1931

PRELIMINARY
SERVICE INFORMATION

Cadillac 355
La Salle 345

September, 1930

Service Department
CADILLAC MOTOR CAR COMPANY
DETROIT, MICHIGAN

CONTENTS

Cadillac V-8

Preliminary Service Information

Cadillac 355 - - La Salle 345

Front Axle

The front axle on both of the new cars is like the La Salle 340 front axle except for the angle of the knuckle pins and the method of attaching the shock absorbers. On the new models the steering knuckle pin is only 8½° from vertical instead of 10¼° as on the 340 and 353. This does not affect the camber, however, because the angle between the wheel spindle and the steering knuckle pin has been changed to 100°, giving 1½° camber which is the same as on the 340.

The caster on both of the new cars is 2½° to 3½° instead of 1½° as on the 340 and 2½° as on the 353. This caster is obtained by using a 1½° wedge spacer (Part No. 876813, 303-353 Parts List) between the spring and the axle.

The axle I-beam on the new models is interchangeable except for the method of attaching the shock absorbers. The front shock absorber links on the 355 are attached under the spring clip nuts as on the V-16, while those on the 345 are attached at the drilled boss on the I-beam as on the 340. Neither of these axles is interchangeable with the 340 and the 353.

The steering knuckles, arms, pins and all parts excepting the I-beams themselves are, however, interchangeable on the 345 and the 355. For service it is only necessary to stock the type 345 I-beam, because this I-beam can be used on the 355 also.

Except as noted, all service operations and adjustments on the front axle are the same as on the La Salle 340 and the Cadillac 353.

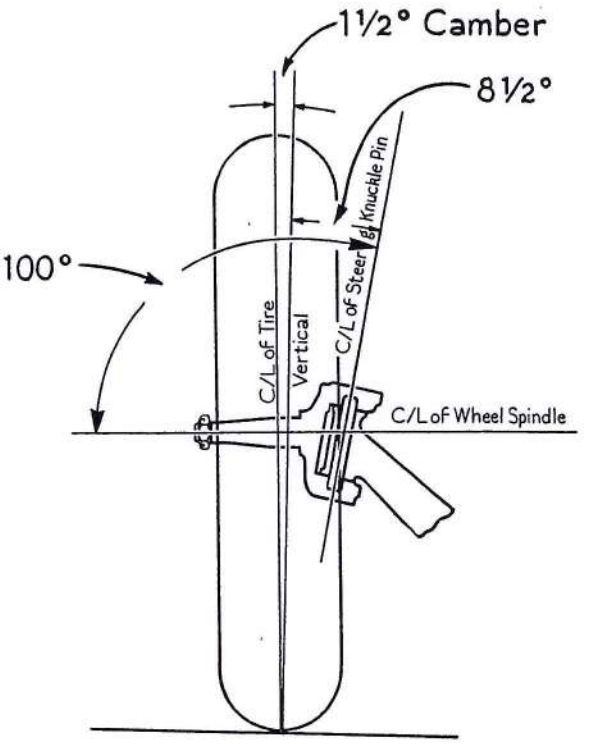

Fig. 1. The front axle camber is 1½°, the same as the 340 and 353, although the angle of the steering knuckle pin is different.

Rear Axle

The rear axle on the La Salle 345 is the same as on the 340 and is interchangeable with it except for the gear ratios. The Cadillac 355 rear axle is similar to the 345, but is not interchangeable, because the rear spring seats on the 355 are 5⅜" closer together than on the La Salle 345 and 340, to take care of the new frame and different spring suspension used on the Cadillac.

The gear ratios being furnished on the new cars are:

Actual	Nominal
4.07 to 1	4.00 to 1
4.54 to 1	4.50 to 1
4.75 to 1	4.75 to 1

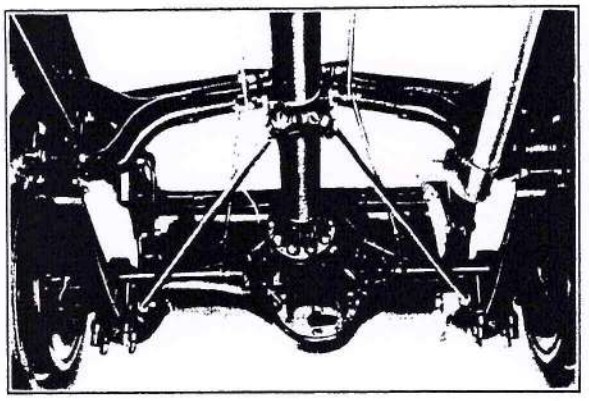

Fig. 2. The 355 rear springs are directly under the frame and the spring seats are accordingly 5⅜" closer together on the 345.

