



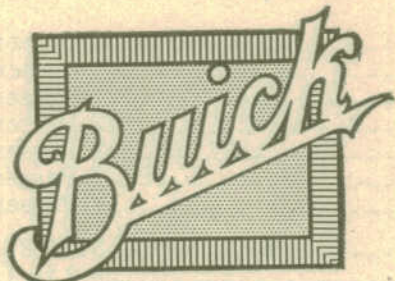
1927 MODELS



SPECIAL FEATURES
and
DETAILED SPECIFICATIONS



BUICK MOTOR COMPANY
DIVISION OF GENERAL MOTORS CORPORATION
FLINT, MICHIGAN



1927 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, 1926

1927 MODELS

114-1/2" WHEEL BASE

MODELS

27-20	5-Passenger Two Door Sedan
27-24	2-Passenger DeLuxe Roadster
27-25	5-Passenger DeLuxe Touring Car
27-26	2-Passenger Business Coupe
27-26S	2-Passenger DeLuxe Coupe
27-27	5-Passenger Four Door Sedan
27-28	4-Passenger Coupe
Tires	31x5.25 low pressure
Gear Ratio	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	17 gallons

120" WHEEL BASE

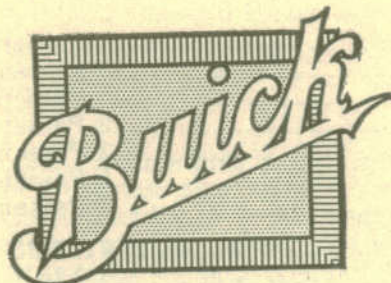
MODELS

27-40	5-Passenger Two Door Sedan
27-47	5-Passenger Four Door Sedan
27-48	4-Passenger Coupe
Tires	33x6 low pressure
Gear Ratio	4.54 to 1
Engine	3 1/2" 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	20 gallons

128" WHEEL BASE

MODELS

27-50	7-Passenger Sedan
27-51	5-Passenger Brougham
27-54	2-Passenger DeLuxe Roadster
27-54C	2-Passenger Coupe
27-55	5-Passenger DeLuxe Touring Car
27-58	5-Passenger Coupe
Tires	33x6 low pressure
Gear Ratio	4.72 to 1
Engine	3 1/2" 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	20 gallons



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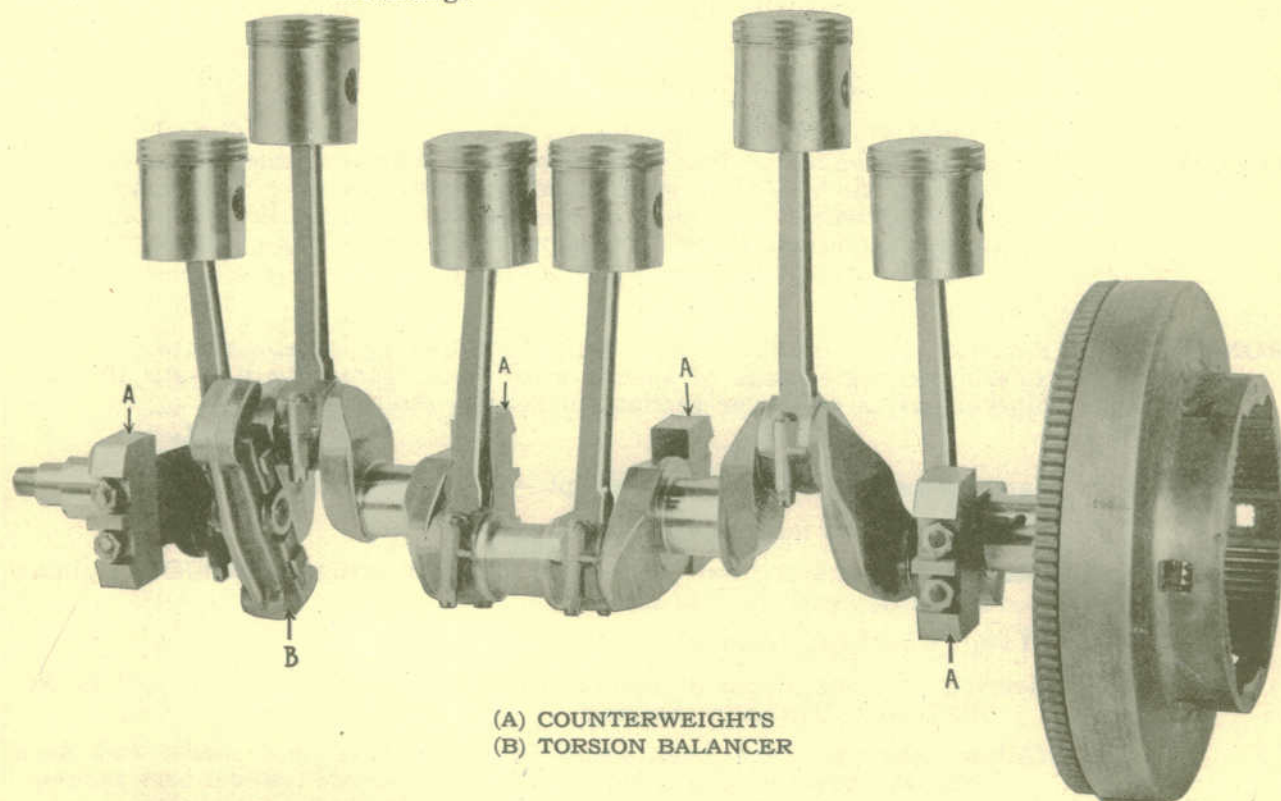
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Special Mechanical Features

