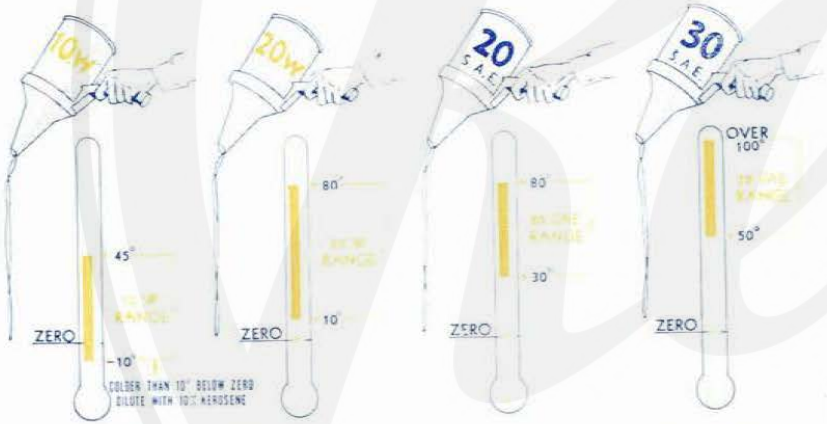
To make certain that only clean oil is drawn into the pump, a floating oil screen is used. This oil screen is connected to the oil inlet pipe, which is pivoted at the pump. Thus, regardless of the oil level, the oil is always drawn off the clean top surface—above any impurities and sedi-

ment which might collect at the bottom of the pan where it is flushed out at time oil is changed.

In the summer months, oil should be selected on the basis of the anticipated average temperature during which it is to be used.

During the fall and winter months, an oil should be selected which agrees with the LOWEST TEMPERATURE LIKELY TO BE ENCOUNTERED. Otherwise, if too heavy oil is used, cranking and starting difficulties may be encountered when the temperature drops.

The viscosity of a lubricant is simply a measure of its body or fluidity. For instantce, a 10W oil will flow more freely than an S.A.E. 30 oil. The S.A.E. viscosity numbers constitute a classification



Grade of oil best suited for various air temperatures is shown in above illustration

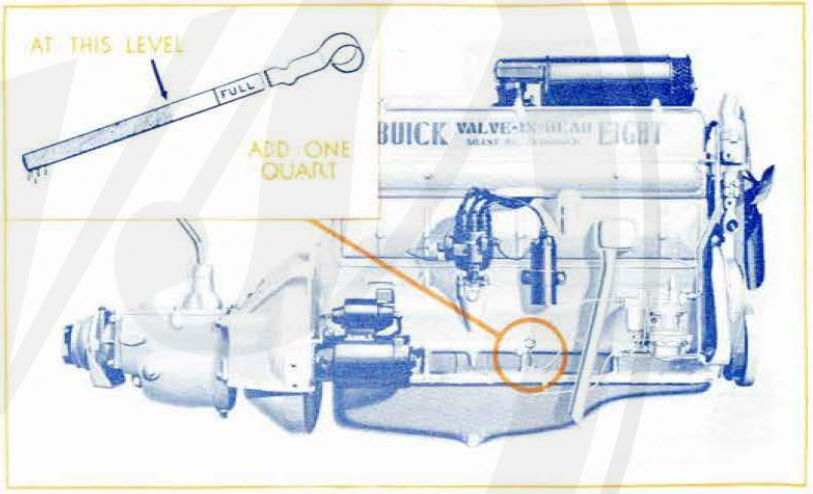
of lubricants in terms of viscosity, or fluidity, but without reference to any other characteristics or properties. THE REFINER OR MARKETER SUPPLYING THE OIL IS RESPONSIBLE FOR THE QUALITY OF ITS PRODUCTS. HIS REPUTATION IS THE BEST INDICATION OF QUALITY.

The S.A.E. viscosity numbers have been adopted by practically all oil companies and no difficulty should be experienced in obtaining the proper grade of lubricant to meet seasonal requirements.

It is recommended that you change the engine oil every 2,500 to 3,000 miles or every three months, whichever should occur first.

Oil capacity of the different Buick models is as follows:

Special Series 40	6 quarts
Century Series 60	8 quarts
Roadmaster Series 80	8 quarts
Limited Series 90	8 quarts

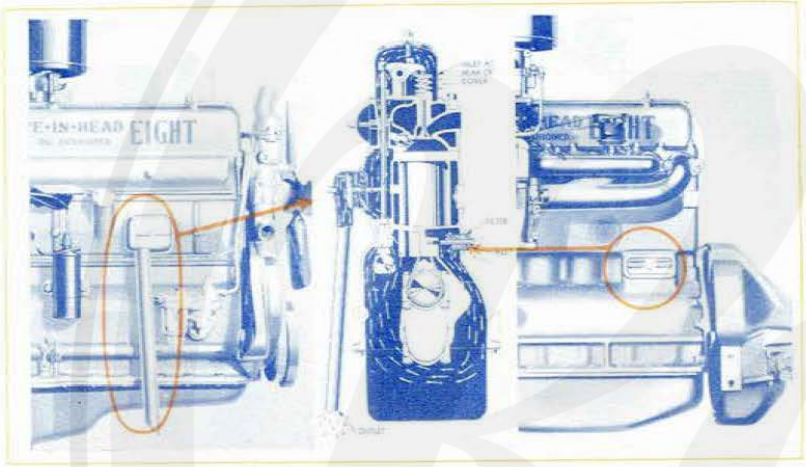


Oil Measuring Gauge

CRANKCASE VENTILATION

The purpose of Buick's crankcase ventilation is to keep the oil in a "healthy" condition and thereby increase the life of the engine.

Were it not for this crankcase ventilation system it would be advisable to change the oil every 500 miles, even though you used



Location and Sectional View of Crankcase Ventilation "Inlet" and "Outlet"

the finest engine oil available on the market. Actually, as a result of this ingenious device, it is now possible for you to drive your car 2,500 to 3,000 miles or a period of ninety days before it is necessary to change the oil.

HOW THE VENTILATING SYSTEM WORKS

A. Removal of Fuel Vapors

As fresh gases are drawn into the combustion chambers when starting the engine, a small amount of gas may work past the rings and pistons and travel into the crankcase where it mixes with the oil and dilutes it.

The ventilator system provides sufficient circulation of air within the crankcase to carry away the gas vapors and thereby keep the body of oil in a good condition.

B. Removal of Water From Crankcase

Hydrogen is formed during combustion and combines with the oxygen of the inrushing air and forms water. Strange as it may seem, slightly more than a gallon of water is "manufactured" for each gallon of gasoline burned in a gas engine.

This water is in the form of a vapor and the greater percentage of it passes through the exhaust system. (Perhaps you have noticed an occasional drop of water from the exhaust of your car when it is

For maximum performance a LEAD TREATED Spirit such as B.P. Ethyl or Esso Ethyl is recommended.

running.) This is a perfectly natural condition. A slight percentage of this vapor, however may sometimes find its way past the pistons and rings down into the crankcase where it condenses into water and may freeze in winter thereby interferring with the lubrication system.

When the engine warms up the water again becomes a vapor and is carried through the outlet of the ventilator system.

C. Removal of Acid Fumes

The natural sulphur found in gasoline when burned forms sulphur oxide. In the presence of water this sulphuric oxide, but for the crankcase ventilator system, would dissolve in the water and form sulphuric acid in the crankcase.

Sulphuric acid is a very strong chemical and if permitted to remain in the crankcase would corrode and etch the accurately machined parts which are fitted to close limits.

The Buick crankcase ventilator removes these acid fumes before they can harm the engine.

AUTOMATIC TEMPERATURE CONTROL OF THE BUICK COOLING SYSTEM

Since a gas engine develops its power from the heat generated by the burning and expansion of gases, the important thing, from a cooling standpoint, is to see that temperatures throughout the engine are properly controlled.

It has been proven that the engine functions best with the cooling solution temperatures ranging from 140° to 180°, although it does no harm if the engine temperature goes to 200° under extremely hot driving conditions. We have outlined below the manner in which the cooling system operates in order that you may have a better appreciation of how to care for it to insure maximum efficiency, long life and dependability.

Why Automatic Temperature Control?

It is desirable to have Automatic Temperature Control for the following reasons:

A. If an engine runs too cold, it will not develop the maximum power and economy out of each gallon of fuel.

B. If the engine runs too hot, (in addition to the above) the high temperatures generated within the engine will shorten engine life.

End View of Engine

These two requirements are directly opposed to each other. It is necessary to have considerable heat concentrated around the combustion chamber for maximum power and economy. Yet, it is also desirable to keep other sections of the engine at cooler temperatures. The Buick Temperature Control provides a means of meeting both of these requirements in a way that will increase the life of your engine and, at the same time, give better engine performance.

Here is how the cooling system in your Buick functions:

As you start the engine, the water circulates within the engine without going through the radiator. This is due to the thermostatically controlled by-pass type of water temperature control. (See illustration on page 19).

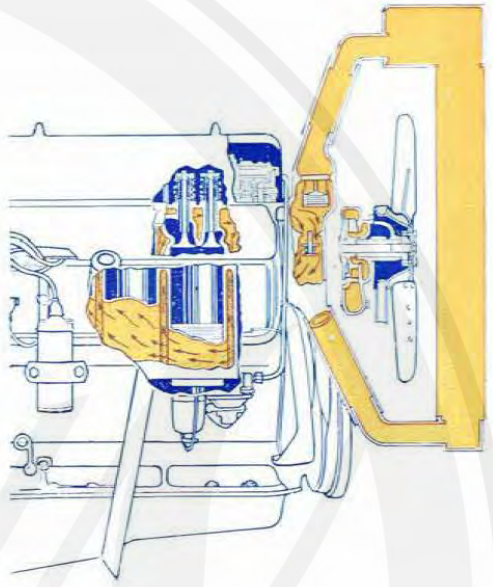


Illustration shows how water circulates within the engine when thermostat is closed

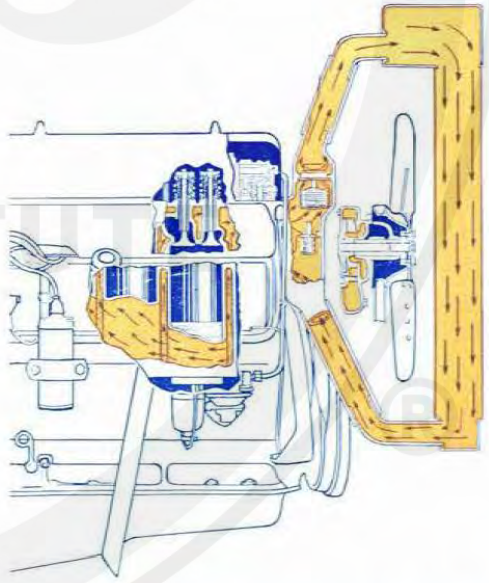


Illustration shows water circulation through radiator and engine with thermostat open

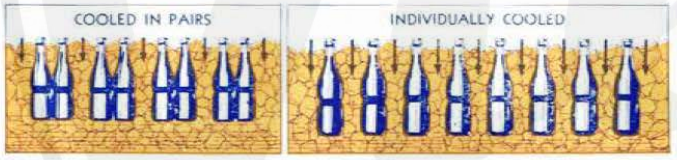
This localizing of water circulation within the engine is desirable in order to have a quick and uniform warm-up. When a temperature of approximately 150° is reached, the thermostat opens and allows the water to circulate in a normal manner through the radiator as well as the engine. (See illustration on page 19.)

Ordinary valve seats cooled in pairs

Buick valve seats individually cooled

Cylinders cooled in pairs

Buick cylinders individually cooled



The water is kept circulating by a heavy-duty water pump which is built in the front of the cylinder block and driven by a V-type belt. Note, too how Buick cools all cylinders individually so that the correct temperature control of these important parts will be maintained. This construction is not used by all manufacturers.

Buick also individually cools all valve seats to insure uniform valve operation, as the comparative valve diagrams show. The reason for cooling valve seats individually is to give efficient valve operation and long life regardless of car speed.

DRAINING AND CLEANING OF COOLING SYSTEM

To drain the cooling system thoroughly, open both drain valves provided for this purpose. One drain valve is located in the lower radiator fitting and the other in the right side of the cylinder block at the rear (See illustration).

Upper inset shows drain valve in engine. Lower inset shows drain valve in lower radiator fitting

It is advisable to have the cooling system drained and cleaned twice a year. This can be done when the anti-freeze is added in the fall and removed in the spring.

Do not use chemicals which loosen scale unless you reverse-flush the radiator, because if scale is loosened it may plug the radiator water passages. It is best to have this method of cleaning done by an authorized Buick dealer.

Flushing with clean water is sometimes helpful in getting rid of fine rust which remains in suspension when agitated.

ANTI-FREEZE SOLUTIONS

The available commercial materials for anti-freeze are:

General Motors Anti-freeze
Alcohol (denatured)
Glycerine
Ethylene Glycol (Prestone)

These are all satisfactory if used in accordance with the instructions issued by the anti-freeze manufacturer.

All have several good points and drawbacks. Your Buick dealer will be glad to assist you in selecting an anti-freeze which will meet your particular requirements.

CAUTION: NEVER POUR COLD WATER INTO RADIATOR WHEN WATER CONTENT IS EXTREMELY LOW AND THE ENGINE HOT, SUCH A SUDDEN CHANGE IN TEMPERATURE MAY RESULT IN CRACKING THE WATER JACKETS. IT IS ADVISABLE TO ALLOW THE ENGINE TO COOL FOR TEN OR FIFTEEN MINUTES BEFORE ADDING WATER.

TESTING THE FREEZING POINT OF ANTI-FREEZE SOLUTIONS

Only a "Universal" hydrometer can be used to determine the freezing point of different types of anti-freeze solutions at various temperatures. Errors as great as 30° F. can be made unless the temperature of the solution is taken into consideration.

When you mix various types of anti-freeze it will not be possible to read the freezing point of the mixture, so you should not start with one type and add another to the solution.

Cooling System Capacities:

Special Series 40 pts.	Century Series 60 pts.	Roadmaster Series 80 pts.	Limited Series 90 pts.
26½	31	31	31

The following table shows quantity of anti-freeze required to protect to indicated temperatures.

Methanol or Denatured Alcohol			G. M. Anti-Freeze	
Series 40 pts.	Series 60-80-90 pts.	Freezing Point	Series 40 pts.	Series 60-80-90 pts.
8½	10⅝	+10° F.	10⅝	13
10	12¾	0° F.	13½	16½
11⅞	15	−10° F.	16	19¾
13¾	17	−20° F.	18	22
16⅝	21⅓	−30° F.	19½	23½

ANTI-FREEZE SOLUTIONS THAT YOU SHOULD NOT USE

Salt solutions	Oils	Honey
Sugar solutions	Glucose	Kerosene

Each of these anti-freeze solutions have harmful effects on the system. Some will corrode the inside of the system, others will clog the small passages, and all oils and many chemicals will attack rubber, necessitating early replacement of hose connections.

Use only Lendrum & Hartman Radiator Cleaning Fluid — can be obtained from your local Buick Dealer or Concessionaires.

TIVES

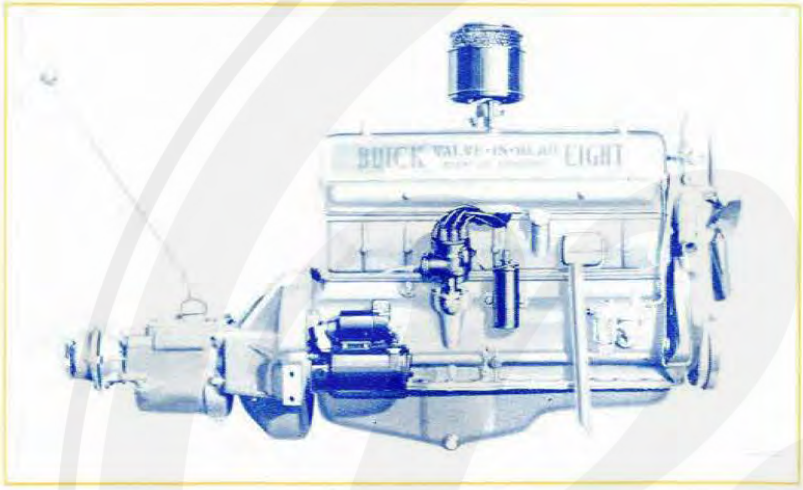
namator rust preventatives coat the metal surfaces in the cooling system, thereby preventing rust and corrosion without affecting its efficiency.

