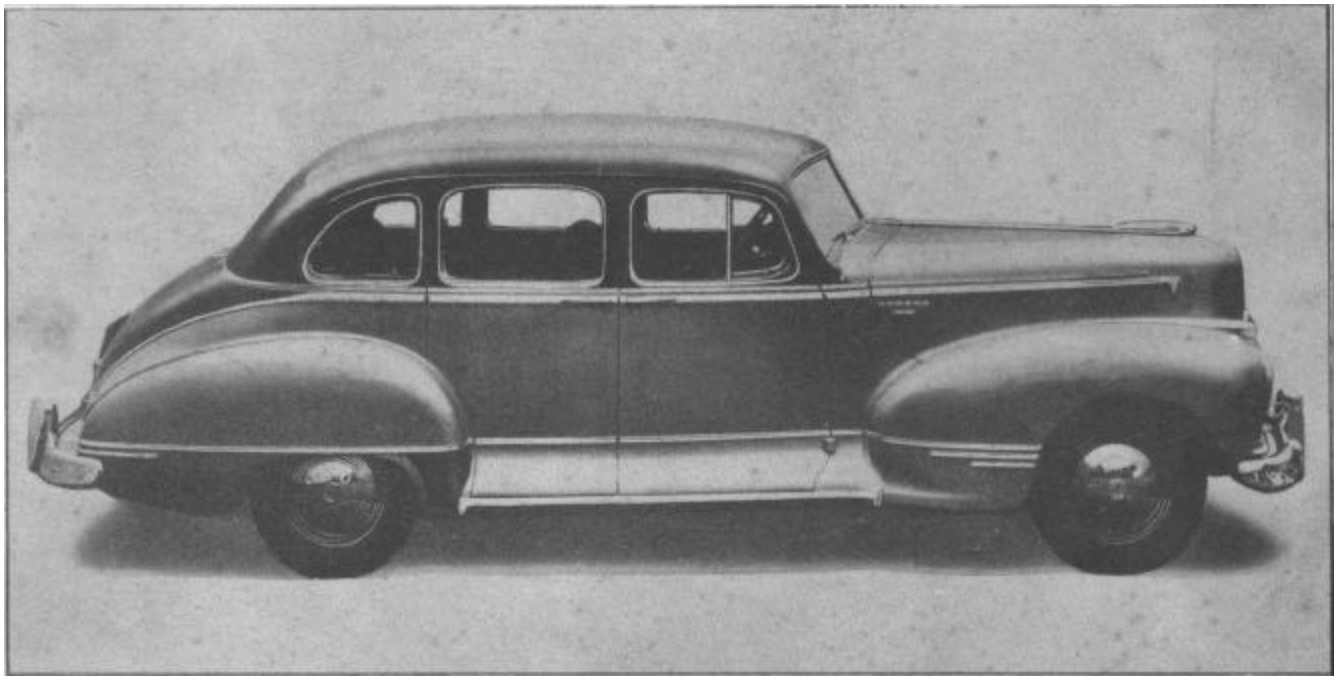
MECHANICAL INFORMATION
AND
SERVICE SPECIFICATIONS

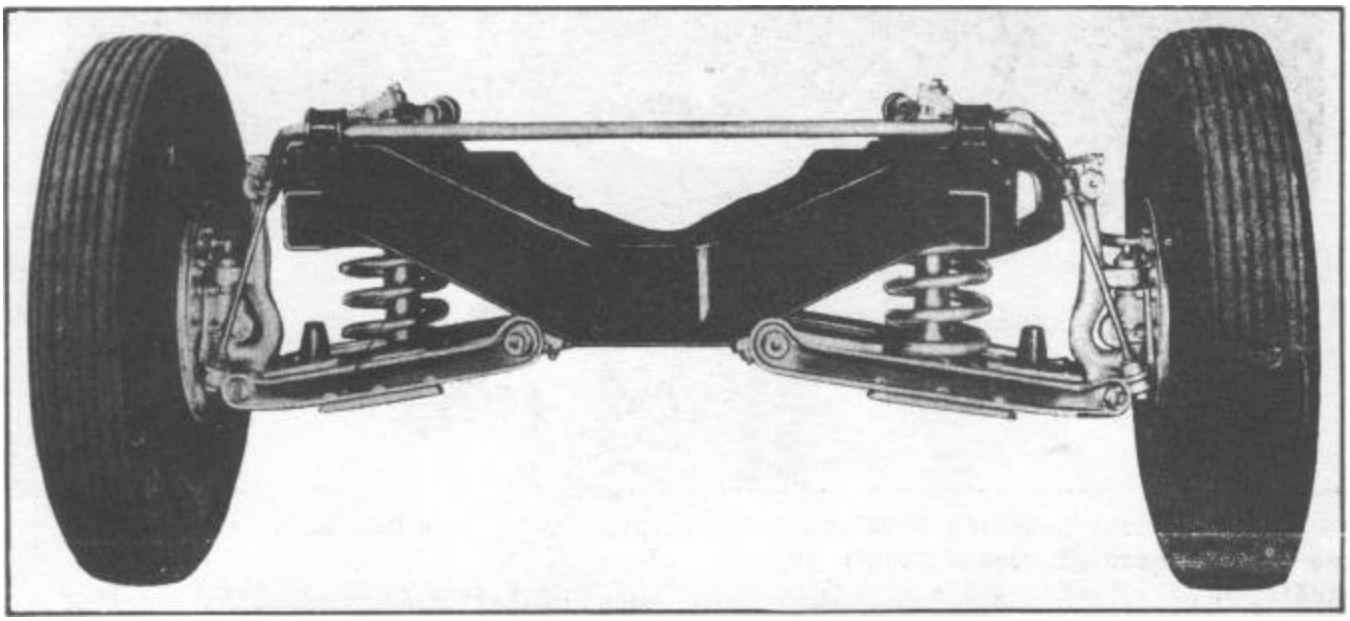


1946 MODELS

HUDSON MOTOR CAR COMPANY
DETROIT

FRONT SUSPENSION

The independent front suspension system is of the angularly set wishbone type incorporating Hudson's patented Auto-Poise front wheel control, large diameter Silico Manganese steel coil springs and direct-acting low pressure shock absorbers. The front shock absorbers are vertically mounted within the coil springs where they are protected against damage from stones while still easily accessible for servicing. To minimize the transmission of road noise, the upper ends of the springs are fitted with rubber silencers, with spacers inserted between the silencers and the frame to provide means for controlling the front end height.



The upper and lower suspension arm and spindle support assemblies are mounted in threaded bushings adjustable for wear and fitted with rubber sleeves for protection against dirt and water. Attachment of the top of the steering spindle support to the upper suspension arm on each side is made through threaded eccentric bushings which also provide the necessary adjustment to obtain the correct caster and camber settings.

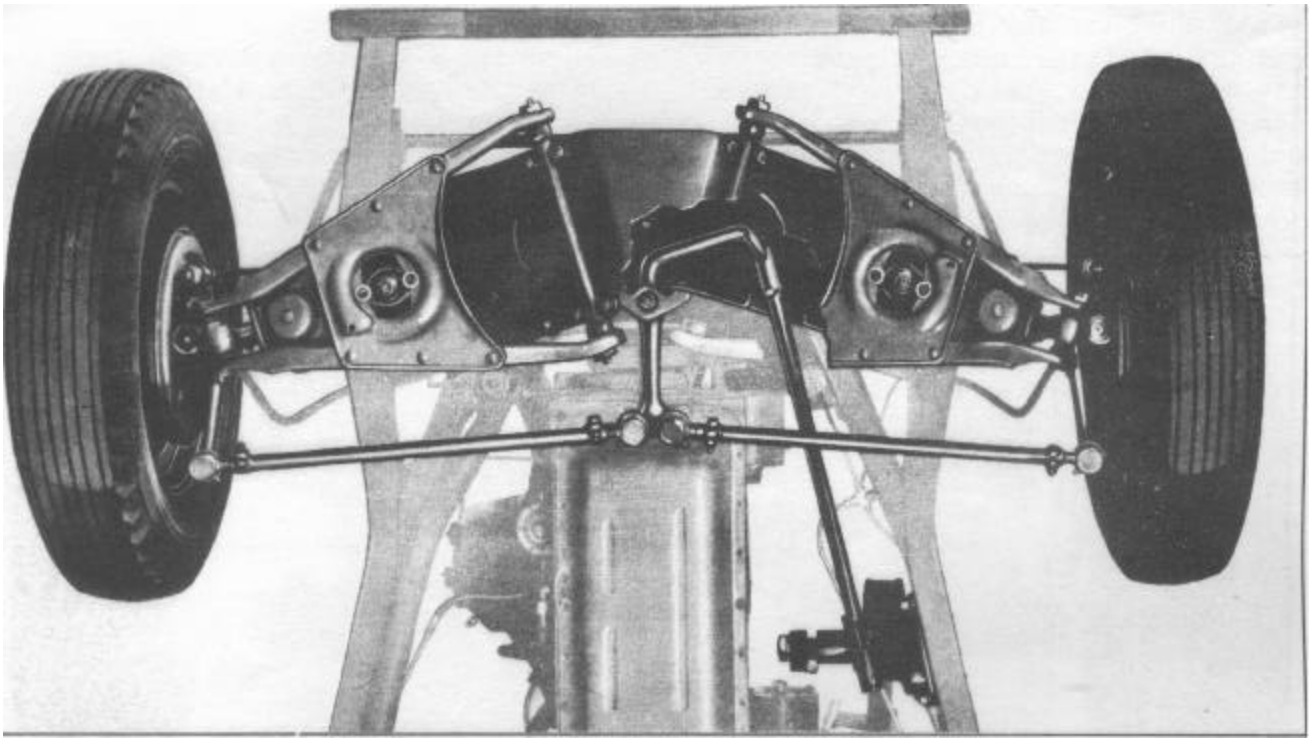
Two identical tie rods are used to connect the center steering arm with the right and left spindle arms. They carry ends fitted with automatic take-up for wear and are adjustable for toe-in. A pressure lubrication fitting has been added to the center steering arm through which lubricant can be introduced to the pivot needle roller bearings. This part therefore, now becomes a point requiring lubrication attention at the standard 1,000 mile lubrication period.

Auto-Poise Front Wheel Control makes use of a heat treated alloy steel bar supported in rubber mountings on top of the frame side members. Attaching the ends of this bar directly to the steering spindles through the medium of connectors cushioned in rubber at top and bottom, results in maximum directional control and freedom from sway on turns.

Front suspension alignment specifications are:
Caster - 1/4° positive to 1/4° negative
- 0° preferred.
Camber - 1/4° to 3/4°.
Maximum variation in caster or camber between right and left sides - 1/2°.
Pivot pin inclination - 4° 36'.
Toe-in - 0 to 1/16".

STEERING

Center Point Steering,-developed and engineered by Hudson to tie in with Auto-Poise wheel control front suspension, provides ease of handling, stability, short turning radius and many other advantages.



Center Point Steering involves the use of few parts of rugged design including a heavy, adjustable drag link through which the steering effort is transmitted to a steering arm located at the exact center of the chassis. This center steering arm is mounted on a needle roller bearing pivot in the front suspension support frame cross member and transfers the steering movement to each front wheel through two tie rods of equal length.

