



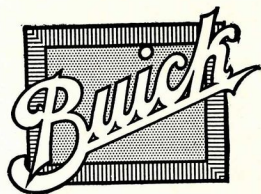
1928 MODELS



SPECIAL FEATURES
and
DETAILED SPECIFICATIONS



BUICK MOTOR COMPANY
DIVISION OF GENERAL MOTORS CORPORATION
FLINT, MICHIGAN



1928 MODELS



SPECIAL FEATURES
and
DETAILED SPECIFICATIONS



This book is issued by the sales department of Buick Motor Company
for the information of the sales and service departments
of Buick branches, distributors and dealers.

AUGUST 1, 1927

1928 MODELS

115" SERIES

MODELS

28-20	5-Passenger Two Door Sedan
28-24	4-Passenger Sport Roadster
28-25	5-Passenger Sport Touring
28-26	2-Passenger Business Coupe
28-26S	4-Passenger Country Club Coupe
28-27	5-Passenger Four Door Sedan
28-29	5-Passenger Town Brougham
Tires	31x5.25 low pressure
Gear Ratio—Models 20-27-29	5.1 to 1
Models 24-25-26-26S	4.9 to 1
Engine	3 1/8" bore x 4 1/2" stroke
Piston Displacement	207.1 cu. in.
Rated horse power	23.44 S. A. E.
Actual horse power	63 h. p. at 2800 r. p. m.
Car speed, maximum	65 to 70 miles per hour
Braking area	270 sq. in.
Gas tank capacity	16 gallons

120" SERIES

MODELS

28-47	5-Passenger Four Door Sedan
28-47S	5-Passenger Sedan
28-48	4-Passenger Coupe
Tires	33x6 low pressure
Gear ratio—Models 47-47S	4.9 to 1
Model 48	4.72 to 1
Engine	3 1/8" bore x 4 3/4" stroke
Piston displacement	274 cu. in.
Rated horse power	29.4 S. A. E.
Actual horse power	77 h. p. at 2800 r. p. m.
Car speed, maximum	70 to 75 miles per hour
Braking area	350 sq. in.
Gas tank capacity	19 gallons

128" SERIES

MODELS

28-50	7-Passenger Sedan
28-51	5-Passenger Brougham
28-54	4-Passenger Sport Roadster
28-54C	4-Passenger Country Club Coupe
28-55	5-Passenger Sport Touring
28-58	5-Passenger Coupe
Tires	33x6 low pressure
Gear Ratio—Models 50-51	4.9 to 1
Models 54-54C-55-58	4.72 to 1
Engine	3 1/8" bore x 4 3/4" stroke
Piston displacement	274 cu. in.
Rated horse power	29.4 S. A. E.
Actual horse power	77 h. p. at 2800 r. p. m.
Car speed, maximum	70 to 75 miles per hour
Braking area	350 sq. in.
Gas tank capacity	19 gallons

Special Mechanical Features

- FRAME** Frames on all models have been redesigned for greater strength and rigidity and to lower the center of gravity of the car. These frames are of the double drop type with increased depth of side channels and reinforcements between upper and lower flanges at engine rear cross member and at rear spring trunion. Additional strength has been provided by extra large flanges on front engine cross member, and brake shaft and rear kick up cross members.
- REAR AXLE** Same as used on 1927 models except:—
On the 115" Series the differential pinion shaft has been increased in size from $\frac{3}{4}$ " diameter to $1\frac{3}{8}$ " diameter.
On the 120" and 128" Series a standardized axle of same type as previously used has been adopted which makes these units identical with the exception of gear ratios and length of third member.
- SHOCK ABSORBERS** Specially designed Lovejoy hydraulic shock absorbers are used both front and rear on all models.
- GASOLINE GAUGE** Instrument board type installed on all models.
- RADIATOR EMBLEM** Improved design now standard equipment on all models.
- WATER TEMPERATURE GAUGE** Special water temperature gauge mounted on instrument board in all models.
- RADIATOR** Increased cooling area provided on all models.
New design of radiator shell gives larger frontal area.
On the 115" Series frontal area is increased 13% over previous design. On the 120" and 128" Series frontal area has been increased 9% and the core has been increased in thickness from $2\frac{1}{4}$ " to $2\frac{3}{4}$ ".
A new type of tubular baffle is fitted as an extension of the filler neck. It encircles the overflow pipe and extends low enough to prevent water being forced out of over-flow pipe.
- RADIATOR BRACE RODS** Triangular method of bracing has been adopted for all models. This construction stabilizes the radiator without throwing undue strains on shell or core.
- THERMOSTAT** A redesign of this unit reduces restriction and ensures more positive operation. New method of mounting in radiator prevents sticking of valve and simplifies removal.
- FAN** Drive has been changed to "V" belt type on 120" and 128" Series and the adjustment is the same as previously used on the 115" Series. The change in belt type was made because of increased thickness of radiator core. It in no way reduces fan belt life and adjustment is seldom required.

- STEERING GEAR LOCK** The steering gear lock in combination with the ignition switch is mounted on the steering column and replaces the transmission lock formerly used. The steering gear cannot be locked until the ignition switch is placed in "Off" position. To lock the steering gear and ignition switch, first turn ignition lever to "Off" position, then turn key and remove. If front wheels are straight the bolt will recess in slotted collar on steering tube. Should it be necessary to lock with wheels at an angle it may be done as the instant the wheels are turned straight it automatically locks. When unlocking, the ignition will not be turned "On" automatically by turning the key, but must be done by moving the ignition lever. The bracket and lock housing are both case hardened and this device has the full approval of the Underwriters' Laboratories.
- ADJUSTMENT OF STEERING WHEEL POSITION** The steering wheel is adjustable on all models so it can be placed in the most convenient position. Adjustment is made by loosening two nuts on the steering column bracket back of the instrument board, and loosening two screws which clamp the steering gear housing in the bracket.
- CAM SHAFT** Cam contours have been changed to reduce the crossing of valves, increase area of valve openings and produce quieter valve action.
- PUSH RODS** Push rods have been increased from $\frac{3}{8}$ " to $\frac{7}{16}$ " diameter and shortened to correspond with lowered overhead valve mechanism.
- VALVE SPRINGS** Valve springs have been shortened for lightness and to reduce clatter.
- VALVES** Valve stems have been shortened to correspond with shortened valve springs. Tulip head exhaust valves of No. 1 Silchrome steel are used in all models.
- VALVE LIFTER GUIDES** Valve lifter guides have been shortened.
- VALVE LIFTER SPRINGS** Valve lifter springs have been shortened.
- CYLINDER HEAD** Cylinder heads have been redesigned to give increased power and to reduce detonation. The combustion chambers on all models are spherical. On the 120" and 128" Series the water passages in head have been changed to provide better cooling of valve seats and valves, and the exhaust ports have been increased in diameter.
- EXHAUST MANIFOLD** On the 120" and 128" Series the exhaust manifold has been increased in cross sectional area.
- MUFFLER** Mufflers have been increased in length and decreased in diameter. Same type and construction as in 1927 Models.
- MUFFLER TAIL PIPE** Tail pipe on 120" and 128" Series has been increased in diameter to reduce back pressure.
- STARTING MOTOR** The Delco-Remy starting motor is now used on all models. The gear ratio between starter gear and fly wheel has been changed to provide greater cranking torque. A ground strap connects the starting motor to the frame. The overrunning clutch has been changed in design to prevent slipping and to give longer life.

- DISTRIBUTOR** A new type jump spark distributor has been adopted. This provides a more uniform spark timing throughout the speed range and longer life to breaker points, rubbing block and bearings. No special tools are required to adjust breaker points or to set timing.
- LIGHT CONTROL** Head, parking and tail lights are controlled by a single lever mounted at top of steering column. This lever has four positions: Parking and Tail, Dim and Tail, Bright and Tail, and Off. The head lights are of the tilting beam type as used previously.
- A two-way switch is provided on instrument board to control the instrument panel indirect lights and the front compartment light.
- A stop light and a back up light are built in combination with the tail light. These two lights are automatically operated by the brake pedal and by the transmission control lever when in reverse.
- HEAD LAMPS** Bullet type head lamps are used on all models, mounted on a rigid one piece cross bar attached to fender arms. This type of mounting greatly reduces lamp vibration.
- HORN** An improved vibrator type horn having an effective and pleasing tone has been adopted for all models.
- GEAR SHIFT** The S. A. E. or conventional type gear shift has been adopted for all models. The Buick type shift may be substituted by parts furnished by Parts Department.
- CHASSIS LUBRICATION** Zerk connections have been made more accessible on brake cross shafts, rear axle and the front shackle bolts of rear springs. The Zerk connections for the brake cross shaft and the front shackle bolts of rear springs are grouped, and reached through a trap door in side apron. On the rear axle, cam shaft connections have been brought to the rear of axle housing.
- CAR JACK** A double screw type jack is furnished with all models. Jack is operated by a folding crank type handle which is so locked in jack that it may be used to place jack under car or to withdraw same.
- TIRE CARRIERS REGULAR EQUIPMENT** On 120" and 128" Series the tire carriers are of same type as used on 1927 models. On 115" Series the carriers are mounted on chassis by four supporting arms which afford greater strength and rigidity.
- TIRE CARRIERS SPECIAL EQUIPMENT** When rear trunk rack is attached, regular tire carrier cannot be used. The parts department is prepared to furnish tire wells for both front fenders. These wells are fitted with bar type locks, and strap type brackets for attachment to cowl are supplied.
- TRUNK RACK** On Models 51 and 55 single piece trunk racks are regular equipment. If a wider rack is desired, a hinged section may be attached. When this is used, however, the tires must be placed in front fenders.
- For all other models a hinged, two piece rack will be supplied by the parts department. With this installation a special gasoline tank and right rear fender wing must be used.
- When the hinged extension of rack is used on Models 51 and 55 or the special rack is attached to other models, special rear bumper and license bracket must be used.

Mechanical Specifications in Detail

115-in. Series

- TIRES** 31 x 5.25 low pressure, black side walls and tread.
- RIMS** 21" diameter by 4" section. Black finish to match tires, centering bosses pressed into base of rim, and set directly on outer leg of felloe, between rim wedges. The bosses ensure rim being mounted true on wheel, and give additional support for rim between wedges.
A rivet is placed in base of rim to ensure correct mounting of rim on wheel.
Rim supported by six wedges.
The rim stock is $\frac{3}{8}$ " thick, which is thinner than stock used in 1927 rims. 1928 rim may be used on 1927 wheel.
- FRONT AND REAR WHEELS** Artillery type, using steel felloe. Spoke width $1\frac{3}{8}$ ", hub flange $7\frac{3}{8}$ " diameter, using twelve $\frac{3}{8}$ " diameter spoke bolts.
Wheels provided with balance weight to counterbalance weight of rim locking device and tire valve stem.
New style hub caps are rolled with a reinforcing bead at inner end. These are interchangeable except for appearance.
- FRONT AXLE** Reverse Elliott type, using drop forged, heat treated I beam $2\frac{1}{4}$ " x $1\frac{7}{8}$ " x $\frac{7}{32}$ ".
Knuckles of drop forged heat treated nickel alloy steel.
Knuckle bearings special hard rolled bronze.
Spindle diameter $1\frac{3}{32}$ " at inner bearing and $\frac{13}{16}$ " at outer bearing.
King bolts are $\frac{7}{8}$ " diameter, provided with ball thrust bearings containing seven-teen $\frac{1}{4}$ " balls to carry load and ensure easy steering.
New I beam is identical with the 1927 beam except that a boss is forged at either end to accommodate the shock absorbers.
- FRONT WHEEL BEARINGS** Front wheel bearings are New Departure adjustable cup and cone type.
Inner bearing carries ten $\frac{5}{8}$ " diameter balls.
Outer bearing carries nine $\frac{15}{32}$ " diameter balls.
- TIE ROD** Tie rod 1" diameter tube, $\frac{1}{8}$ " thickness of wall, adjustable at both ends. Located back of I beam.
- REAR AXLE** Three-quarter floating type, using pressed steel banjo type housing and malleable iron differential carrier.
Housing provided with truss rod for additional strength.
Axle shafts easily removable without removing axle from car.
Differential adjustable and easily removable from rear of axle housing.
Differential of two pinion type supported on each side by No. 0210 New Departure adjustable cup and cone bearings.
Differential pinion pin has been increased from $\frac{3}{4}$ " to $\frac{13}{16}$ " diameter.
Ring gear and pinion are spiral bevel type.
Gear ratios—Models 20-27-29..... 5.1 to 1
Models 24-25-26-26S..... 4.9 to 1.
Rear axle requires $5\frac{1}{4}$ pounds of oil to fill.