TIRES	Low pressure specially finished black tires.
RIMS	Specially finished black rims.
WHEELS	Rear wheels balanced in addition to front wheels (which have had this feature since the adoption of low pressure tires.) The balancing of all four wheels results in a marked improvement in road ability and riding comfort, greatly reducing the bobbing and chattering of rear wheels produced by certain types of roads.
FRONT AXLE	Same as used on 1926 models with the following improvements: Steering knuckle made of special alloy steel, increasing strength 50%. Steering arms of larger section, increasing strength 50%.
REAR AXLE	Same as used on 1926 models except:— 120" wheel base models— Gear ratio changed from 4.7 to 1 to 4.54 to 1, using eleven teeth in pinion and fifty teeth in ring gear. 114½" wheel base models— Bearing on shaft ahead of pinion has been changed from No. 307 to No. 5306 New Departure bearing. Oilless bushings have been removed from brake cam shafts and Zerk fittings provided, the same as on 120" and 128" wheel base models.
FRAME	An additional cross member has been placed in the frame directly back of the rear engine arms, greatly increasing rigidity of the already substantial frame.
SNUBBERS	Models 50, 51, 54, 54C, 55 and 58 are equipped with Gabriel balloon type snubbers at the front. Frames of all other models are drilled at the front and rear for snubber installation. Snubbers should be adjusted after 500 to 1,000 miles of driving to take up the stretch of the straps.
GAS GAUGES	Models 40, 47, 48 and all 114½" W. B. models have gauges on the gasoline tank. These gauges are of gear operated construction. All other models have gauge on the instrument board.
RADIATOR EMBLEM	A special radiator emblem, integral with filler cap, is used on models 24 and 25 and all 128" W. B. models. Regular filler caps are used on all other models.
RADIMETERS	Special radimeters are installed on the instrument board on all 128" W. B. models. Attachment is made at rear end of water manifold.

ENGINE

Same bore and stroke and general construction as used on 1926 models, with following improvements: Counter balanced crankshaft; torsion balancer; lighter pistons; new design piston pins; camshaft and valve springs redesigned for quieter valve action; engine suspended in rubber mountings.



(A) COUNTERWEIGHTS
(B) TORSION BALANCER

Crankshaft, Flywheel and Piston Assembly

COUNTER-BALANCED CRANKSHAFT

A counter-balanced crankshaft, together with a Torsion Balancer, a combination entirely new and advanced in crankshaft design, is an exclusive Buick feature, and reduces to a minimum all causes of engine vibration.

The counterweights are attached to the crankshaft to counter-balance the crank pins and lower ends of the connecting rods.

Crankshaft main bearings on the 114½" wheel base models have been increased from 2⅛" to 2¼" diameter.