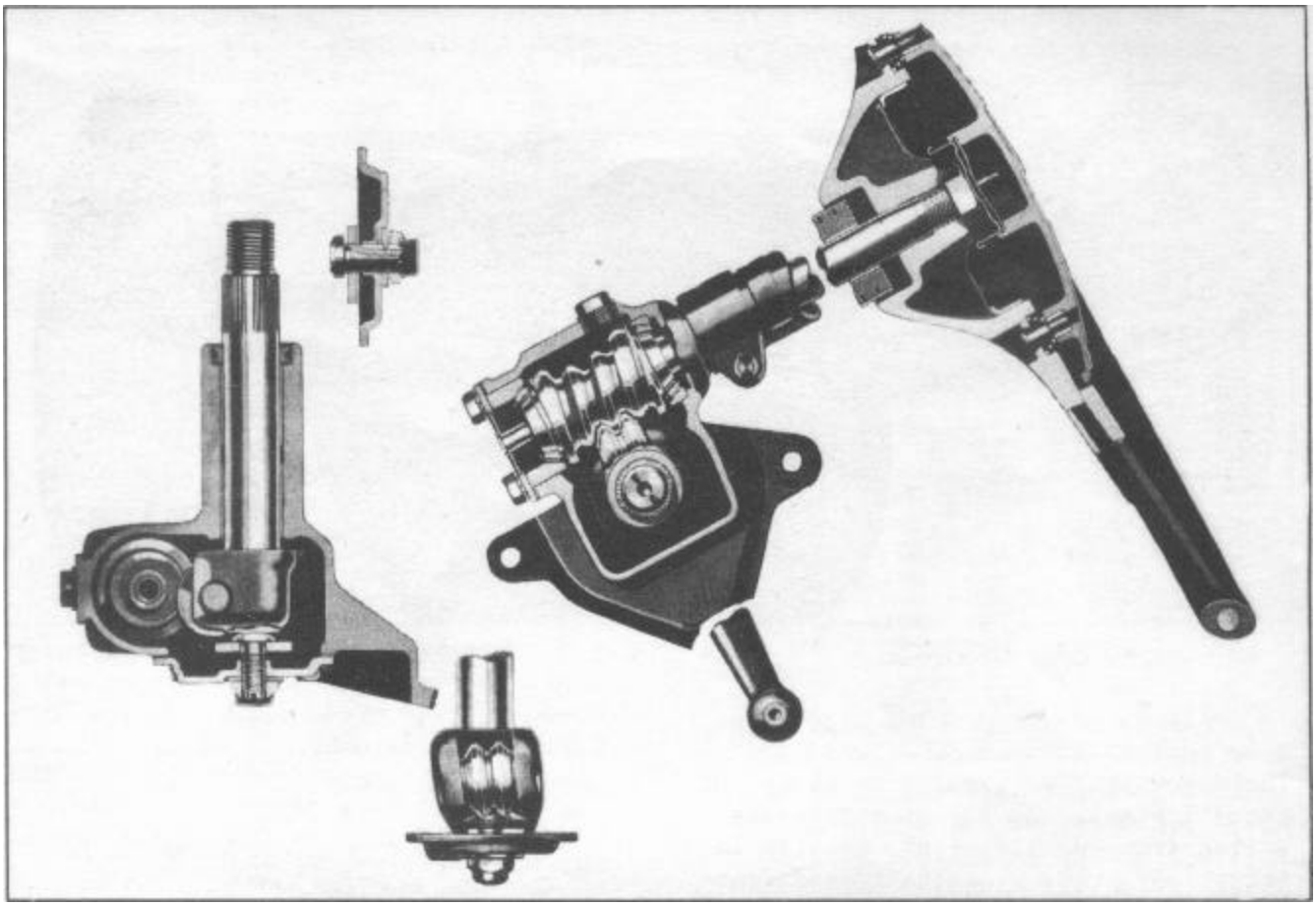
STEERING GEARS

Steering gears of the worm and double roller tooth design with the lever or pitman arm mounted on the right side for use with center point steering, are used on all models. The worm and main steering column are mounted in tapered roller bearings with provisions for adjustment to take up any wear or looseness which might develop. A new feature of the 1946 steering gears is the ball bearing used between the upper end of the main column and the jacket tube which further minimizes steering effort and eliminates the noise sometimes encountered with the rubber composition bushing formerly used at this point.

The steering wheel movement is transmitted through the worm to the double tooth roller mounted on needle roller bearings and supported in the inner end of the cross shaft. The cross shaft in turn operates in bronze bushings in the steering gear used on the six cylinder models and in needle roller bearings on eight cylinder models. The cross shaft is provided with means of adjusting the engagement of the roller teeth with the threads of the worm to compensate for any looseness or wear which might take place.

A dowel type self locking screw is now used in the gear shift lever mounting bracket, the point of which engages a hole drilled in the jacket tube. This provides a positive anchorage and does away with the possibility of the bracket shifting on the jacket tube and the resulting difficulty in shifting gears.

The hollow hexagon head fulcrum screw formerly.used to mount the gear shift lever in its bracket at the top of the control tube has been discontinued and a new screw having an external



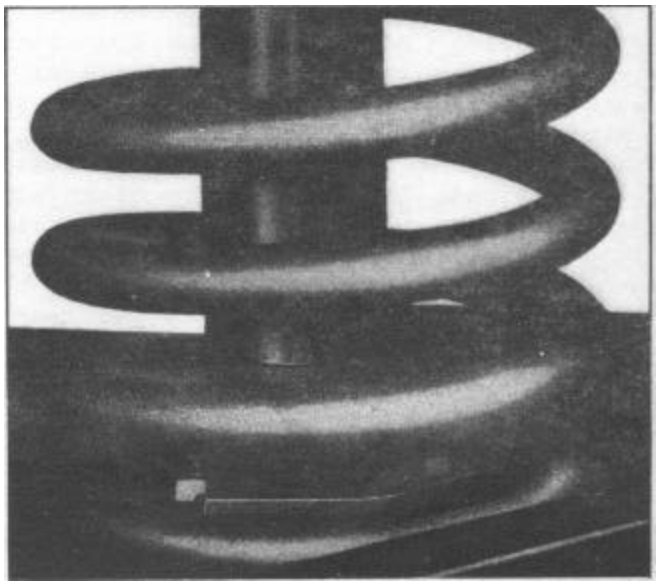
hex head and using a lock washer is fitted. This makes for easier tightening and more secure locking and does away with the need for a special wrench.

The steering gears used on the six and eight cylinder models are identical except for the use of bronze bushings for the cross shaft on the six and needle roller bearings on the eight as previously mentioned and the ratio, which is 18.2 to 1 for the sixes and 18.4 to 1 for the eights.

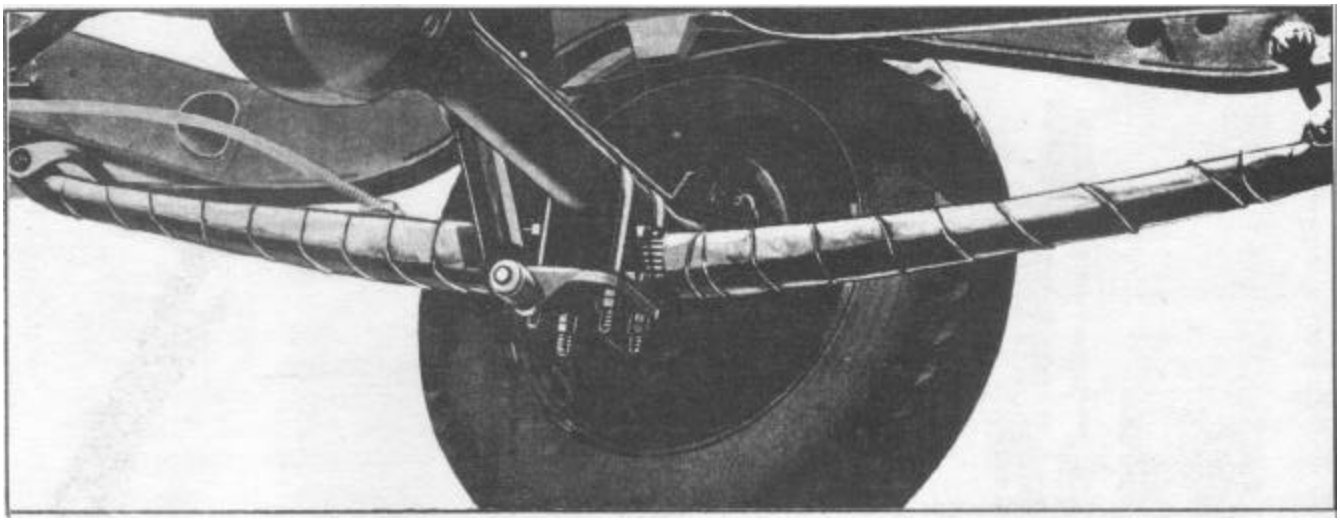
The Super-Six and Super-Eight models are equipped with 17 inch two spoke plastic steering wheels with center horn buttons as standard, while the Commodore Sixes and Eights have 18 inch two spoke wheels carrying horn operating rings. Seventeen inch and eighteen inch wheels fitted with horn rings are available as options for the Super-Six and Super-Eight models.

FRONT SPRINGS

As mentioned under front suspension, the front coil springs are of unusually large size and made from silico manganese steel, recognized as the best material for this purpose. Springs having different load and rate values are used on the various models and in addition, so called heavy scale front springs are available to take care of other than standard requirements. All



front springs are distinguishable from one another by the use of different color paint markings. In addition, heavy and light limit springs of any one part number can be identified by a single grind mark on the flat end of the light limit spring and a double mark on the heavy limit spring.



REAR SPRINGS

All Hudson models for 1946 have rear springs of unusual length (60 inches) which, coupled with the use of special steels and the generous size of the front coil springs, results in exceptional riding qualities and freedom from spring breakage. Additional stability is secured through the "splay mounting" of the rear springs in which the springs are attached in an angular position instead of parallel to each other.

All rear springs are 1 1/2 inches wide and are anchored to the frame at their front ends by rubber bushings and shoulder pins. This construction entirely insulates the front ends of the springs from the rest of the chassis minimizing the transmission of noise,, and eliminating the need for lubrication at this point. As a further means of reducing the transmission of road noise and shock, rubber silencers are used at the top and bottom of the spring at the point where it is clamped to the rear axle spring seat by the "U" bolts.

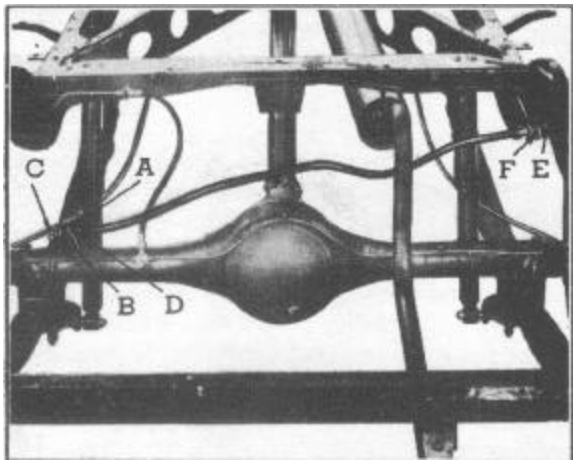
Silent "U" type threaded shackles are used to attach the rear ends of the springs to the frame. These shackles are of the self-adjusting type using replaceable bushings and are fitted with rubber sleeves to seal out dirt and water.

Spring covers are standard equipment on rear springs; two types being used in 1946 production. On the first production cars spring covers of the laced fabric type were used while the later built cars carry metal covers. Spring leaf lubrication at the recommended intervals is accomplished by removing and replacing the fabric type cover. Springs fitted with the metal type cover require the use of a special lubricating clamp, available from our service tool source, which permits pressure gun lubrication through holes punched in the bottom of the cover.

Heavy scale springs are available as optional equipment for police cars, taxicabs and when road and other conditions make the use of heavier than standard springs desirable.

REAR LATERAL STABILIZER

All passenger models are equipped with rear lateral stabilizers to control lateral movement between the frame and rear axle. The use of this device improves steering control, stability and riding comfort and eliminates rear spring noise by preventing any tendency for the leaves to fan out. This horizontal control is secured through the use of a specially shaped steel bar connected to a bracket welded to the
top of the rear axle housing on the left side and to another bracket on the



frame member on the right side. The latter part has been redesigned and reinforced and is now attached to the frame side member by riveting and welding providing a much stronger anchorage than heretofore. frame member on the right side. The latter part has been redesigned and reinforced and is now attached to the frame side member by riveting and welding providing a much stronger anchorage than heretofore

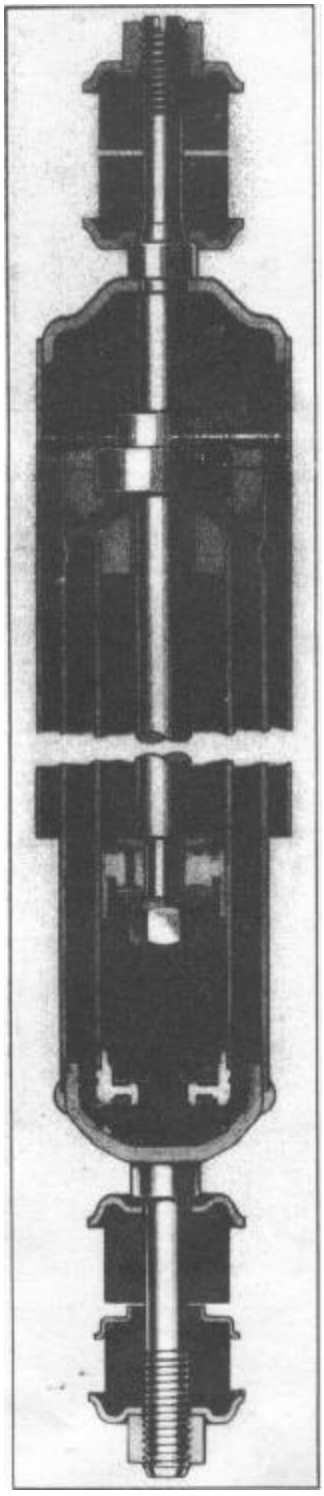
The stabilizer bar is threaded at each end where it passes through the rear axle and frame brackets to which it is attached by nuts, lock nuts and washers. Live rubber cushions on both sides of the brackets cushion shocks, prevent metal to metal contact and eliminate the need for lubrication.