AXLE SHAFTS	Axle shafts heat treated, manganese alloy steel.	
	1 $\frac{3}{8}$ " diameter, outer end.	
	1 $\frac{1}{8}$ " diameter, necked portion.	
	1 $\frac{1}{4}$ " diameter, inner end, using six splines.	
REAR WHEEL BEARINGS	Rear wheel bearings are high duty Hyatt roller type, carrying twenty $\frac{3}{8}$ " diameter rolls 1 $\frac{3}{4}$ " long.	
PINION SHAFT	Pinion shaft, which is entirely enclosed in torque tube, is heat treated, high carbon steel. Shaft is 1 $\frac{11}{16}$ " diameter at center portion, tapering to 1 $\frac{1}{16}$ " diameter at inner end and 1 $\frac{1}{8}$ " diameter at outer end.	
	Outer end at universal joint is six splined type 1 $\frac{1}{4}$ " diameter.	
PINION SHAFT BEARINGS	Two bearings support pinion:	
	Single row No. 1309 New Departure bearing on pinion.	
	Double row No. 5306 New Departure bearing on shaft ahead of pinion. Pinion provided with fore and aft adjustment at outside of carrier.	
	Pinion, pinion shaft and bearings as a unit, easily removable at rear of axle housing without removing axle from car.	
TORQUE TUBE	Torque tube through which both torque and drive are taken, is 2 $\frac{3}{32}$ " diameter, $\frac{5}{32}$ " thickness of wall. Strut rods tie torque tube and axle housing together, ensuring perfect alignment of these units.	
	Torque tube is bolted to ball in housing at rear end of transmission by four $\frac{3}{8}$ " cap screws.	
SPRING SEATS	Rear axle spring seats provided with drop forged case hardened thrust blocks to prevent end chuck.	
	Jack rest cast integral with spring seat to accommodate jack and prevent same from slipping.	
	Spring opening milled 2 $\frac{1}{16}$ " instead of 2 $\frac{1}{2}$ " as in previous models.	
BRAKES	Four wheel mechanically operated, external contracting service brakes, giving effective braking with light pedal pressure.	
	Simple and accessible adjustment provided. All exposed joints are covered with leather boots to retain lubricant and keep out dirt and water.	
	Brake band facings protected from dirt and water by shields fastened to brake discs. These shields add greatly to life of lining and reduce tendency of brakes to squeal.	
	Rear wheel mechanically operated internal expanding brakes, easily operated by hand lever, are intended for use when car is parked on grades.	
BRAKE DIMENSIONS	Internal Brakes	External Brakes
	Drum	12 $\frac{3}{8}$ " dia.
	Facings	$\frac{3}{16}$ " x 1 $\frac{3}{8}$ " x 35 $\frac{9}{16}$ "
	Area of braking surface	98 sq. in.
		12 $\frac{3}{8}$ " dia.
		$\frac{3}{16}$ " x 1 $\frac{3}{4}$ " x 38 $\frac{5}{8}$ "
		270 sq. in.
CHASSIS LUBRICATION	Zerk high pressure lubrication used on chassis.	
	Connections for brake cross shaft and rear spring front shackle bolts are grouped at a trap door in each side apron. Brake cam shaft connections on rear axle are extended to rear of axle housing.	

FRAME

The double drop type frame is exceptionally rigid, being made of $\frac{3}{4}$ " stock with five extra heavy cross members. Side channels have a maximum depth of $6\frac{1}{2}$ " and flanges $1\frac{3}{4}$ " wide, top and bottom, at center portion. Flanges flare to a width of $2\frac{1}{2}$ " at front kick up and 3 " at rear kick up.

Brackets are riveted to outside of channels to properly support the overhang of the body.

Model 20 frame carries 3 body brackets on each side and body is bolted to top flange at front and rear on each side.

Model 24 and 25 frames carry 4 body brackets on each side and bodies are bolted to top flange at the middle section on each side.

Models 26-26S-27 and 29 frames carry 4 body brackets on each side and bodies are bolted to top flange at the front end on each side.

SPRINGS

Front springs semi-elliptic, overslung.

Length $36\frac{1}{8}$ ", width 2 ".

Front spring bolts $\frac{9}{16}$ " diameter.

Rear springs full floating cantilever.

Length, 48 ", width $2\frac{1}{2}$ ".

Rear spring front bolt diameter $\frac{9}{16}$ "; rear $\frac{3}{4}$ ".

Both springs made of high carbon steel.

Carrying capacity and number of leaves in springs vary with different models in order to ensure proper riding qualities.

Spring leaves should not be lubricated any more than is necessary to prevent squeaks.

TIRE CARRIER

Full band type carriers are supplied as regular equipment.

These are attached to rear of chassis by four supporting arms; two attached to side rails and two to the rear frame cross member.

A cross bar is located on band to carry combination signal and license plate.

Band is punched to accommodate brackets for carrying a second spare tire and rim. These brackets are not furnished with cars but may be obtained from any branch or dealer.

STEERING GEAR

The steering gear is of the worm and split nut, semi-irreversible type with gear ratio of 15.15 to 1.

The worm is $1\frac{3}{4}$ " diameter, $\frac{1}{2}$ " lead, keyed and welded to the steering tube, and supported in two plain bearings. A cup and cone type thrust bearing is provided below the adjustment nut.

The half nuts, made of special bronze, have six threads in contact with worm to reduce unit pressure and wear, and are supported full length in steering gear housing.

Half nuts provided with case hardened steel thrust block, working against case hardened rollers attached to cradle shaft.

Cradle shaft, $1\frac{1}{8}$ " diameter, is supported in steering gear housing by three special plain bronze bearings.

The mast jacket is $1\frac{1}{8}$ " diameter, nickel plated on Models 24 and 25, and black enameled on all other models.

Gears provided with accessible adjustment to take up lash.

Ferrules are provided in nest of tubes to prevent rattle.

Caution: Do not use air pressure to force grease up into steering column.

- STEERING GEAR LOCK** Steering gear is provided with a lock in combination with the ignition switch. Gear may be locked only when ignition lever is in "Off" position. Lock is fully approved by the Underwriters' Laboratories.
- STEERING WHEEL** Steering wheel is 17½" outside diameter, having walnut rim and polished aluminum spider. Spark, throttle and light control levers and horn button are mounted at top of steering wheel. Steering wheel position is adjustable by means of the supporting bracket attached to instrument board.
- PITMAN ARM** The pitman arm, 8¼" long, is of drop forged, heat treated steel, splined to cradle shaft. The lower end, to which drag link attaches, is provided with case hardened ball to reduce wear at this part to a minimum.
- DRAG LINK** The drag link is steel tubing 1½" outside diameter by ⅜" wall, adjustable at both ends, and bent to give shortest possible turning radius to cars. Turning circle is 37½ ft. right or left.
- ENGINE** The engine is overhead valve type—detachable head—6 cylinder—3¼" bore by 4½" stroke—207 cu. in. piston displacement. It develops 63 horse power at 2800 revolutions per minute and 146 pounds feet torque at 1400 revolutions per minute. The compression chamber is entirely machined to ensure even compression in all cylinders and is spherical shaped for turbulence. Compression 93 pounds corrected to standard barometer and temperature. Lubrication system is of the pressure feed type. Engine is suspended in frame at three points, each being insulated from frame by rubber mountings.
- CRANKCASE** The crankcase upper half is made of cast iron, strongly reinforced by ribbing, providing rigid foundation for engine. The crankcase lower half is made of pressed steel for lightness and provided with ribs on bottom to prevent drumming. It is also provided with baffles to prevent surging of oil. Oil drain plug is located at lowest point of pan to ensure thorough drainage of oil.
- FLYWHEEL HOUSING** The flywheel housing, composed of two parts, upper and lower half, is made of cast iron. The upper half, which is integral with engine arms, is doweled and bolted to upper half of crankcase. The lower half is doweled and bolted to upper half of flywheel housing.
- CRANKSHAFT** The counter balanced crankshaft, equipped with torsion balancer, is of drop forged, heat treated high carbon steel. The shaft, in addition to counter balancing, is statically and dynamically balanced.
- MAIN BEARINGS** The crankshaft is supported on four main bearings, the upper half bearing being bronze backed, babbitt lined, doweled in crankcase. The lower half of bearing or cap, is drop forged steel, babbitt lined, bonded directly to cap.

Bearing sizes are:

	Diameter	Length
Front.....	2¼"	2 ⁹ / ₃₂ "
Front center.....	2¼"	1 ¹¹ / ₁₆ "
Rear center or thrust bearing.....	2¼"	1¾"
Rear.....	2¼"	2 ³³ / ₃₂ "

MAIN BEARING CLEARANCE

From April 1st to November 1st, main bearings are fitted .001 to .002 radial clearance on shaft; from November 1st to April 1st, are fitted .0015 to .0025 radial clearance on shaft.

Shims are provided between upper and lower halves of bearings to take up reasonable wear without the necessity of filing faces of cap.

Rear center bearing, which is also thrust bearing, is fitted with .005 to .007 total end clearance on shaft.

Other three bearings are fitted with clearance on shaft of $\frac{1}{32}$ " to $\frac{1}{16}$ " at each end.

PISTONS

The lightweight cast iron pistons are $3\frac{3}{4}$ " long, have full skirt, relieved at piston pin bosses, and provided with three piston ring grooves; the lower groove being drilled with ten $\frac{3}{32}$ " holes for oil ring.

The piston pin bosses, in which piston pins oscillate, are bronze bushed and are offset $\frac{3}{32}$ " toward camshaft.

The pistons are fitted in cylinder to pass of their own weight on feeler .0015 thick and hold of their own weight on feeler .0025 thick—feelers being $\frac{1}{4}$ " wide.

PISTON RINGS

Each piston carries three $\frac{1}{8}$ " cast iron diagonal split piston rings, all located above piston pin. The two top rings are plain type, and the third or lower ring is oil control type.

PISTON PIN

The piston pin is hollow, $\frac{3}{4}$ " diameter. The hole through pin is tapered from both ends, with greatest wall thickness at center of pin, giving maximum strength and minimum weight.

The pin is securely clamped in upper end of connecting rod.

CONNECTING ROD

The connecting rod is drop forged, heat treated steel, 10" long. The lower end bearing is $1\frac{1}{2}$ " wide, 2" diameter, babbitt lined, bonded directly to rod.

Connecting rods are provided with shims to take care of reasonable wear, without filing caps.

Connecting rod fitted to crankshaft with .002 to .0025 radial clearance, and .007 end clearance on shaft.

CAMSHAFT

The camshaft is drop forged steel, case hardened, $1\frac{1}{16}$ " diameter, supported in four bronze bushings and driven by crankshaft through helical gears.

The cam contour is especially designed for quiet action.

Camshaft bearing sizes are:

	Diameter	Length
Front.....	$1\frac{31}{32}$ "	$1\frac{9}{16}$ "
Front center.....	$1\frac{13}{16}$ "	$1\frac{1}{16}$ "
Rear center.....	$1\frac{13}{16}$ "	$1\frac{1}{16}$ "
Rear.....	$1\frac{25}{32}$ "	$1\frac{3}{32}$ "

VALVE LIFTERS, ROLLERS AND PINS

Valve lifters are 1" diameter, $2\frac{5}{16}$ " long and hollow for light weight.

Valve lifter rollers are $1\frac{1}{4}$ " diameter, $\frac{7}{16}$ " wide and case hardened.

Roller pins are $\frac{3}{4}$ " long, $\frac{1}{2}$ " diameter, case hardened and hollow for lightness and ease of lubrication.

VALVE LIFTER GUIDES

Valve lifters operate in individual cast iron guides which may be removed easily from side of engine.

VALVE PUSH RODS

Valve push rods are made of $\frac{7}{16}$ " diameter tube, $\frac{3}{32}$ " wall thickness. Tubing used for strength combined with light weight.