These have no anti-freeze properties and can be used with all anti-freeze solutions. These rust preventatives are available at your Buick dealer's, and should be added to the radiator in following quantities:

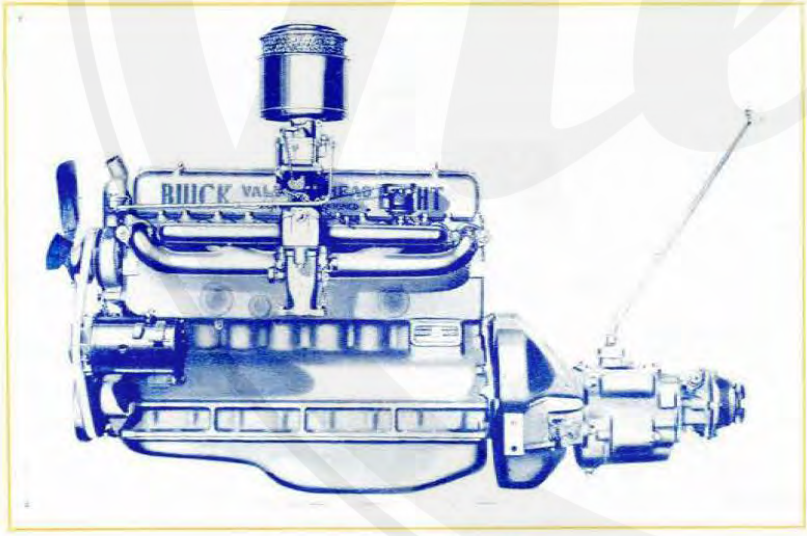
Buick Special—Series 40	3½ ounces
Buick Century—Series 60	4½ ounces
Buick Roadmaster—Series 80	4½ ounces
Buick Limited—Series 90	4½ ounces

This treatment should be repeated after the cooling system has been cleaned.

It is unnecessary, however, to add rust preventatives with such anti-freeze solutions as General Motors anti-freeze and Prestone because they already contain sufficient rust preventative properties.



Series 40 Engine—Right Side



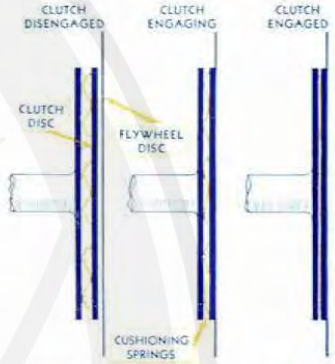
Series 40 Engine—Left Side

THE BUICK CLUTCH

The clutch in an automobile provides a means of connecting and disconnecting the engine from the mechanism that drives the car.

The Buick clutch is technically known as a single-plate dry disc

Clutch Disc Disassembly



Clutch Disc—Showing Springs

type. In this type of clutch, a number of cushioning springs are mounted between the fabric facing and the metal base. This method of construction assures a permanent "cushion" for the clutch action and contributes to soft, firm operation. The clutch assembly is illustrated in the simplified drawing above.

The accompanying illustrations show the way the clutch functions, in order to help you appreciate "what to do" and "what NOT to do" in driving the car.

RELEASING THE CLUTCH

In depressing the clutch pedal (see Fig. A) you force the clutch plate away from the disc which is connected to the transmission drive shaft. These parts are then motionless, although the crankshaft continues to revolve.

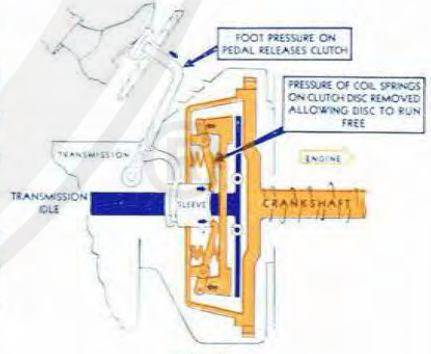


Fig. A

ENGAGING THE CLUTCH

Removing the foot from the clutch pedal brings the clutch plate in contact with the disc. (See Fig. B.) Friction then causes the plate and disc to rotate together, turning the transmission clutch gear and, if the car is in gear, the transmission main shaft, propeller shaft, and rear wheels.

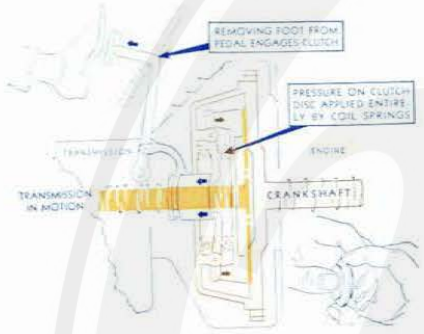


Fig. B

PRINCIPLE OF CLUTCH OPERATION

Pressing outside coins with thumb and first finger creates sufficient pressure and friction on center coin to prevent it being turned between the other two coins—this causes the three coins to turn as a unit. This is the same principle of operation as the disc clutch.

"RIDING THE CLUTCH"

If the foot exerts a pressure upon the clutch pedal without entirely disengaging it, it is generally referred to as "riding the clutch."

This reduces the pressure which holds the clutch plate in engagement thereby causing it to slip, this results in excessive wear of clutch facing and unnecessary abuse of clutch release bearing.

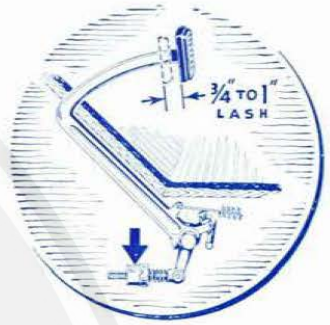
It is not necessary to use the clutch in slowing down in traffic or turning corners. It **IS** important that you do not exert pressure upon the clutch pedal except when shifting gears or coming to a complete stop.

Series 40

CLUTCH ADJUSTMENT

There should be ¾ of an inch to 1 inch "slush" or free movement in the clutch pedal at all times. This adjustment can be quickly made. (See illustration.)

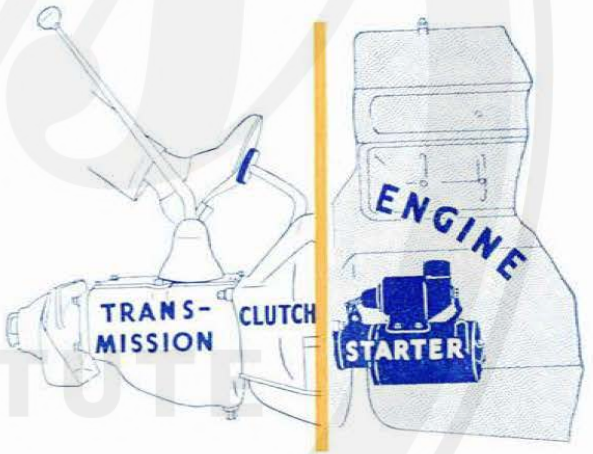
Unless this amount of "lash" is maintained the clutch may slip. And a slipping clutch often necessitates replacement of the clutch plate due to worn facings.



Series 60, 80 and 90

STARTING SUGGESTION

When starting the car especially in cold weather, it is advisable to disengage the clutch as the engine will then be relieved of the burden of turning the transmission gears, which revolve in a heavy lubricant. This disengagement also



lessens the load on the battery. As a matter of fact it is a good plan to cultivate this habit to avoid any possible chance of ever starting the engine with the car in gear.

CLUTCH RELEASE BEARING

The ball bearing which throws out the clutch pressure plate is lubricated from a reservoir which is packed with grease at the factory and runs indefinitely without attention.

THE BUICK TRANSMISSION

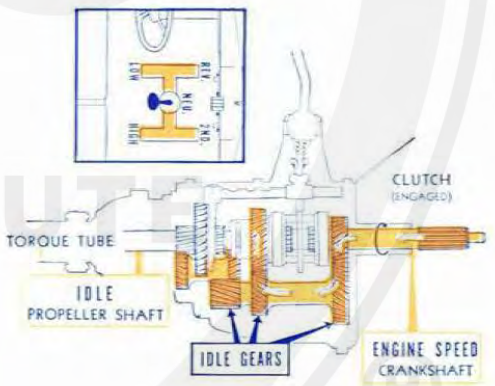
Perhaps no single feature has met with more popular appeal in recent years than has the Buick synchro-mesh transmission. Note: **Synchro-**—refers to time—**mesh**—to fit together. Therefore, Synchro-mesh means fitting together at the proper time—that is, quietly—smoothly—without grinding.

WHAT TAKES PLACE WHEN YOU SHIFT GEARS

Below are shown several views of a Buick transmission with gears in their various speeds. We believe this will give you a better understanding of how the transmission functions. (These illustrations are of a Buick 60 transmission.)

GEARS IN NEUTRAL

When the shift lever is placed in neutral position, the transmission idler gears run free, as indicated by the travel of arrows in the shaded gears. They are not meshed or engaged with any gears that are connected to the propeller shaft or rear axle.

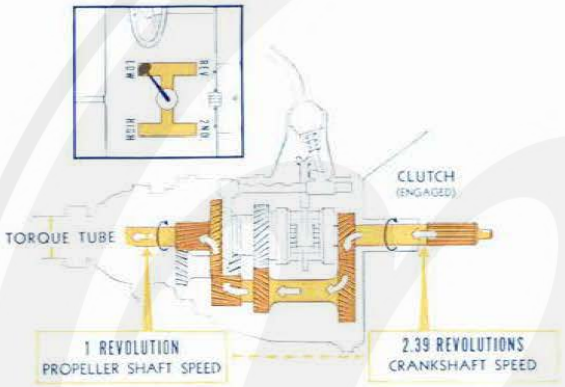


Gears in Neutral

LOW OR FIRST GEAR

When the shift lever is placed in first or low gear it provides a drive of power to the rear axle through the shaded gears, as illustrated

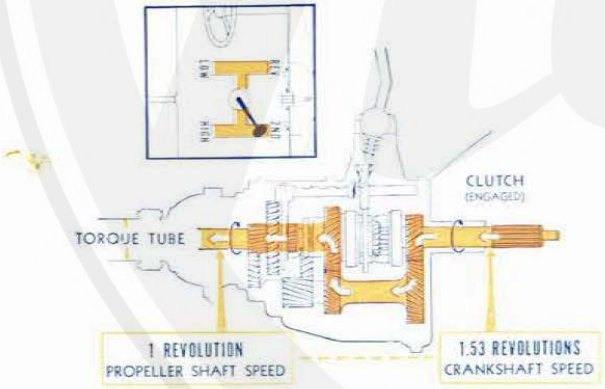
by the travel of arrows. The engine crankshaft then makes 2.39 revolutions to one revolution of the propeller shaft. This permits the engine to develop extra power for low speed operation.



Low or First Gear

SECOND GEAR

When the transmission lever is placed in second gear, the drive from the engine crankshaft travels through the shaded gears as indicated by arrows. In this position the engine makes 1.53 revolutions to one for the propeller shaft.

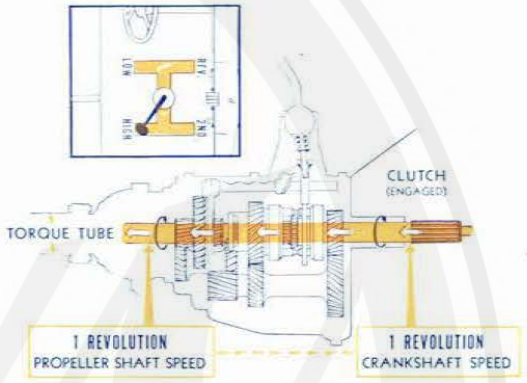


Second Gear

Therefore, the engine does not run as fast in second for the same car speed as it does in low. It is easier on the engine and transmission to shift into second gear after driving approximately twenty or thirty feet in low.

HIGH GEAR

When the shift lever is in high gear a direct drive between engine and propeller shaft takes place, which makes the engine crankshaft and the propeller shaft travel as a unit and at the same speed. It is desirable from an economical standpoint to shift from second into

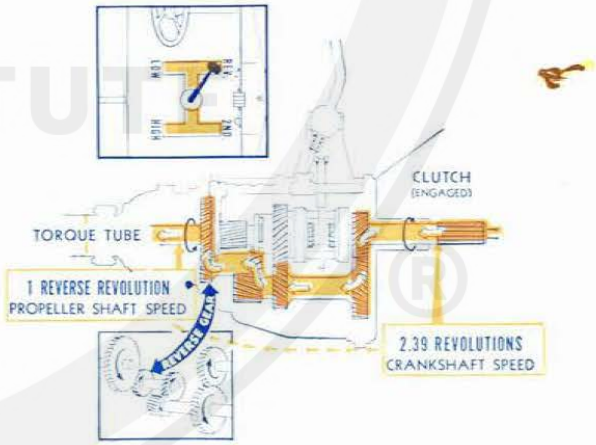


High Gear

high gear after the car has attained a speed of approximately 20 to 25 miles an hour.

REVERSE GEAR

When the shift lever is placed in reverse gear the drive is from the engine through the shaded gears as indicated by the arrows. In this position the engine crankshaft makes 2.39 revolutions to 1 for the



Reverse Gear

propeller shaft—the inset shows an illustration of how the gears mesh when in reverse gear.

DRIVING IN THE HILLS

From this description of the transmission, you can see why it is recommended that you shift into second gear when climbing steep grades. For when the speed of your car drops below twenty miles an hour, second gear gives you a more responsive engine and greater control.

Should you go down a very steep grade, it is likewise safer to shift into second gear and use the engine as a braking force to check the car's speed and provide easier control.

STARTING ON HILLS

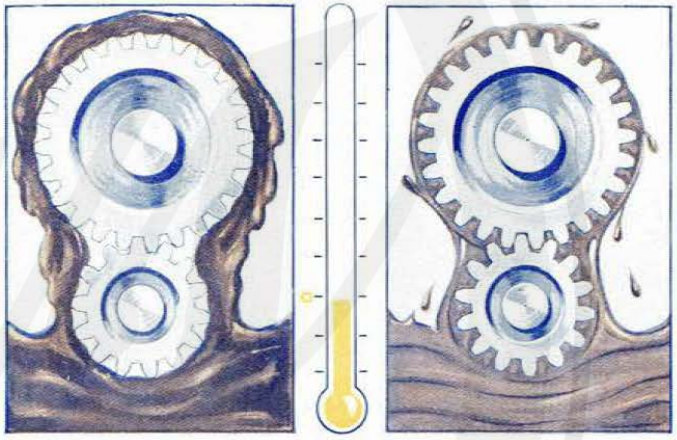
If it becomes necessary to start the engine when headed up a hill, you have in addition to your regular method of starting, the advantage and safety provided by throttle control starting.

Hold the car with the foot brake. Disengage clutch, then pull out hand throttle and engine will start. When the engine starts, set the hand throttle to a fast idle, shift into first gear and release the pressure on brakes and clutch until the car is started. Then place your right foot on the accelerator to maintain car speed and close the hand throttle. Don't forget to push back the hand throttle, after you are under way.

In order that you will continue to receive smooth shifting and quiet operation for many thousands of miles, the transmission lubricant should be drained, and the transmission flushed and refilled in the fall for winter operation and in the spring for summer operation.

WINTER OPERATION

To maintain ease of shifting in cold weather, the lubricant in the transmission should be changed to S.A.E. 90 oil. This lighter lubricant will flow freely in the bearings and between the gear teeth, giving efficient lubrication of all parts and, in turn, lessening wear. Furthermore, it permits much easier cold weather shifting.

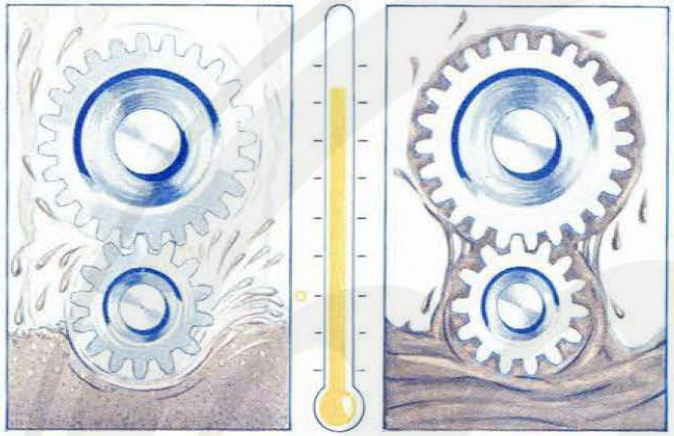


This illustration shows how lubricant which is too heavy fails to flow between gear teeth in the proper manner

This shows the use of correct lubricant, providing a film of oil between gear teeth

Perhaps you have already noticed shifting was not as easy after a drop in temperature as it was during a warm spell. The reason for this is that in cold weather the lubricant does not flow as freely into the mechanism which controls the silent shifting of your transmission. It slows up the shifting and makes it more difficult to change gears.

The transmission should be filled with lubricant to the top of the filler opening.



When too light a lubricant is used, improper lubrication of gears and mechanism results

Note how proper lubricant clings to gears, giving correct lubrication and oil cushion between teeth

SUMMER OPERATION

It is equally important in the spring season to have the light lubricant removed from the transmission and replaced with S.A.E. 160 oil. This is necessary because the heavier body of this lubricant provides the necessary cushioning between bearings and gear teeth, a requisite for long life.