SHOCK ABSORBERS

Direct acting shock absorbers of Monroe and Delco makes are fitted to all passenger models. These units are of the hydraulic two-way type and have a very large fluid volume compared to other types which results in lower operating pressures and better control. Also changes in fluid viscosity due to temperature changes affect the control less than in other designs.

The front shock absorbers are vertically mounted within the front coil springs where they are protected against damage by flying stones and other obstacles. Attaching studs at the top and bottom pass through the upper suspension bracket and a lower mounting plate, respectively, using rubber cushions to insure quietness and dispense with lubrication. Taking off the upper stud nut and two bolts holding the lower mounting plate permits easy removal of the unit from the bottom for servicing. The rear units carry rubber units carry rubber bushings at top and bottom ends and are attached to brackets in the rear axle frame cross member at the top, and by studs in the rear spring clip plates at the bottom.

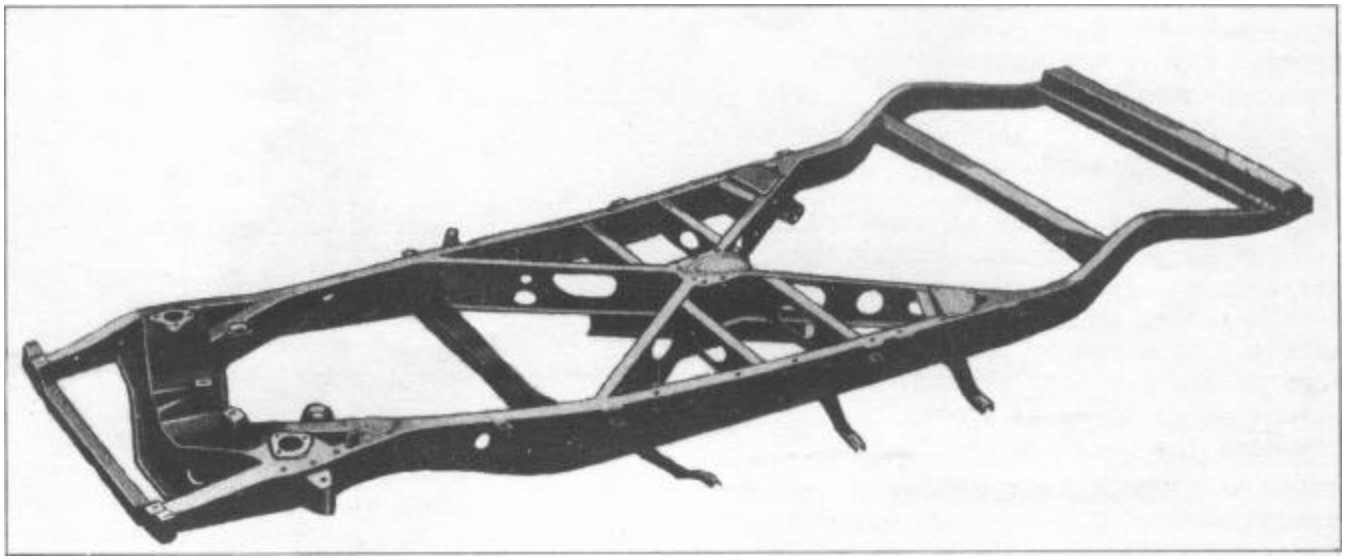
The valving used in front and rear instruments provides proper control for the light scale springs which are standard, with special valves available to give the additional control necessary with heavy scale springs.



FRAMES

Frames are of the heavily reinforced "X" type having double drop side members and five cross members in addition to the sturdy X-member. The maximum depth at the point of greatest stress it 7 3/8 inches, Inner side member, reinforcements and the extension of the "X" members on each side provide box section side rails for practically their entire length. The front suspension frame cross member is exceptionally massive and is both welded and riveted to form a sturdy box section to withstand the loads imposed by the suspension system.

A special frame is used on the convertible models which do not have the extra reinforcement of the steel body roof to insure rigidity. In addition to the standard frame features, the convertible frame is provided with an extra sub-member welded under the X member, also four transverse struts connecting the X member with the side rails.



WHEELS AND TIRES

Drop center, balanced steel wheels are used on all models. On the Super- Six and Super-Eight models the 16 x 4.50 wheel size and 16 x 6.00, 4 ply black side wall tires, are standard. The Commodore Six and Commodore Eight models carry 15 x 5.00 wheels fitted with 15 x 5.50, 4 ply black side wall tires, as standard equipment. Commercial models also use the 16 x 4.50 size wheel with 16 x 6.50, 6 ply black side wall tires as standard equipment.

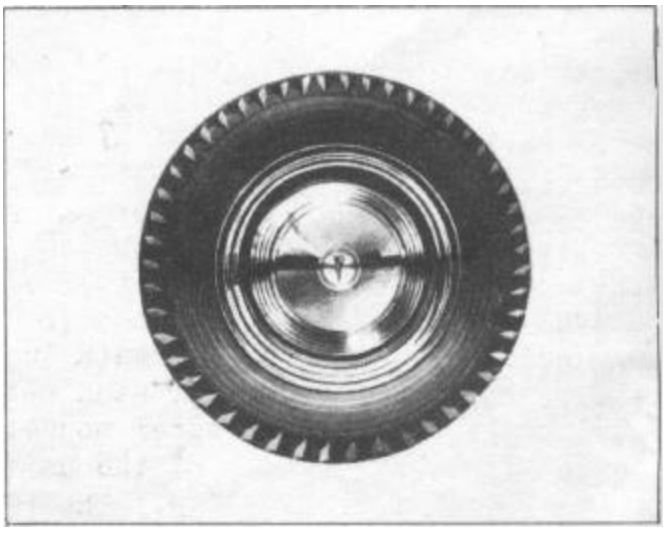
Tire equipment options include:

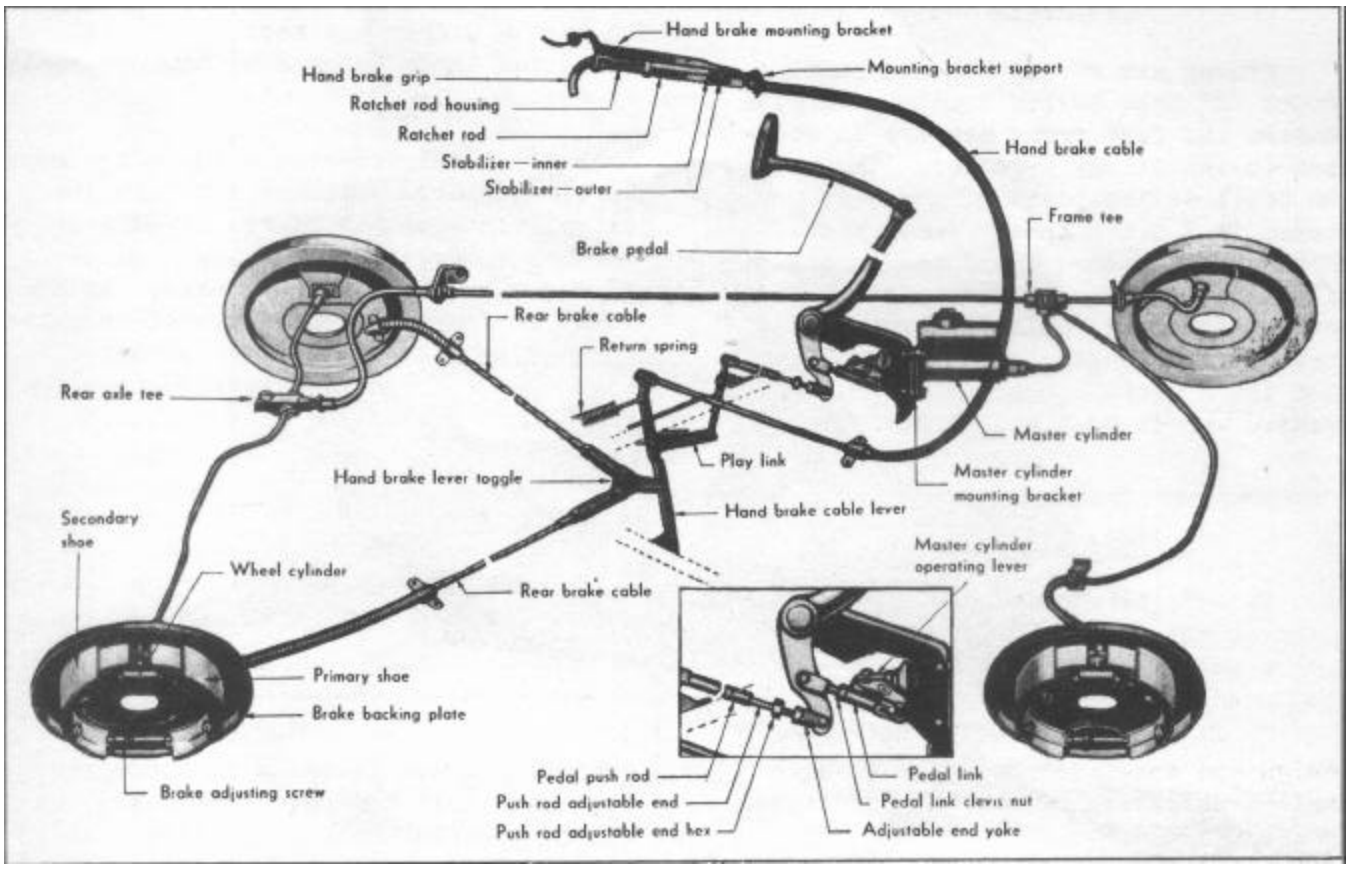
15 x 6.50, 4 ply black side wall tires for Super-Six and Super-Eight models.

White side wall tires for all models.

Six ply black side wall tires for all models.

15 x 7.00, 4 ply white side wall tires for all except Commercial models.





BRAKES

Servo-action hydraulic four wheel brakes incorporating the patented Hudson reserve mechanical brake feature are used. This system includes the convetional hydraulic brake application through the foot pedal, master cylinder, lines and wheel cylinders, together with linkage connecting the brake pedal with the rear brake mechanically operated cables.

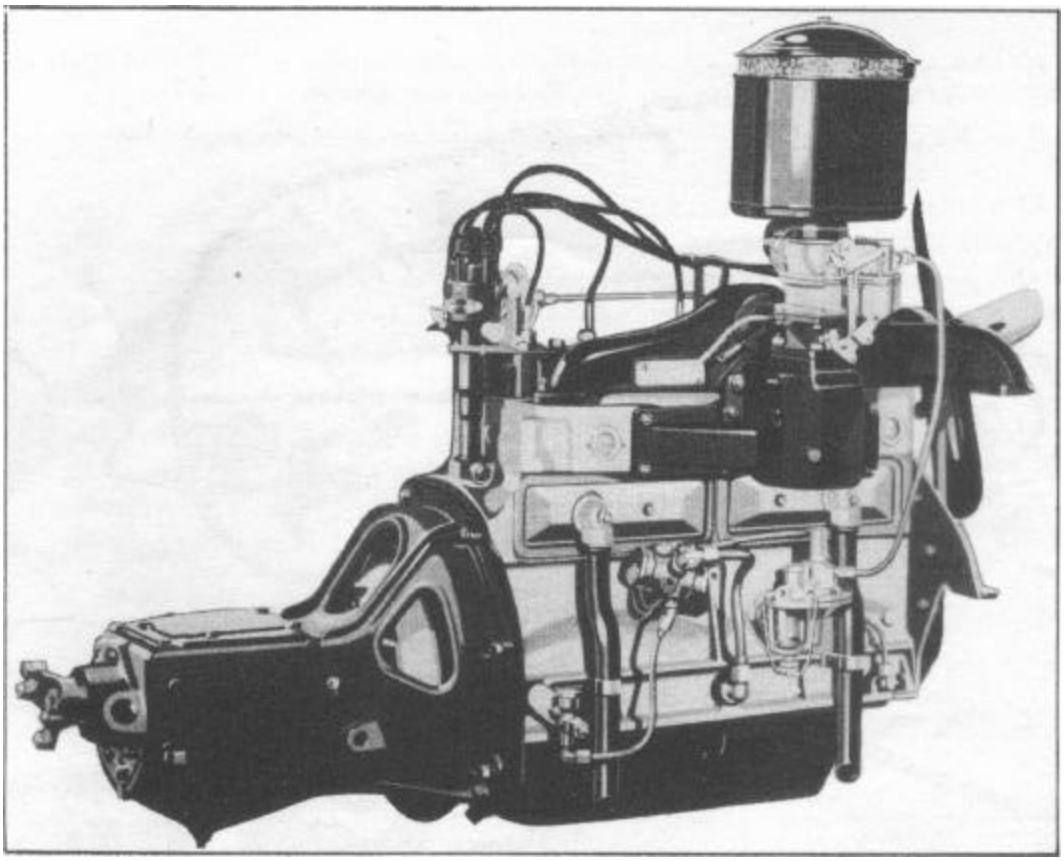
By means of this arrangement depressing the brake pedal in making an ordinary stop applies the brake' linings to the drums by hydraulic means. However, in the event of disablement of the hydraulic system due to a broken line or hose, loose connection or any other cause, continued pressure on the brake pedal beyond the point of hydraulic application, causes the mechanical system to come into action and apply the rear wheel brakes through the cables. The parking brake lever is of the direct pull type, released by rotating the lever and acts on the rear brakes by means of the linkage and cables.