- VALVES** Valves, located in detachable cylinder head, are of one piece construction of following dimensions:
- | | Clear Dia. Head | Dia. Stem | Valve Lift |
|--------------|------------------|----------------|----------------|
| Inlet..... | $1\frac{7}{16}"$ | $\frac{3}{8}"$ | $\frac{3}{4}"$ |
| Exhaust..... | $1\frac{7}{16}"$ | $\frac{3}{8}"$ | $\frac{3}{4}"$ |
- Inlet valve material—Nickel steel head, with nickel steel or carbon stem.
 Exhaust valve material—No. 1 Silchrome steel.
 Valve lash—.003 when engine is hot.
 Valve Timing:
 Inlet valve opens—at upper dead center.
 Inlet valve closes—54° after lower dead center.
 Exhaust valve opens—62° before lower dead center.
 Exhaust valve closes—25° after upper dead center.
 Firing order—1-4-2-6-3-5.
- VALVE SPRINGS** Double valve springs are used to ensure quiet operation and proper opening and closing of valves at all engine speeds.
 Valve spring pressure—valve closed—53 to 65 lbs.
 Valve spring pressure—valve open—138 to 154 lbs.
- ROCKER ARM SHAFT** Rocker arm shaft is one piece, $\frac{7}{8}"$ diameter tube, $\frac{3}{16}"$ wall, case hardened and ground.
- ROCKER ARM** Rocker arms are drop forged steel, heat treated, and provided with hard rolled bronze bushing for bearing on rocker arm shaft.
 The end operating against valve stem is case hardened and ground.
 The other end is tapped for adjustable ball stud which operates in push rod.
- ENGINE COVERS** The valve rocker arm mechanism and push rods are provided with pressed steel covers and cork gaskets which prevent dirt and dust from attacking these parts and also prevent oil from escaping.
- TIMING GEARS** Timing gears are composed of steel crankshaft and generator gears running with Textolite cam gear. This construction is same as used on 1927 models. All gears have $1\frac{1}{8}"$ width of face.
- COOLING SYSTEM** The cooling system consists of the radiator, thermostat, cylinder water jacket, water circulating pump and fan.
 The capacity of the entire system is 4 gallons.
- RADIATOR** The radiator core is Harrison cellular type, provided with copper water passages and copper cooling fins. The core is $2\frac{1}{4}"$ thick and has frontal area of 460 sq. in.
 A pressed steel shell encloses the core and supports it on the frame of car.
- FAN** The four blade 17" diameter fan revolves on a plain bearing which is lubricated under pressure by a gear pump which draws oil from a reservoir in the fan shell. A stand pipe inside the shell is provided to control the oil level.
 The fan is mounted on an adjustable bracket attached to cylinder block and is driven by a flat belt $1\frac{1}{4}"$ wide from fan pulley mounted on end of cam shaft.
- CAUTION: ENGINE OIL ONLY SHOULD BE USED IN FAN.**

WATER PUMP

The water pump is of the centrifugal type and is mounted directly back of generator in a rigid bracket integral with the upper crankcase.

The impeller, $3\frac{1}{16}$ " diameter, $\frac{7}{8}$ " wide, is pinned to a case hardened shaft $\frac{9}{16}$ " diameter.

The shaft is supported in two bronze bearings located in pump body, which also carries the packing gland.

The pump is driven by the generator shaft through an Oldham coupling.

Water pump to crankshaft speed, $1\frac{1}{2}$ to 1.

The entire cooling system is drained by opening drain cock located in water pump.

ENGINE LUBRICATION

The engine lubricating system is of the pressure feed type and functions in the following manner:

OIL PUMP

An oil pump, driven from the camshaft, is submerged in the oil sump in lower half crank case.

Oil is delivered from the pump through oil manifold to each of the crankshaft main bearings, and by means of drilled holes in crankshaft from main bearings to lower connecting rod bearings.

Lubrication is furnished to camshaft bearings, cylinder walls, pistons and pins by oil thrown from sides of connecting rods and from small holes drilled through connecting rod bearings which meter with drilled holes in crankshaft.

A secondary line leads from oil pump to oil pressure gauge and also to oil filter. After oil is passed through filter it is forced to valve rocker arm shaft. Through drilled holes in shaft, a quantity of the oil is fed to rocker arm bearings and through drilled holes in rocker arm is carried to push rod ball joints, then runs down push rods and lubricates the valve lifters, guides, rollers and pins. The greater portion of oil from the rocker arm shaft is carried down the front end of engine to the timing gear housing, lubricating the timing gears, front camshaft bearing and generator bearing, eventually returning to lower half of crankcase.

In case oil filter is clogged, oil passes direct through by pass hole to rocker arm shaft.

The oil pump consists of two gears, $\frac{7}{8}$ " thick, sixteen teeth, fourteen pitch. The pump is provided with pressure relief valve which opens when oil pressure reaches 25 to 30 pounds.

Oil capacity of crankcase: 7 quarts in dry engine, and 5 quarts to refill.

OIL FILTER

The AC oil filter is a round type with rolled up cloth filtering element having 600 sq. in. of filtering surface.

The filter, located on the front of dash, takes the oil direct from the oil pump in the crankcase, and after filtering passes the oil to the rocker arm shaft and then oil returns to crankcase. The total quantity of oil in crankcase will pass through the filter every five minutes, ensuring clean oil to working parts at all times.

Should the filtering element become clogged, the oil is by-passed around the filter, ensuring oil to rocker arm mechanism under any condition.

A pet cock is provided at the filter, and if oil does not flow from cock when opened, either the filter or line to filter has become clogged. If line is clogged it can be opened by blowing through line with air hose. If filter is clogged, new cartridge must be installed.

Pet cock should be opened every 500 miles in order to determine that filter is functioning. This test should be made only when oil is hot and engine running.

CRANKCASE VENTILATOR

The crankcase ventilator is identical in construction with the one used on 1927 models. This ventilator works on the ejector principle. The fan blows air through a funnel, past an opening in the crankcase, causing a suction which pulls the vapors from the crankcase and ejects them through a pipe below the side pan. This disposition of vapors prevents their reaching the interior of car.

The rear breather which acts as a vent to the crankcase, is provided with an air cleaner to prevent dust particles from entering the crankcase.

One of the chief products of the explosive mixture in a gasoline engine is water. When starting a cold engine the water and heavy ends of the fuel, which are not combustible below a certain engine temperature, find their way down past the piston in the form of vapor. Unless this vapor is removed it will condense and cause water and kerosene dilution of the lubricating oil.

The water mixes with the sulphur which may be in the unburned fuel or the oil, and forms sulphuric acid which attacks working parts of the engine and causes quick corrosion, pitting and rapid wear.

The crankcase ventilator does not prevent kerosene dilution of the oil in extremely cold weather, but positively does remove the water. The kerosene dilution, when held within normal limits, is necessary to keep the oil from congealing and to allow easy starting of the engine and immediate circulation of oil through the system.

The normal limits of kerosene dilution in zero weather are from 20% to 30% and the ventilator automatically keeps the oil within these limits.

The combination of the crankcase ventilator, which removes all harmful dilution, with the oil filter and air cleaner, keeps the oil in the engine in good condition at all times, thereby entirely eliminating the necessity of frequent oil changes.

The crankcase ventilator, in combination with the Thermostatic Water Control, prevents the accumulation of water which is the destructive element of crankcase dilution and holds the other element, unburned fuel, to a minimum.

NOTE: Oil filler cap must be closed tightly or ventilator will not function.

THERMOSTATIC WATER CONTROL

A thermostat is placed in the water line between engine head and radiator. It is held in a housing attached to the upper water tank of radiator, the water from engine passing through this housing and around the thermostat unit. The unit consists of a metallic bellows attached to a poppet valve. This valve remains closed while water in cylinder jacket is below 120° and prevents circulation of water through the system. When water reaches 120° the bellows expands, forcing the valve from its seat and allowing normal circulation of water. The valve is provided with a $\frac{1}{16}$ " bleeder hole which permits a small quantity of water to pass through the thermostat housing when valve is closed, assuring instant action of the bellows when cylinder water jacket temperature reaches 120°.

Under the most severe weather conditions the engine will warm up from zero to 120° in less than three minutes.

After engine has been warmed, should the car be parked, the thermostat valve will close as soon as water temperature falls to 120°, and prevent thermosyphon circulation. The water in cylinder jacket will, therefore, remain warm for a long time. Subsequent start may then be made without the excessive use of choker which is a large factor in the dilution of lubricating oil with raw gasoline.

The thermostat requires no adjustment. The unit is easily removed from the housing by taking out four cap screws in radiator inlet fitting.

INLET MANIFOLD

The inlet manifold, located on left side of engine, is of the three port type, with straight horizontal runner, each port feeding gas to two cylinders.

The manifold is securely clamped to cylinder head on both sides of each port, assuring air tight joint.

Special attention has been given manifold to ensure even distribution of gas to all cylinders.

Inside diameter of runner and ports, $1\frac{1}{4}$ ".

- CARBURETOR** The carburetor is Marvel model T-3, automatic air valve, heat controlled type, provided with two adjustments only, one for needle valve or low speed nozzle, and one for air valve.
- Carburetor sizes:
- | | |
|------------------------|-------------------------------------|
| Air intake | 1 $\frac{7}{8}$ " diameter. |
| Air valve | 1 $\frac{7}{8}$ " diameter opening. |
| Air valve spring | No. 24-115. |
| High speed jet | No. 49-225-C-33. |
| Metering pin jet | No. 84-44. |
- CARBURETOR RISER** A double-walled riser, between inlet manifold and carburetor and connected to exhaust manifold, utilizes exhaust gases, by-passing them between riser walls to ensure complete vaporization and minimum consumption of fuel.
- The amount of heat furnished to the riser is controlled by two valves, one located in damper body at end of exhaust manifold, the other located in outlet tube, extending from riser to damper body. These valves are both automatically and manually operated.
- Being connected with the throttle, they are automatically opened or closed by the corresponding opening or closing of the throttle, furnishing greatest amount of heat to riser when throttle is closed.
- Being connected to manually operated lever located on instrument board, the automatic action of the heat valves may be varied to suit weather and driving conditions.
- Throttle is located in riser and is 1 $\frac{7}{8}$ " diameter.
- AIR CLEANER** The AC air cleaner, attached to air inlet of carburetor, separates the dust particles from the air, keeping them from entering the engine where they would cause excessive wear of all moving parts.
- The suction of the engine draws air into cleaner through directing vanes which give the air stream a rapidly rotating motion, spirally.
- Centrifugal force separates the dust particles from the air, throwing them against the wall of the cleaner. The dust is then ejected through a small outlet.
- The clean air moves through inner portion of cleaner and enters carburetor free from dirt.
- EXHAUST MANIFOLD** Exhaust manifold, located on left side of engine, is of six port construction and is securely clamped to cylinder head on both sides of each port.
- EXHAUST PIPE** The exhaust pipe, extending from damper valve body to muffler, is 2" in diameter.
- MUFFLER** Muffler construction is the same as was used in 1927 Models, except that shell has been decreased $\frac{3}{4}$ " in diameter and lengthened 5 $\frac{1}{16}$ ".
- It is divided into five compartments by dome-shaped baffle plates. These compartments act as expansion chambers for the exhaust gases, which do not enter rear compartment but pass through into the tail pipe by means of a venturi tube.
- The rear compartment, being in communication with the tail pipe, acts as a vacuum chamber which removes all impulses from out-flowing gases.
- This construction will prevent loosening of muffler parts or bursting because of explosions in muffler and also eliminate exhaust roar so common to other types of mufflers.
- MUFFLER TAIL PIPE** A long muffler tail pipe 1 $\frac{1}{2}$ " diameter extends from muffler to rear of frame, carries exhaust gases completely clear of chassis, and reduces exhaust noise.