The nominal values given vary slightly from the actual ratios but are used because they are more easily remembered.

On a few of the first cars shipped, a 4.40 to 1 ratio has been used instead of a 4.50. The performance with either of these ratios is practically the same, and after the present stock of 4.40 to 1 is exhausted, only the 4.50 to 1 will be furnished on order from the Parts Division.

The above gear ratios will also be supplied by the Parts Division for service on the La Salle 340 and 328 when the present stock of differential carrier assemblies of different ratios is exhausted. These three different differential carrier assemblies will therefore be interchangeable on four models; the 328, 340, 345 and 355.

Body

On the La Salle 345, practically the same body is used as on the 340. The dash, however, has been insulated to better protect the body from the heat of the engine. The radiator on the 345 is mounted vertically instead of being tipped slightly backward at the top as on the 340, and the hood is about ½ inch longer than on the 340 to take care of the change in the radiator position.

The 345 fenders are the same shape as those on the 340. The front fenders are not interchangeable however because of the different location for the holes for the head lamp brackets. The left-hand rear fender also differs in the size and shape of the holes for the rear lamp. In order to make these fenders interchangeable all left-hand rear fenders shipped by the Parts Division for either of these models will not have the holes punched for the rear lamp, but will have a template attached to the underside so that these holes can be cut for the particular model on which the fender is to be used.

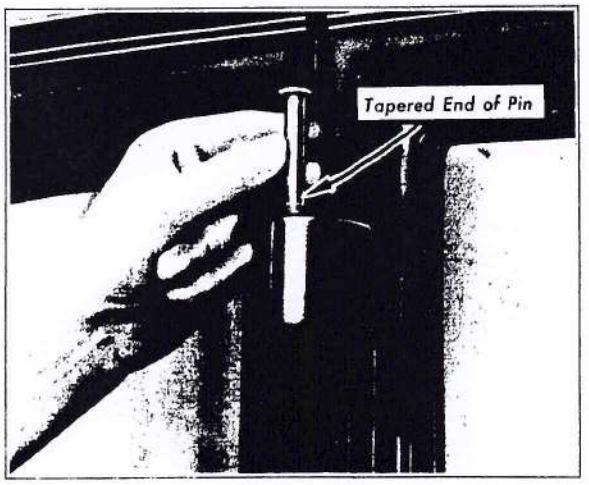

Fig. 3. The hinge pin on the 355 is tapered at the end and can be removed or installed without injury to pin or hinge.

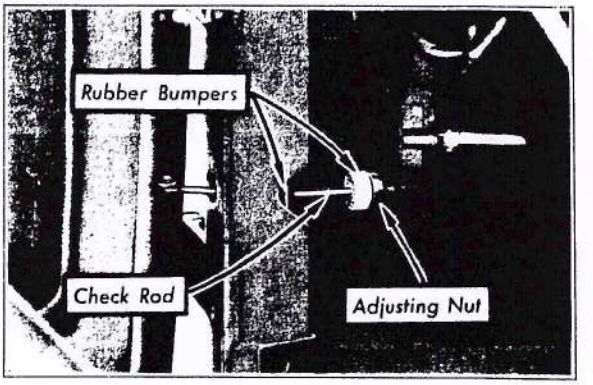

Fig. 4. The 355 door checks are in the pillars as shown above and are adjustable.

The body on the Cadillac 355 is entirely new. It is lower and wider than any Cadillac or La Salle body previously used.

On the doors, four hinges are used instead of three as on past models. The hinge pins are chromium-plated and are tapered at the bottom to make removal and installation of the pins easier. This type of pin can be driven out without danger of upsetting the end, and can be replaced easily because the tapered end aligns the two sections of the hinges.

The door check used on the 355 is in the pillar instead of in the top of the door as on previous models. Two rubber bumpers are provided for the check, one on the pillar and the other on the check itself. The checks are adjustable upon removing the quarter panel of the upholstery.

The front seats on the 355 are ¾ inch lower than on the 353 and are provided with the same

means of adjustment as the 353. The tool compartment on this new Cadillac is under the front seat instead of in the dust-shield as on the 353.