The brakes used on the Super-Six and Commodore Six models are of.10 inch diameter having a width of 1 3/4 inches. On the Super-Eight and Commodore Eight models and the Commercial models, 11 inch diameter brakes with shoes 1 3/4 inches wide are employed. The 11 inch size brake is also available as optional equipment for police car and taxicab use

The brake drums used on all models are of the Centrifuse type in which the drum is made with an alloy iron braking surface by spinning the molten metal in the steel shell under centrifugal force.

ENGINES

Two engines are used as power plants for the 1946 models, the six cylinder Super-Six engine developing 102 horsepower for the Super-Six, Commodore Six and Commercial models and the eight cylinder 128 horsepower unit for the Super-Eight and Commodore Eight models. The principal features of



design and construction apply to both engines which are of the "L" head type.

The six cylinder engine has a 3 inch cylinder bore, 5 inch stroke, piston displacement 212 cubic inches, 6.50 to 1 compression ratio and develops its maximum horsepower at 4,000 R.P.M. The crankshaft is of drop forged steel fully compensated and balanced and operates in 3 bronze backed babbit lined bearings. The camshaft also runs in 3 steel shell babbit lined bushings pressed in the crankcase.

The eight cylinder engine has a bore of 3 inches, stroke 4 1/2 inches, piston displacement 254 cubic inches, compression ratio 6.5 to 1 and develops its maximum horsepower at a speed of 4,200 R.P.M. A fully compensated and balanced crankshaft is used with 5 bronze backed, babbit lined bearings in the crankcase which is also fitted with 5 steel backed babbit lined bushings for the camshaft.

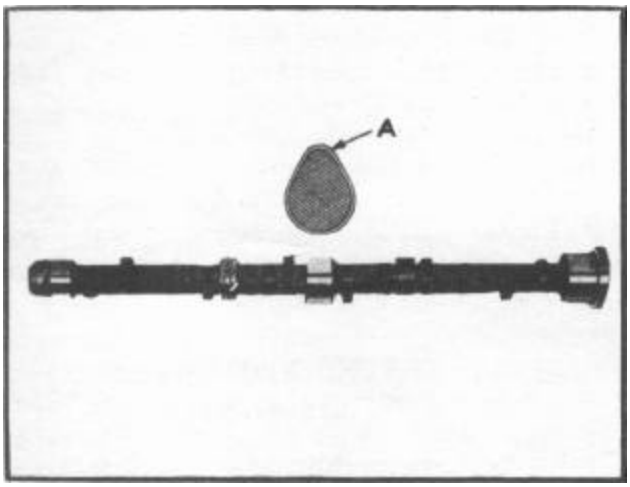
Light weight drop forged steel connecting rods have spun babbit big end bearings, bronze bushings at the upper ends for the piston pins and are shimless. Pistons are of aluminum alloy, T slotted and cam ground for expansion control and are fitted with 2 compression and 1 oil control rings above the piston pin and 1 oil ring below. All piston rings are pinned to prevent rotation. Piston pins float in both connecting rods and piston bosses and are held in place by lock rings.

Cast iron cylinder heads providing a 6.5 to 1 compression ratio are standard on both engines. Aluminum alloy cylinder heads of 7 to 1 ratio will be available later as equipment options. The cylinder head is secured to the block with 21 studs on the six cylinder and 30 studs on the eight cylinder engine.

Camshafts are of electric furnace alloy iron treated by the "Granoseal" process for lubrication and wear-resisting qualities. Six cylinder engines now employ\ the part number 162962 camshaft which was previously specified exclusively for the 175 cubic inch, 3 x 4 -1/8 inch engine. Research work has shown the desirability of using this camshaft for the larger six cylinder 3 x 5 inch engine as well, with the result that in addition to being used in production, it will also be supplied for service in place of the part number 159505 camshaft. This greatly simplifies the service problem

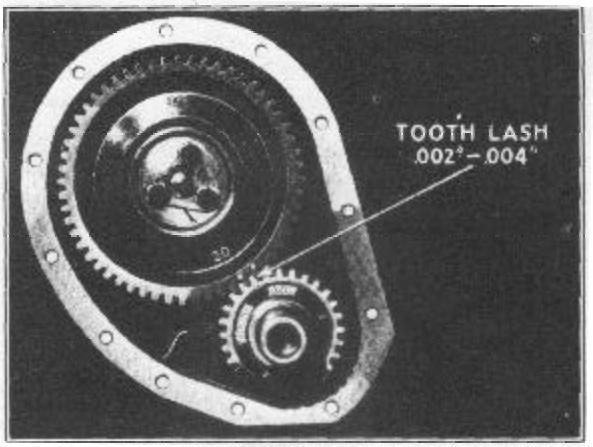
since only one camshaft is needed for all six cylinder engines from 1940 to date.

With the increased use of this camshaft the matter of correct tappet adjustment is perhaps of greater importance than heretofore and the decalcomania supplied by the factory when the part number 162962 camshaft is furnished for service in place of part number 159505, should be attached to the engine tappet cover to guide mechanics in making later adjustments. To obtain proper idling and low speed operation it is essential that the recommended clearances of .010" for the intake valves and .012" for the exhaust valves, be maintained. Tappets should be adjusted with the engine at normal operating temperature.



The difference between the two six cylinder camshafts is in the cam contours and since this cannot be detected with the eye, it has been necessary to provide other means for identification. For this purpose the part number 162962 shaft has a letter "X" stamped on the front face of the flange to which the cam gear is attached and in addition, an identification shoulder in the form of a slightly increased diameter, 1/4 inch wide, exactly half way between the second and third cams from the front. This can be seen from the bottom when the oil reservoir is removed.

No changes have been made in the camshaft used in the eight cylinder engine or in the recommended valve clearances which should be .006" for the intake and .008" for the exhaust valves.



TIMING GEARS

The camshaft drive is through two gears having helical teeth for quietness. The crankshaft or driving gear is of cast iron while the camshaft gear on the first production cars if of laminated bakelite and aluminum alloy on the later cars. Gears have 20 degree pressure angle teeth and operate with from .002" to .004" back lash.

On cars fitted with aluminum camshaft gears. the crank and cam gear teeth are machined with a slight crown or curvature to improve quietness. In servicing these gears in the field it is imperative that both cam and crank gears be replaced to insure satisfactory operation. Aluminum cam gears will therefore be furnished for service only in sets including matched crank and cam gears.

In making installation of the aluminum timing gear on a car originally equipped with a bakelite gear, certain operations must be performed at the front of the engine to compensate for the difference in gears. These consist of removing the front engine support plate to permit countersinking the two holes behind the cam gear for the use of special countersunk head screws and lock washers. The two corresponding holes in the cylinder block must also be slightly countersunk to allow proper seating of the screw heads. In addition, the cutout in the front support plate adjacent to the camshaft flange must be

chamfered or increased in size. This work is necessary to prevent interference and provide the extra clearance needed when the aluminum gear is used.

Engines are lubricated by the Hudson Duo-Flow oiling system which delivers oil in direct ratio to engine speed to all working surfaces from the first turn of the crankshaft. In this system the oil is drawn from the oil pan by the double acting valveless plunger type pump which forces it through external oil lines to the front and rear ends of the engine where it is delivered to the front and rear splash troughs formed in the oil pan upper tray.

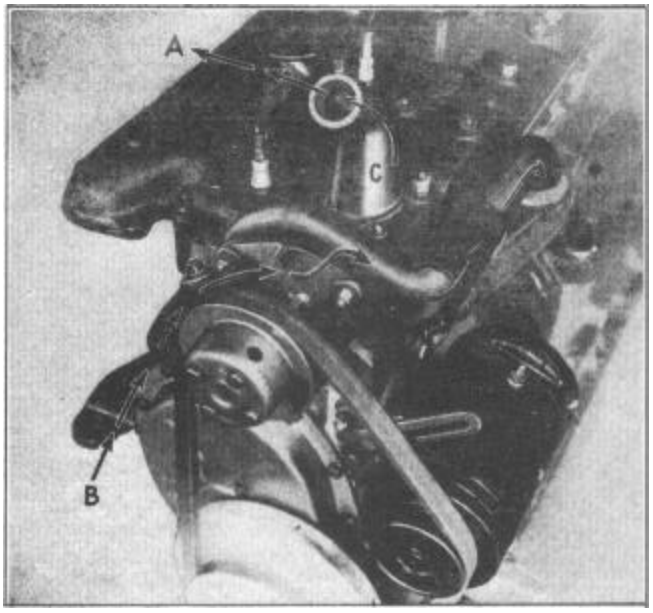
The oil is then picked up by the connecting rod dippers and vigorously distributed to the interior working surfaces through splash and a system of channels which convey it into wells over the crankshaft and camshaft bearings. Overflow oil running down the crankcase walls is diverted by dams in the oil pan tray into adjacent splash troughs until it reaches the center of the engine. At this point it is returned to the main oil supply in the oil pan through an opening in the tray, where it is circulated through a series of passages for cooling and screening before again being used.

The constant agitation of the oil vaporizes water, acids and other harmful and sludge-forming matter which is drawn out through the crankcase ventilator pipes.

COOLING SYSTEM

The cooling system is of the pressure pump type incorporating thermostatic control. A six vane centrifugal water pump, circulating 30 gallons at approximately 50 miles per hour, is used.

A choke type thermostat located in the cylinder head water outlet is used on the Super-Six, Super-Eight, Commodore Six and Commercial models which prevents circulation of the coolant until a temperature of 155 degrees is reached. At this temperature the thermostat begins to open at 185 degrees.

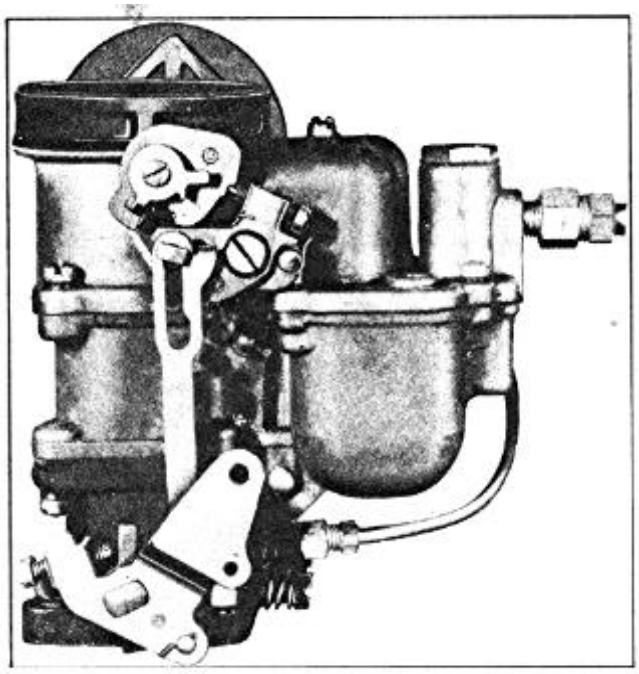


The Commodore Eight model is equipped with a by-pass type thermostat which restricts circulation through the radiator core when the engine is cod but permits the coolant to circulate through the by-pass in the pump and the cylinder block. The opening and wide open temperatures for this thermostat are the same as for the choke type.

FUEL SYSTEM
Carburetors

Carburetors of the down draft, duplex type are used on all models, six cylinder engines being equipped with 1 inch and eight cylinder engines with 1 1/4 inch size units. These dual carburetors are virtually two carburetors in a single housing, having a single float chamber. In the six cylinder engine one carburetor barrel feeds the front three and the other barrel the rear three cylinders. In the eight cylinder engine one barrel
feeds the two front and two rear cylinders; the other barrel the four center cylinders.