IMPORTANT: Do not have the same type lubricant that you place in the transmission put in the rear axle of any 1937 Buick model. An E. P. lubricant is required in the rear axle. Detailed specifications of the lubricant required in all series Buicks are shown on the lubrication chart in back section of book.

Use Delco No.5 Brake Fluid or Lockheed Orange Brand Fluid.

BUICK BRAKES

The increased speed of modern cars has made motorists more conscious than ever of the need for good, efficient brakes that will insure fast and positive stopping.

The new Buick is equipped with the latest type of hydraulic brakes. These brakes are so engineered and constructed that smooth and rapid stops can be accomplished with scarcely any effort on the part of the driver.

The following outline briefly describes the operation and construction of these brakes and tells how to care for them to insure maximum braking efficiency and long life.

HOW BUICK BRAKES OPERATE

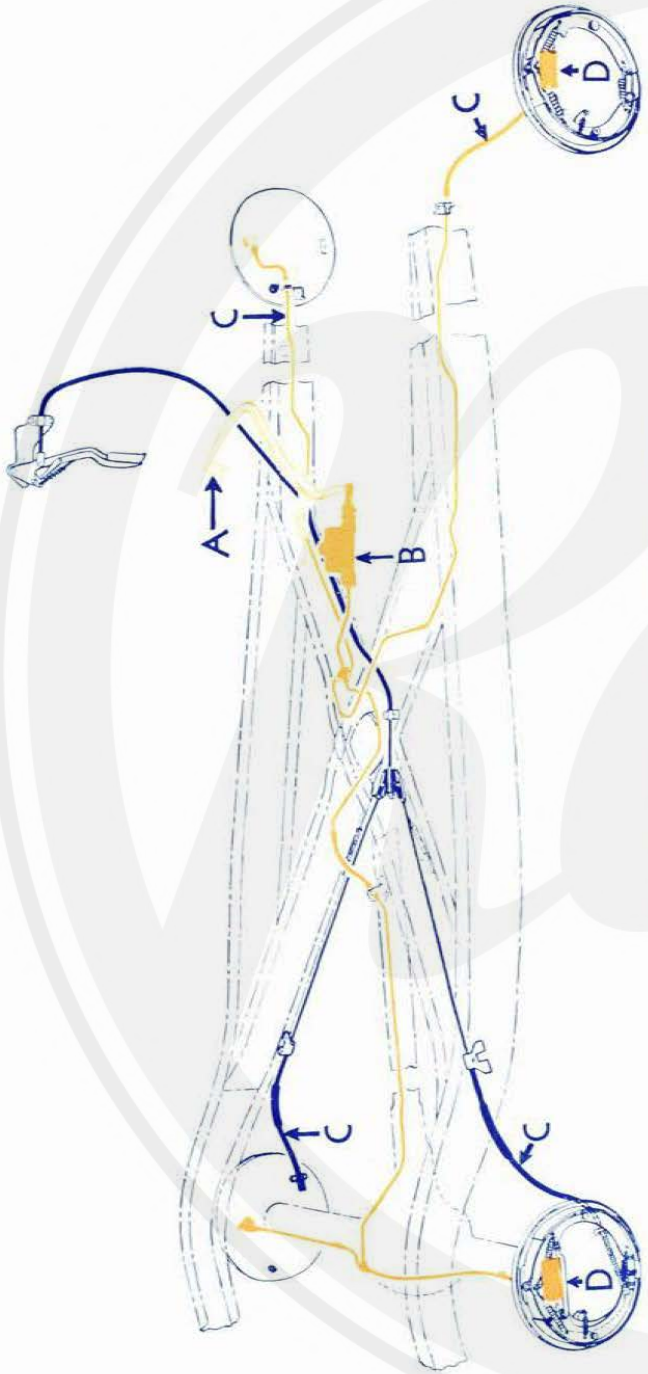
(See illustration page 36)

As pressure is exerted on the brake pedal "A", the fluid in the master cylinder "B", is forced through the metal tubes and non-expanding hose "C", to the wheel cylinders "D", where it presses against the pistons. As these pistons move outward they force the brake shoes against the brake drum. The resulting friction stops the car.

It is important that the master cylinder always be slightly more than half-full of fluid. When refilling the master cylinder, use General Motors or Delco hydraulic brake fluid of the proper number. Your Buick dealer will gladly give you this information. These fluids are blended in such a way that they do not corrode metal parts or harm the connections. They will flow freely in the coldest weather and yet will not evaporate under a tropical sun.

Avoid the use of an oil with a mineral base. Such an oil will cause the rubber seals to swell and become inoperative.

You probably have noticed the unusual soft pedal action of Buick brakes. This is due to their scientific construction. Such care has been given to their construction, in fact, that longer brake lining life and smoother, more positive brake action is definitely assured.



DIAGRAM—BUICK HYDRAULIC BRAKING SYSTEM

Buick hydraulic brake assembly with one anchor pin

Ordinary hydraulic brake with two anchor pins

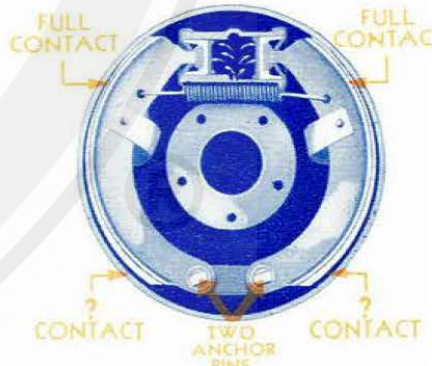
Illustration at left above shows the latest Buick type hydraulic brakes. Note that only one anchor pin is used. Right above shows the ordinary hydraulic brake in which two anchor pins are used.

Due to this single anchor pin design, the shoes in Buick brakes have a "self-centering" action in the drum when the pedal pressure is applied. The two shoes are linked together at the bottom and thus work as a single unit in building up a powerful braking force. This results in uniform lining wear and unusual softness of brake action.

Illustration at left below shows the full contact of Buick brake shoes with the drum at the top and bottom after a car has been in operation for thousands of miles.

Illustration at right below shows an ordinary hydraulic brake after many miles of operation. Note how the use of two anchor pins results in greater lining wear at the top of the shoes where the full contact is made. Note, too, the absence of contact the lower part of the shoes.

Buick brake with full shoe contact at top and bottom

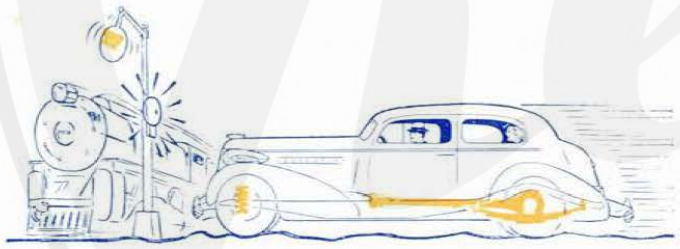


Ordinary hydraulic brake with full shoe contact at top only

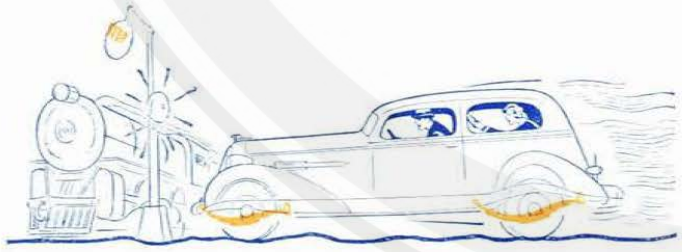
Whether a Buick has been driven 100 miles or 20,000 miles the lining will maintain full contact with the drum, thus insuring uniform wear and greater economy of operation.

Buick engineers drove hundreds of thousands of miles in their test runs in developing the best combination of brake linings that would give the long life and dependable service so much desired by car owners. Therefore, if, after a long period of time, your brakes require new linings, be sure and insist on Genuine Buick brake linings which can be obtained from your Buick dealer. Linings for service requirements are ground to fit the drums so that, when placed on a car already in service, they will immediately give the same full contact that they would in a new car.

Series 80-90 Series 40-60
Brake Drums



In the New Buick, the Torque Tube and Knee-Action Arms absorb all braking loads



In the conventional car, the burden of all braking loads is placed on the springs

Additional life is built into the braking mechanism through the use of drums with cast-iron surfaces. Cast-iron provides the finest surface upon which a brake shoe can operate and it is also less subject to scoring and distortion than a conventional steel type drum. (See illustration).

Still another feature which helps provide the smooth gradual stop you experience in your Buick is the combination of knee action wheels with a torque tube drive.

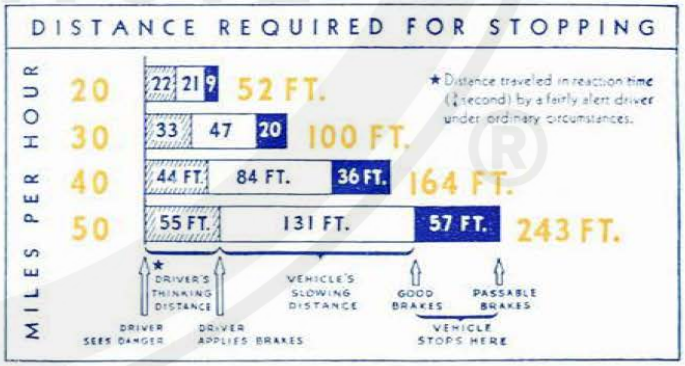
This combination absorbs all braking strains thus leaving the springs free to perform their one main job—that of cushioning the car and its passengers. It results in smooth stopping of the car without abnormal pitching or tossing of the passengers.

On the opposite page is an illustration of a conventional car, in which the springs are called upon to absorb all braking twists in addition to cushioning the car. This tends to pitch the car forward on the springs when the brakes are quickly applied.

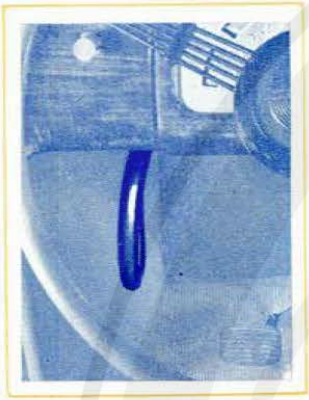
Remember that Buick engineers have had more years of experience building four wheel brakes than other car manufacturers. As a result, your 1937 Buick has the finest combination of brake drums, shoes, linings, backing plates and hydraulic control.

However, with even the best brakes, a few seconds necessarily elapse between the time you sense the need for braking and the time your car actually stops. Naturally, the faster your car is going the further it is going to travel during that interval.

The diagram below gives you an idea of the distance traveled at various speeds from the time a driver senses the need of brake application until the car is brought to a stop.



THE BUICK PARKING BRAKE

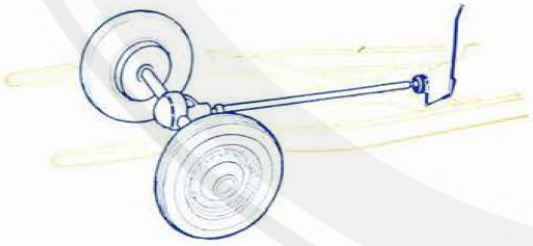


Location of parking brake handle

In addition to the powerful hydraulic service brakes, Buick also has a parking brake which exerts direct pressure on both rear wheels. (See illustrations.)

Buick not only seals and protects the service brakes but also the parking brake. This assures you of safe dependable service in all kinds of weather.

Buick parking brake, because of its location (illustrated above) exerts a powerful braking force DIRECTLY to both rear wheels



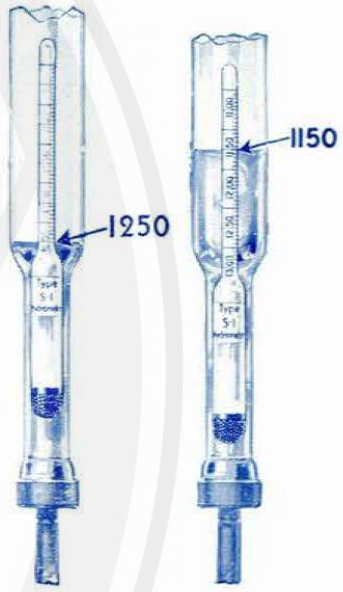
Above, outline of exposed type parking brake located at rear of transmission

THE BUICK ELECTRICAL SYSTEM

The Buick electrical system is designed for heavy-duty operation and long life. There are, however, certain units in the electrical system that will require periodic inspection. You will find these specific units outlined in the following few pages.

THE BATTERY

The battery provides a storage space for the electrical energy used for the starting, lighting and ignition system. Normally when the engine is running the various units obtain this current from the generator which also furnishes an additional amount to keep the battery in a fully charged condition. The process of storing this energy in the battery results in some of the water in the battery passing off in the form of gas. For this reason it is necessary to occasionally add distilled water to the battery.

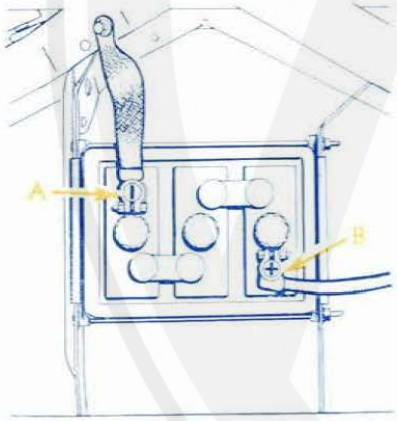


Hydrometer Readings

It is suggested that battery inspection be made every two weeks during the summer and every three or four weeks during the winter. Inasmuch as the water consumed depends on climatic conditions and amount of driving done it will soon be obvious how frequently water need be added. The water level should be about ⅜" above the plates. After adding water in the winter the engine should be run at charging speed for at least an hour to thoroughly mix the water with the sulphuric acid to prevent freezing.

Battery terminals are made from non-corrosive lead alloy. Thus, good contact is assured as long as terminals are tight.

The fully charged battery at room temperature of approximately 75 degrees Fahrenheit should have a hydrometer reading of approximately 1250. In climates where extremely low temperatures may



Battery

All four Series are equipped with batteries having $\frac{3}{32}$" Heavy Duty Plates, and are of the high plate type, thus the 15-plate battery used in the 40 Series has a capacity of 97-ampere hours. The 60, 80 and 90 Series have 17 plates with a capacity of 110-ampere hours.

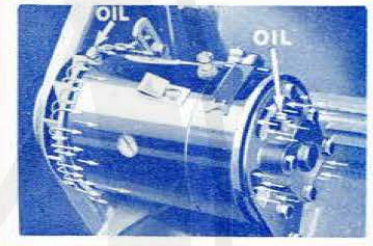
All Canadian Buicks are equipped with Prest - o - lite Batteries - consult your local Buick Dealer or any Oldham Battery Station who are servicing these Batteries in England.

GENERATOR

Buick provides a Heavy-Duty Air Cooled Generator capable of producing sufficient current to supply the lights and ignition, as well as accessories such as clocks, radio, heater and defroster. The following table shows the approximate current consumed by these different units—

Lights and Ignition	15-amps (Approx.)
Car Heater	4-amps (Approx.)
Radio	7-amps (Approx.)
Defroster	4-amps (Approx.)
Clock	-amps Negligible
Total	30-amps

Because the ordinary generator has a maximum output of only 20 to 24 amperes at normal speed (30 to 35 m.p.h.) and is often as low as 10 to 15 amperes at high speeds, it is obvious that the current used is more than that produced — which results in the battery becoming discharged.



Buick Generator

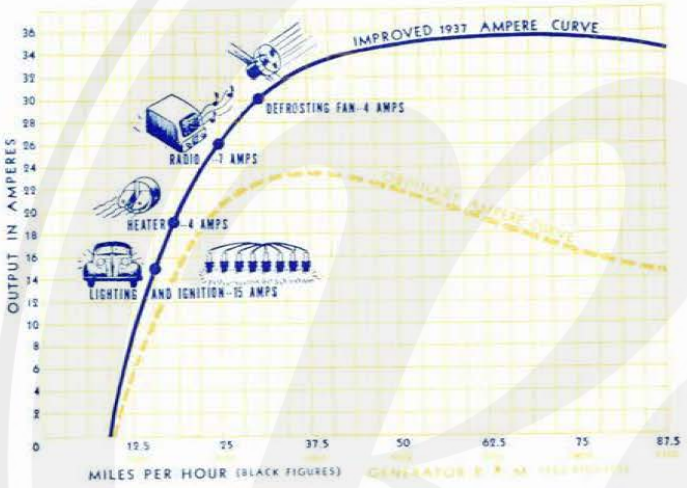
The generator charging rate has been greatly increased by improvements in electrical design and cooling. These generators are capable of delivering approximately 30-amperes at average driving speeds and high speed as well. The generator normally, however, does not deliver this amount of current because of the action of the voltage regulator. Thus, when the battery is fully charged the generator seldom delivers to the battery more than 10-amperes with units warm.