- FUEL SYSTEM** The fuel system consists of gasoline tank, gas lines, vacuum tank, gasoline strainer, carburetor and intake manifold.
- GASOLINE TANK** The gasoline tank of 16 gallons capacity, is located at rear of frame. The tank is provided with a suction pipe to which is attached a wire gauze strainer.
- VACUUM TANK** The gasoline is drawn from rear tank to vacuum tank of 2.66 pints capacity, mounted in front of dash. Vacuum is created by suction from the intake manifold.
- GASOLINE STRAINER** The gasoline strainer, mounted at lower end of vacuum tank prevents dirt and water from entering the carburetor.
The strainer is provided with a detachable glass bowl which may be removed easily for cleaning.
A valve is provided for shutting off the gas when cleaning strainer or removing carburetor.
Gasoline flows from strainer by gravity to carburetor float bowl.
- GASOLINE GAUGE** A gasoline gauge is mounted on instrument panel, on all models, in combination with other instruments.
- CLUTCH** The clutch is multiple disc, dry plate type, self-contained, carrying five driving plates, five driven plates and ten friction facings. The driving plates to which facings are riveted are driven by the flywheel by means of sixty teeth in the flywheel and driving plates.
The driven plates drive the clutch hub by means of fifty-three teeth in hub and plates.
Clutch driven plates are made of high carbon steel, ensuring long life and resistance to warpage.
Clutch hub is heat treated, drop forged, high carbon steel.
Clutch shaft is supported in two ball bearings, one mounted in front of transmission case, the other in rear end of crankshaft.
Clutch release bearing is ball thrust type containing twelve $\frac{3}{8}$ " diameter balls.
Clutch facings are of woven asbestos re-inforced by copper wires.
The facings are $5\frac{3}{4}$ " inside diameter, $7\frac{3}{4}$ " outside diameter, $\frac{1}{8}$ " thick. Area of friction surface is 212 sq. in.
Clutch spring pressure is 310 to 330 pounds.
Clutch pedal reduction 19.2 to 1.
- CLUTCH ADJUSTMENT** The only adjustment required in connection with the clutch is at clutch pedal. This adjustment is made with thumb nut located at rear end of clutch release rod outside the clutch housing.
Proper adjustment provides there shall be 1 to $1\frac{1}{2}$ inches free pedal travel.
- TRANSMISSION** The transmission is of the selective sliding gear type, three speeds forward and reverse, with general construction similar to that used on 1927 models.
The S. A. E. or conventional type gear shift has been adopted for 1928 models. Special parts to change 1928 shift to former Buick type shift may be secured from the parts department.
S. A. E. type shifter parts will not interchange with those of previous models.
Clutch gear bearing No. 1209 New Departure, single row.

Transmission main shaft front bearing, located in clutch gear, is plain bronze $\frac{15}{16}$ " diameter by $2\frac{1}{16}$ " long.

Transmission main shaft bearing, rear, No. 1306 New Departure, single row.

Transmission main shaft of high carbon heat treated steel and has six splines of $1\frac{1}{4}$ " outside diameter.

Stationary transmission counter gear shaft is case hardened and ground with diameter of 1".

Counter gear bushings plain bronze—two—1" diameter by 2" long.

	Teeth	Pitch
Clutch gear.....	17	7
High and intermediate sliding gear.....	24	7
Low and reverse sliding gear.....	30	7-9
Countershaft constant mesh gears.....	31	7
Countershaft intermediate gear.....	24	7
Countershaft low speed gear.....	18	7-9
Countershaft reverse gear.....	15	7-9
Reverse idler gear.....	17	7-9

Gear material; heat treated chrome nickel steel.

GEAR REDUCTIONS

Transmission	Total at Wheel	
All Models	M-24-25-26-26S	M-20-27-29
High—Direct.....	4.9 to 1	5.1 to 1
Intermediate—1.824-1.....	8.93 to 1	9.30 to 1
Low—3.039-1.....	14.89 to 1	15.50 to 1
Reverse—3.647-1.....	17.87 to 1	18.60 to 1

Transmission case requires 3 lbs., 8 oz. of oil to fill to proper level.

UNIVERSAL JOINT

The universal joint is enclosed in the ball drive housing located at rear of transmission case. The housing protects joint from dirt and water and retains lubricant supplied by the transmission.

The forward yoke is attached to transmission main shaft by means of a spline fitting and held securely by washer and nut.

The rear yoke is supported in a bronze bushing in driving ball. The yoke is broached to receive splined end of pinion shaft.

The universal joint and bushing are automatically oiled from the transmission.

The joint is $3\frac{3}{4}$ " outside diameter and yoke pins 1" diameter.

SPEEDOMETER GEARS

The speedometer drive gears are enclosed in ball drive housing, protected from dirt, and automatically lubricated.

	M-24-25-26-26S	M-20-27-29
Speedometer driven gear.....	22 teeth	23 teeth
Speedometer worm gear.....	7 teeth	7 teeth

DRIVING BALL

The driving ball $4\frac{3}{4}$ " in diameter surrounds the universal joint and is enclosed in a ball housing at end of transmission case. It is fastened directly to the torsion tube by four $\frac{3}{8}$ " diameter cap screws.

STARTING, LIGHTING AND IGNITION

The Delco-Remy system of starting, lighting and ignition is used on all models. Complete description of the various units of this system is given on page 28.

Mechanical Specifications in Detail

120 in. and 128 in. Series

- TIRES** 33 x 6.00 Low pressure, black side walls and tread.
- RIMS** 21" diameter x $4\frac{1}{8}$ " section. Black finish to match tires, centering bosses pressed into base of rim, and set directly on outer leg of felloe, between rim wedges. The bosses ensure rim being mounted true on wheel, and give additional support for rim between wedges.
- A rivet is placed in base of rim to ensure correct mounting of rim on wheel. Rims are supported on felloes by six wedges.
- The rim stock is $\frac{5}{32}$ " thick, which is thinner than stock used in 1927 rims. 1928 rims may be used on 1927 wheels.
- FRONT AND REAR WHEELS** Artillery type, using steel felloe. Wheels are provided with balance weights to counterbalance weight of rim locking devices and tire valve stems.
- | | Hub Flange Diameter | Spoke Width | Spoke Bolts |
|------------|---------------------|------------------|-----------------------------|
| Front----- | $7\frac{1}{8}$ " | $1\frac{3}{8}$ " | Twelve $\frac{3}{8}$ " Dia. |
| Rear----- | $8\frac{1}{2}$ " | $1\frac{3}{8}$ " | Twelve $\frac{1}{2}$ " Dia. |
- New style hub caps are rolled with a reinforcing bead at inner end. These are interchangeable except for appearance.
- FRONT AXLE** Reverse Elliott type, using drop forged, heat treated I beam $2\frac{1}{4}$ " x $1\frac{7}{8}$ " x $\frac{1}{4}$ ". Knuckles of drop forged, heat treated nickel alloy steel.
- Knuckle bearings special hard rolled bronze.
- Spindle diameter $1\frac{7}{16}$ " at inner bearing and $1\frac{1}{8}$ " at outer bearing.
- King bolts are 1" diameter, provided with ball thrust bearings containing fourteen $\frac{5}{16}$ " balls to carry load and ensure easy steering.
- New I beam is identical with the 1927 beam except that a boss is forged at either end to accommodate the shock absorbers.
- FRONT WHEEL BEARINGS** Front wheel bearings are New Departure adjustable cup and cone type.
- Inner bearing carries ten $\frac{3}{4}$ " diameter balls.
- Outer bearing carries nine $\frac{5}{8}$ " diameter balls.
- TIE RODS** Tie rod $1\frac{1}{8}$ " diameter tube, $\frac{1}{8}$ " thickness of wall, adjustable at both ends. Located back of I beam.
- REAR AXLE** Full floating type, using pressed steel banjo type housing and malleable iron differential carrier.
- Housing provided with truss rod for additional strength.
- Axle shafts easily removable without removing wheels from housing.
- Differential of four pinion type supported on each side by No. 0211 New Departure adjustable cup and cone bearings.
- Differential adjustable and easily removable from rear of axle housing.
- Ring gear and pinion are spiral bevel type.
- Gear ratios:—Models 47-47S-50-51-----4.9 to 1.
 Models 48-54-54C-55-58-----4.72 to 1.
- Rear axle requires $4\frac{3}{4}$ pounds of oil to fill.

- AXLE SHAFTS** Axle shafts heat treated, manganese alloy steel.
 $1\frac{1}{2}$ " diameter, outer end.
 $1\frac{1}{4}$ " diameter, necked portion.
 $1\frac{3}{8}$ " diameter, inner end, using six splines.
- REAR WHEEL BEARINGS** Rear wheels are mounted on No. 1310 New Departure annular type ball bearings.
- PINION SHAFT** Pinion shaft is heat treated high carbon steel and is enclosed in torque tube.
- | | Diameter of Shaft | | |
|-----------------|-------------------|-------------------|-------------------|
| | Outer End | Center | Inner End |
| 120" W. B. | $1\frac{3}{8}$ " | $1\frac{5}{16}$ " | $1\frac{5}{16}$ " |
| 128" W. B. | $1\frac{3}{8}$ " | $1\frac{9}{16}$ " | $1\frac{5}{16}$ " |
- Outer end is ten splined to receive universal joint.
- PINION SHAFT BEARINGS** Two bearings support pinion:
 Single row No. 1310 New Departure bearing on pinion.
 Double row No. 5307 New Departure bearing on shaft ahead of pinion. Pinion provided with fore and aft adjustment at outside of carrier.
 Pinion, pinion shaft and bearings as a unit, easily removable at rear of axle housing without removing axle from car.
- TORQUE TUBE** Torque tube through which both torque and drive are taken, tapers from $3\frac{1}{4}$ " diameter at inner end to $2\frac{1}{2}$ " at outer end with $\frac{3}{16}$ " thickness of wall. Strut rods tie torque tube and axle housing together, ensuring perfect alignment of these units.
 Torque tube is bolted to ball housing at rear end of transmission by $6\text{-}\frac{3}{8}$ " cap bolts.
- SPRING SEATS** Rear Axle spring seats provided with drop forged, case hardened thrust blocks to prevent end chuck.
 Jack rest cast integral with spring seat to accommodate jack and prevent same from slipping.
 Spring opening milled $2\frac{1}{16}$ " instead of $2\frac{1}{2}$ " as in previous models.
- BRAKES** Four wheel mechanical type, external contracting service brakes, giving effective braking with light pedal pressure.
 Simple and accessible adjustment provided. All exposed joints are covered with leather boots to retain lubricant and keep out dirt and water.
 Brake band facings protected from dirt and water by shields fastened to brake discs. These shields add greatly to life of lining and reduce tendency of brakes to squeal.
 Rear wheel mechanical type internal expanding brakes, easily operated by hand lever, are provided for use when car is parked on grades.
- | BRAKE DIMENSIONS | Internal Brakes | External Brakes |
|-------------------------------|---|--|
| Drum | $13\frac{3}{8}$ " dia. | 14" dia. |
| Facings | $\frac{3}{2} \times 1\frac{1}{8} \times 40\frac{1}{16}$ " | $\frac{3}{16} \times 2 \times 43\frac{3}{4}$ " |
| Area of braking surface | $132\frac{1}{2}$ sq. in. | 350 sq. in. |
- CHASSIS LUBRICATION** Zerk high pressure lubrication used on chassis.
 Connections for brake cross shaft and rear spring front shackle bolts are grouped at a trap door in each side apron. Brake cam shaft connections on rear axle are extended to rear of axle housing.

FRAME

The double drop type frame is exceptionally rigid, being made of $\frac{5}{32}$ " stock with seven extra heavy cross members. Side channels have a maximum depth of 7". Flanges at center portion are 2" wide at top and $1\frac{7}{8}$ " at bottom. Flanges are flared at front kick up to a width of 2" at top and $2\frac{3}{4}$ " at bottom.

Flanges are flared at rear kick up to a width of $3\frac{1}{4}$ " at top and 3" at bottom. Bottom flanges at front and rear kick up are flanged downward for greater strength.

Brackets are riveted to outside of channels to properly support the overhang of bodies.

Models 50-54C and 58 have four brackets on each side and also have one bolt in channel on each side just ahead of center cross member.

Models 51-54-55 have three brackets on each side and are bolted to the channel at the rear and also just ahead of the center cross member. These bodies are not supported at the rear on brackets.

Models 47-47S and 48 have four brackets on each side and are bolted to each side channel just ahead of center cross member.

SPRINGS

Front springs semi-elliptic, overslung.

Length $36\frac{3}{4}$ ", width 2".

Front spring bolt diameters:

Front $\frac{11}{16}$ ".

Rear $\frac{7}{8}$ ".

Rear spring full floating cantilever.

Length 48", width $2\frac{1}{2}$ ".

Rear spring bolt diameters:

Front $\frac{9}{16}$ ".