All carburetors incorporate the Climatic Control or automatic choke feature, dual, vacuum controlled metering rods for governing fuel flow, fast idle mechanism for quick warm up, and

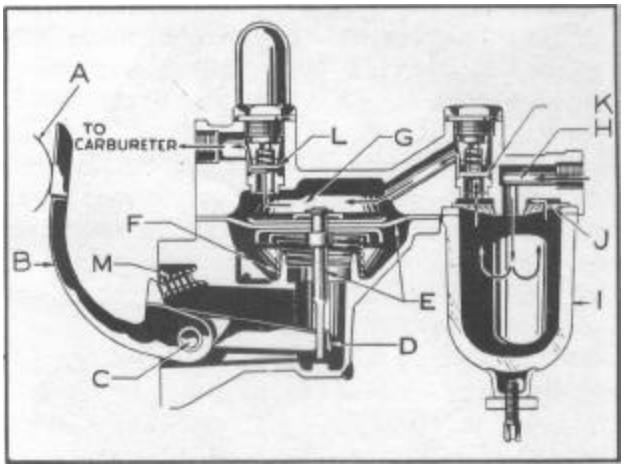


anti-percolating valve to reduce vapor pressure and the possibility of vapor lock. Heat deflecting shields and special thick insulating gaskets are used between the carburetor and manifold to reduce the heat transferred to the carburetor.

A thermostatic type heat control valve in the exhaust manifold automatically provides the correct flow of exhaust gas through the intake manifold for efficient carburetion. Oil wetted metal gauze type air cleaners are standard equipment with oil bath type cleaners available as optional equipment.

Fuel is delivered to the carburetor float chamber under pressure supplied by a fuel pump. Two types of pump are used on current production cars; one being the standard mechanical, diaphragm type pump operated by the engine camshaft and the other an electrically operated unit. In the mechanical type pump the delivery capacity is dependent upon the engine speed while the electrically operated pump is capable
of full capacity operation regardless of engine speed.

The electric pump makes use of an electro-magnet to pulsate the bellows employed as the pumping element, the stroke or movement being approximately 3/64 inch. Suction stroke is by magnetic pull and delivery pressure is de

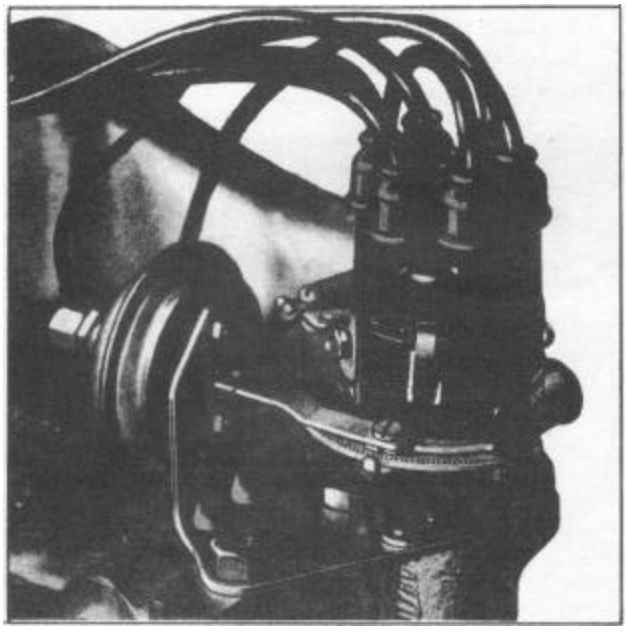


termined by an adjustable drive spring. Delivery pressure with the electric type pump ranges from 2-1/2 to 3 pounds and from 3 to 4 pounds with the mechanical type unit.

The gasoline tanks of all models have a capacity of 16-1/2 gallons.

DISTRIBUTORS

Ignition distributors on both six and eight cylinder engines incorporate centrifugally operated automatic advance mechanisms and single contact points and arms. The six cylinder unit is driven by a separate vertical shaft operating in a housing at the rear of



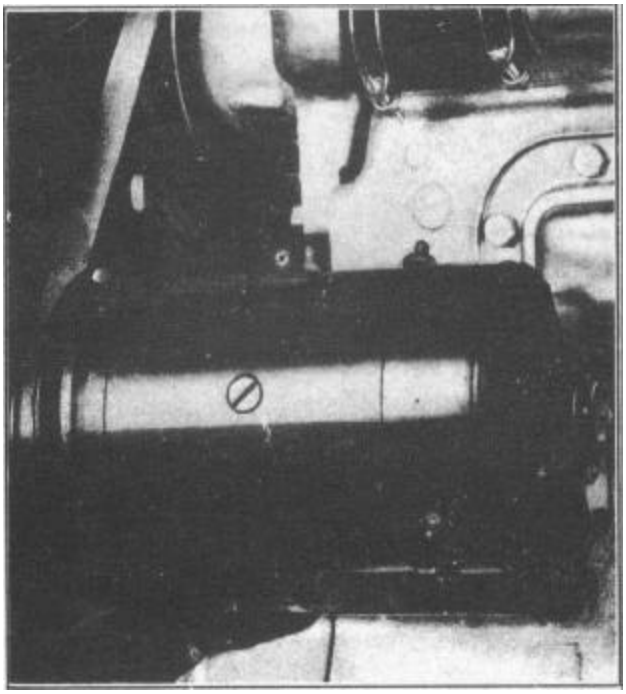
the engine while the eight cylinder distributor is mounted on the side of the crankcase and is driven directly by the camshaft.
The automatic governor spark control advances the ignition for proper timing in direct proportion to the engine speed. In addition to this means, the six cylinder distributor is provided with a vacuum control mechanism which supplements the governor for the purpose of further advancing the ignition. With this arrangement, when the engine is running under light load and the manifold vacuum is high, the spark is advanced to the maximum position. However, under heavy load conditions as when the throttle is opened for acceleration or hill climbing and the vacuum is reduced, the spark is retarded to prevent pinging.

The automatic governor spark control provides a maximum spark advance of 11.8 degrees on six cylinder models and 17.5 degrees on eight cylinder models.

On six cylinder models this is augmented by an additional advance of 7.5 degrees furnished by the vacuum control.

GENERATOR

The generator is of the bi-polar belt driven fully ventilated high out-put type, with third brush and voltage regulator current control. The front end of the armature carries a fan for forced ventilation and is supported in an annular ball bearing. The rear bearing is of the bronze sleeve type fitted with an oil reservoir and wick for lubrication. A swinging hinge type mounting is used to permit easy belt adjustment.



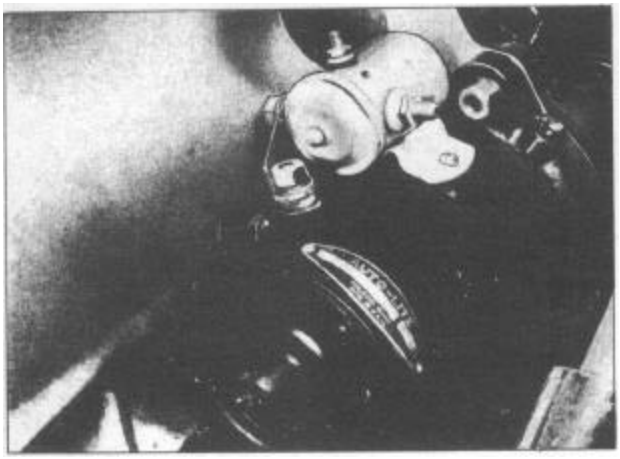
One type generator is used for all models which has a maximum current output of 44 amperes cold and a charging rate of 38 amperes at normal operating temperatures. The maximum charging rate is attained at a car speed of approximately 35 miles per hour.

Special generators and current regulators are available as optional equipment to meet the needs of police and state highway cars, taxicabs and other vehicles operating under extraordinary conditions. The maximum output of these generators is no higher than the standard production unit but they have the advantage of delivering this output at a much lower car speed which makes them especially desirable for such installations.

STARTERS

Two starters, both of the 4 pole design and alike in general constructional features are used. The starter

used on six cylinder engines has an outside diameter of 4 inches and is 5-3/8 inches in length. A larger and more powerful unit is employed on the eight cylinder engine to provide the greater starting torque required for this power plant. This starter is 4-1/2 inches in diameter with a frame length of 6-1/4 inches. Starter armatures run in sleeve bearings in the front and rear support plates. Bearing lubrication is provided by oilers.

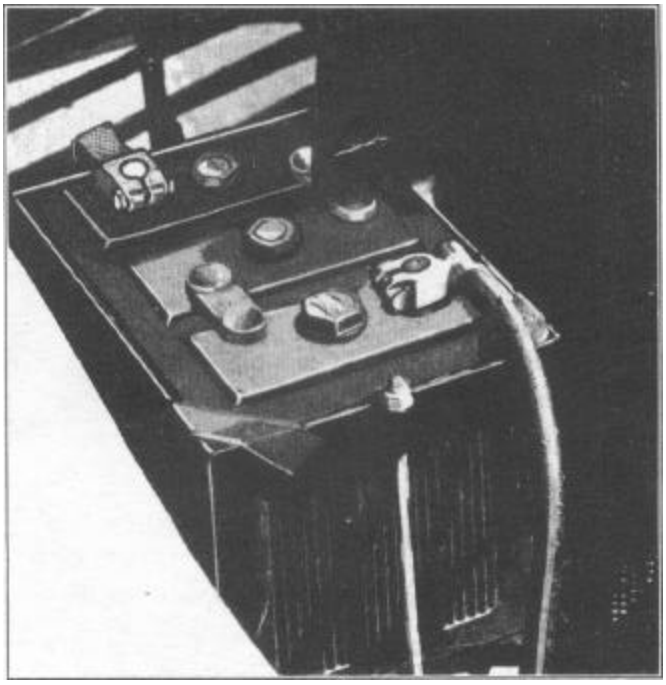


The inboard type of Bendix starter drive is used which is interchangeable on both starters. The pinion of the starter drive engages directly with the separate, heat treated ring gear pressed on the steel flywheel.

Starter operation is by means of a solenoid switch located on the starter, which is actuated electrically when the circuit is closed by pressing the starter button on the instrument panel. A small push button located at the rear end of the starter solenoid switch is provided for use in cranking the.engine when checking timing, changing clutch compound, or when performing work requiring the engine to be turned over.

BATTERIES

Batteries of two sizes are used; one having 51 plates being supplied as standard equipment for six cylinder cars and another having 57 plates for eight cylinder models. The battery is located in the left front corner of the engine compartment where it is accessible for servicing and protected against excessive temperatures. The positive terminal is grounded on all models.

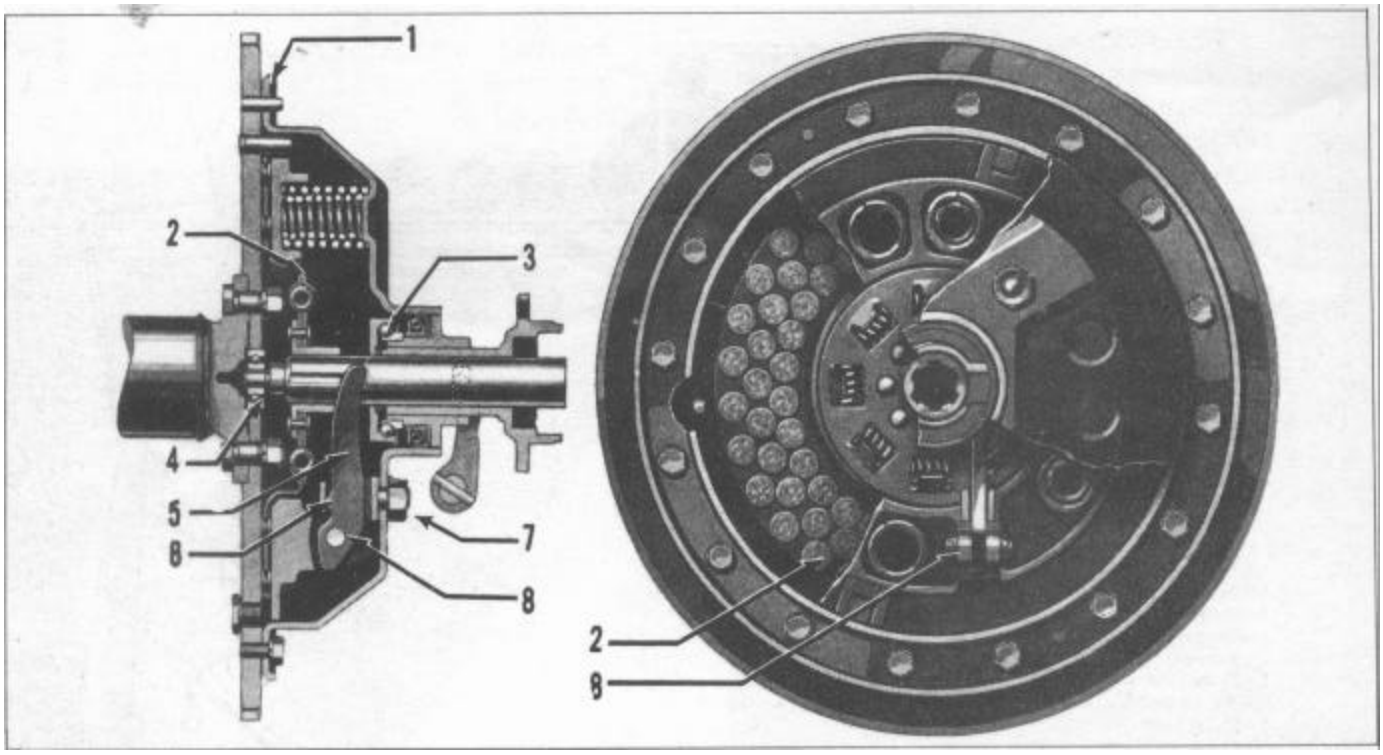


The battery used in six cylinder models has a rating of 96 ampere hours while the one used on eight cylinder models is rated at 108 ampere hours. The S.A.E. classification is 1-ME for the six cylinder battery and 2-ME for the eight cylinder battery.