However, when the battery is in a low state of charge, or when the lights, radio, heater or other accessories are turned on, the action of the regulator is such as to increase the amount of current produced by the generator in proportion to the requirements. This tends to maintain the battery in the proper state of charge and protects it from overcharging as well. This not only increases the dependability of the electrical system but considerably increases the life of the battery.

BATTERY CHARGE INDICATOR

Inasmuch as the charging rate of the generator is controlled automatically by the voltage regulator and there are no manual adjust-

ments that require a calibrated ammeter on the Instrument Cluster, the conventional ammeter has been superseded by an indicator of the pointer type to match the other instruments in the cluster. The position of the pointer indicates at all times whether the battery is being charged or discharged.



This illustration shows the great reserve capacity of the new Buick generator

If the battery remains in a good state of charge, and the instrument board "indicator" shows charge at speeds above 14 miles per hour, it can be assumed that the generating circuits are functioning properly.

SPARK PLUGS

The gap between electrodes should measure .025" to .030". In readjusting this gap always make the adjustment on the

grounded electrode (see illustration) and never on the center electrode as this may crack the porcelain.

It is good economy to have plugs cleaned and tested every 5,000 miles. When new plugs are installed replacement should be made with genuine AC Type H-9 plugs, which are used on all models.

DISTRIBUTOR POINT SETTING

Complete instructions for setting breaker points are given in section entitled "For the Mechanically Minded."

OCTANE SELECTOR

The large variety of gasolines now on the market has made necessary some means for grading them with reference to the tendency to produce engine detonation or "ping." The term "Octane Rating" has come into use as a means of indicating the Anti-knock properties of these different grades of gasoline.

Octane Selectors provide a means of advancing or retarding the initial ignition timing in order to obtain best efficiency from a particular grade of gasoline.

Octane Selectors on the Series 40 are set for regular gasoline having an approximate octane rating of 70, and the Series 60, 80 and 90 for high octane Ethyl gasoline having an approximate rating of 75. Thus, a Series 40 owner desiring to use fuel having a higher octane rating would be able to improve his performance by setting the octane selector in the slightly advanced position. An owner of a Series 60, 80 or 90 car desiring to use a lower grade of fuel, which might otherwise cause a loud spark "ping", could overcome this by setting the octane selector slightly to the low side. The correct position in either case being that in which a slight "ping" occurs at low speed with the throttle wide open.

The name Octane Selector is not merely a new name for the old system of manually retarding or advancing the spark. Unless some other provision were made, the mere retarding of the spark would result in serious loss of performance and fuel economy under all conditions of driving. This is, to a great extent, compensated for by providing an additional automatic advance, obtained by a mechanism

operated by the vacuum in the engine manifold which is effective at all times other than at idle speeds, during acceleration or on open throttle.

IGNITION DISTRIBUTOR WITH VACUUMATIC AND CENTRIFUGAL SPARK ADVANCE

Inasmuch as higher efficiency is obtained by increasing the spark advance on part throttle over that required for full throttle operation, the conventional centrifugal mechanism is supplemented by one controlled by engine vacuum. This combination gives the Buick engine the correct automatic spark advance for all conditions of driving, for example:

(a) With the car running at 30 m.p.h., climbing a steep grade FULL OPEN THROTTLE might exist. Under this condition the vacuum in the manifold would not be sufficient to operate the vacuum advance. Therefore, correct advance would be furnished by the centrifugal mechanism.

(b) With the car running on level road at 30 m.p.h. the engine would be working at PART THROTTLE with the result that there would be a heavy vacuum in the intake manifold. This would increase the spark advance approximately 10 degrees beyond that furnished by the centrifugal mechanism. The resultant improvement in efficiency produces a material increase in gas mileage.

HORN

Dual Air Trumpet Horns are used throughout the 1937 line. They are mounted under the hood where they are unaffected by sleet and snow.

COINCIDENTAL STEERING AND IGNITION LOCK

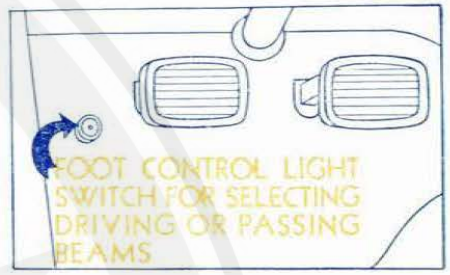
Buick provides greater theft protection by a combination steering wheel and ignition lock.

HEADLIGHTS

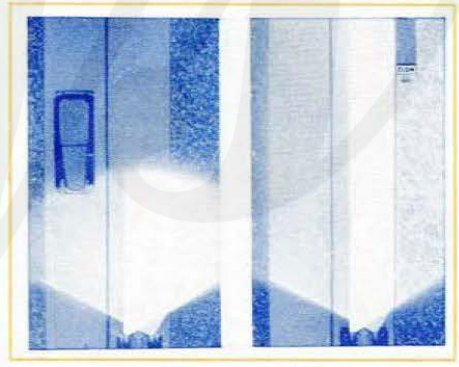
Buick provides a headlighting system which offers a maximum of safety and convenience to the driver. There are three conditions of

driving, each of which requires different performance from the head lamps. These are as follows:

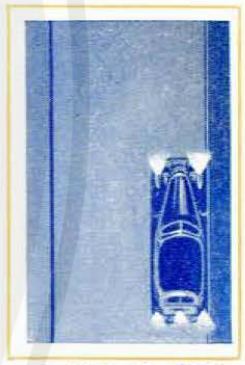
(1) Fast driving on straight clear roads—free from traffic.
(2) Fast driving on straight roads—meeting other cars.
(3) Conservative driving on winding roads meeting other cars and driving on well-lighted streets.



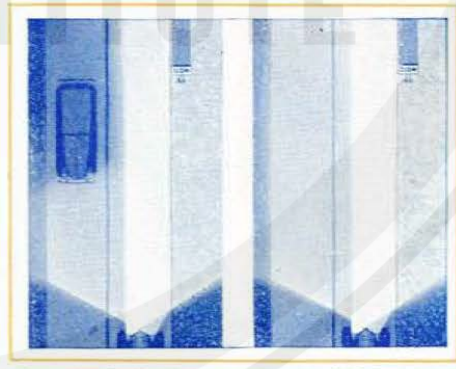
Buick has recognized that it is not possible to meet all of these conditions with a single beam, or even two beams. Therefore, the Multibeam system has been designed to insure the motorist maximum



City Lower Beam City Upper Beam



Buick Parking Lights



Country Passing Beam Country Driving Beam

Light Switch Positions

safety by enabling him to conveniently select a type of illumination to meet these driving conditions.

By pulling the light button out on the instrument board to the last position, either the elevated far-reaching beam to meet the conditions of fast driving on straight roads, or the meeting beam is obtained alternately by operating the foot switch. With the light switch button in this position the meeting beam results from tilting down the beam on the left-hand side of the road which thus protects the approaching motorist from glare. The beam projected to the center and right-hand side of the road is retained in its elevated position, thus revealing the roadway a much greater distance ahead than would be possible if both beams were fully depressed. When both beams are elevated the red pilot bulb in the center of the instrument cluster will be illuminated making it convenient for the driver to determine which beam is in use.

By pushing the light button "in" one position, the beams from both lamps can be either elevated for the straight stretches, or depressed for meeting other cars by operating the foot switch. This is the combination that should be used when driving at slower speeds on roads with frequent curves, as this affords the approaching driver maximum relief from glare under such conditions, and assures maximum safety to both the driver and the approaching motorist.

When either the partial or fully depressed beams are in use the fender lamps are also lighted. These serve to outline the full width of the car with the result that approaching motorists allow additional clearance in passing.

Driver: Driving behind Buick headlights gives us ample vision of the highway and a feeling of safety and security.

Passenger: Notice our left-hand beam is lowered and doesn't blind the approaching motorist; that's why he, in turn, gives us the courtesy of dimming.

PARKING LIGHTS

The fender lamps are also utilized for parking as well as clearance lights. When the switch button is pulled out to the second position these lamps, as well as the tail lamps and license plate lamp, are lighted.

The fender lamps consume a very small amount of current, thus minimizing the current consumed while the car is parked.

The projecting lenses on the fender lamps, and tail lamps, make the car visible from the side as well as front and rear.

INSTRUCTIONS FOR REPLACEMENT OF BULBS AND CLEANING REFLECTORS

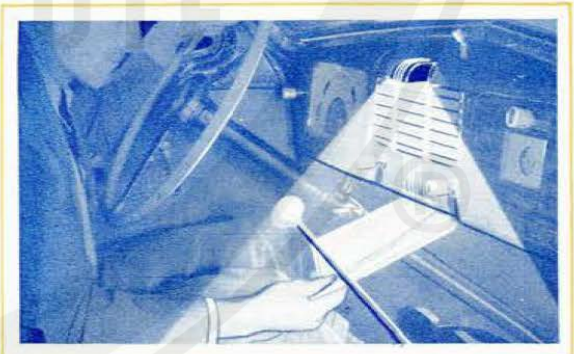
See page 61

INSTRUMENTS AND INSTRUMENT BOARD

The outstanding feature of the new instrument panel is the embodiment of a new principle of illumination which is obtained by the diffusion of light through the outside edge of the glass panel. A red pilot lamp located on the upper face of the panel indicates whenever the bright lights (upper beams) are in use.

The glove compartment mounted on the right-hand side of the instrument board presents a pleasing balance for the instrument panel. The door of the glove compartment is provided with a lock and has a medallion which is removable to permit the installation of a special Buick electric clock having the same type of illumination as the instrument panel.

The arrangement of instruments and controls is illustrated on page 4.



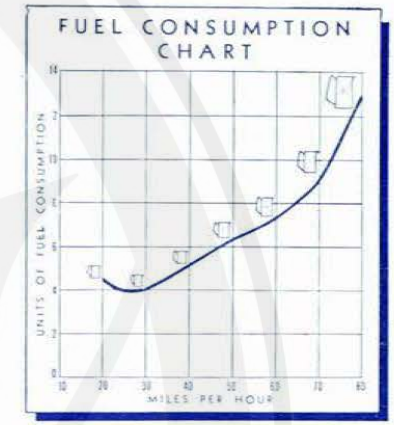
Convenient Map Light

NO FUSES USED IN HEADLIGHT AND TAIL LIGHT CIRCUITS

There are no fuses used in either the headlight or tail light circuits. Protection for these circuits is through a thermostatically controlled current limit relay attached to the light switch. When the current load, due to a short circuit, is too heavy for the wiring this relay opens and closes rapidly, thus reducing the current flowing into the circuit sufficiently to protect the wiring from damage. This opening and closing action continues until the short is eliminated. This is an important safety feature inasmuch as when a short circuit does occur the lights are not ordinarily completely extinguished as is the case when the fuse blows. There is usually sufficient light to permit the car to be driven to the nearest Service Station.

DRIVING ECONOMICALLY

That the manner in which any car is driven has a direct bearing on gas, oil and tire mileage is clearly demonstrated in the following unbiased performance records of ten leading makes in Buick's 40 Series price range. It must be remembered that mileage figures really do not mean a great deal unless we know the conditions under which they were obtained.



In obtaining the figures used, the tests for all cars were made under the same ideal conditions—on a testing track that was free of traffic and other interference. (Under normal operation in city and country driving, you should realize approximately 80% of this mileage.)

AVERAGE FUEL CONSUMPTION AT VARIOUS SPEEDS OF TEN LEADING MAKES OF CARS

SPEED	30 Miles Per Hour	50 Miles Per Hour	70 Miles Per Hour	Top Speed
Miles Per Gallon	19	16	12.5	8.5

GASOLINE MILEAGE

You will notice that these tests clearly show how the wind resistance encountered at high speeds influences gas mileage. Actually, the resistance of air to any object moving through it, increases as the square of the speed, for instance:

A car going 60 miles per hour has to "put up a fight" against the air currents four times as great as when going 30 miles per hour. At 80 miles per hour the effort is over seven times as great as at 30 miles an hour.

GASOLINE SELECTION

Buick is designed to operate economically on any good grade of gasoline.

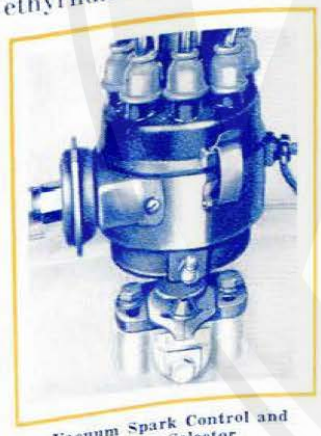
In the selection of gasolines, you have, at your option, the choice

THE BUICK OCTANE SELECTOR

The Buick Octane selector makes a definite contribution toward fuel economy.

Factory setting of the octane selector on the Special Series 40 models is for regular gasoline—octane rating 70. All other models are factory set for a fuel of 75 octane rating.

The term octane rating is used to indicate the "anti-knock" properties of gasoline. Therefore, a fuel having octane rating of 78 can be used in an engine with less knock than a fuel with a rating of 60. This octane rating is usually controlled by the percentage of ethyl fluid which is added to regular gasoline. To adjust the octane selector, it is necessary to loosen the two distributor mounting screws. The distributor can then be moved so that the pointer is toward the low side of the scale for fuel of low octane rating and to the high side for fuel of high octane rating. (See illustration.)



Vacuum Spark Control and Octane Selector

In using a low octane fuel, the correct position is indicated if there is only a slight ping when accelerating from 10 miles an hour with the throttle wide open. To obtain maximum economy, do not move the pointer towards "low" more than is necessary. Remember that all cars should have a slight "ping" with either low or high octane fuels, as the best economy and performance is obtained from this setting.

THE BUICK AUTOMATIC CHOKE

Buick's automatic choke contributes to economy by eliminating the tendency towards having too rich or too lean a mixture of gas when starting. It protects the car owner against three distinct disadvantages:

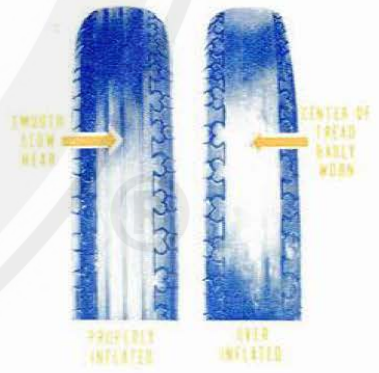
1. The excessive use of fuel from too rich a mixture.
2. The removal of lubricant from the cylinder walls when the mixture is so rich that it permits gas to run by the pistons.
3. Excessive use of the starter and consequent drain on the battery which results from the engine's stalling from too lean a mixture.

The choke is operated through a thermostatic arrangement in which the heat of the engine controls the opening and closing of the choke valve. This automatically controls the richness of the mixture drawn into the combustion chambers.

PROLONGING TIRE LIFE

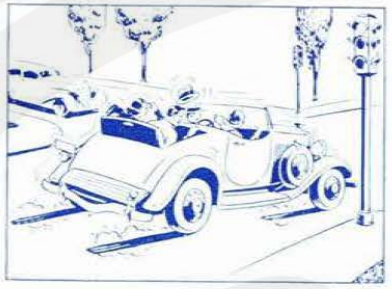
Too much pressure has just as definite effect on tire wear as too little. The higher the pressure, the less the tire will yield or spread out. Consequently, if the center portion of the tread shows more wear than the outer edges, it indicates that you have been driving with over-inflated tires. If, on the other hand, the center of the tread seems to show very little wear while the outer edges or "shoulders" show quite noticeable wear, it indicates that you have been driving on under-inflated tires. When tires are under-inflated the center does not carry its share of the weight. In other words, the tire "rides on the shoulder."

Tire Wear—Under-Inflation



Tire Wear—Over-Inflation

The manner in which you drive your car will also have a great bearing on tire life. Quick application of the brakes when approaching a stop light and jerky get-aways cause excess wear on tires. Therefore, it is obvious that the thing to do is to make gradual stops and starts if you want unusual tire mileage.



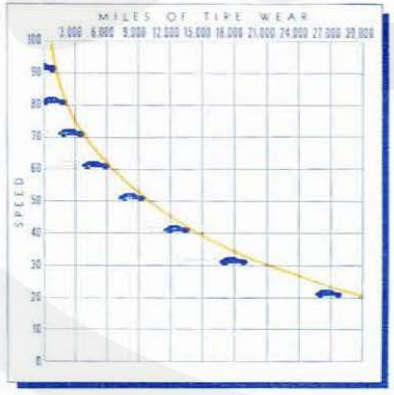
Improper Use of Brakes

Under-inflated tire causing rim bruise

Care should always be used in parking. Scraping tires against the curb will weaken the side walls. This, of course, invites blowouts and shortens the life of tires.

THE EFFECT OF SPEED AND HEAT ON TIRE LIFE

The accompanying chart is supplied from records obtained from The Rubber Manufacturers' Association. It presents a composite picture of how tire life is affected by heat and high speed operation. From this it can be seen that tire wear is much greater when driving at high speeds, tires also wear faster in summer than in winter.