TORSION BALANCER

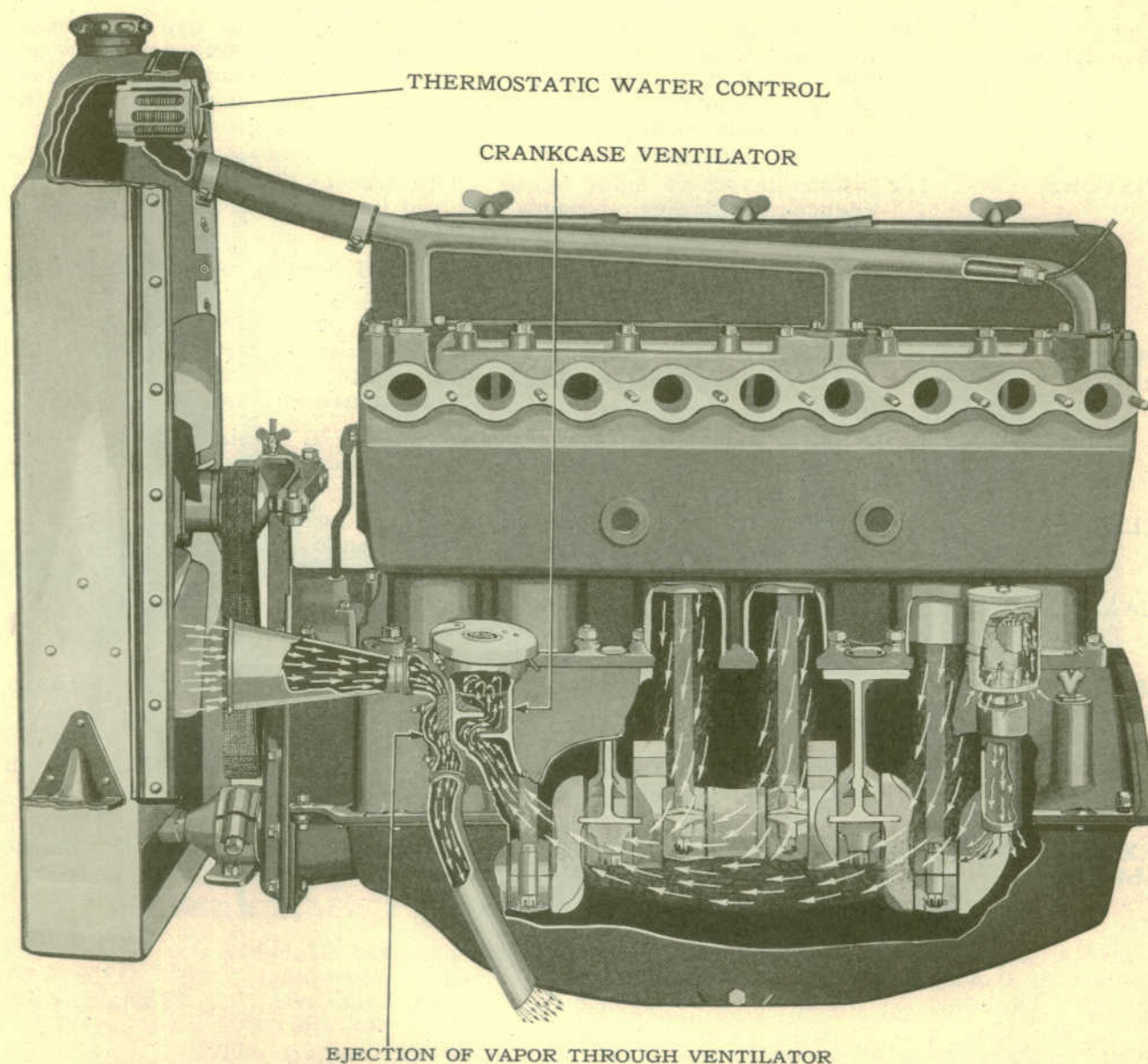
A counter-balanced crankshaft has periods of torsional vibration which can only be eliminated by the use of a torsion balancer.

The Torsion Balancer absorbs the tendency of the crankshaft to twist under the power impulses of the pistons and delivers these impulses back to the shaft after the piston forces are spent.