CLUTCHES

Fluid cushioned, single plate clutches in two sizes are retained for 1946. Super-Six and Commodore Six models employ a clutch having a 9 inch diameter driving plate while all eight cylinder and Commercial models are fitted with 10 inch diameter driving plate clutches as standard. Some exceptions as noted below apply when certain items of optional equipment are installed.

The Hudson fluid cushioned clutch has a single driving plate fitted with cork inserts for frictional contact and having its driving hub mounted in coil springs to dampen vibration. The corks in the driving plate are held in contact with the smoothly finished surfaces of the flywheel and pressure plate by the action of the engaging springs and all operating parts are continually bathed in lubricant which is retained by efficient sealing. This oil cushion



insures smooth starting and long life for all working parts. The driving plate of the 9 inch clutch contains 90 cork inserts; the ten inch plate has 108 corks and the light weight of this part greatly assists gear shifting by reducing the tendency to spin.

Following is a summary of clutch sizes and engaging spring combinations and the car models on which they are used.

9-9-6 Clutch (9 inch clutch with 9 outer and 6 inner engaging springs). Standard on six cylinder passenger cars except when Vacumotive Drive, Overdrive or Drive-Master (optional equipment units) are installed.

10-12-0 Clutch (10inch clutch with 12 outer and no inner engaging springs). Standard on Commercial Models. Also used on all six cylinder models equipped with Vacumotive Drive, Overdrive or Drive-Master options and included in six cylinder police car and taxicab special equipment option.

10-12-3 Clutch (10 inch clutch with 12 outer and 3 inner engaging springs). Standard equipment on all eight cylinder models.

VACUMOTIVE DRIVE

Vacumotive Drive or automatic clutch control is available as a factory equipment option on all models and is also supplied in kit form for installation in the field. This device provides means of engaging and disengaging the clutch automatically, dispensing with the use of the left foot when driving. It utilizes engine vacuum and is operated by momentarily lifting the foot from the accelerator pedal to disengage the clutch and depressing the pedal to engage it.

A centrifugally operated governor driven by the transmission is used to electrically control Vacumotive Drive which prevents automatic disengagement and free wheeling when the foot is lifted from the accelerator at speeds above 19 miles per hour.

A two button switch on the instrument panel permits the driver to change from conventional operation to automatic operation by merely pressing the "Vac" button. To revert to conventional control the "Off" button is pressed in. This can be done at any time. This permits full manual clutch control when free wheeling and automatic operation

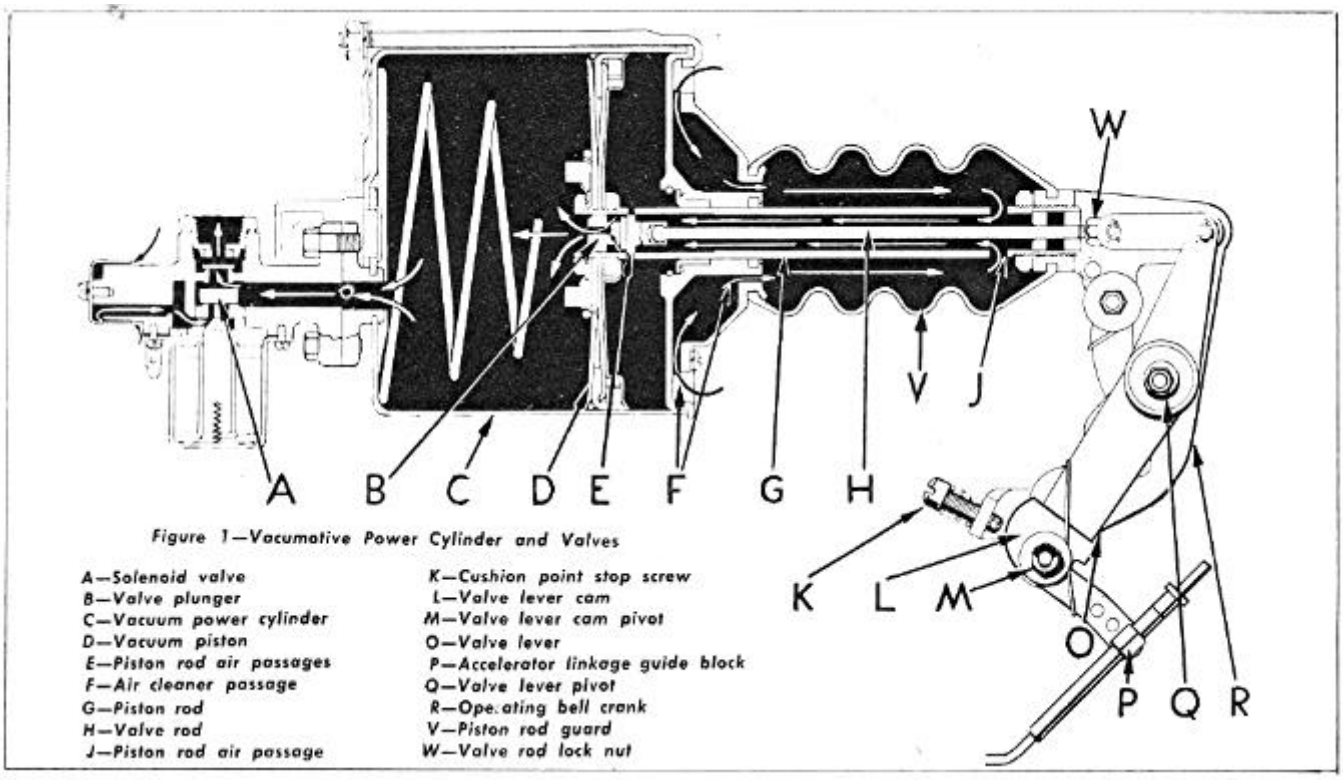
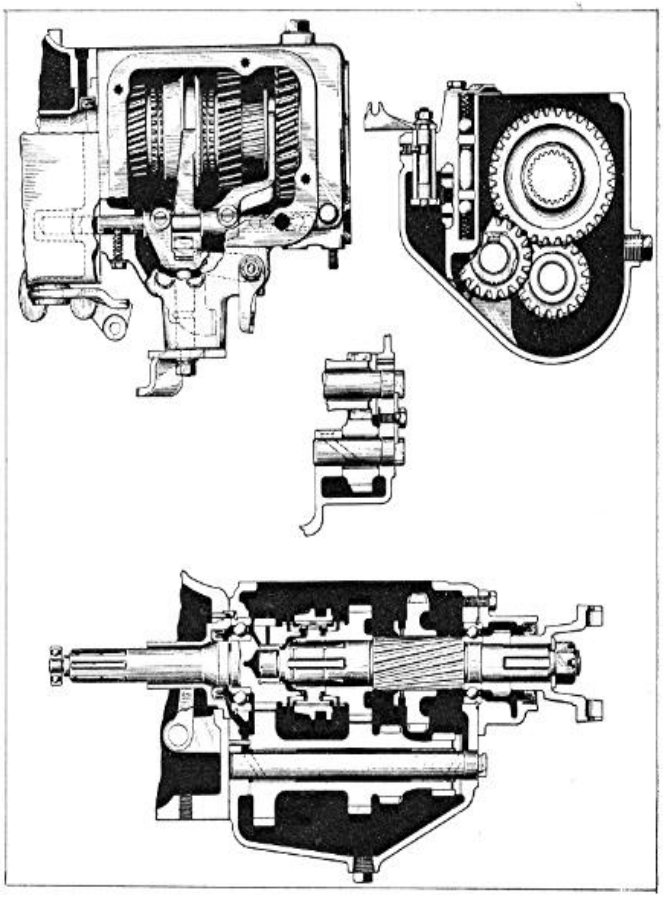


Figure 1—Vacumotive Power Cylinder and Valves

A—Solenoid valve
B—Valve plunger
C—Vacuum power cylinder
D—Vacuum piston
E—Piston rod air passages
F—Air cleaner passage
G—Piston rod
H—Valve rod
J—Piston rod air passage
K—Cushion point stop screw
L—Valve lever cam
M—Valve lever cam pivot
O—Valve lever
P—Accelerator linkage guide block
Q—Valve lever pivot
R—Operating bell crank
V—Piston rod guard
W—Valve rod lock nut

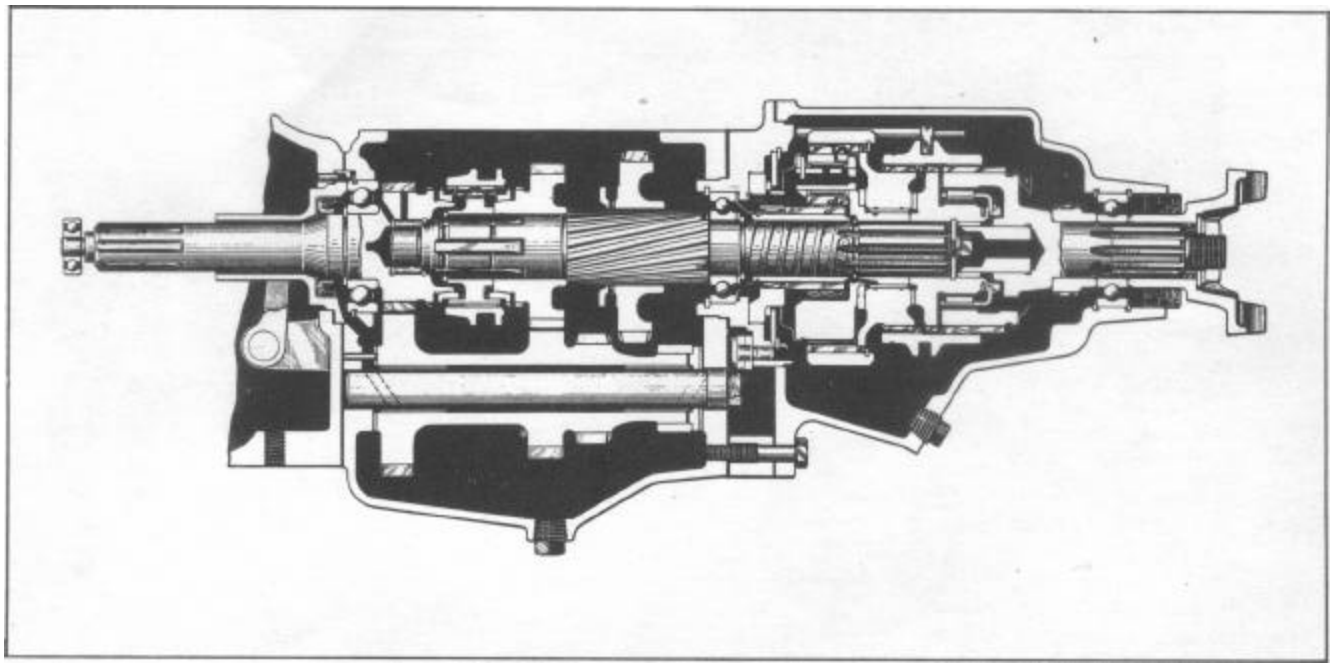
Is not desirable as when driving on slippery pavements and descending steep grades.



TRANSMISSION

The transmission employed on all models is of the three speed forward and reverse type incorporating the "blocker type" synchronizing unit which eliminates gear clashing when shifting. All gears have helical cut teeth for quiet operation in all speeds. The main drive gear is supported by annular ball bearings located in the flywheel and the front of the transmission and is fitted with a needle roller bearing in which the front end of the main shaft operates. The mainshaft is spirally splined to receive the sliding low and reverse gear, and is supported in a large ball bearing in the rear of the transmission case.