Rear $\frac{7}{8}$ ".

Front springs made of high carbon steel with Vanadium steel main plate.

Rear springs made of high carbon steel.

Carrying capacity and number of leaves in springs vary with different models in order to ensure proper riding qualities.

Spring leaves should not be lubricated any more than is necessary to prevent squeaks.

TIRE CARRIER

Full band type carriers are supplied as regular equipment. These are attached to rear of chassis by four supporting arms: two attached to side rails and two to the rear frame cross member.

A cross bar is located on band to carry combination signal lamp and license plate.

Band is punched to accommodate brackets for carrying a second spare tire and rim. These brackets are not furnished with cars but may be obtained from any branch or dealer.

STEERING GEAR

The steering gear is of the worm and split nut, semi-irreversible type with gear ratio of 16.2 to 1.

The worm is $2\frac{1}{8}$ " diameter, $\frac{1}{2}$ " lead, keyed and welded to steering tube, and is supported in three bearings, two plain and one No. 206 New Departure cup and cone type bearing, which also acts as thrust bearing.

The half nuts, made of special bronze, have six threads in contact with worm to reduce unit pressure and wear, and are supported full length in steering gear housing.

Half nuts provided with case hardened steel thrust blocks, working against case hardened rollers attached to cradle shaft.

Cradle shaft, $1\frac{1}{4}$ " diameter, is supported in steering gear housing by three special plain bronze bearings.

The mast jacket, $1\frac{3}{4}$ " diameter, is nickel plated.

Gears provided with accessible adjustment to take up lash.

Ferrules are provided in nest of tubes to prevent rattle.

CAUTION: Do not use air pressure to force grease up into steering column.

- STEERING GEAR LOCK** Steering gear is provided with a lock in combination with the ignition switch. Gear may be locked only when ignition lever is in "Off" position. Lock is fully approved by the Underwriters' Laboratories.
- STEERING WHEEL** Steering wheel is 18" outside diameter, having walnut rim and polished aluminum spider. Spark, throttle and light control levers and horn button are mounted at top of steering wheel. Steering wheel position is adjustable by means of the supporting bracket attached to instrument board.
- PITMAN ARM** The pitman arm, 8" long, of drop forged, heat treated steel, is splined to cradle shaft. The lower end, to which drag link attaches, is provided with case hardened ball to reduce wear of this part to a minimum.
- DRAG LINK** The drag link is steel tubing $1\frac{1}{8}$ " outside diameter by $\frac{3}{16}$ " wall, adjustable at both ends, and bent to give shortest possible turning radius to cars.
- | | |
|---------------------|----------------|
| | Turning Circle |
| 120" WB models..... | 41½ feet |
| 128" WB models..... | 43 feet |
- ENGINE** The engine is overhead valve type—detachable head—6 cylinder— $3\frac{1}{2}$ " bore by $4\frac{3}{4}$ " stroke—274 cu. in. piston displacement. It develops 76 horsepower at 2800 revolutions per minute and 186 pounds feet torque at 1400 revolutions per minute. The compression chamber is entirely machined to ensure even compression in all cylinders and is spherical shaped for turbulence. Compression 80 pounds corrected to standard barometer and temperature. Lubrication system is of the pressure feed type. Engine is suspended in frame at three points, each being insulated from frame by rubber mountings.
- CRANKCASE** The crankcase upper half is made of cast iron, strongly re-enforced by ribbing, providing rigid foundation for engine. The crankcase lower half is made of pressed steel for lightness and provided with ribs on bottom to prevent drumming. It is also provided with baffles to prevent surging of oil. Oil drain plug is located at lowest point of pan, to ensure thorough drainage of oil.
- FLYWHEEL HOUSING** The flywheel housing, composed of two parts, upper and lower half, is made of cast iron. The upper half, which is integral with engine arms, is doweled and bolted to upper half of crankcase. The lower half is doweled and bolted to upper half of flywheel housing. Housing is not interchangeable with 1927 models.
- CRANKSHAFT** The counter balanced crankshaft, equipped with torsion balancer, is of drop forged, heat treated high carbon steel. The shaft, in addition to counter balancing, is statically and dynamically balanced.
- MAIN BEARINGS** The crankshaft is supported in four main bearings, the upper half bearing being bronze backed, babbitt lined, doweled in crankcase. The lower half of bearing, or cap, being drop forged steel, babbitt lined, bonded directly to cap. Bearing sizes are:
- | | Diameter | Length |
|------------------------------------|------------------|--------------------|
| Front..... | $2\frac{3}{8}$ " | $2\frac{5}{8}$ " |
| Front Center..... | $2\frac{3}{8}$ " | $1\frac{15}{16}$ " |
| Rear Center or Thrust Bearing..... | $2\frac{3}{8}$ " | 2" |
| Rear..... | $2\frac{3}{8}$ " | $2\frac{25}{32}$ " |

MAIN BEARING CLEARANCE

From April 1st to November 1st, main bearings are fitted .001 to .002 radial clearance on shaft; from November 1st to April 1st, are fitted .0015 to .0025 radial clearance on shaft.

Shims are provided between upper and lower halves of bearings to take up reasonable wear without the necessity of filing faces of cap.

Rear center bearing, which is also thrust bearing, is fitted from .005 to .007 total end clearance on shaft.

Other three bearings are fitted with clearance on shaft of $\frac{1}{32}$ " to $\frac{1}{16}$ " at each end.

PISTONS

The light weight cast iron pistons are $3\frac{1}{8}$ " long, have full skirt, relieved at piston pin bosses, and provided with three piston ring grooves; the lower groove being drilled with twelve $\frac{5}{32}$ " holes for oil ring.

The piston pin bosses, in which piston pins oscillate, are bronze bushed, and are offset $\frac{3}{32}$ " toward the camshaft.

The pistons are fitted in cylinder to pass of their own weight on feeler .002 thick and hold of their own weight on feeler .003 thick—feelers being $\frac{1}{4}$ " wide.

PISTON RINGS

Three concentric type, diagonally cut, cast iron rings are provided above the piston pin.

The two top rings are plain type $\frac{1}{8}$ " wide and the lower ring is an oil control type $\frac{3}{16}$ " wide.

PISTON PIN

The piston pin is hollow, $\frac{7}{8}$ " diameter. The hole through pin is tapered from both ends, with greatest wall thickness at center of pin, giving maximum strength with minimum weight.

The pin is securely clamped in upper end of connecting rod.

CONNECTING ROD

The connecting rod is drop forged, heat treated steel, $10\frac{1}{4}$ " long. The lower end bearing is $1\frac{3}{4}$ " wide, $2\frac{1}{4}$ " diameter, babbitt lined, bonded directly to rod.

The connecting rods are provided with shims to take care of reasonable wear, without filing caps.

Connecting rod fitted to crankshaft with .002 to .0025 radial clearance, and .007 end clearance on shaft.

CAMSHAFT

The camshaft is drop forged steel, case hardened, $1\frac{1}{8}$ " diameter, supported in four bronze bushings and driven by crankshaft through helical gears.

The cam contour is especially designed for quiet action.

Camshaft bearing sizes are:

	Diameter	Length
Front.....	2"	$2\frac{1}{8}$ "
Front Center.....	$1\frac{3}{32}$ "	$1\frac{5}{8}$ "
Rear Center.....	$1\frac{1}{16}$ "	$1\frac{5}{8}$ "
Rear.....	$1\frac{3}{32}$ "	$1\frac{1}{16}$ "

VALVE LIFTERS ROLLERS AND PINS

Valve lifters are 1" diameter, $2\frac{5}{16}$ " long and hollow for light weight.

Valve lifter rollers are $1\frac{1}{4}$ " diameter, $\frac{7}{16}$ " wide and case hardened.

Roller pins are $\frac{3}{4}$ " long, $\frac{1}{2}$ " diameter, case hardened and hollow for lightness and ease of lubrication.

VALVE LIFTER GUIDES

Valve lifters operate in individual cast iron guides which may be removed easily from side of engine.

VALVE PUSH RODS

Valve push rods are made of $\frac{7}{16}$ " diameter tube, $\frac{3}{32}$ " wall thickness. Tubing used for strength combined with light weight.

- VALVES** Valves located in detachable cylinder head, are of one piece construction of following dimensions:
- | | Clear Dia. Head | Dia. Stem | Valve Lift |
|--------------|-------------------|-----------------|-------------------|
| Inlet..... | 1 $\frac{7}{8}$ " | $\frac{3}{8}$ " | $\frac{21}{32}$ " |
| Exhaust..... | 1 $\frac{5}{8}$ " | $\frac{3}{8}$ " | $\frac{21}{32}$ " |
- Inlet valve material—Nickel steel head, with nickel steel or carbon steel stem.
 Exhaust valve material—No. 1 Silchrome steel.
 Valve lash—.008 when engine is hot.
- Valve Timing:**
 Inlet valve opens—at upper dead center.
 Inlet valve closes—54° after lower dead center.
 Exhaust valve opens—62° before lower dead center.
 Exhaust valve closes—25° after upper dead center.
 Firing order—1-4-2-6-3-5.
- VALVE SPRINGS** Double valve springs used to close the valves and designed for quiet operation, are of sufficient tension to ensure proper opening and closing of valves at greatest engine speed.
- Valve spring pressure—valve closed—53 to 65 lbs.
 Valve spring pressure—valve open—138 to 154 lbs.
- ROCKER ARM SHAFT** Rocker arm shaft is one piece, $\frac{7}{8}$ " diameter tube, $\frac{3}{16}$ " wall, case hardened and ground.
- ROCKER ARM** Rocker arms are drop forged steel, heat treated, and provided with hard rolled bronze bushing for bearing on rocker arm shaft.
- The other ending against valve stem is case hardened and ground.
 The other end is tapped for adjustable ball stud which operates in push rod.
- ENGINE COVERS** The valve rocker arm mechanism and push rods are provided with pressed steel covers and cork gaskets which prevent dirt and dust from attacking these parts and also prevent oil from escaping.
- TIMING GEARS** Timing gears are composed of steel crankshaft and generator gears running with Textolite cam gear. This construction is same as used in 1927 models. All gears have $1\frac{1}{4}$ " width of face.
- COOLING SYSTEM** The cooling system consists of the radiator, thermostat, cylinder water jacket, water circulating pump and fan. The water capacity of the entire system is 5 gallons.
- RADIATOR** The radiator core is Harrison cellular type, provided with copper water passages and copper cooling fins. The core is $2\frac{3}{4}$ " thick and has frontal area of 460 square inches.
- A pressed steel shell encloses the core and supports it on the frame of car.
- FAN** The four blade, $17\frac{3}{4}$ " diameter fan revolves on a plain bearing which is lubricated under pressure by a gear pump which draws oil from a reservoir in the fan shell. A stand pipe inside the shell is provided to control the oil level.
- The fan is mounted on an adjustable bracket attached to cylinder block, and is driven by a "V" belt $\frac{3}{8}$ " wide from fan pulley mounted on end of cam shaft.
- Caution: Engine Oil Only Should Be Used in Fan.**

WATER PUMP

The water pump is of the centrifugal type and is mounted directly back of generator in a rigid bracket integral with the upper crank case.

The impeller, $3\frac{1}{16}$ " diameter, $\frac{7}{8}$ " wide, is pinned to a case hardened shaft $\frac{9}{16}$ " diameter.

The shaft is supported in two bronze bearings located in pump body, which also carries the packing gland.

The pump is driven by the generator shaft through an Oldham coupling.

Water pump to crankshaft speed— $1\frac{1}{2}$ to 1.

The entire cooling system is drained by opening drain cock located in radiator.

**ENGINE
LUBRICATION**

The engine lubricating system is of the pressure feed type and functions in the following manner:

OIL PUMP

An oil pump, driven from the camshaft, is submerged in the oil sump in lower half crankcase.

Oil is delivered from the pump, through oil manifold to each of the crankshaft main bearings, and by means of drilled holes in crankshaft from main bearings to lower connecting rod bearings.

Lubrication is furnished to camshaft bearings, cylinder walls, pistons and pins by oil thrown from sides of connecting rods and from small holes drilled through connecting rod bearings which meter with drilled holes in crankshaft.