The Torsion Balancer is mounted on No. 2 crank throw and its bearings are lubricated under pressure from the crankshaft oiling system. The balancer, being a part of the crankshaft, is completely enclosed in the engine crankcase and thoroughly protected from dirt and atmospheric conditions. It should last the life of the engine without requiring adjustment or attention.

Connecting rods and pistons can be removed through lower part of engine, same as formerly, except in the case of Nos. 1 and 2 the torsion balancer must first be removed.

ENGINE MOUNTINGS	Three point suspension is retained, but all three points are completely insulated from the frame by rubber mountings, reducing steering wheel vibration and body rumble. The mountings are made of the highest grade of rubber and are housed in such a manner as to provide the best possible protection and long life.
PISTONS	The pistons have been made lighter. This decrease in reciprocating weight reduces the strains on crankshaft and bearings and contributes materially to the smoothness of the engine. Pistons are of cast iron which material is used because of its fine bearing qualities and long life.
PISTON RINGS	In the 120" and 128" wheel base models, the two upper piston rings are $\frac{1}{8}$" wide, diagonal split, instead of $\frac{3}{16}$" wide as formerly used. The $\frac{3}{16}$" width oil control ring is retained in these models. In the 114$\frac{1}{2}$" wheel base models, pistons carry $\frac{1}{8}$" plain rings in two upper grooves and $\frac{1}{8}$" oil control ring in lower groove as in 1926.
PISTON PINS	Light weight hollow piston pins are used with hole tapered to provide increased wall thickness and strength at center portion.
CAM SHAFT	The cam contour has been changed to lessen velocity and sound as the valves seat.
VALVE SPRINGS	Valve springs have been redesigned to provide slight clearance between lower coils and prevent spring clatter.
PUSH RODS	Push rods in the 114 $\frac{1}{2}$ " wheel base models have been changed from $\frac{5}{16}$ " rod to a $\frac{3}{8}$ " diameter tube with $\frac{1}{32}$ " wall.
EXHAUST MANIFOLD	Exhaust manifolds are securely clamped on each side of ports to prevent distortion, leakage and blowing of gaskets.



Crankcase Ventilating System

CRANKCASE VENTILATOR

A crankcase ventilator is located on the front left side of the engine. 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.

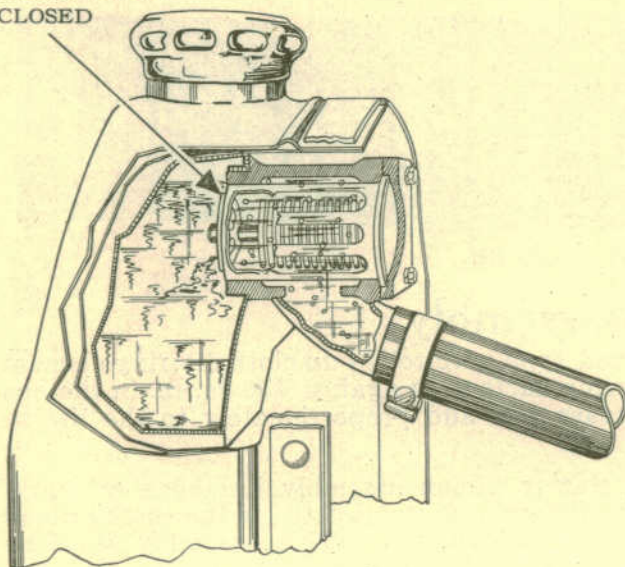
The crankcase ventilator does not prevent kerosene dilution of the oil in extremely cold weather, but positively does remove the water. The kerosene dilution, when held within normal limits, is necessary to keep the oil from congealing and to allow easy starting of the engine and immediate circulation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