Tire Wear Chart

HOW TO CHANGE TIRES

See complete instructions on page 87 of the section entitled "For the Mechanically Minded."

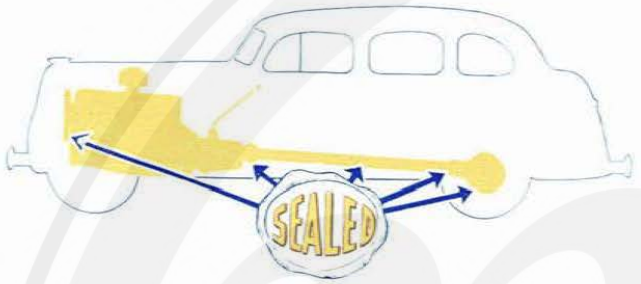
TEN SUGGESTIONS FOR DEFINITELY INCREASING ECONOMY

1. Depress the accelerator easily and only in proportion with speed required.
2. Acceleration over 20 to 30 miles per hour in second gear accomplishes very little toward fast "pick-up" but does use an excessive amount of gasoline.
3. When coming to a red stop light—coast toward it with the throttle fully closed.
4. Driving with under-inflated tires causes excessive tire wear and the "drag" produced definitely handicaps fuel economy.
5. Don't idle the engine for long period of time.
6. Keep your engine tuned up for maximum efficiency. The greatest economy can be obtained by having your engine tuned up every 5,000 miles.
7. Use the correct grade of engine oil for winter and summer operations, as shown in the chart on page 14. Engine oil should be changed every three months or at intervals of 2,500 to 3,000 miles.
8. Keep the proper amount of cooling solution in your radiator summer and winter. An over-heated engine operates inefficiently and causes undue wear.
9. High speed driving consumes gasoline and oil in large quantities.
10. Moderate speeds on rough roads lessens the impact strains on the tires and all other parts of the car. Careful driving prolongs the life of all car parts and increases overall economy.

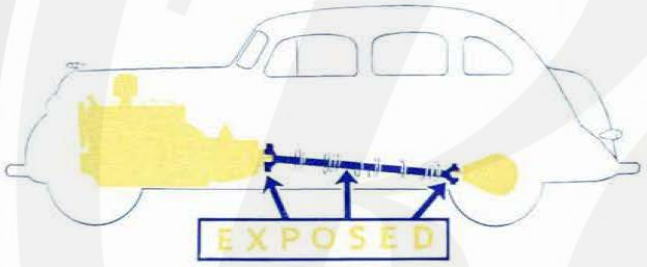
BUILT-IN ECONOMY SAFEGUARDS

Many important features are built into your Buick engine to increase its life and dependability, such as the automatic temperature control and full pressure oiling system which are described in the cooling and engine sections of this manual. There are, also, a great many other important economy features which are built into the chassis that are too numerous to mention here. But Buick's sealed chassis, accomplished through the torque-tube construction, is an

important long life and dependability feature and one that is easily understood.



Buick chassis is sealed from the fan to rear wheels from dust, dirt and water



Conventional car with propeller shaft and universal joints exposed

With this construction, the torque-tube provides the final link in sealing the chassis from fan to rear wheels. This protects fine working parts from dust, dirt and water and prevents the escape of lubricants.

But in the last analysis, the life of your car is largely dependent upon the care you give it.

On page 74 you will find detailed instructions regarding the periodic service recommended.

BUICK KNEE-ACTION

RIDING COMFORT

So that you may obtain the maximum riding comfort which your Buick is designed to provide, you should have an understanding of those features which make its famous gliding ride possible and know how to keep each unit functioning at the peak of its efficiency.

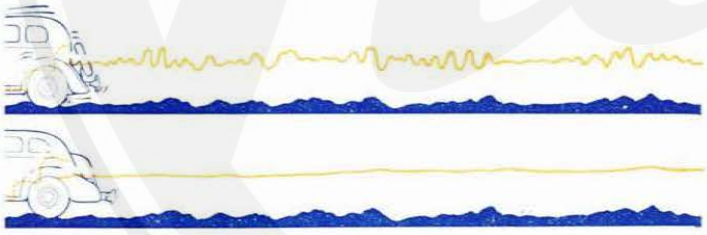
Buick chassis springs have only a "cushioning" job

In Buick the springs (both front and rear) have but one job to do—that of cushioning the car and passengers, thus giving a smooth comfortable ride. This is made possible by combining Knee Action front wheels with Torque Tube Drive.

BUICK KNEE ACTION WHEELS

As a matter of convenience, we will start with Knee Action front wheels.

It was to get away from the pitching motion experienced by the

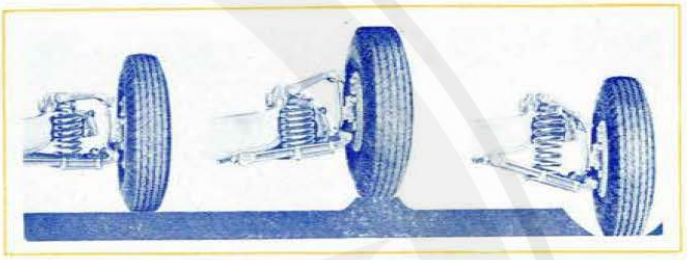


Upper: Conventional Ride . . . Lower: Buick's Gliding Ride

old-fashioned type of front springs that Buick designed and perfected the knee action wheels which give the even ride illustrated above.

Knee action wheels relieve the front springs of all braking and steering loads, making it possible to design the front coil springs for only one job—that of cushioning the car and its passengers. Furthermore, with the front wheels mounted independently, each

front wheel can rise or fall when going over rough roads without disturbing the car's balance, as illustrated below:

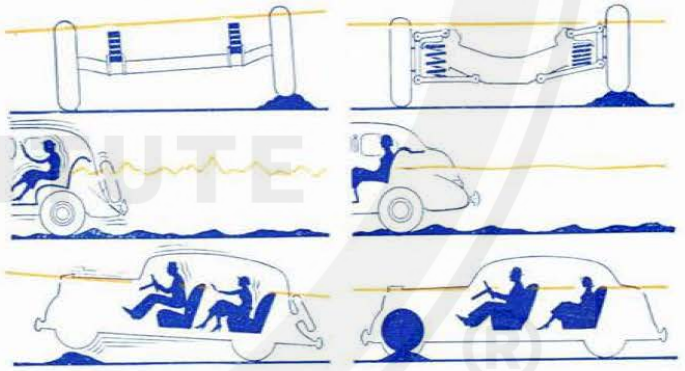


Three Positions of Buick's Knee-Action

You can see from the above picture that the two big V-shaped arms at each wheel are the only points that will require lubrication at regular intervals. These arms should be lubricated every 1,000 miles in order to have the maximum freedom of movement which is so important to riding comfort.

Because the spring is of a coil type it will not require lubrication and will always maintain the same degree of flexibility. Mud, snow, rain and ice will not affect the operation of these springs.

Here is a comparison of Buick Knee Action wheels with the ordinary method of springing. Knee action holds the car at an even keel when going over bumps. This is not possible with conventional springing.



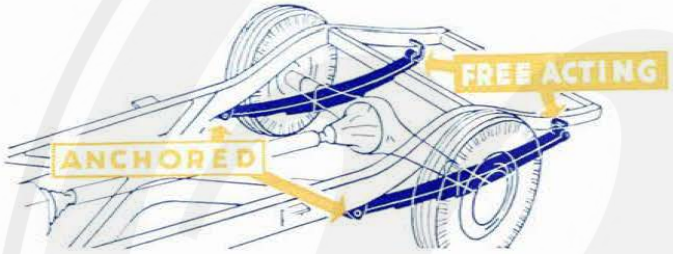
Above is shown results of ordinary springing with solid I-beam construction. Note the pitching motion of car.

And here is shown the results obtained through use of knee-action wheels. Note the smooth gliding ride.

With conventional springing the front springs must absorb all braking and steering strains in addition to cushioning the ride. This extra work thrown on the springs necessarily results in a sacrifice of riding comfort.

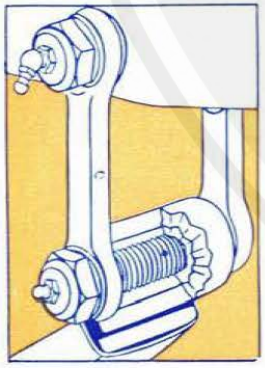
THE BUICK REAR SPRINGS

Buick rear springs are shackled at the front as well as the rear, giving free action. This particular feature is brought to your attention because many cars have the rear springs shackled only at the rear. (See illustrations below.)



In some cars the rear springs are free acting or shackled only at the rear—front half of spring pushes car

Buick rear springs are "free acting" at front and rear, made possible by torque tube drive, which pushes the car



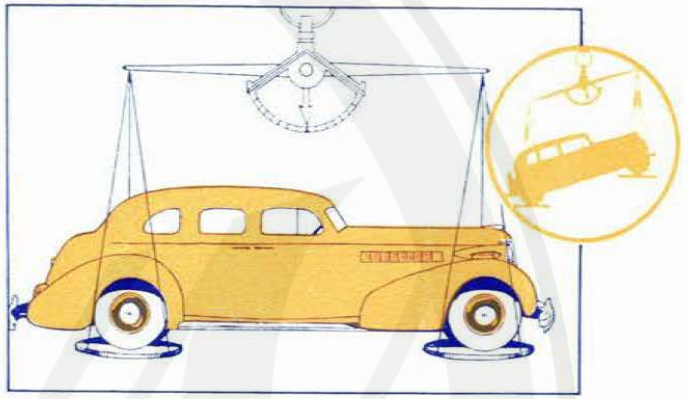
Threaded Spring Shackle

All four shackles should be lubricated every 1,000 miles to maintain the full flexibility of the springs for maximum riding comfort.

All models are equipped with metal rear spring covers which give protection against dirt and also retain lubricant for long periods thus insuring uniform spring action. The rear springs should be lubricated every 5,000 miles, or twice a year.

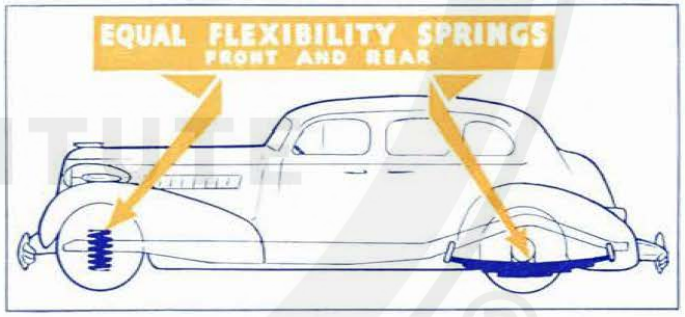
SCIENTIFIC WEIGHT DISTRIBUTION

Buick's weight is scientifically distributed over the front and rear springs. Because the car is thus in perfect balance, it rides with greater smoothness. (See illustration.)



Buick's weight is equally distributed front and rear

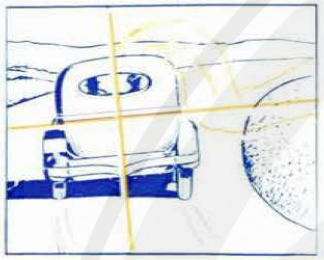
This scientific weight distribution together with the combination of torque-tube drive and knee action gives the front and rear springs approximately equal flexibility. Thus you get uniform spring action when going over rough or rolling highways.



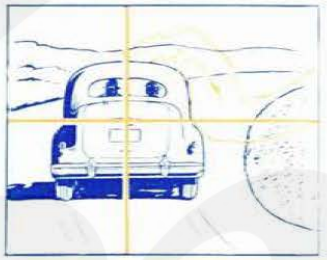
Equal flexibility of springs, front and rear

To compensate for the unusual flexibility of the front and rear springs, your Buick is equipped with ride stabilizers in the front and rear. (See illustration.) The reason for this is obvious. It is naturally desirable to have springs that will fully absorb the shocks of the road, but the extreme flexibility this requires would make the car sway on

curves unless this flexibility were controlled. This is where the ride stabilizer performs an important function.



Conventional car—lack of ride stabilizers causes sway



New Buick—ride stabilizers front and rear eliminate sway

In addition, the use of both front and rear stabilizers not only eliminates the tendency towards swaying or rolling—it also takes up the stress throughout the entire length of the car and minimizes tire squeal. Tests definitely prove that better control is obtained when two stabilizers are used.

The front ride stabilizer is connected across the front end of

Front Ride Stabilizer

Rear Ride Stabilizer

the frame. The arms are joined to the spring seats through rubber cushioned links. As the car tends to sway to one side, it sets up a twist in the stabilizer bars, which the strength of these spring steel bars resists. Neither the front or rear ride stabilizers will require lubrication or adjustment. The rear ride stabilizer is connected to the rear shock absorbers.

CENTER-POINT CONTROL STEERING

Center-point control steering is made possible by the use of Knee Action wheels. The steering tie rods pivot from a central point, maintaining a constant relationship between steering parts, this

Center Point Controlled "Shockless" Steering—Series 40 and 60 Construction

resulting in unusual ease of handling and shockless steering control. Lubricate each 1,000 miles.

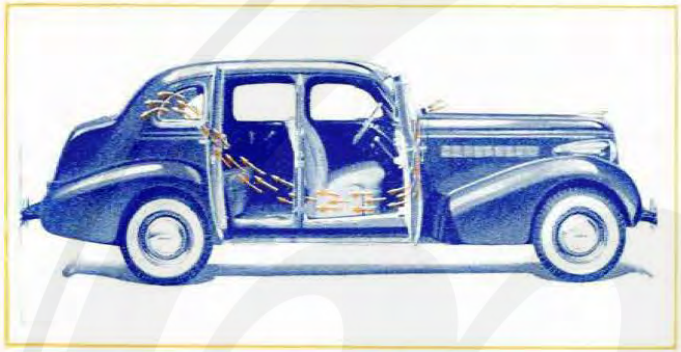
A worm and double roller straddle type of steering gear is used on all models which greatly assists in easing the pull necessary to turn the wheels. Check oil level twice a year.

THE BUICK SHOCK ABSORBERS

Buick provides double-acting shock absorbers both front and rear. They check the rebound of the wheels when going over rough roads and further contribute toward smoothing out your ride.

The shock absorbers, however, should be checked twice a year to make sure that they contain proper amount of shock absorber fluid. They should be kept full at all times. This is important. It is suggested that you have this taken care of by your Buick dealer as a particular grade of fluid must be used for correct shock absorber action. It is necessary to maintain the full efficiency of this unit for complete riding comfort.

NO DRAFT VENTILATION

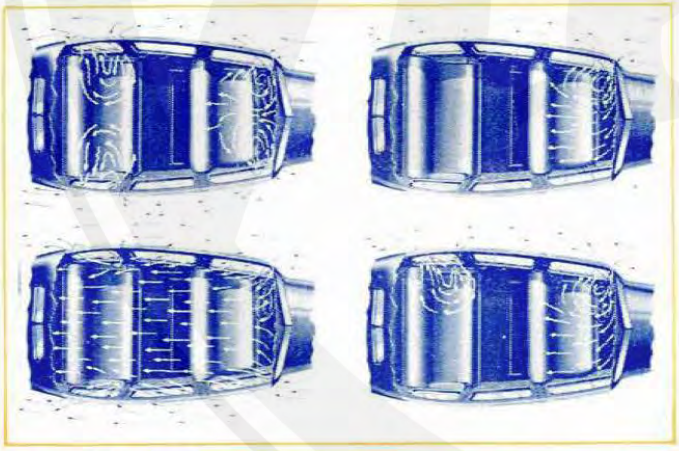


Cowl Ventilator

Like knee action wheels, Fisher No Draft Ventilation is another feature which makes riding in a Buick a real pleasure regardless of the conditions under which you travel.

It enables you to keep the interior of your car supplied with refreshing air without subjecting the passengers to drafts.

By setting the Ventipanes at the proper angle, you can control the circulation of air to suit your comfort and that of each individual passenger—on stuffy hot days or blustery, cool ones, in wet weather as well as dry.



Upper left . . . Arrows indicate travel of air with all ventilators open.
Lower left . . . Arrows indicate travel of air with all ventilators set in "scoop" position.
Upper right . . . Arrows indicate travel of air with left front ventilator open.
Lower right . . . Arrows indicate travel of air with left front and left rear ventilators open.

Fisher No Draft Ventilation

The diagrams on page 64 demonstrate the most efficient Ventipane settings under various weather conditions.

With the Ventipane open sufficiently as shown, fresh air is drawn in over the forward surface while the vacuum on the back surface sucks out the stale air. Thus, draft-free circulation is obtained.

ALL VENTIPANES OPEN. The arrows show the complete individual control of ventilation that Fisher No Draft Ventilation provides. Each passenger gets his own supply of air. Therefore, even a single passenger in a full car can have all the air he desires without interferring with the comfort of the other passengers.