All countershaft gears are contained in the forged gear cluster which is fitted with steel-backed babbit



lined bushings operating on a stationary countershaft. Bronze and steel washers located at both ends of the countershaft absorb end thrust. The reverse idler gear is also fitted with a bushing which operates on the stationary reverse idler gear shaft.

Hydraulic leather oil seals located at the main drive gear and rear end of the mainshaft prevent loss of lubricant and a breather in the transmission cover maintains an atmospheric condition inside the transmission.

Transmission gear ratios for all models are: low gear - 2.88 to 1, second gear - 1.82 to 1 and reverse 3.5 to 1.

TRANSMISSION OVERDRIVE

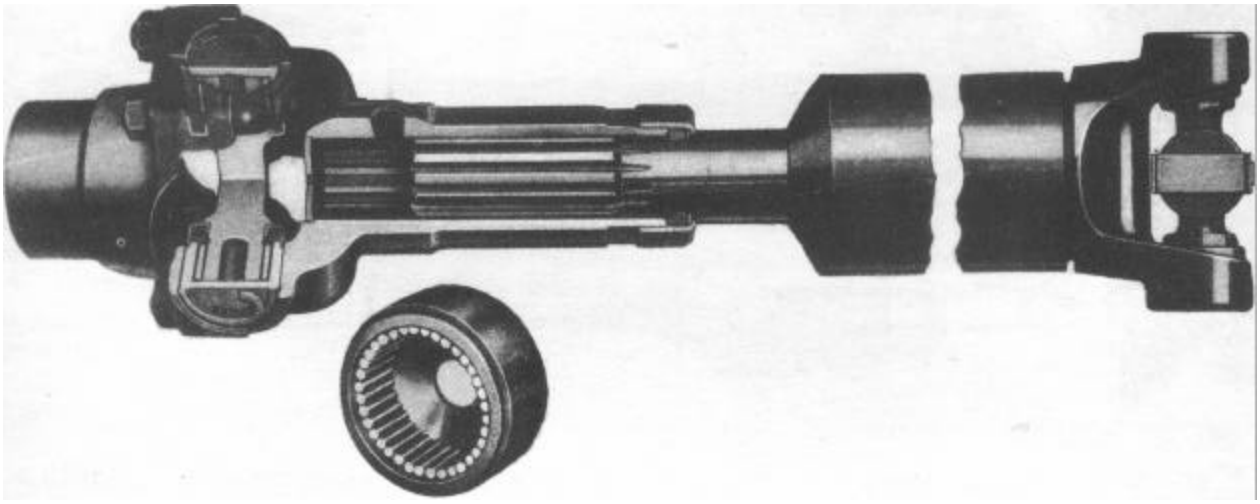
Overdrive is available as a factory installed equipment option for all models. This device provides 4th speed operation by means of planetary gears, an overrunning roller clutch and electrically operated solenoid control permitting the propeller shaft to turn at a speed approximately 36% faster than engine speed. This reduction in engine speed at a given car speed is reflected in quieter operation, reduced engine wear and greater fuel and oil economy.

With the instrument panel control button pushed in, overdrive is placed in operation by momentarily releasing the accelerator pedal at car speeds above 22 miles per hour. When the speed drops to 19 miles per hour or lower, the solenoid control disengages overdrive and the overrunning clutch then provides "free wheeling" thus permitting the propeller shaft to turn faster than the crankshaft.

To obtain fast acceleration when passing other vehicles and climb short, steep hills while in overdrive, it is only necessary to depress the accelerator pedal beyond the wide open throttle position. This "fast acceleration" feature cuts out overdrive and by reverting to direct drive, maximum power is available for such occasions.

With the control button pulled out overdrive and free wheeling become

	Actual Axle Ratio	Ratio In Overdrive
inoperative. This is desirable when it is necessary to use the engine as a brake in descending steep grades or when driving on icy or slippery pavements.	4 5/9 to 1	4 1/9 to 1
Final rear axle ratios when over-drive is used.	3.28 to 1	2.96 to 1



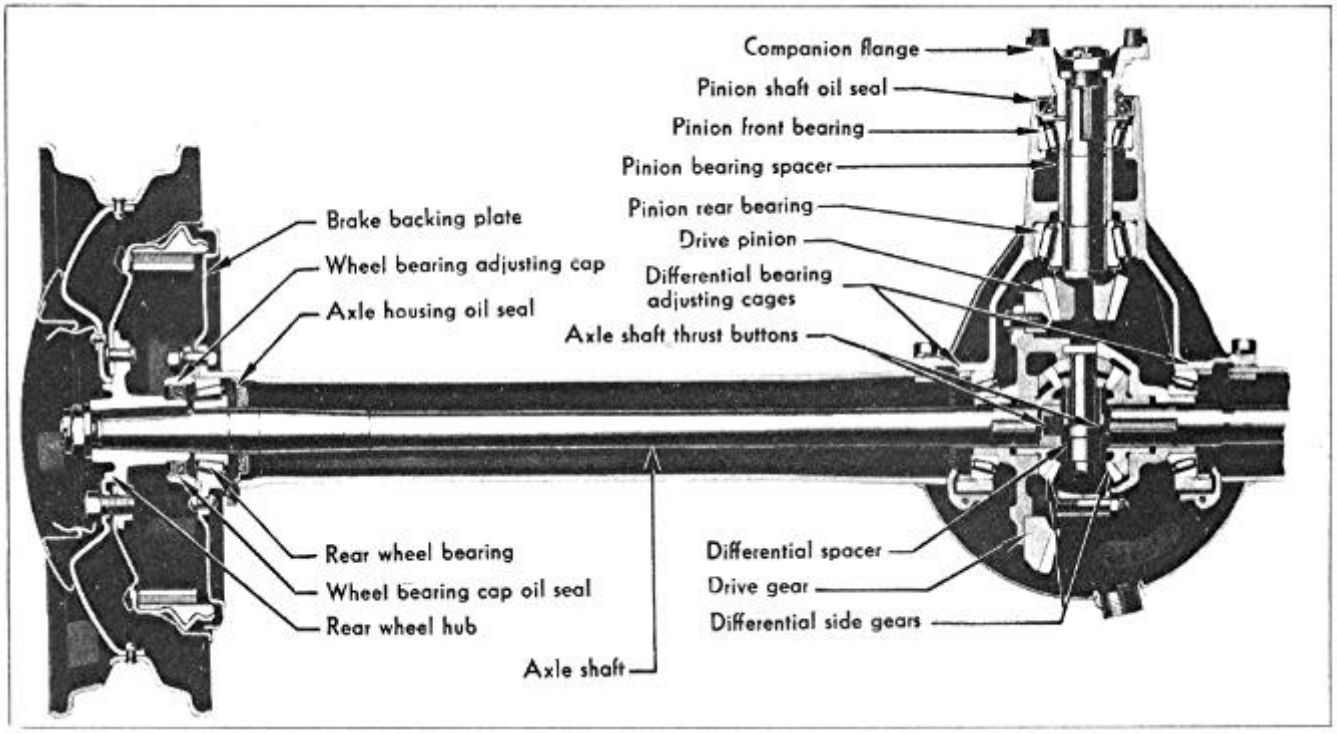
UNIVERSAL JOINTS AND PROPELLER SHAFT

Propeller shafts of large diameter tubular design, carefully balanced to eliminate vibration, are used on all models. Two universal joints are employed, one yoke of the rear joint being welded to the shaft while the front joint is fitted to the shaft with a splined, sliding sleeve to compensate for spring action. The drlving loads are taken by needle roller bearings in both joints, reducing friction and wear to a minimum. The design of the joints has been improved for 1946 by the addition of drilled passages in the trunnions for the passage of lubricant to the needle roller bearings, and pressure fittings through which the lubricant is introduced. Viscous chassis grease applied during the regular 1,000 mile chassis lubrications, does away with the necessity of disassembling, cleaning and repacking, heretofore required.

Due to the location of these fittings for the clearances for the pressure gun nozzle small and a special coupling must be used on the gun or lubricating hose. For this purpose the Alemite Division of the Stewart-Warner Corporation have developed and are making available through Alemite Distributors, their #6274 "Controlled Pressure" hydraulic coupling. This part, in addition to being small enough to get in close quarters, also incorporates a limiting device which prevents the development of pressures in excess of 1,500 pounds. This is an important feature and does away with the possibility of damaging or blowing out the needle roller bearing grease seals.

REAR AXLE

The rear axle is of the semi- floating type incorporating a one piece pressed steel banjo housing, self-contained unit type differential carrier and gear set assembly, and is equipped with roller bearings throughout. One axle is now used on all models; the small diameter axle shaft and wheel bearing unit formerly employed in conjunction with the 175 cubic inch engine, having been discontinued. Alloy



steels are used for all gears and shafts and the drive gear and pinion are of the helical bevel type. Eight bolts are used to attach the drive gear to the flange of the two piece differential case.

Two differential pinions and two side gears splined to the ends of the axle shafts are used. The complete differential and drive gear assembly is mounted in large tapered roller bearings, which are adjustable for wear and tooth mesh. The drive pinion is also carried in tapered roller bearings and shim adjustments are furnished to take care of both wear and tooth mesh.

Car weight and thrust loads are carried by the large diameter axle shafts and absorbed by the tapered roller bearings mounted in the ends of the axle housing. These bearings are adjustable for wear and proper axle shaft end play by shims between the bearing retaining cap and the housing.

Hydraulic leather oil seals located in the cap and axle housing retain the wheel bearing and differential lubricant and prevent leakage onto the brake drums and linings

Rear axle gear ratios available as standard and optional with the various equipment items, are as follows:

Models	51	32	53	54	58
Standard Ratio	4 1/9	4 1/9	4 1/9	4 1/9	4 5/9
Optional Ratio	4 5/9	4 5/9	4 5/9	4 5/9	--
Standard Ratio with Overdrive	4 5/9	4 5/9	4 5/9	4 5/9	4 5/9
Optional Ratio with Overdrive	4 1/9	4 1/9	4 1/9	4 1/9	4 5/9
Standard Ratio with Hudson Drive Master	4 5/9	4 5/9	4 5/9	4 5/9	4 5/9
Optional Ratio with Hudson Drive Master	4 1/9	4 1/9	4 1/9	4 1/9	..

DRIVE-MASTER

Hudson Drive-Master is available as a factory installed option on all models. This device is used in conjunction with the standard Hudson clutch and transmission units and provides means for automatic operation of the clutch and shifting of the transmission gears in the forward speeds. Drive-Master also allows the driver to have complete control

of the transmission at all times and permits him to shift gears in the conventional manner whenever he so desires.

Clutch operation and gear shifting are performed by power units employing engine vacuum, electrically controlled. The principal units of Drive-Master are: Instrument Panel Switch, Accelerator Switch, Clutch Control Unit, Transmission Switch, Shift Rail Switch, Governor Switch and Power Unit Assembly.

The instrument panel switch controls the operation of Drive-Master and is fitted with 3, push buttons. With the "H.D.M." button pushed in, clutch operation and gear shifting is automatic, with the "Vac" button pushed in automatic clutch operation alone is obtained and when the "Off" button is depressed conventional driving requiring manual clutch operation and gear shifting is necessary.

Due to differences in the transmission, transmission and clutch linkage, wiring harnesses and because of factors involved in installation, Drive-Master will be available only as an option installed by the Factory when the car is built.

SERVICE INFORMATION AND SPECIFICATIONS

1946 SERIES

FRONT SUSPENSION

Type	Independent Coil Spring
Camber	1/4º to 3/4º
Caster	-1/4° to +1/4°
Maximum Variation - Right and Left Ends	1/2°
Toe-In	0 to 1/16"
Spindle Pin Inclination. .	4° 36’
Steering pin Thrust Bearlng. Ball	
Wheel Bearing - Type . . .	Taper Roller
End Play	.001" - .003"
Tie Rod End - Type	Plain Bearing
Tie Rod Adjustment:	
To Lengthen	Turn Clockwise
To Shorten	Turn Counter-Clockwise (as seen from rt.)

AXLE - REAR

Type	Semi-floating
Gear Type	Helical Bevel
Gear Ratio :	

	SERIES				
	51	52	53	54	58
Standard Ratio	4 1/9	4 1/9	4 1/9	4 1/9	4 5/9
Optional Ratio	4 5/9	4 5/9	4 5/9	4 5/9	---
Standard Ratio with Overdrive	4 5/9	4 5/9	4 5/9	4 5/9	4 5/9
Optional Ratio with Overdrive	4 1/9	4 1/9	4 1/9	4 1/9	4 5/9
Standard Ratio with Hudson Drive-Master	4 5/9	4 5/9	4 1/9	4 1/9	4 5/9
Optional Ratio with Hudson Drive-Master	4 1/9	4 1/9	4 5/9	4 5/9	---

Pinion Bearings:	
Type	Taper Roller
Adjustment	Shim
End Play	,000" - .001"
Differential Bearings:	
Type	Taper Roller
Adjustment	Screw
Wheel Bearings:	
Type	Taper Roller
Adjustment	Shim
End Play	.004" - .010"
Pinion and Gear:	
Adjustment	Shim
Lash in Gears	.0005" - .003"
Lubrication	
Type -Summer. and Winter.	S.A.E. 90 E.P.
Quantity - Lbs	2-3/4 (1.24 Kgs.)