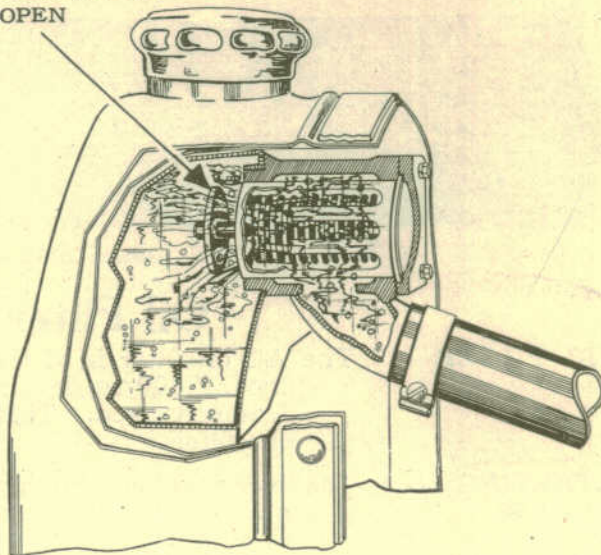
The combination of the crankcase ventilator, which removes all harmful dilution, with the oil filter and air cleaner, keeps the oil in the engine in good condition at all times, thereby entirely eliminating the necessity of frequent oil changes.

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.

THERMOSTAT
CLOSED



THERMOSTAT
OPEN



Thermostatic Water Control

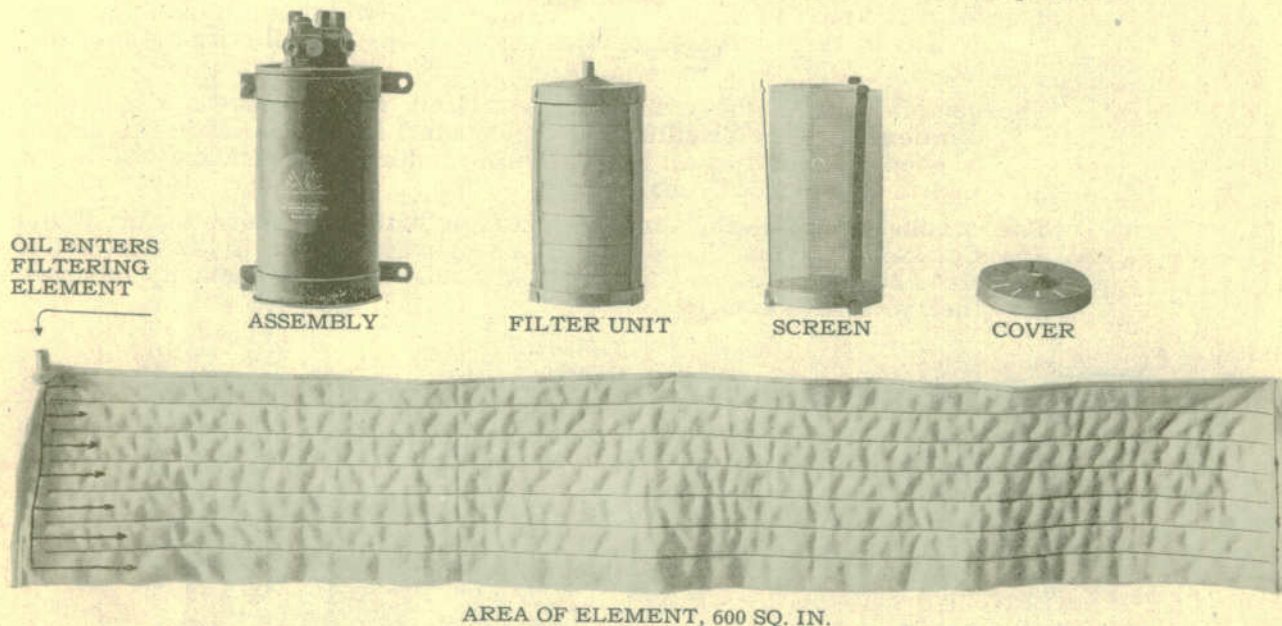
THERMOSTATIC WATER CONTROL

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 7/64" 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 bolts in rear plate.



Oil Filter Disassembly

OIL FILTER

The AC oil filter is of the round type with rolled up cloth filtering element having 600 sq. in. of filtering surface as against 450 sq. in. in the one formerly used. This increase will add proportionately to the life of the filter.

STARTING MOTOR

The overrunning clutch and starter pinion assembly has been strengthened by redesigning so that the gear slides directly on the shaft instead of on a sleeve, to give sturdier construction. This assembly is interchangeable with assembly used on 1926 models.

GENERATOR

Sixteen slotted generator armature is used instead of twenty-six slots as formerly used.

This results in fewer crossovers of wires, reducing the possibilities of short circuits.

The armature is interchangeable with one used on 1926 models.