DRIVER'S WINDOW AND VENTIPANE OPEN. Note how the air flows across the windshield and circulates around the front seat. The flow across the windshield prevents clouding in cold or rainy weather.

IN HOT WEATHER simply open all Ventipanes as wide as possible and pull the windows down. In addition to the air that flows in through the open windows, the Ventipanes "scoop" in greater quantities and distribute it throughout the car.

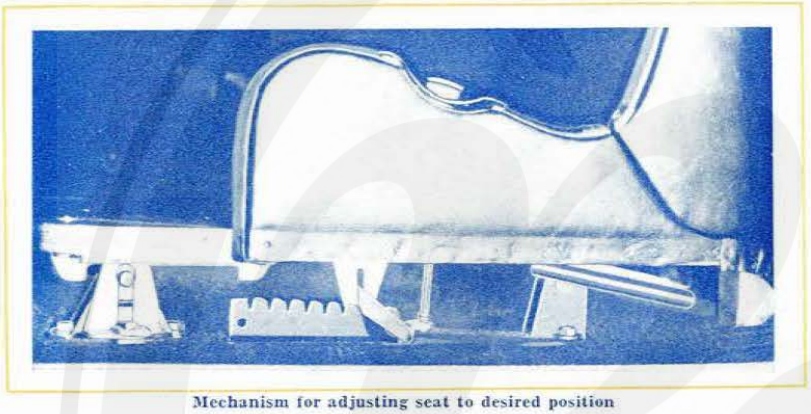
IN COLD WEATHER with a heater on in front, the warm air from the heater is actually drawn into the back of the car when the rear Ventipanes are opened as shown.

ON RAINY DAYS open the Ventipane so that it does not extend beyond the outside edge of the drip-shield as shown. The drip-shield keeps out the rain and yet you still get a circulation of air.

In addition to the Ventipanes, your Buick is also equipped with a cowl ventilator, see page 64. The cowl ventilator, when opened, scoops in additional cool air and circulates it around your feet. You probably will want to use this only on exceptionally hot days to overcome the engine heat which does not dissipate itself as readily as it does on cooler days. This cowl ventilator is particularly useful in the two-door sedans which do not have rear-window ventilators.

THE ADJUSTABLE FRONT SEAT

You can move the front seat of your Buick as your own height requires for driving comfort. This is accomplished by giving a slight lift or pull to the release handle under the seat on the driver's side and moving the seat with you as you move your body. As the seat



Mechanism for adjusting seat to desired position

is moved **ahead**, it also lifts up, tilting the back into a more upright position. This brings the front edge of the cushion a little lower so that the person who needs to be close to the foot controls is lifted up to get a better view without having to stretch for the pedals.

TIRE PRESSURES

Correct air pressures for Buick's large low pressure tires:

	When tires are cold		While tires are hot	
	Front	Rear	Front	Rear
40 - 60	23 lbs.	28 lbs.	25 lbs.	32 lbs.
80 - 90	25 lbs.	30 lbs.	27 lbs.	34 lbs.

Because of the large size of Buick tires a slight variation in pressure will make quite a difference in the handling of the car and the mileage that you get from the tires. It is recommended that you check air pressures once a week.

(See the suggestions on page 53 for other things to do to prolong the life of your tires.)

HOW TO CHANGE TIRES

(See instructions on page 87 of the section entitled, "For The Mechanically Minded.")

TIRE CHAINS

Any of the conventional full-type non-skid tire chains can be used on the rear wheels of your Buick.

Due to the solid disc construction of the wheels, the use of individual cross-link chains is not feasible.

Do not use tire chains on the front wheels under any circumstances. Front wheel chains have no traction effect in driving your car. They simply make steering difficult and actually increase the danger of skidding rather than help prevent it.

SAFETY MEASURES

For safety's sake, your Buick is equipped with everything that sound engineering practice recognizes as practical aids to safer driving and protection against the "other fellow's" possible carelessness.

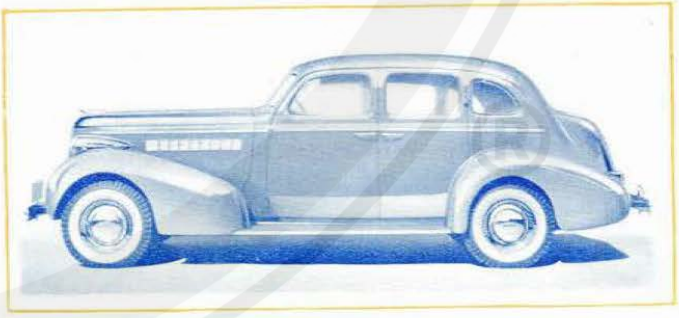
Such features as Buick Hydraulic Brakes, Center-point Steering, Knee Action Wheels, and front and rear stabilization are typical of the extent to which Buick engineers have gone to assure your safety.

THE BUICK BODY

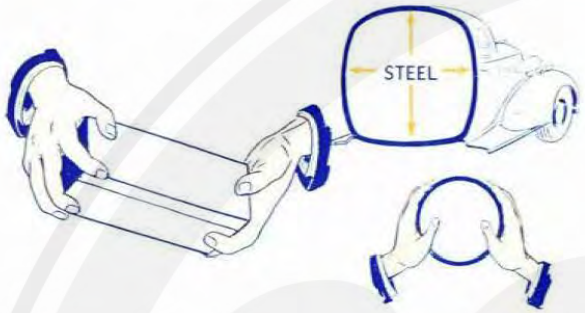
Equally important as these safety measures is your Buick's solid steel Turret Top Body by Fisher. This rugged body gives you the protection of solid steel on all four sides—there is no "soft spot" over your head.

Sectional View of Buick Turret Top

With strong "U"-shaped steel cross bows arched across its crown, steel on its sides and steel on the bottom, the body on your Buick has a sphere-like rigidity.



Buick 11 Sedan



Buick bodies have steel on top, steel on the sides, and steel below. The rounded corners give it a sphere-like shape for greater strength . . . A box, with a cover securely attached, gives greater strength as the top ties the four sides together.

Without a solid steel top the strength of the sphere is lost even though there may be a steel floor with a "patched" or "soft" roof . . . Notice also that a box without a top is sensitive to twist as the sides lack the reinforcement a solid top would give.

In addition, it is heavily insulated against heat, cold and vibration. You ride in luxuriously quiet comfort and perfect peace of mind—regardless of the speed at which you are traveling or the temperature outside.

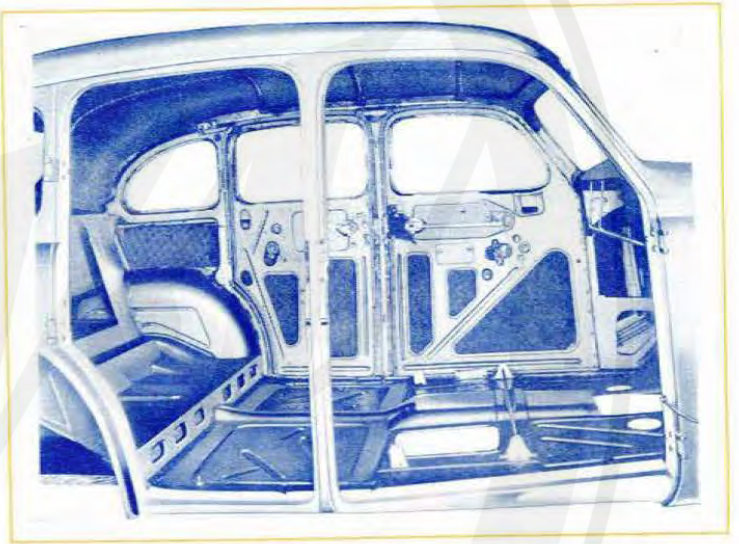
Refreshing, draft-free ventilation is assured with Fisher No Draft Ventilation, as described on page 64 of the section entitled, "Comfort Measures."

On the inner side of the doors, there is a wind hose type of seal of more than ample diameter—$\frac{9}{16}$ of an inch to be exact. There is also

a new rubber pneumatic cushion, similar to the seal used on refrigerator doors, attached to the inner edge of the door flange.

When the doors are closed, this rubber seal is tightly compressed against the outer door channels. This makes the absolute tightness and rattle-free solidity of the body doubly certain.

You have probably noticed the unusually solid sound you hear when you slam any of the doors of your Buick shut. There is no tinni-



Sectional view of solid steel body construction used on Series 40 and 60

ness. This substantial solidity that even your ears detect is your assurance that the body on your Buick is not only completely safe—but that it will continue to remain as solid, true and comfortable as it is right now.

CARE OF FINISH

You have read in other sections of this manual how important the proper lubrication and care of the mechanical mechanism of your Buick is. It is equally important that you give its finish a share of your attention, too, for the following reasons:

1. To prolong its beauty.
2. To protect the value of your investment.
3. To increase your satisfaction and pride of ownership.

Accordingly, here are a few simple suggestions for preserving the finish.

Here is an artist's sketch of what a cross section of the finish on your car looks like when it is new. At the bottom is the steel sheet that must be preserved.

Next comes the specially prepared undercoat, and finally the lacquer finish. The dots represent the particles of pigment that give the finish its color, held together by a carrier or binder. So long as the binder covers the pigment particles, the color and gloss will be retained.

THE WEATHERING EFFECT

Sunlight, rain, snow and road dirt—all war against the finish of your car, and with relatively slight effect. However, over a period of time, some change, known as "weathering" can be noted.

THE WEATHERED FINISH

Extremely long exposure to the weather has this effect. The ultra-violet rays of the sun attack the carrier and break it down, leaving the particles of pigment exposed on top. When you polish your car, you really are removing the spent pigment on top and restoring the finish to its original luster.

The finish is dulled principally by the action of sunlight and water. It is obvious that prolonged exposure to the elements is not helpful.

Sunlight and Moisture

If the car is used along the seashore for a period of time, special precautions should be taken to protect the finish and chromium. It is advisable to wax the body and plated parts every three or four months as this wax coating prevents rust and corrosion.

Salt Air

When operating the car over dusty roads, a few minutes now and then should be spent to remove the accumulated dust with a soft cloth, wiping rather than rubbing the surface in order to avoid scratching the finish. This lessens the necessity for more frequent washing of the car. If the car has been operated over roads that are freshly tarred, the tarred spots can be removed from the body with a commercial tar remover. If the tar is still fresh, it can be removed with plain gasoline.

Tarred Roads

After prolonged driving on muddy roads, the dirt and mud should be flushed off the finish of the car with a hose. If mud is permitted to accumulate on the finish of the car, it becomes more difficult to remove.

Muddy Roads

Winter driving in Northern sections of this country, partic-

Winter Roads

ularly in cities where salt or calcium chloride is used to melt ice on the streets, requires special precautions on owner's part to preserve the chromium and finish. Frequent washing to remove the salt or calcium chloride deposits will decrease their harmful effects.

THE PROTECTED FINISH

Here the spent pigment has been removed and the body waxed, leaving a thin film of wax as a protective coating over the lacquer surface. The finish has been restored and further erosion checked.

Since the wax film does not last indefinitely, it must be renewed from time to time.

Washing and Polishing

When washing and waxing the car, use a sponge with plenty of water to clean the body, then dry it carefully with a clean chamois. When waxing the body, work on only two or three square feet at a time rubbing that area to the degree of polish desired before proceeding to the next. If a cleaning compound is also used, it should be handled with care to avoid removing any of the hard finish under the film of dirt and spent pigment.

CHROMIUM

Chromium parts also need protection. The bare steel, where exposed by injury to, or scratches in, the chromium finish, may rust unless protected by an oil or wax film.

THE UPHOLSTERY AND ITS CARE

This section presents tried and tested methods for the removal of the more common types of specific spots and stains. All of the cleaning methods described can be used with complete assurance of safety, if instructions are carefully followed.

Before cleaning the upholstery, you should know whether it belongs among (1) Modern Mohair Velvets, or (2) Broadcloths and Bedford Cords.

CARE OF MODERN MOHAIR VELVET AUTO UPHOLSTERY

This upholstery can be washed safely with soap and water. Use luke warm water and a neutral soap. The suds should be good and frothy, not "watery" and should be applied in moderate quantities with a damp cloth, sponge or soft brush. Be sure to rub with the pile, not against it. Remove suds with a clean damp cloth or sponge. Then wipe surface several times with a dry cloth. Brush material lightly, while still damp, with a whisk broom or brush of medium stiffness. Permit air to circulate freely over the wet upholstery and, when dry, brush again with the pile.

CARE OF BROADCLOTH AND BEDFORD CORD UPHOLSTERY

These fabrics can be completely cleaned, but not with soap and water.

Because these are "flat fabrics," spots—if they are not immediately removed may spread and be absorbed, making removal difficult. Care should be taken in the use of cleaning solvents to minimize the amount of "finish" removed from the material and lessen the possibility of "cleaning rings." This is fully discussed in the following instructions for cleaning.

GENERAL INSTRUCTIONS FOR CARE OF UPHOLSTERY

Dust and dirt particles that fall on the surface of auto upholstery should be removed every few weeks—more often with constant, hard driving. This removal can be done readily with a whisk broom or vacuum cleaner.

GENERAL INSTRUCTIONS FOR REMOVING STAINS

1. Use clean cloths and be sure clean portions of the cloth are used throughout any operation.
2. A neutral (non-alkaline) soap should be used whenever soap suds are applied.
3. Avoid using hot water, except when instructions call for it and then it should be wiped off immediately before it has a chance to run.
4. Do not use any gasoline as cleaning solvent, which is colored or contains tetraethyl lead.
5. Do not use bleaches or reducing agents. Follow specific instructions carefully.
6. Most cleaning solvents, except carbon tetrachloride solutions and chloroform are inflammable and care should be taken in handling them. Chloroform should be used carefully and in small quantities so that vapors are not inhaled.
7. Mohair velvets should always be brushed in the direction of the pile or lengthwise of the goods.
8. In removing grease spots, start just outside the spot and rub towards it. This will lessen the possibility of cleaning rings.

INSTRUCTIONS FOR REMOVAL OF SPECIFIC TYPES OF STAINS

BATTERY ACIDS

Pour enough ordinary household ammonia directly on the spot so that it will be well covered. Permit this to stand about a minute to neutralize the acid. Rinse the spot with cold water applied with a clean cloth.

Acid spilled on any fabric will form holes in a short time, therefore, this treatment should be applied immediately or as soon as possible.

BLOOD

Rub spot with clean cloth wet with cold water until no more stain will come out. Use clean portions of the cloth at all times.

Never use hot water or soap on blood stains, as their use will set the stain, making its removal impossible.

CANDY, FRUIT AND ICE CREAM (OTHER THAN CHOCOLATE)

Pour hot water (boiling, if possible) directly onto the spot. Remove excess sugar, pulp or grease by scraping with dull knife, then rub spot with cloth wet in very hot water. If this fails to remove the stain, allow to dry, then sponge with carbon tetrachloride solution. Soap is not recommended. It may set the stain and cause permanent discoloration.

CHOCOLATE

Use a cloth wet with clear, lukewarm water. After spot is dry, sponge with carbon tetrachloride or chloroform.

Cream or fruit filled candy may require the use of soap and lukewarm water together with scraping with a dull knife. Rinse well with clear, cold water applied with a cloth.

TAR AND CHEWING GUM

Moisten with chloroform, carbon tetrachloride, benzine or gasoline (not ethyl) then remove as much as possible with a dull knife. Rub again with a cloth wet with the solvent until stain disappears.

GREASE AND OIL

If grease has been spilled on the upholstery, as much as possible should be removed by scraping with a dull knife before attempting any further treatment.

Grease or oil spots may be removed by sponging with a clean cloth and a solvent such as carbon tetrachloride, benzine, chloroform, ether or gasoline (not ethyl). To lessen the possibility of grease rings, start just outside the spot and rub towards it with a circular motion. Always use clean portions of cloth to rub the stain.

If a dirty stain remains after this treatment, rub the spot with a clean rag saturated with lukewarm suds. Rinse with clean water and cloth.

INK

The composition of various writing ink varies: therefore, it is impossible to find agents effective in removing all ink stains. It is difficult to remove ink from velvet and flat

fabrics without injuring the goods. The following methods are recommended and are listed according to their relative efficiency.

1. Gartside's Iron Rust Soap—rub soap on stain with the fingers. Let stand a minute and wipe off with a dry cloth. Repeat until wiping cloth no longer shows stain. Rinse with cold water and clean cloth.
2. Carter's Ink Eraser No. 1 Solution (Solution No. 2 cannot be used since it changes color of fabric)—apply solution to stain with eyedropper and blot with blotting paper. Repeat until blotter shows no stain. Rinse with cold water and clean cloth.
3. Saturated Solution of Oxalic Acid—use as outlined in No. 2.
4. Two per cent Solution of Sodium Acid Flouride (Sodium Biflouride)—use same as in No. 2.