A secondary line leads from oil pump to oil pressure gauge and also to oil filter. After oil is passed through filter it is forced to valve rocker arm shaft. Through drilled holes in shaft, a quantity of the oil is fed to rocker arm bearings and through drilled holes in rocker arm, is carried to push rod ball joints, then runs down push rods and lubricates the valve lifters, guides, rollers and pins. The greater portion of oil from the rocker arm shaft is carried down the front end of engine to the timing gear housing, lubricating the timing gears, front camshaft bearing and generator bearing, eventually returning to lower half of crankcase.

In case oil filter is clogged, oil passes direct through by-pass hole to rocker arm shaft.

The oil pump consists of two gears, $\frac{1}{8}$ " thick, sixteen teeth, fourteen pitch. The pump is provided with pressure relief valve which opens when oil pressure reaches 25 to 30 pounds.

Oil capacity of crankcase: 8 quarts in dry engine, and $6\frac{1}{2}$ quarts to refill.

OIL FILTER

The AC oil filter is a round type with rolled up cloth filtering element having 600 sq. in. of filtering surface.

The filter located on the front of dash, takes the oil direct from the oil pump in the crankcase, and after filtering passes the oil to the rocker arm shaft and then oil returns to crankcase. The total quantity of oil in crankcase will pass through the filter every five minutes, ensuring clean oil to working parts at all times.

Should the filtering element become clogged, the oil is by-passed around the filter ensuring oil to rocker arm mechanism under any conditions.

A pet cock is provided at the filter, and if oil does not flow from cock when opened, either the filter or line to filter has become clogged. If line is clogged it can be opened by blowing through line with air hose. If filter is clogged, new cartridge must be installed.

Pet cock should be opened every 500 miles in order to determine that filter is functioning. This test should be made only when oil is hot and engine running.

CRANKCASE VENTILATOR

The crankcase ventilator is identical in construction with the one used on 1927 models. This ventilator works on the ejector principle. The fan blows air through a funnel, past an opening in the crankcase, causing a suction which pulls the vapors from the crankcase and ejects them through a pipe below the side pan. This disposition of vapors prevents their reaching the interior of car.

The rear breather, which acts as a vent to the crankcase, is provided with an air cleaner to prevent dust particles from entering the crankcase.

One of the chief products of the explosive mixture in a gasoline engine is water. When starting a cold engine the water and heavy ends of the fuel, which are not combustible below a certain engine temperature, find their way down past the piston in the form of vapor. Unless this vapor is removed it will condense and cause water and kerosene dilution of the lubricating oil.

The water mixes with the sulphur which may be in the unburned fuel or the oil, and forms sulphuric acid which attacks working parts of the engine and causes quick corrosion, pitting and rapid wear.

The crankcase ventilator does not prevent kerosene dilution of the oil in extremely cold weather, but positively does remove the water. The kerosene dilution, when held within normal limits, is necessary to keep the oil from congealing and to allow easy starting of the engine and immediate circulation of oil through the system.

The normal limits of kerosene dilution in zero weather are from 20% to 30% and the ventilator automatically keeps the oil within these limits.

The combination of the crankcase ventilator, which removes all harmful dilution, with the oil filter and air cleaner, keeps the oil in the engine in good condition at all times, thereby entirely eliminating the necessity of frequent oil changes.

The crankcase ventilator, in combination with the Thermostatic Water Control, prevents the accumulation of water which is the destructive element of crankcase dilution and holds the other element, unburned fuel, to a minimum.

Note: Oil filler must be closed tightly or ventilator will not function.

THERMOSTATIC WATER CONTROL

A thermostat is placed in the water line between engine head and radiator. It is held in a housing attached to the upper water tank of radiator, the water from engine passing through this housing and around the thermostat unit. The unit consists of a metallic bellows attached to a poppet valve. This valve remains closed while water in cylinder jacket is below 120° and prevents circulation of water through the system. When water reaches 120° the bellows expands, forcing the valve from its seat and allowing normal circulation of water. The valve is provided with a $\frac{1}{16}$ " bleeder hole which permits a small quantity of water to pass through the thermostat housing when valve is closed, assuring instant action of the bellows when cylinder water jacket temperature reaches 120°.

Under the most severe weather conditions the engine will warm up from zero to 120° in less than three minutes.

After engine has been warmed, should the car be parked, the thermostat valve will close as soon as water temperature falls to 120°, and prevent thermosyphon circulation. The water in cylinder jacket will, therefore, remain warm for a long time. Subsequent start may then be made without the excessive use of choker which is a large factor in the dilution of lubricating oil with raw gasoline.

The thermostat requires no adjustment. The unit is easily removed from the housing by taking out four cap screws in radiator inlet fitting.

INLET MANIFOLD

The inlet manifold, located on left side of engine, is of the three port type with straight horizontal runner, each port feeding gas to two cylinders.

The manifold is securely clamped to cylinder head on both sides of each port, assuring air tight joint.

Special attention has been given manifold to ensure even distribution of gas to all cylinders.

Inside diameter of runner and ports, $1\frac{7}{16}$ ".

CARBURETOR The carburetor is Marvel model T-4, automatic air valve, heat controlled type, provided with two adjustments only, one for needle valve or low speed nozzle, and one for air valve.

Carburetor sizes:

Air intake	2 $\frac{1}{8}$ " diameter.
Air valve	2" diameter opening.
Air valve spring	No. 24-115.
High speed jet	No. 49-300-D-28.
Metering pin jet	No. 84-43.

CARBURETOR RISER A double walled riser, between inlet manifold and carburetor, and connected to exhaust manifold, utilizes exhaust gases, by passing them between riser walls, to ensure complete vaporization and minimum consumption of fuel.

The amount of heat furnished to the riser is controlled by two valves, one located in damper body at end of exhaust manifold, the other located in outlet tube, extending from riser to damper body. These valves are both automatically and manually operated.

Being connected with throttle, they are automatically opened or closed by the corresponding opening or closing of the throttle, furnishing greatest amount of heat to riser when throttle is closed.

Being connected to manually operated lever located on instrument board, the automatic action of the heat valves may be varied to suit weather and driving conditions.

Throttle is located in riser and is 1 $\frac{1}{8}$ " diameter.

AIR CLEANER

The AC air cleaner, attached to air inlet of carburetor, separates the dust particles from the air, keeping them from entering the engine where they would cause excessive wear of all moving parts.

The suction of the engine draws air into cleaner through directing vanes which give the air stream a rapidly rotating motion, spirally.

Centrifugal force separates the dust particles from the air, throwing them against the wall of the cleaner. The dust is then ejected through a small outlet.

The clean air moves through inner portion of cleaner and enters carburetor free from dirt.

EXHAUST MANIFOLD

Exhaust manifold, located on left side of engine, is of six port construction and is securely clamped to cylinder head on both sides of each port. It has been increased $\frac{1}{4}$ " in diameter at the ports and the runner has been increased approximately $\frac{1}{4}$ " to permit quicker discharge of exhaust gases.

EXHAUST PIPE

The exhaust pipe, extending from damper valve body to muffler, is 2 $\frac{1}{4}$ " diameter.

MUFFLER

Muffler construction is the same as used in 1927 Models except that shell has been decreased $\frac{3}{4}$ " in diameter and lengthened 7 $\frac{1}{16}$ ".

It is divided into six compartments by dome shaped baffle plates. These compartments act as expansion chambers for the exhaust gases which do not enter rear compartment but pass through into the tail pipe by means of a venturi tube.

The rear compartment being in communication with the tail pipe, acts as a vacuum chamber which removes all impulses from out-flowing gases.

This construction will prevent loosening of muffler parts or bursting because of explosion in muffler, and also eliminate exhaust roar so common to other types of mufflers.

MUFFLER TAIL PIPE

A long muffler tail pipe 1 $\frac{3}{4}$ " diameter extends from muffler to rear of frame, carries exhaust gases completely clear of chassis, and reduces exhaust noise.

- FUEL SYSTEM** The fuel system consists of gasoline tank, gas lines, vacuum tank, gasoline strainer, carburetor and intake manifold.
- GASOLINE TANK** The gasoline tank of 19 gallon capacity, is located at rear of frame. The tank is provided with a suction pipe to which is attached a wire gauze strainer.
- VACUUM TANK** The gasoline is drawn from rear tank to vacuum tank of 3.76 pints capacity, mounted in front of dash. Vacuum is created by suction from the intake manifold.
- GASOLINE STRAINER** The gasoline strainer, mounted at lower end of vacuum tank, prevents dirt and water from entering the carburetor.
The strainer is provided with a detachable glass bowl which may be removed easily for cleaning.
A valve is provided for shutting off the gas when cleaning strainer or removing carburetor.
Gasoline flows from strainer by gravity to carburetor float bowl.
- GASOLINE GAUGE** A gasoline gauge is mounted on instrument panel in combination with other instruments in all models.
- CLUTCH** The clutch is multiple disc, dry plate type, self contained, carrying five driving plates, five driven plates and ten friction facings. The driving plates to which facings are riveted are driven by the flywheel, by means of sixty teeth in the flywheel and driving plates.
The driven plates drive the clutch hub by means of fifty-three teeth in hub and plates.
Clutch driven plates are made of high carbon steel, ensuring long life and resistance to warpage.
Clutch hub is heat treated, drop forged, high carbon steel.
Clutch shaft is supported in two ball bearings, one mounted in front of transmission case, the other in rear end of crankshaft.
Clutch release bearing is ball thrust type containing twelve $\frac{3}{8}$ " diameter balls.
Clutch facings are of woven asbestos, re-enforced by copper wires.
The facings are $5\frac{3}{4}$ " inside diameter, $7\frac{3}{4}$ " outside diameter and $\frac{5}{32}$ " thick; area of friction surface is 212 sq. in.
Clutch spring pressure is 360 to 380 pounds.
Clutch pedal reduction 17.3 to 1.
- CLUTCH ADJUSTMENT** The only adjustment required in connection with the clutch is at clutch pedal. This adjustment is made with thumb nut located at rear end of clutch release rod outside the clutch housing.
Proper adjustment provides there shall be 1 to $1\frac{1}{2}$ inches free pedal travel.
- TRANSMISSION** The transmission is of the selective sliding gear type, three speeds forward and reverse, with general construction similar to that used on 1927 models but is not interchangeable with previous models.
The S. A. E., or conventional type, gear shift has been adopted for 1928 models. Special parts to change 1928 shift to former Buick type shift may be secured from the parts department.
S. A. E. type shifter parts will not interchange with those of previous models.
Clutch gear bearing No. 1210 New Departure, single row.
Transmission main shaft front bearing, located in clutch gear, is plain bronze $\frac{1\frac{1}{8}}$ " diameter by $2\frac{9}{32}$ " long.
Transmission main shaft bearing, rear, No. 1307 New Departure, single row.

Transmission main shaft is of high carbon, heat treated steel and has six splines of $1\frac{1}{8}$ " outside diameter.

Stationary transmission counter gear shaft is case hardened and ground to 1" diameter.

Counter gear bushings plain bronze—two—1" diameter by $2\frac{3}{8}$ " long.

	Teeth	Pitch
Clutch gear	19	7
High and intermediate sliding gear	27	7
Low and reverse sliding gear	34	7-9
Countershaft constant mesh gear	34	7
Countershaft intermediate gear	26	7
Countershaft low speed gear	19	7-9
Countershaft reverse gear	15	7-9
Reverse idler gear	19	7-9

Gear material; heat treated, chrome nickel steel.

Transmission	Gear Reductions	Total at Wheel
120" and 128" WB	Models 47-47S-50-51	Models 48-54-54C-55-58
High—Direct	4.9 to 1	4.72 to 1
Intermediate—1.858 to 1	9.121 to 1	8.782 to 1
Low—3.202 to 1	15.718 to 1	15.136 to 1
Reverse—4.056 to 1	19.911 to 1	19.172 to 1

Case requires 3 lbs., 12 oz. of oil to fill to proper level.

UNIVERSAL JOINT

The universal joint is enclosed in the ball drive housing located at rear of transmission case. The housing protects joint from dirt and water and retains lubricant supplied by the transmission.

The forward yoke is attached to transmission main shaft by means of a spline fitting and held securely by washer and nut.

The rear yoke is supported in a bronze bushing in driving ball. The yoke is broached to receive splined end of pinion shaft.

The universal joint and bushing are automatically oiled from the transmission.

The joint is 4" outside diameter and yoke pins 1" diameter.