MUFFLER

Muffler is of entirely new construction, composed of a series of baffles welded directly to the shell, eliminating the horizontal tubes as formerly used. It is much stronger, quieter and reduces tendency to blow-out, loosen and rattle.

TAIL PIPE

A long muffler tail pipe extending from muffler to rear end of frame carries exhaust gases completely clear of chassis and reduces exhaust noise.

CLUTCH

Same clutch as used on 1926 models.

Thumb nut adjustment at clutch pedal is provided on 120" and 128" wheel base models. (This adjustment is same as used on Standard Six 1926 models and retained on 114½" wheel base models in 1927.)

- TRANSMISSION** Same type and general construction as used on previous models with following important changes to reduce gear sound:
- A longer and more positive pilot between flywheel housing and transmission case, together with heavier sections in these parts, to maintain correct alignment of engine and transmission.
 - Larger gears reducing unit pressure on teeth.
 - New tooth forms having more teeth in contact, giving a smooth rolling action.
 - Larger transmission case to dampen gear sound.
 - One-piece drop forged counter gears to eliminate gear distortion and add to quietness of operation.
 - Transmission case in 120" and 128" wheel base models has been changed to one piece construction, eliminating separate end plate as used in former models.

TRANSMISSION LOCK Transmission lock is the same type as used in 1926 models.

Mechanical Specifications in Detail

114½-in. Wheel Base Models

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. Rims supported by six wedges.
FRONT AND REAR WHEELS	Artillery type, using steel felloe. Spoke width 1⅜", hub flange 7⅜" diameter, using twelve ⅜" diameter spoke bolts. Wheels provided with balance weight to counter balance weight of rim locking device and tire valve stem.
FRONT AXLE	Reverse Elliott type, using drop forged, heat treated I beam 2¼" x 1⅞" x 7/32". Knuckles of drop forged heat treated nickel alloy steel. Knuckle bearings special hard rolled bronze. Spindle diameter 1-9/32" at inner bearing and 13/16" at outer bearing. King bolts are 7/8" diameter, provided with ball thrust bearings containing seventeen ¼" balls to carry load and ensure easy steering.
FRONT WHEEL BEARINGS	Front wheel bearings are New Departure adjustable cup and cone type. Inner bearing carries ten 5/8" diameter balls. Outer bearing carries nine 15/32" diameter balls.
TIE ROD	Tie rod 1" diameter tube, ⅛" 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 of two pinion type supported on each side by No. 0210 New Departure adjustable cup and cone bearings. Differential adjustable and easily removable from rear of axle housing. Spiral bevel ring gear and pinion. Ratio 4.9 to 1.
AXLE SHAFTS	Axle shafts heat treated, manganese alloy steel 1⅜" diameter, outer end 1⅛" diameter, necked portion 1¼" diameter, inner end, using six splines.
REAR WHEEL BEARINGS	Rear wheel bearings are high duty Hyatt roller type, carrying twenty ⅜" diameter rolls 1¾" long.
PINION SHAFT	Pinion shaft, which is entirely enclosed in torque tube, is heat treated, high carbon steel. Shaft is 1-11/32" diameter at center portion, tapering to 1-3/16" diameter at rear end and 1⅛" diameter at forward end. Forward end at universal joint is six splined type 1¼" diameter.

**PINION
SHAFT
BEARINGS**

Two bearings support pinion:

Single row No. 1309 New Departure bearing on pinion and double row No. 5306 New Departure bearing on shaft ahead of pinion. Pinion provided with fore and aft adjustment very accessible 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 2-9/32" diameter, 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. Torque Tube has been shortened because of increased length of transmission case.

**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.

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" dia.	12 3/8" dia.
Facings	3/16"x1 3/8"x35-9/16"	3/16"x1 3/4"x38 5/8"
Area of breaking surface	98 sq. in.	270 sq. in.

**CHASSIS
LUBRICATION**

Zerk high pressure lubrication used on chassis.

FRAME

The frame, of pressed steel channel section 5/32" thickness of stock, is provided with five cross members to prevent weaving and distortion.

The maximum depth of side member is 6", with top flange 1 3/4" wide and bottom flange 1 1/2" wide.

Body brackets are provided outside the frames on closed models, providing additional support for body and accessibility of body bolts.