IRON RUST

Wash spot with warm soap and water and clean cloth. Rinse well and treat exactly as an ink spot.

ENAMEL, PAINT AND LACQUERS

If stain is not dry, remove as much as possible with a cloth wet in turpentine or in one of the solvents mentioned for dry stains. This may entirely remove the spot, if not, proceed with treatment for dry stains.

For dry stains, saturate with the following mixture:
1 part denatured alcohol
1 part benzine
1 part acetone
1 part butyl or amyl acetate

Then work out as much paint as possible with a dull knife.

Repeat this treatment several times then saturate the spot with above mixture and rub vigorously with clean cloth and strong lukewarm soap suds. Rinse with clear water and clean cloth.

LIPSTICK

Some lipstick stains can be removed more easily than others. Pour a little chloroform or carbon tetrachloride on the stain and press a blotter firmly on the spot. Repeat this, using clean sections of blotter, until stain is completely removed.

FOR THE MECHANICALLY MINDED

You will frequently hear modern car owners say, "I don't know anything about machinery. I don't even like to lift the hood."

It is entirely possible and sensible for people to drive a Buick in this way. The car is built, and Authorized Service is maintained to give them all the pleasure of driving without the "chore" of bothering with mechanical adjustments or even slight repairs.

But, there are other drivers who actually like to work on their cars. Such people have some knowledge of mechanics, and we can see no reason why they should not have the pleasure which this experience provides.

If you are such an owner, the following pages will interest you.

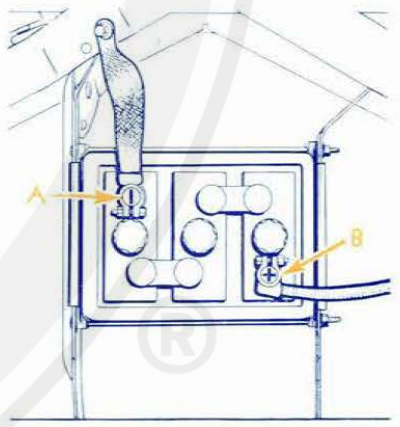
Needless to say, there are many jobs which require not only experience, but proper tools and equipment as well. If there is any question, the safe rule is to take your car to an Authorized Service Station.

THE BATTERY

Prest-o-lite Batteries on Canadian cars are as follows :—	97 amp. hr.
Series 40 Prest-o-lite Model No. RTX-1.15 Plate 100 amp. hr	110 amp. hr.
„ 60, 80, and 90 „ „ RTX-2.17 „ 120 „ „	110 amp. hr.
	110 amp. hr.

Full instructions for servicing the battery will be found on page 41.

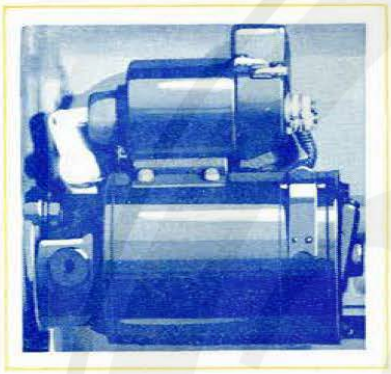
Terminals A and B must always be tight to secure maximum efficiency from the battery.



THE STARTING MOTOR

The starting motor front bearing should be lubricated each 1,000 miles with a few drops of engine oil. Also a few drops

should be used on the fulcrum of the shifting mechanism lever. Do not oil the solenoid plunger.

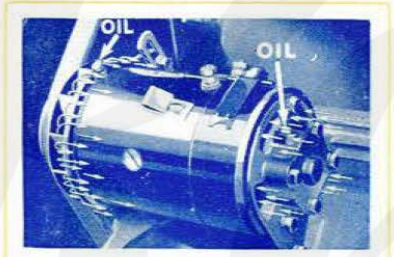


Buick Starter

THE GENERATOR

The generator charging rate is not adjustable. The generator can be assumed to be functioning properly when the instrument panel indicator shows "charge" at road speeds between 10 and 15 miles per hour providing the only current used is for the ignition system.

Lubricate the generator at the front and rear bearing as shown in cut, Use engine oil every 1,000 miles.



Buick Generator

ENGINE TIMING

1. Check breaker point gap as follows:
   (a) Remove distributor cap and rotor (see Fig. 1).
   (b) Rock engine over slowly until breaker arm points are open to the widest position.

Fig. 1. Checking Timing

   (c) Check gap with .015" feeler gauge.
   (d) If gap is incorrect, loosen lock screw and turn eccentric screw until gap is just .015".
   (e) Tighten lock screw securely after adjusting the gap.

2. Uncover timing hole on side of flywheel housing. See Fig. 2.
3. With ignition "off", turn engine over until distributor rotor is approximately under No. 1 high tension terminal. If distributor has been removed turn engine over until No. 3 cylinder exhaust valve "D", Fig. 3, starts to open. Continue to turn slowly until the "Adv." mark on flywheel comes directly opposite the index line on flywheel housing. This is the position to fire No. 1 cylinder.

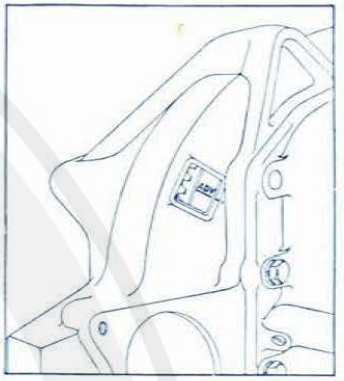


Fig. 2. Timing Mark

4. If distributor has been removed, install in position shown in Fig. 4.
5. Turn on ignition and remove the center high tension lead from the distributor cap and hold in position to form a gap with distributor housing. See Fig. 1. Rotate distributor in a clockwise direction until the breaker points open, and a spark is produced at the gap.

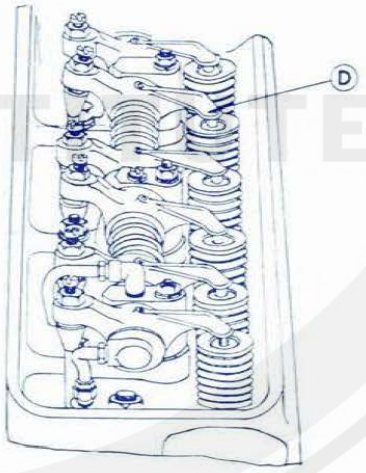


Fig. 3. No. 3 Exhaust Valve

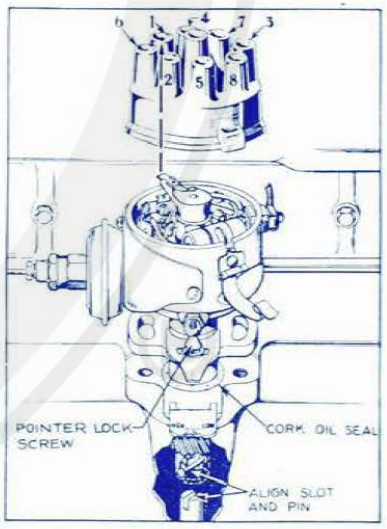


Fig. 4. Installing Distributor

6. After engine has been timed, the operation should be checked by revolving the crank shaft two revolutions and observing the position of the timing mark on flywheel relative to index line on flywheel housing at the instant spark occurs. To do this put car in high gear and roll forward.
7. Observe position of pointer index line. This line should be directly opposite line on the scale. See Fig. 5. If lines do not coincide, loosen the pointer, lock screw with a $\frac{3}{16}$" Allen set-screw wrench, adjust pointer to correct position, and tighten the pointer lock screw.

THE OCTANE SELECTOR

This is an arrangement on the distributor to set the spark timing, high or low, without having to check the timing after it has been set. For high octane fuels like Ethyl gasoline, the pointer can be moved towards "high" and vice versa.

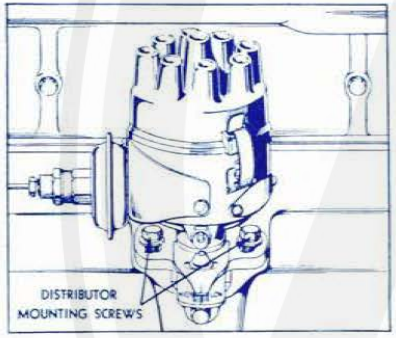


Fig. 5. Pointer Position—Regular Gasoline

To adjust the octane selector, it is necessary to loosen the two distributor mounting screws. The distributor can then be rotated so that the pointer is toward the low side of the scale for fuel of low octane rating, and toward the high side for fuel of high octane rating.

The correct position for low octane fuel is indicated if there is a very light "ping" between 10 and 20 m.p.h., when accelerating with the throttle wide open. To obtain maximum economy, do not move the control lever toward "low" more than necessary. All cars should have a slight "ping", even with high octane (Ethyl) gas under these conditions.

THE SPARK PLUGS

In case you readjust the spark plug gap, always make the adjustment from the grounded electrode (see illustration) and never from the center electrode, as this may crack or break the porcelain.


Spark Plug Adjustment

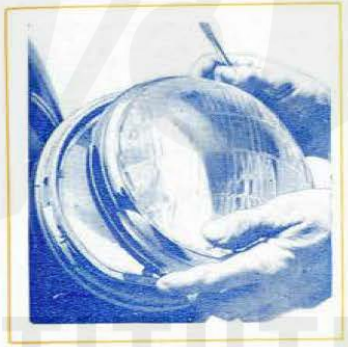
AC type H-9 spark plugs are used in all models. The gaps of the plugs should be set at .025" to .030".

CLEANING HEADLIGHTS

To clean headlights, remove the headlight lens and wipe with a soft, clean cloth—or apply a mixture of lampblack and pure alcohol. Always wipe from the center straight out to the rim. Rubbing in a circular motion may cause slight scratches in the reflector and lessen its efficiency. If frequent cleaning is required, inspect rim gaskets to see if they need replacing.


Loosening rim


Removing light bulb

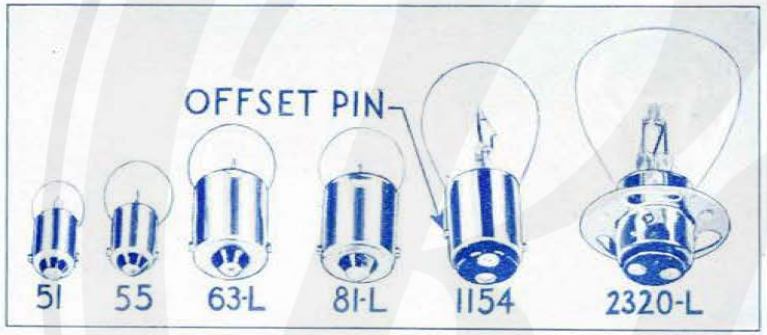

Removing rim and lens


Installing light bulb

Bulbs that have turned dark should be replaced. The Buick Pre-Focused Bulb can be installed in only one position. Its base is marked TOP. When installing bulbs, make sure that all three hold-down lugs enter the slots in the bulb base. Then turn the bulb to the right so that the hold-down lugs are in the extreme end of the slots.

LAMP BULBS

Headlights	2320L	32-21	c. p.
Parking lights	55	1.5	c. p.
Stop and tail lights	1154	21-3	c. p.
Instrument panel	55	1.5	c. p.
Dome light	81L	6	c. p.
Map light	55	1.5	c. p.
Fender lights	55	1.5	c. p.
Beam indicator	51	1	c. p.



If a headlight lens becomes broken, the reflector should be protected by fastening a cloth over the headlight face, until a new lens can be secured.

Be sure to use the genuine Multi-beam lens should you have occasion to make replacement. Also, be sure to get the right or left lens as required.

Headlam
bulbs as

THE FUEL SYSTEM—CLEANING FUEL PUMP BOWL

The fuel pump is provided with a glass bowl and a screen of fine mesh, through which the fuel must pass upward. Dirt and water settle in the glass bowl, which may be removed for cleaning. Simply loosen the retaining nut beneath the bowl until the bowl can be lifted out. Be sure the gasket is not broken and that the bowl seats properly when you replace it. If bowl impressions are on both sides, gasket should be replaced. Tighten the star-shaped nut at the bottom to prevent air leakage.

Fuel Pump and Bowl

It is good practice to run the motor until the bowl refills to make sure that it has been properly installed.

NOTE; The gasoline tank is vented through the filler cap. Should it be necessary to replace the cap with a new one—be sure a vented type is used.

HIGH AND LOW VOLATILITY FUELS

In some parts of the country gasolines are marketed for easy starting. Some of these fuels are far more volatile than regular gasoline. Such gasolines, however, are not needed in your Buick, since its automatic choke has been designed and calibrated to provide easy and positive starting on regular blends of gasoline.

These volatile gasolines make it very easy for an owner to overchoke the engine by loading the manifolds during the starting trials.

If starting troubles are experienced, they are no do
this condition, provided the choke and engine are tuned u bulbs should
When highly volatile fuels are used the following pro designated.
help overcome any starting difficulty.

After turning on ignition switch, DEPRESS ACCELERATOR PEDAL ALL THE WAY TO FLOOR INSTEAD OF JUST ENOUGH TO ENGAGE STARTER. Hold the pedal down in this position until the engine starts and runs sufficient to allow throttling at a reasonably low speed without stalling.

No damage to the starter mechanism will result from this method of starting as the starter will automatically be released as soon as engine speed increases sufficiently.

THE BUICK AERO-TYPE CARBURETOR

The carburetor on your Buick is designed similiar to the carburetors used on all types of airplanes.

It functions in much the same way that a stunt-flying airplane carburetor must—in any position, sideways or even upside down.

Of course, no automobile carburetor needs to be quite that versatile. But with your Buick's flashing power and extra-sensitive responsiveness, you need a carburetor which will operate on almost any grade—on fast turns and quick stops.

This is what the Buick Aero-type carburetor does. Specifically, its advantages are:

1. It eliminates the possibility of your motor's missing or stalling on sharp turns.
2. On quick stops—it also prevents stalling.
3. On steep grades—it meters out the fuel evenly.
4. In hot starting—it practically eliminates "percolating."
5. On quick starts at low speeds—it provides greater smoothness.
6. Parked on grades—it prevents flooding.

You can see from the accompanying illustration the difference in the jet positions from those in an ordinary carburetor. In the Aero-type carburetor the jets are "centered" **inside** the float chamber so

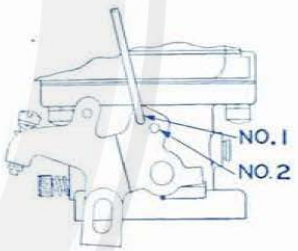
Top three illustrations show the conventional carburetor nozzle at side of carburetor bowl

Lower three illustrations show the center location of nozzle as built in the Buick Aero-type Carburetor

that regardless of the surface angle of the gasoline at any time the jets can continue to function normally. There is a wall at the forward end of the chamber and some baffles near the base of the nozzle, which tend to entrap the fuel when the car is whipped around sharp curves or the brakes are applied while turning.

To adjust the idle speed simply turn the stop screws on the carburetor throttle valve shaft. This causes the valve to remain slightly open when the hand throttle or accelerator are not operated. The correct idle speed of a normally warm engine is equivalent to a 7 or 8 m.p.h. car speed on a level road.

The two screws (one for each carburetor barrel) are adjusted for the best possible idle by turning them "in" until they seat and then turning them out $\frac{7}{8}$ of a turn on the Series 10 and $1\frac{1}{4}$ turns on the Series 60-80-90. Be very careful not to "ring" these brass needles when seating same. When both screws are set as described it may be possible to obtain a better idle by going in or out about $\frac{1}{16}$ or $\frac{1}{8}$ turn each. This should only be checked with a normally warm engine.



There is one other selective setting which has to do with the accelerating pump in the carburetor. This need not be changed unless highly volatile fuels are to be used regularly. For the gasolines which are not classed as "volatile," install link in the hole designated in illustration as No. 1. For highly volatile gasolines the link should be installed in the hole designated as No. 2. This will cut down the amount of gasoline "pumped" when accelerating the engine and prevent overloading when highly volatile fuels are used.

THE BUICK VALVES

The correct lash is .015" with the engine warm. It requires 8 to 10 miles of running or several minutes of idling to bring the entire engine to its normal operating temperature of 140° to 180°. The adjustment is made at the ball stud of the rocker arm and the lash de-

Buick's accessible valve adjustment

termined by "feeling" the clearance between the valve and the rocker arm using an .015" feeler gauge. This adjustment can best be made with the engine idling.

BUICK AIR CLEANERS

Figures 1 and 2 show the regular production air cleaner which is used in areas free from large quantities of dust.

Figure 3 shows the Heavy Duty Oil Bath air cleaner necessary for use in dusty areas.