SPEEDOMETER GEARS

The speedometer drive gears are enclosed in ball drive housing, protected from dirt, and automatically lubricated.

	Models 48-54-54C-55-58	Models 47-47S-50-51
Speedometer driven gear	23 teeth	24 teeth
Speedometer worm gear	8 teeth	8 teeth

DRIVING BALL

The driving ball surrounds the universal joint and is enclosed in ball housing at end of transmission case. It is $5\frac{1}{8}$ " diameter and fastened directly to the torsion tube by six $\frac{3}{8}$ " diameter cap screws.

Starting, Lighting and Ignition

The Delco-Remy system of starting, lighting and ignition is used on all models. It is of the six volt, single wire or grounded type, the engine and frame of car forming the return side of the electrical system.

The equipment consists of the following units:

	Model No.	Buick Part No.
Starting motor	725 A	820205
Generator	940 F	821305
Lighting switch	484 A	820869
Ignition coil	002188	002188
Distributor assembly	640 A	820872
Signal lamp switch	466 B	820867
Current limit relay	410 A	820871
Horn	K-18-B	820865
Instrument board switch		208615
Steering gear and Ignition lock assembly (Includes lock and switch)		
Models 24-25		209006
20-26-26S-27-29		208085
27-47S-48-50-51-54C-58		207650
54-55		209007
Signal lamp	810 A	820899
Cut-out relay	265 B	812970
	115" Series	120"-128" Series
Battery, Exide	3 x C-13-1G	3 x C-15-1G
No. flywheel teeth	118	122
No. pinion teeth	10	10
Ratio	11.8	12.2

STARTING MOTOR

The starting motor, mounted on flywheel housing on right side of engine, is of the direct drive mechanical shift type. It is a four-pole unit with the field coils in parallel and connected in series with the armature. The armature shaft is supported in two bronze bushings, inlaid with graphite which require no further lubricant.

Engagement with the flywheel is made through the drive unit, which consists of a pinion, spring, shifting collar and overrunning clutch. This drive unit is mounted on the splined armature shaft. It is moved endwise by means of a shifting yoke which fits in the shifting collar. The upper end of the shifting yoke is connected through a lever and cross shaft to the starter pedal.

When the starter pedal is depressed, the drive unit is shifted toward the flywheel and the pinion engages with the flywheel gear. After the pinion is well meshed with the flywheel gear, the upper arm of the shifting yoke comes in contact with a switch on top of the motor housing, completing the electrical circuit between the starting motor and storage battery. The armature then revolves and cranks the engine.

The teeth of both the flywheel gear and starting pinion are chamfered, providing easy engagement. In shifting the drive unit, if the teeth of pinion do not slide into mesh with the flywheel gear, the spring behind the pinion is compressed until circuit is closed, and when the armature begins to rotate, the pinion slides into complete engagement.

The overrunning clutch is provided to automatically disconnect the drive unit from the armature shaft and prevent the flywheel driving the armature at high speed after engine starts running on its own power and before the starter pedal is released.

The flywheel teeth are cut in a heat treated steel ring, shrunk on flywheel and welded to it.

	114 $\frac{1}{2}$ " Series	120" and 128" Series
No. Flywheel teeth-----	118	122
No. Pinion teeth-----	11	11
Ratio-----	11.8 to 1	12.2 to 1

GENERATOR

The generator is mounted on right side at front of engine. It is a two pole shunt wound unit, having third brush and thermostat regulation for controlling the charging rate.

The generator furnishes current for the lights and ignition and keeps the storage battery charged so that a supply of current is available for starting and lighting when engine is not running.

The armature shaft is driven at one and one-half engine speed in a clockwise direction (looking at front end) by the engine timing gears, and is supported at the front end by two special bronze bearings and at rear end by an annular ball bearing. Lubrication for the front bearing is supplied by overflow of oil from rocker arm shaft to oil well below bronze bearings. An oil ring on armature shaft dips into this well and carries oil up to the bearings.

The generator starts charging at a car speed of 8 to 10 miles per hour. Below this speed no current is generated and all current required is taken from the storage battery. In order to prevent battery from discharging through generator below charging speed, a cut-out relay is used.

Control of the charging rate as mentioned above is accomplished by a third brush regulator and thermostat. The ordinary type of shunt generator furnishes a current that increases with speed. The third brush applied to the shunt wound generator produces a current output that reaches its maximum at a car speed of approximately 25 miles per hour and automatically decreases above that speed. The position of the third brush determines the maximum charging rate and is mounted on an adjustable plate, which is held in position by a lock screw at the end of the generator. By means of this plate the brush position may be changed. The thermostat is an automatic switch which allows a high charging rate when generator is cold but cuts the charging rate down to protect generator and storage battery when generator becomes hot. This unit makes it unnecessary to change the third brush setting for winter or summer driving, as the proper charging rate is automatically maintained.

CUT-OUT RELAY

The cut-out relay, mounted on top of the generator, and magnetically operated completes the current between the battery and generator when generator voltage exceeds that of battery, and opens the circuit when the generator voltage drops below that of battery.

DISTRIBUTOR

The distributor is an integral part of the generator, being mounted on the commutator end housing. It is of the combined automatic and manual spark advance, and is driven by generator armature shaft through spiral gears at one-half engine speed.

The purpose of the distributor is to interrupt the primary circuit and distribute the high tension current to the spark plugs.

AUTOMATIC AND MANUAL SPARK ADVANCE

The automatic advance mechanism, located in distributor cup automatically advances or retards the spark for different driving speeds, eliminating the necessity of frequently shifting of the spark lever located on steering wheel.

The distributor is set to fire 17° before upper dead center (measured on flywheel) in the advanced position which brings it 7° after upper dead center in retard position.

The automatic advance cuts in at approximately eleven miles per hour, car speed, and gradually advancing spark 15° to 19° at car speed of forty miles per hour. With this setting the total maximum advance, both manual and automatic is from 32° to 36° .

IGNITION COIL

The ignition coil, mounted on top of the generator converts the low voltage primary current from the battery or generator into a secondary current of very high voltage, capable of jumping the gap in the spark plugs.

The resistance unit, which is mounted on the front end of the ignition coil, prevents excessive discharge of the battery in case the ignition switch is left on when engine is stopped and timing contacts are closed.

IGNITION SWITCH

Ignition switch is in combination with the steering gear lock. Lever may be locked in the "Off" position by the steering gear lock key.

CURRENT LIMIT RELAY

A protective device known as the current limit relay is mounted on the inside of dash board.

The normal current to the lighting circuits does not affect the current limit relay, but in the event of an abnormally heavy flow of current, such as would be caused by a ground in any of the lighting circuits, the current limit relay operates and intermittently cuts off the flow of current, causing an audible clicking sound which gives a distinctive warning that abnormal conditions exist. This will continue until the ground is removed or switch is operated to cut off the circuit in which the ground exists. In this manner, the current limit relay protects the wiring, switch and storage battery. As soon as ground is removed the current limit relay restores the circuit.

LIGHTING SWITCH

The lighting switch is mounted at base of steering gear and is operated by lever at top of steering wheel.

The switch has four positions and from left to right are:

Parking—Off—Dim—Bright.

Parking position lights—cowl and tail lamp.

Dim position lights—head lamp upper filament and tail lamp.

Bright position lights—head lamp lower filament and tail lamp.

SIGNAL LAMP SWITCH

The signal lamp switch is mounted on transmission cover, and is operated by the brake pedal and also by the control lever when in reverse position.

INSTRUMENT BOARD SWITCH

A two way switch is provided on instrument board to control the instrument panel indirect lights and the front compartment direct lights.

LIGHTING

The head lamps, of controllable beam type, are provided with universal brackets and mounted on a rigid one piece cross bar attached to fender irons. Two filament bulbs and special reflectors are used, both filaments having the same candle power. The beams are controlled by lever at top of steering wheel.

The lever when moved to dim position, lights the upper filament of bulb, throwing light beam directly in front of car.

When moved to bright position, lights the lower filament of bulb, throwing light beam at a greater distance ahead of car.

Head lamps are focused by means of screw at back of lamp body.

SIGNAL LAMP

The signal lamp is mounted on cross bar of tire carrier and consists of stop, back-up, tail light and license illuminating lenses, contained in exclusive Buick housing.

A 3 C. P. bulb, controlled by lighting switch, illuminates the red tail lens and license plate lens.

A 15 C. P. bulb, operated by brake pedal and transmission control lever, illuminates both the stop and back-up lenses.

		Candle Power
LAMP BULBS	Head lamp	21
	Cowl lamp	3
	Tail lamp	3
	Indirect instrument lamp	6
	Dome lamp	6
	Signal lamp	15
	Front compartment	3
HORN	Klaxon vibrator horn Model K-18-B is mounted on bracket attached to inlet manifold and is used on all models.	
STORAGE BATTERY	115" Series:—Exide No. 3 x C-13-1G, 13 plates, 6-8 volts, 90 ampere hour capacity.	
	120" and 128" Series:—Exide No. 3 x C-15-1G, 15 plates, 6-8 volts, 105 ampere hour capacity.	

Important Features

All Models

Larger Radiators of new design.
Radiator Emblem of Improved Design.
Distinctive Head lamps—Buick Bullet shape.
Large Plain crown Fenders.
Maximum Clear Vision.
New style Hub Caps.
Hydraulic Shock Absorbers—front and rear.
Grouped Chassis Lubrication.
Standard S. A. E. Gear Shift.
Adjustable Steering Wheels.
Gasoline Gauge on Instrument Board.
Water Temperature Gauge on Instrument Board.
Lock mounted on Steering Column.
Instruments grouped in Walnut faced panel.
Dual Lighting of Instruments and Front Compartment.
Combination Tail Lamp, Stop Lamp and Back Up Lamp.
New Steering Wheels.
New Light Controls.
Double Screw Jack.
One Piece Fender Tie Rod and Lamp Bracket.

Open Models

Forward folding Windshields.
Improved Tops, Narrowed at front, Natural wood Bows, Nickered hinges.
Special Colors and material for Top Covers, Curtains and Boots.
Form fitting Cushions.
Leather trimming. Special honey comb grain, two-tone taupe finish.
Nickel finish on Radiators, Lamps, Windshields, Hand Brake Levers, Control Levers, and Hood Fasteners.

Detailed Description

Open Models

There are four open models in the line, as follows:

Series	Models
115"-----	24 Roadster and 25 Touring
128"-----	54 Roadster and 55 Touring

These cars embody all the equipment, refinement and appearance that can be desired in high class sport cars. The cars are long and rakish—with forward folding windshields: very close and neatly folding tops: and pleasing colors.

All the interior refinements built into the closed cars—such as Form Fitting cushions. Luxury type cushion springs; adjustable steering posts; refined instruments and steering wheels—are standard equipment on all open models.

MODEL 24—Four Passenger Sport Roadster.

Colors:

Body—Trail Green.
Moulding—Dark Trail Green.
Wheels—Dark Natural Wood.
Felloes and Brake Drums—Trail Green.

MODEL 25—Five Passenger Sport Touring.

Colors and equipment are the same as Model 24.

MODEL 54—Four Passenger Sport Roadster.

Colors:

Body—Horizon Blue.
Mouldings—Dark Trail Green.
Hood—Horizon Blue.
Wheels—Dark Natural Wood.
Felloes and Brake Drums—Horizon Blue.

MODEL 55—Five Passenger Sport Touring.

This is a companion car for the Model 54 and carries the same equipment and is finished in the same colors.

Closed Models

Improved Features of Closed Bodies All Models

New body lines.
Clear vision fronts—obtained by narrow windshield and front door posts and narrow windshield top bar.
New roof lines.
Wider doors.
Carpet covered foot rests with nickled brackets.
Arm rests at rear seats.
Form fitting cushions.
Improved vanity cases and smoking sets.
New carpets in rear compartments.
Rubber mats in front compartments.
New sun visors with nickled brackets.
Wider doors.
New window regulators.
No vertical mouldings on lower back panels.
Better top materials.
New outside door handles.

MODEL 20—Two Door Five Passenger Sedan.

Driver's seat adjustable forward or backward one inch from center position.

Colors:

Body—Lower, Parkway Green.

Upper, Black.

Mouldings—Black with double Cream stripes.

Window Insets—Parkway Green.

Wheels—Painted and striped to match body.