Four brackets—two on each side for model 20.

Six brackets—three on each side for models 26, 26-S, 27, 28.

SPRINGS

Front springs semi-elliptic, overslung.

Length 36 1/4", width 2".

Front spring bolts 9/16" diameter.

Rear springs full floating cantilever.

Length, 48", width 2 1/2".

Rear spring front bolt diameter 9/16"; rear 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.

Proper riding qualities will be maintained by keeping spring leaves free of lubricant, as proper action is destroyed when spring leaves are lubricated.

TIRE CARRIER	Tire carrier is of full band type, mounted on rear of frame by pressed steel brackets. Cross bar located on band to carry tail 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 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 $1\frac{1}{2}$" diameter, nickel plated on DeLuxe models and black enameled on all other models. Gears provided with accessible adjustment to take up lash. Special ferrules are provided in nest of tubes to prevent rattle.
STEERING WHEEL	Steering wheel is $17\frac{1}{2}$" outside diameter, having walnut rim and polished aluminum spider. Spark and throttle, dimmer control levers and horn button, neatly mounted at top of steering wheel.
PITMAN ARM	The pitman arm, 8" 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 $1\frac{1}{8}$" outside diameter by $\frac{3}{16}$" wall, adjustable at both ends, and bent to give shortest possible turning radius to cars. Turning circle $37\frac{1}{2}$ ft. right or left.
ENGINE	The engine is overhead valve type—detachable head—6 cylinder—$3\frac{1}{8}$" bore by $4\frac{1}{2}$" stroke—207 cu. in. piston displacement. It develops 63 horse power at 2800 revolutions per minute and 140 pounds feet torque at 1400 revolutions per minute. The compression chamber is entirely machined to ensure even compression in all cylinders. Compression 77 pounds at 500 revolutions per minute. 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 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 -----	2 $\frac{1}{4}$ "	2-9/32"
Front center -----	2 $\frac{1}{4}$ "	1-11/16"
Rear center or thrust bearing -----	2 $\frac{1}{4}$ "	1-3/4"
Rear -----	2 $\frac{1}{4}$ "	2-19/32"

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 1/32" to 1/16" at each end.

PISTONS The light weight 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 3/32" holes for oil ring.

The piston pin bosses, in which piston pins oscillate, are bronze bushed and are offset 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 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" 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, 1-1/16" 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 -----	1-31/32"	1-9/16"
Front Center -----	1-15/16"	1-1/16"
Rear Center -----	1-13/16"	1-1/16"
Rear -----	1-25/32"	1-1/8"

VALVE LIFTERS, ROLLERS AND PINS Valve lifters are 1" diameter, 2-5/16" long and hollow for light weight.

Valve lifter rollers are 1-7/64" diameter, 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.

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, a valve located in filter automatically opens, by passing oil around filter 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 crank case: 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 as against 450 sq. in. in the one formerly used. This increase will add proportionately to the life of the filter.

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 by means of a by-pass valve automatically operated, 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.

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 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 $1\frac{7}{16}$ " 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 forced through a small outlet, collecting in a removable container.
- 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, preventing warpage of manifold and blowing of gaskets.
- EXHAUST PIPE** The exhaust pipe, extending from damper valve body to muffler, is 2" in diameter.
- An opening, enclosed with pressed steel cover, is provided in exhaust pipe on closed models for attachment of heat valve when installing car heater.
- MUFFLER** Muffler construction is entirely new. It is made up of a shell 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 17 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.
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, $\frac{1}{8}$" thick. Area of friction surface is 212 sq. in. Clutch spring pressure is 310 to 330 pounds. Clutch pedal reduction 17.2 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 1926 models. The transmission case has been made larger and heavier—the pilot forming joint between flywheel housing and transmission case has been reversed, by making the flywheel housing the male member and the transmission case the female member. This increases the length of pilot from $\frac{7}{32}$" to $\frac{7}{16}$", ensuring better alignment between engine and transmission case. The constant mesh gear set and second speed gear set have been changed from 7-9 pitch gears to full 7 pitch, giving more teeth in contact and smoother rolling action. The counter gear assembly is of one piece construction instead of built-up type as formerly. The internal teeth of high speed sliding gear are broached to true tooth form.