Fig. 1. Air Cleaner (Regular) Series 10

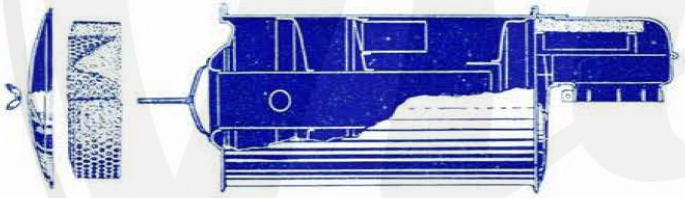


Fig. 2. Air Cleaner, Regular—Series 60, 80 and 90

The screen element in the regular air cleaner should be cleaned and reoiled every 2,500 miles.

To clean—remove the wing nut in Figures 1 and 2 and pull off the cleaning element. This will permit the filtering element to be removed. Clean this part in a pail of clean gasoline (do not use Ethyl or colored gas.) Rinse until thoroughly clean

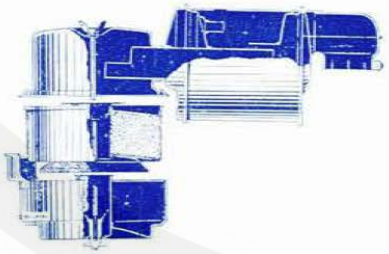


Fig. 3. Air Cleaner, Heavy Duty

and recoil the screen element with No. 50 cylinder oil until thoroughly covered with a film of fresh, clean oil. When the engine is first started, after oiling the air cleaner the exhaust may be clouded with blue smoke. This will be only a temporary condition and does not indicate any trouble.

The Heavy Duty air cleaner can be distinguished from the production cleaner by its appearance. To clean the filter element remove wing nut which will allow the filter element to be pulled off. Clean in gasoline as described previously.

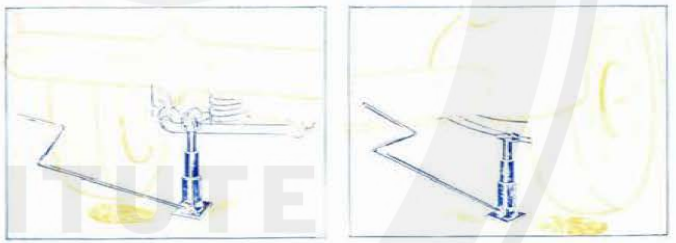
This cleaner carries one pint of No. 50 cylinder oil in the pan and the oil should be replaced with clean oil every 10,000 miles.

CHANGING TIRES

To remove wheels, proceed as follows:

1. Jack up the car.
2. Pry off the cap with screw driver.
3. Remove the nuts with the demountable wheel wrench.
4. The wheel can then be removed from the hub.

The illustration below shows the location of jacks when lifting wheel. Always use these pads instead of placing the jack under the rear axle or front suspension parts.



Location of Front and Rear Jack Supports (Illustration is of Series 10 and 60)

REMOVING TOP BEAD WITH WHEEL ON FLOOR

Deflate tube completely. Loosen both beads from rim ledges using tool if necessary. Stand on tire with feet about 15 inches apart opposite valve stem to force bead off the bead seat into the well. See Fig. 1. Insert two tire tools about 8 inches apart between bead and rim flange near valve stem and pry short lengths of bead over flange, as shown in illustration. Then leaving one tool in position,

Fig. 1

Fig. 2

Fig. 3

follow around rim with the other tool, taking small bites, to remove remainder of bead.

REMOVING BOTTOM BEAD

Remove inner tube. Fig. 2. Stand wheel in upright position with bead in well of rim at bottom, and apply soap around both sides of the rim. Insert tool between bead and rim flange at top side of wheel and pry wheel out of tire, as shown in illustration. See Fig. 3.

APPLYING BOTTOM BEAD

Before mounting, use soap, as tire changing is made extremely easy by coating the inside and outside tire beads with soap, which helps the beads to slid back completely against the rim flange. The use of soap is highly recommended.

DO NOT USE OIL OR GREASE. Inflate tube until barely rounded out and insert in tire. Place tire on rim, guiding valve through valve hole. Push bottom bead down into well at valve stem and force remaining portion of bead over rim flange, using a tire tool if necessary, see illustration. When following around, use small bites.

At point opposite valve stem, insert tool between top bead and rim flange, prying bead over rim flange and into the well. Holding this tool in position, continue prying with other tool, taking small bites, working around rim until bead is in place, see illustration. Always keep as much of the top bead as possible in the well while applying. Push valve stem back into casing to make certain that

tube is not pinched under the bead. Do not let go of the valve stem while doing this. Inflate slowly and see that tire beads are centered on rim at both sides, before inflating fully.

When replacing wheel make certain that the nuts are drawn up tight. In tightening the nuts, continue to tighten until the wheel is drawn up snug against the hub flange.

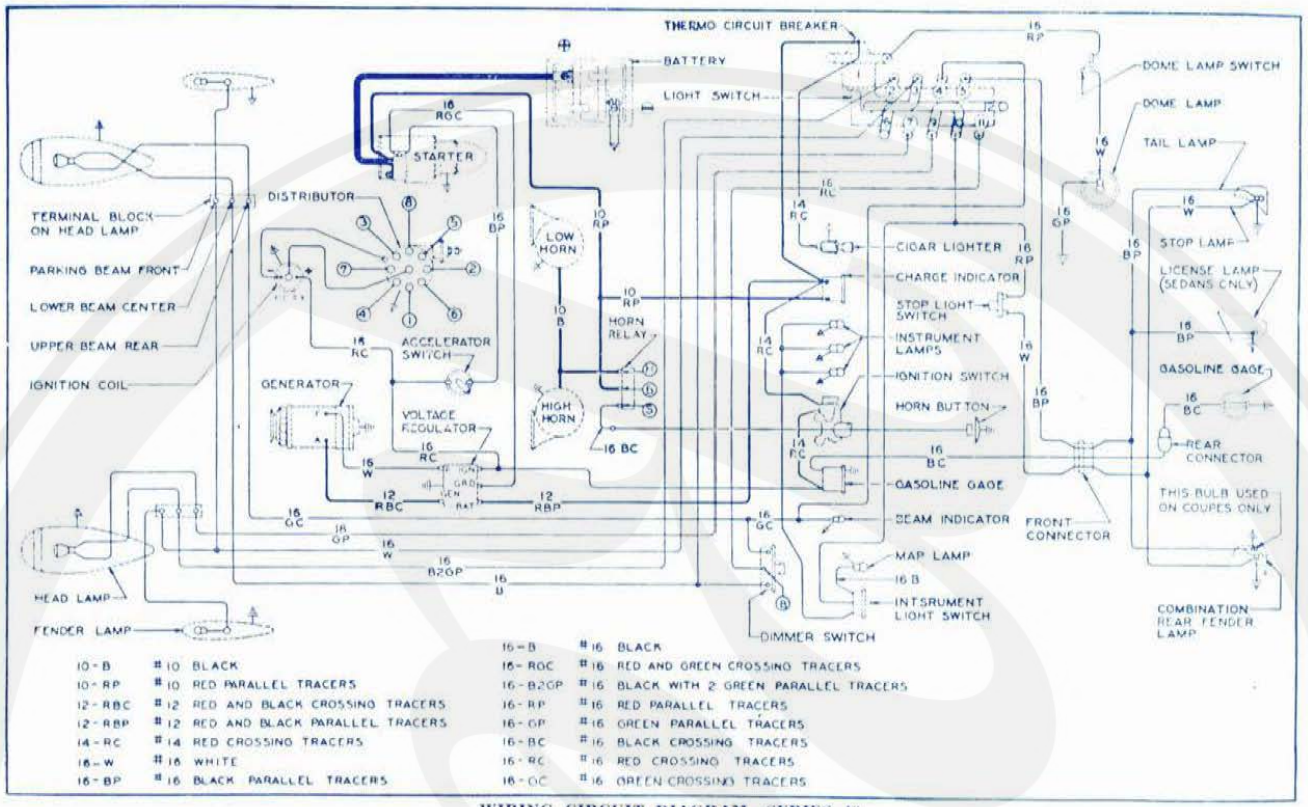
THE SIMPLEST WAY TO TAKE GOOD CARE OF YOUR CAR

From the list of Service Operations on page 7, you will note that lubrication services are scheduled at regular intervals.

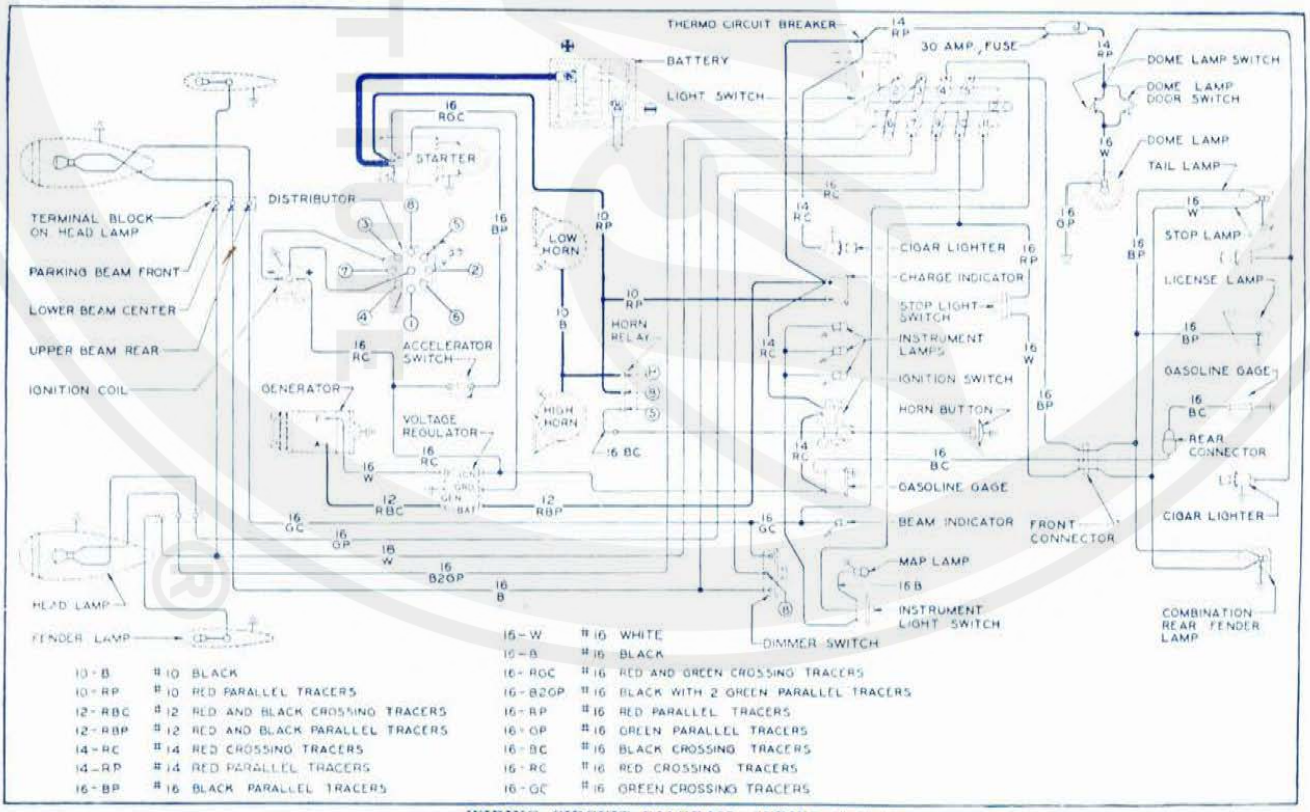
The simplest suggestion, then, is that you take your car to Buick Authorized Service every thousand miles. Get to know the men there, and give them an opportunity to inspect your car. These men are experienced and their recommendations may well be followed.

WIRING DIAGRAMS

On the following pages are shown the principal wiring diagrams for all 1937 Series Buicks. This information should be of much help in locating any electrical troubles in the system.



WIRING CIRCUIT DIAGRAM—SERIES 40



WIRING CIRCUIT DIAGRAM—SERIES 60-80-90

SPECIFICATIONS AND LICENSE DATA

	SPECIAL	CENTURY	ROADMASTER	LIMITED
	Series 40	Series 60	Series 80	Series 90
Wheelbase	122"	126"	131"	138"
Tire Size	16 x 6.50—4 ply	15 x 7.00—4 ply	16 x 7.00—4 ply	16 x 7.50—6 ply
Bore	$3\frac{3}{32}$"	$3\frac{7}{16}$"	$3\frac{7}{16}$"	$3\frac{7}{16}$"
Stroke	$4\frac{1}{8}$"	$4\frac{5}{16}$"	$4\frac{5}{16}$"	$4\frac{5}{16}$"
Piston Displacement	248.0 cu. in.	320.0 cu. in.	320.0 cu. in.	320.0 cu. in.
Horsepower (N.A.C.C. Rating)	30.63	37.8	37.8	37.8
Horsepower (Actual)	100 at 3200 r.p.m.	130 at 3100 r.p.m.	130 at 3100 r.p.m.	130 at 3400 r.p.m.
Firing Order	1-6-2-5-3-4-7-8 all Series			
CAPACITIES				
Gasoline Tank	18 gals.	20 gals.	20 gals.	20 gals.
Cooling System	$13\frac{1}{4}$ qts.	17 qts.	17 qts.	17 qts.
Transmission	$1\frac{3}{4}$ pts.	$2\frac{1}{2}$ pts.	$2\frac{1}{2}$ pts.	$2\frac{1}{2}$ pts.
Differential	3 lbs.	4 lbs.	4 lbs.	4 lbs.
Oil Capacity (Refill)	6 qts.	8 qts.	8 qts.	8 qts.
Oil Capacity (Dry Engine)	7 qts.	9 qts.	9 qts.	9 qts.
ADJUSTMENTS				
Valve Lash or Clearance	.015" Hot	.015" Hot	.015" Hot	.015" Hot
Distributor Point Opening	.015"	.015"	.015"	.015"
Spark Plug Gap	.025"	.025"	.025"	.025"
Clutch Pedal Lash or Free Movement	$\frac{3}{4}$" to 1"	$\frac{3}{4}$" to 1"	$\frac{3}{4}$" to 1"	$\frac{3}{4}$" to 1"

DETAILED INDEX

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RECOMMENDED LUBRICANTS FOR BUICK CARS.

		PRICE'S	WAKEFIELD	VACUUM	SHELL	ESSOLUBE	DUCKHAM'S
Engine	Summer	Motorine D ...	Patent Castrol AA	Mobiloil A ...	Double Shell ...	Essolube 40 ..	Duckham's Aero N.P. 2
	Winter	Motorine D ...	Patent Castrol C.W.	Mobiloil A ...	Single Shell ...	Essolube 30 ...	Duckham's Aero N.P. 2.
Gear Box	Summer	Motorine Battersea A	Castrol D Gear Oil	Mobiloil C ...	Shell Spirax ...	Essolube Gear Oil Heavy	Duckham's Adcol "S" Gear Oil
	Winter	Motorine Battersea A	Castrol D Gear Oil	Mobiloil C.W.	Shell Spirax ...	Essolube Gear Oil Medium	Duckham's Adcol "S" Gear Oil
Rear Axle	Summer	Motorine E.P.	Castrol Hi-Press Gear Oil	Gargoyle Hypoid Gear Lubricant	Shell E.P. Spirax	Esseleum Expee 110	Duckham's XS-Press Oil
	Winter	Motorine E.P.	Castrol Hi-Press Gear Oil	,, ,, ,,	Shell E.P. Spirax	Esseleum Expee 110	Duckham's XS-Press Oil
Steering Box		Motorine E.P.	Castrol Hi Press Gear Oil	,, ,, ,,	Shell E.P. Spirax	Esseleum Expee 110	Duckham's XS-Press Oil
Chassis		Belmoline C ...	Castrolease Medium	Mobilgrease No. 2	Shell R.B. Grease	Esso Grease ...	Duckham's Adcol H.B.B. Grease
Front Hubs		Price's High Speed Grease	Castrolease Heavy	Mobilgrease No. 4	Shell R.B. Grease	Esso Grease ...	Duckham's Adcol H.B.B. Grease
Dynamo, Starter Motor, and other oilers		Motorine D ...	Wakefield Oilit ...	Mobiloil A ...	Single Shell ...	Essolube 30 ...	Duckham's Aero N.P. 2
Fan, Water Pump, and Clutch Release Bearing		Motorine D ...	Patent Castrol C.W.	Mobiloil A ...	Single Shell ...	Essolube 30 ...	Duckham's Aero N.P. 2
Door Locks, Hinges, &c.,		Price's Cycle Lubricating Oil	Wakefield Oilit ...	Gargoyle Velocite Oil D	Single Shell ...	Essolube 30 ...	—
Rear Springs		Rangraphine ...	Castrolease G ...	Gargoyle Grease Graphited No 5	—	—	—
Squeak and Rusted Parts		Price's Penetrating Oil	Castrol Penetrating Oil	Voco Penetrating Oil	Shell Penetrating Oil	—	Duckham's Easing Oil