Interior Trimming—Cushions and backs, Green Gray with figured pattern Mohair plush.

Side walls and head lining plain Gray Green cotton plush.

Carpet is velvet pile with Moresque design. Instrument board and window

garnish mouldings are colored to harmonize with the trimming.

A large smoking set is located at the right hand side of rear door.

Outside door handles are new in design.

MODEL 26—Two Passenger Business Coupe.

Door in deck is hinged at the front for easier access to the luggage compartment.

Top and rear side quarters finished with black long grain material.

Ornamental Landau side hinges are used at rear side quarters.

Interior finish colors and general equipment are the same as for Model 20.

MODEL 26-S—Four Passenger Country Club Coupe.

The top covering is a new material of light color but has same durable finish as the conventional top material.

Landau hinges are colored to match body and have nicked centers and ends.

Colors:

Body—Lower, Valley Green.

Upper, Avenue Green.

Mouldings—Flemish Green with Red stripe edged with White.

Wheels—Dark Natural Wood.

Felloes and Brake Drums—Colored and striped to match body.

Interior Trimmings—Cushions, backs and side walls same as Model 20.

Doors are trimmed with Walnut panels with Ivory striping and edged to match garnish mouldings.

Instrument board and garnish mouldings are colored to match upper portion of body.

Dickey seat and rear compartment trimmed with long grain black leather.

MODEL 27—Five Passenger Four Door Sedan.

Interior finish, colors and general refinements—same as Model 20.

MODEL 29—Five Passenger Town Brougham.

Top and back quarters are finished in special black long grain leather.

Landau hinges are black with nicked centers and ends.

Metal finish extends beyond the rear side windows.

Colors:

Body—Lower, Harbor Blue.

Upper, Black.

Mouldings—Black striped with Cream and Gold.

Wheels—Dark Natural Wood.

Felloes and Brake Drums—Colored and striped to match body.

Interior Trimming—Cushions, backs and side walls same as Model 20.

Doors are trimmed with Walnut panels with Ivory striping and edges to match garnish mouldings.

Instrument board and garnish mouldings are Harbor Blue to match body.

MODEL 47—Five Passenger Four Door Sedan.

Colors:

Body—Lower, Ocean Blue.

Upper, Black.

Mouldings—Black with double Cream stripe.

Wheels, Felloes and Brake Drums—Colored to match.

Interior Trimming—Cushions and backs, Blue Gray Figured pattern Mohair Plush.

Side walls and head lining plain Blue Gray Wool Plush.

Carpet is a new velvet material of Moresque design.

Vanity case and smoking set are of new design to harmonize with interior finish.

Instrument board and garnish mouldings are colored Ocean Blue to match body.

Outside door handles are of new design and finish.

MODEL 47S—Five Passenger De Luxe Sedan.

This is a new model in the line. All general dimensions are the same as Model 47.

The back is leather trimmed and has Landau hinges at the sides.

Colors:

Body—Lower, Light Promenade Blue.

Upper, Dark Promenade Blue.

Mouldings—Black striped with Buick Vermillion edged with Gold.

Wheels—Dark Natural Wood.

Felloes, Hubs and Brake Drums—Colored and striped to match body.

Interior Trimming—Cushions and seat backs are Taupe and Green figured pattern Mohair Plush.

Sides and head lining are plain Taupe Wool plush.

Doors are trimmed with Walnut panels with Ivory striping and edged to match garnish moulding.

Instrument board and Garnish mouldings colored Dark Promenade Blue.

Vanity case and smoking set are special to match the general color scheme.

MODEL 48—Four Passenger Coupe.

Colors, interior trimming and general refinements the same as Model 47.

MODEL 50—Seven Passenger Sedan.

Colors:

Body—Lower, Avenue Green.

Upper, Black.

Mouldings—Black striped with Red edged with Gold.

Wheels—Dark Natural Wood.

Felloes, Hubs and Brake Drums—Colored and striped to match body.

Interior Trimming—Cushions and seat backs are Dark Green Mohair Plush.

Cushions and backs are plaited style with buttons.

Side walls and head lining Tan Mohair Plush.

The harmony of the interior color scheme is carried out in the finish of the Instrument Board, assist Cords, Curtains, Carpets, Vanity Case, Smoking Set and insets in the door handles.

The rear compartment floor is covered with a velvet carpet of special pattern. Genuine Walnut Mouldings are used around all windows, above the Instrument Board and on door panels.

Door panel and panel above instrument board have inlaid borders and designs.

MODEL 51—Five Passenger Brougham.

Body has been lengthened 2" over 1927 dimensions.

Metal finish has been carried past the rear side windows.

Top and back panels are covered with a special deep grain leather finished material.

Sides are fitted with imitation Landau hinges with nickeled centers and ends.

Colors:

Body—Lower, Highway Grey.
Upper, Black.

Mouldings—Black striped with Red edged with Gold.

Wheels—Dark Natural Wood.

Felloes, Hubs and Brake Drums—Colored and striped to match body.

The interior finish, material, hardware, instruments and carpets are the same as Model 50.

MODEL 54C—Four Passenger Country Club Coupe.

The top covering is a new type of light colored fabric with an inlay design.

Colors:

Body—Lower, Light Mountain Brown.
Upper, Dark Mountain Brown.

Mouldings—Flemish Red striped with Cream edged with Black.

Wheels—Dark Natural Wood.

Felloes, Hubs and Brake Drums—Colored to match body.

Interior Trimming—Cushions, and seat backs are Dark Brown Mohair Plush.

Side walls and head lining are Light Brown Mohair Plush.

Instrument board is colored to match the trimming.

MODEL 58—Five Passenger Coupe.

Driver's seat is adjustable one inch backward or forward from central position.

Colors:

Body—Lower, Boulevard Maroon.
Upper, Black.

Mouldings—Black striped with Red edged with Gold.

Wheels—Dark Natural Wood.

Felloes, Hubs and Brake Drums—Colored and striped to match body.

Interior Trimming, color scheme, hardware and general refinement same as Model 50.

INDEX

	115 ⁷ Series	120 ⁸ & 128 ⁸ Series		115 ⁷ Series	120 ⁸ & 128 ⁸ Series
Axles, front.....	6	17	Gasoline gauge.....	3-15	3-26
Axles, rear.....	3-6	3-17	Gasoline tank.....	15	26
Air Cleaner.....	14	25	Gasoline strainer.....	15	26
Automatic and manual spark advance.....	29	29	Gear, rear axle ratio.....	2-6	2-17
			Gear, timing.....	11	22
Battery, storage.....	30	30	Gear, reduction transmission and total.....	16	27
Bearings, wheel.....	6-7	17-18	Gear Shift.....	5-15	5-26
Bearings, differential.....	6	17	Gear, speedometer.....	16	27
Bearings, pinion shaft.....	7	18	Gear, steering.....	8	19
Bearings, camshaft.....	10	21	Generator.....	29	29
Bearings, connecting rod.....	10	21			
Bearings, connecting rod clearance.....	10	21	Headlamps.....	5-30	5-30
Bearings, crankshaft.....	10	20	Horn.....	5-31	5-31
Bearings, crankshaft clearance.....	10	21	Heat, carburetor heat control.....	14	25
Bodies, general information.....	32	31	Instrument board (see models).....		
Bore and stroke.....	2	2	Instrument lamps.....	5-30	5-30
Brakes, service or foot.....	7	18	Inlet, manifold.....	13	24
Brakes, emergency or hand.....	7	18			
Brake dimensions.....	7	18	Jacks.....	5	5
			King bolts.....	6	17
Camshaft.....	4-10	4-21	Lamps.....	5-30	5-30
Camshaft bearings.....	10	21	Lifters, valve.....	10	21
Carburetor.....	14	25	Light control.....	5-30	5-30
Carburetor riser.....	14	25	Lubrication, engine.....	12	23
Clearance, crankshaft bearings.....	10	21	Lubrication, chassis.....	5-7	5-18
Clearance, connecting rod bearings.....	10	21			
Closed bodies.....	33-34	35-36	Manifold, exhaust.....	14	25
Charging rate.....	29	29	Manifold, inlet.....	13	24
Clutch.....	15	26	Models.....		
Clutch adjustment.....	15	26	27-20.....	34	--
Clutch facings.....	15	26	27-24.....	33	--
Cooling system, Thermostatic water control.....	3-11	3-24	27-25.....	33	--
Coil, ignition.....	30	30	27-26.....	34	--
Colors (see models).....			27-26S.....	34	--
Compression.....	9	20	27-27.....	34	--
Connecting rods.....	10	21	27-29.....	34	--
Connecting rod bearings.....	10	21	27-47.....	--	35
Covers, rocker arm.....	11	22	47S.....	--	35
Covers, push rod.....	11	22	27-48.....	--	35
Crankcase.....	9	20	27-50.....	--	35
Crankcase ventilator.....	13	24	27-51.....	--	36
Crankshaft.....	9	20	27-54.....	--	36
Crankshaft torsion balancer.....	9	20	27-54C.....	--	36
Crankshaft bearings.....	9	20	27-55.....	--	33
Current Limit Relay.....	29	29	27-58.....	--	36
Cutout relay.....	29	29			
Cylinder bore.....	2	2	Mouldings (see models).....		
Cylinder head.....	4-9	4-20	Motor, starting.....	28	28
			Muffler.....	4-14	4-25
			Muffler tail pipe.....	4-14	4-25
Differential bearings.....	6	17			
Distributor.....	5-29	5-29	Oil capacity.....	12	23
Driving ball.....	16	27	Oil filter.....	12	23
Dimmer, switch.....	29	29	Oil pump.....	12	23
Drag link.....	9	20			
			Pinion shaft.....	7	18
Electrical equipment.....	28	28	Pipe, exhaust.....	14	25
Engine.....	2-9	2-20	Pistons.....	10	21
Engine mountings.....	2-9	2-20	Piston pins.....	10	21
Engine covers.....	11	22	Piston rings.....	10	21
Exhaust pipe.....	14	25	Push rods.....	4-10	4-21
Exhaust manifold.....	4-14	4-25	Pitman arm.....	9	20
Fan.....	11	3-22	Radiator.....	3-11	3-22
Firing order.....	11	22	Radiator brace rods.....	3	3
Floor covering (see models).....			Radiator emblem and cap.....	3	3
Flywheel housing.....	9	20	Rims, wheel.....	6	17
Foot rests (see models).....			Rocker arm shaft.....	11	22
Frame.....	3-8	3-19	Rocker arms.....	11	22
Fuel system.....	15	26	Rocker arm covers.....	11	22

INDEX—Continued

	115° Series	120° & 128° Series		115° Series	120° & 128° Series
Shafts, axle.....	7	18	Torque tube.....	7	18
Shafts, pinion.....	7	18	Tops (see open models)		
Shafts, rocker arm.....	11	22	Tool equipment.....	36	36
Shock absorbers.....	3	3	Transmission.....	15	26
Speedometer gears.....	16	27	Trimming (see models)		
Spring seats.....	7	18	Trunk rack.....	5	5
Springs, chassis.....	8	19	Turning circle.....	9	20
Springs, valve.....	4-11	4-22			
Starting, lighting and ignition.....	28	28	Universal joint.....	16	27
Starter.....	4-28	4-28			
Steering gear.....	8	19	Vacuum tank.....	15	26
Steering gear lock.....	4-9	4-20	Valves, engine.....	4-11	4-22
Steering knuckles.....	6	17	Valve lash.....	4-11	4-22
Steering wheel.....	9	20	Valve lifters, rollers and pins.....	10	21
Storage battery.....	30	30	Valve lifter guides.....	4-11	4-22
Strainer, gasoline.....	15	26	Valve push rods.....	4-11	4-22
Switch (Light control).....	5-30	5-30	Valve material and size.....	11	22
			Valve springs.....	4-11	4-22
Tail pipe muffler.....	14	4-25	Valve timing.....	11	22
Tank, gasoline.....	15	26			
Thermostatic water control.....	3-13	3-24	Water pump.....	12	23
Timing gears.....	11	22	Water temperature gauge.....	3	3
Tires.....	6	17	Wheels.....	6	17
Tire carrier.....	5-8	5-19	Wheelbase.....	2	2
Tie rod.....	6	17	Wheel bearings.....	6-7	17-18
Torsion balancer (crankshaft).....	9	20			