BRAKES

Type	4 Wheel Hyd.
Drum Diameter:	
Series 51-52	10"
Series 53-54-58	11"
Drum Material	Centrifuse
Lining:	
Type	Moulded and Woven
Width	1-3/4"
Thickness	7/32"
Length per Wheel:	
Series 51-52	22-1/8
Series 53-54-58	23-15/16
Pieces per Wheel	2
Lining Area:	
Series 51-52	155 sq. ln.
Series 53-54-58	167 1/2 sq. in.
Adjustments:	
Anchor Pin - Movable:	
All Series	Radially
Front and Rear Shoe .	4 Screw
Clearance:	
Both Ends of Shoe . .	.0075"
Mechanical Follow-Up. .	1-1/4"
Pedal to Floor Board. .	1/4"

CLUTCH

Type	Single disc in oil
Facing	Cork
Pilot Bearing	Ball
Throwout Bearing	Ball
Pedal Lash	1-1/2'
Lubrication:	
Housing	Hudsonite
Quantity	1/3 Pt. (1/4 I.P. 180 c.c.)
Location of Filler Plug.	Front of Flywheel
Throwout Bearing . . .	Viscous Chassis Lubricant
Quantity	1 oz.
Type of Fitting	Zerk
Location of Fitting . .	Right Bell Housing

ELECTR I CAL EQUIPMENT

Make	Auto-Lite
Coil Location	Dash
Distributor (Ignition):	
Drive	Camshaft
Advance	Automatlc
Breaker Point Gap:	
6 cyllnder	.020'
8 cylinder	.017"

Timing:	
6 Cylinder	1/2" B.T.D.C.
8 Cylinder	D.C.
Firing Order:	
6 Cylinder	1-5-3-6-2-4
8 Cylinder	1-6-2-5-8-3-7-4
Lubrication	Light Motor Oil and High Temperature Grease
Quantity	Fill Cup
Generator:	
Type	Third Brush
Drive	V -Belt

Charging Rate:

	Cold	Hot
All Series	- Max. 44 Amperes	- Max. 38 Amperes

Lubrication	Motor Oil
Starting Motor:	
Drive	Bendix
Control:	
Type	Solenoid
Lubrication	Motor Oil
Battery:	
Make	National
No. Plates:	
6 Cylinder	51
8 Cylinder	57
Dimensions:	
6 Cylinder	L-10-9/16" W-7-1/4" H-7 13/16"
8 Cylinder	L-11-3/4" W-7-1/4" H-7-13/16"
Terminal Grounded	Positive
Location	Engine Compartment Left Side
Spark Plugs:	
Make	Champion Hudson J-9
Size	14 mm.
Gap	.032"

Lamp Bulbs:

Position	Mazda No.	C.P.	Base	Voltage
Headlamp	Sealed Beam Type			
Bonnet Lamp	56	2	S.C.	6-8
Fender Lamp (with Direction Indicator). .	1168	21-3	D.C.	6-8
Fender Lamp (Without Direction Indicator). .	83	3	S.C.	6-8
Tail and Stop Light. . . .	1154	21-3	D.C.	6-8
License Lamp	83	3	S.C.	6-8
Dome Lamp	88	16	D.C.	6-8
Generator and Oil Indicator	61	1	S.C.	6-8
Clock.	55	2	S.C.	6-8
Speedometer - Series 51-53	51	1	S.C.	6-8
Serles 52-54	55	2	S.C.	6-8
Radio	44	1	S.C.	6-8
Direction Indicator.	51	1	S.C.	6-8
Headlamp Beam	51	1	S.C.	6-8
Ignition Lock.	65	2	S.C.	6-8
Courtesy Lamp	88	15	D.C.	6-8
Fog Lamp	1211S	50	S.C.	6-8
Spot Light	1209S	32	S.C.	6-8

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ENGINE

Series	No. Cylinders
51-52-58	6
53-54	8
Arrangement	Vertical
Bore	3"
Stroke:	
51-52-58	5"
53-54	4-1/2"
Piston Displacement:	
51-62-58	212 cu. in.
53-54	254 cu. in.
Taxable Horsepower:	
6 Cylinder	21 6
8 Cylinder	28 8
Actual Horsepower:	
51-52-58	102 @ 4000 r.p.m.
53-54	128 @ 4200 r.p.m.
Compression Ratio:	
All Series	6.50 to 1
Engine Mounting	Rubber
Camshaft:	
Drive	Gear
Timing Indication -	
Marks on	Gears
Camshaft Bearings:	
Diameter and Length:	
6 Cylinder:	
No. 1	2" x 1-1/4"
No. 2	1-31/32" x 1-1/16"
No. 3	1-9/16" x 11/16"
8 Cylinder:	
No. 1	2-1/32" x 1-3/8"
No. 2	2" x 1-1/16"
No. 3	1-31/32" x 1-1/4"
No. 4	1-15/16" x 1-1/16"
No. 5	1-1/2" x 1-5/16"
Radial Clearance	. 001" - .002?
Connecting Rods:	
Material	D.F. Steel
Welght:	
51-52-63-54-58	29.75 oz.
Length (C to C):	
51-52-53-54-68	8 3/16"

Lower End Bearings:	
Diameter	1-15/16"
Length	1-3/8"
Radial Clearance .	.001"
End Play	007" - .013"
Material	Bearing Alloy
Upper End Bearings:	
Diameter	3/4?
Length	15/16"
Radial Clearance .	.0003"
Material	Bronze

COOLING SYSTEM

Circulation by	Pressure Pump
Temperature Control.	Thermostat
Capacity (Quarts)	
6 Cylinder	13 (10 3/4 I.Q.- 12-1/2 L.)
8 Cylinder	18 (15 I.Q. - 17 L.)
Pump Drive	V-Belt
Fan Drive	Pump Shaft
Belt Adjustment	Generator Mounting
Pump Bearing Type	Bronze
Lubrication Fitting. . .	Alemite (Metered)
Crankshaft:	
Type	Fully Compensated
Number of Bearings:	
6 Cylinder	3
8 Cylinder	5
Bearing Diameter and Length:	
6 Cylinder:	
No. 1	2-11/32" x 1-5/8"
No. 2	2-3/8" x 1-3/4"
No. 3	2-13/32" x 2-3/8"
8 Cylinder:	
No. 1 . .	2-9/32" x 1-5/8"
No. 2	2=5/16" x 1-3/8"
No. 3	2-11/32" x 1-7/8"
No. 4	2-3/8" x 1-3/8"
No. 5	2-13/32" x 2"
End Play taken by Bearing Numbers:	
6 Cylinder	2
8 Cylinder	3
Bearing End Play	.006" - .012"
Bearing Radial Clearance	.001"
Adjustment.	None

FUEL SYSTEM

Carburetor Make	Carter Series:
51-52-58	Down-draft Duplex 1"
53-54	Down-draft Duplex 1-3/4"
Heat Control:	
All Series	Automatic
Choke Control:	
All	Automatic
Fuel Delivery	Pump
Pump driven from	Camshaft or Electric
Air Cleaner and Silencer Type:	
Oil Wetted - Standard: A. C.	
Oil Bath - Optional: United	
Gasoline Tank Capacity (Gal.):	
All Series	16-1/2 (13-3/4 I.G. - 62-1/2 L.)
Lubrication System:	
Type	Hudson Duo-Flo Automatic
Pump Type	Oscillating Plunger
Pump Drive. .	Worm on Camshaft
Oil Cooling by	Baffles in Reservoir
Capacity - Total (Qts.):	
8 Cylinder	5-1/2 (4-1/2 I.Q. - 5-1/4 L.)
8 Cylinder	9 (7 I.Q. - 8 1/2 L.)
Capacity - Refill (Quarts):	
6 Cylinder	4-1/2 (3-3/4 I.Q. - 4-1/2 L.)
8 Cylinder	7 (6 I.Q. - 6 1/2 L.)
Pistons:	
Type	Cam Ground
Material	Aluminum Alloy
Weight	10.5 oz.
Length	3-3/16"
Pin Center to Top . .	1-11/16"
Clearance:	
Skirt	.0005" to .001"
Top of Piston	.016"
Depth of Grooves. . .	.5/32"
Piston Pin:	
Type	Floating
Method of Locking . .	Snap Rings
Diameter	3/4"
Length	2-7/16"
Fit in Plston (at 2000F)	.0003"
Fit in Rod	.0003"
Piston Rings:	
Material	Cast Iron
Joint - Type	Straight Cut- Pinned
Compression Rings:	
No	2
Width	3/32"
Gap	.009" - .011"
Oil Rings:	
No	2
Width - Upper	3/16"
Width - Lower . . .	5/32"
Valves and Tappets:	
Inlet Valve-Material .	Silicon Steel
Head Outside Diameter:	
6 Cylinder	1-3/8"
8 Cylinder	1-1/2"

Opening:	
6 Cylinder	1-1/4"
,8 Cylinder	1-3/8
Valve Lift	11/32"
Stem Length:	
6 Cylinder	5-11/32"
8 Cylinder	5-3/32"
Stem Diameter	11/32"
Stem Clearance in Guide. .	.0025"
Tappet Clearance:	
6 Cylinder	.010" (hot)
8 Cylinder	.006" (hot)
Exhaust Valve - Material .	Silchrome Steel
Head Outside Diameter. . .	1-3/8"
Opening.	1-1/4"
Valve Lift	11/32"
Stem Length:	
6 Cylinder	5-11/32"
8 Cylinder	5-3/32"
Stem Diameter	11/32"
Stem Clearance	.004"
Tappet Clearance:	
6 Cylinder	.012" (hot)
8 Cylinder	.008" (hot)
Valve Stem Guides	Removable
Valve Guide Length	2-9/16"
Top of Guide to Top of Block:	
6 Cylinder	1-1/16"
8 Cylinder	15/16"
Valve Spring Pressure. . .	40 lbs. @ 2"

SPRINGS

Front - Type	Coil
Gear Ratios:	
Color Code (Paint mark on 2 center coils):	
Series	Color
51-52	Bronze
53-54	Orange or Violet or Cream
58	Yellow or White or Green
Length:	
All Series	80"
Width	1-3/4"
No. Leaves:	
All Series	9
Shackle Type	Self-Adjusting
Shackle Location	Rear
Spring Covers:	
Rear Springs Only . .	Fabric or Metal
Lubrlcant:	
Leaves and Shackles . .	Viscous Chassis Lubricant

STEERING GEAR

Type	Worm and Roller Tooth
Ratio:	
Series 51-52-58	18.2 to 1
Series 53-54	18.4 to 1
Adjustments:	
Worm Shaft	Shims
Cross Shaft	Set Screw
Gear Mesh	Set Screw
Lubricant - Summer and Winter	S.A.E. 90 E.P.

TIRES

Series	Std. Size	Optional Size
51-53	16x6.00 4 ply	(16x6.00 6 ply (15x6.50 4 or 6 ply (15x7.00 4 or 6 ply
52-54	15x6.50 4 ply	(15x6.50 8 ply (15x7.00 4 or 6 ply
58	16x6.50 6 ply	

Tire Pressures:

	Front		Rear	
Size	Cold	Hot	Cold	Hot
6.00"x16"	26 lbs.	29 lbs.	30 lbs.	33 lbs.
6.50"x16"	26 lbs.	29 lbs.	40 lbs.	44 lbs.
6.50"x15"	26 lbs.	29 lbs.	30 lbs.	33 lbs.
7.00"x15" Opt.	26 lbs.	29 lbs.	30 lbs.	33 lbs.

TRANSMISSION

Type:	
Synchro-Mesh	
Speeds	3 Forward and Reverse
Gear Type	All Helical
Gear Ratios	
Low	2.88 to 1
Second	1.82 to 1
High	1 to 1
Reverse	3.50 to 1
Lubricant-Summer	S.A.E. 90 E.P.
Winter	S.A.E. 80 E.P.
Capacity (lbs.)	
Without Overdrive . . .	2 (.91 Kgs.)
With Overdrive	3-1/4 (1.47 Kgs.)
Bearings:	
Mainshaft Pilot	Ball
Mainshaft Bearings. . .	Ball
Mainshaft Pocket Bearing	Roller
Countershaft Bearings:	
Type	Steel-backed Babbit
Clearance	.001"
Reverse Idler Bearings:	
Type	Steel-backed Babbit
Clearance	.001"
Adjustment	None