The 355 floor boards are made of metal and are lined with Celotex instead of being made of wood. The dash on this model is also provided with a heat insulator to prevent heat from the engine being transmitted to the driver's compartment.

The 355 hood is longer than the 345 or the 353 and has ports instead of louvres. In warm weather driving it is important to keep these ports open so that the heat from the engine can pass out freely.

Brakes

The brakes are identical on both cars. The size and construction are the same as on the La Salle 340 except for a minor difference in the rear brake rods and the rocker shafts on the Cadillac.

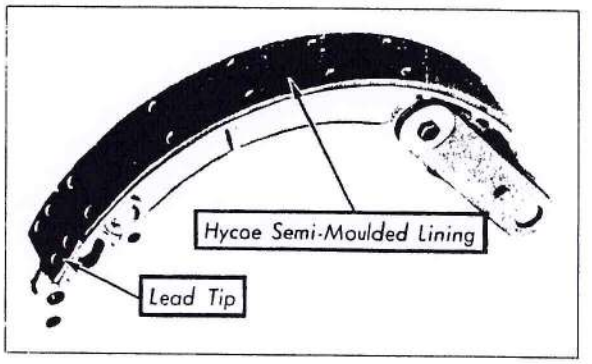

Fig. 5. Hycoe semi-moulded brake lining is used on both the 345 and 355.

The rear brake rocker shaft on the Cadillac 355 is mounted on the rear flange of the center frame cross member like the V-16, on account of the rear engine support at the transmission ball-joint socket.

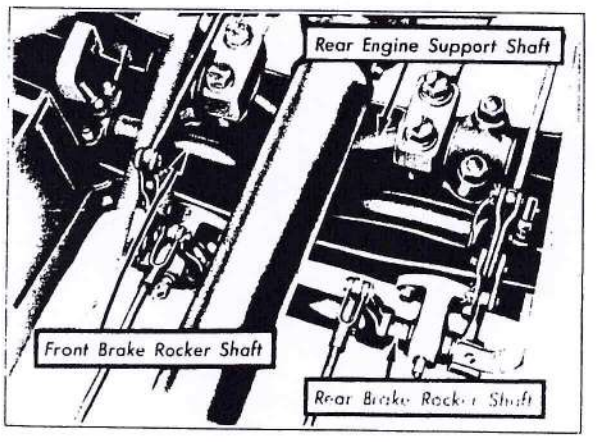

Fig. 6. The 355 brake rocker shafts are arranged as on the V-16.

Hycoe semi-moulded brake lining is standard equipment on both cars. This lining is the same as has been recently furnished for service on 353 and 340 cars.

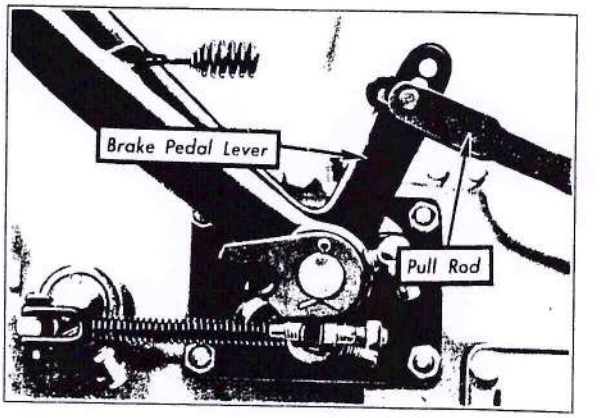

Fig. 7. The brake pull rod is connected at the lowest hole on the pedal lever.

The brake pull rod on both new cars is connected at the lowest hole on the brake pedal as on the Cadillac 353. This is necessary because of the different co-efficient of friction of the Hycoe semi-moulded lining used on these cars. All brake and pedal adjustments and other brake service operations are the same as on the La Salle 340.

With the exception of the method of connecting the brake pull rod as noted above all the brake cables and rods are adjusted exactly as on the La Salle 340. The position of the brake cams on the dust shields are also the same as on the 340.

Clutch

The clutch is the same on both cars and is identical with the late type 353 clutch, which has bronze bushings in the driving plates, heavier release fingers and a larger release shaft than were used on earlier 340 and 353 clutches. Only one type of clutch need be carried in stock to service the 340, 345, and the 353 and 355 cars. The service operations on the clutch are the same on all these models.

Cooling System

The cooling system on both cars is identical with the exception of the radiators and the fan supports.

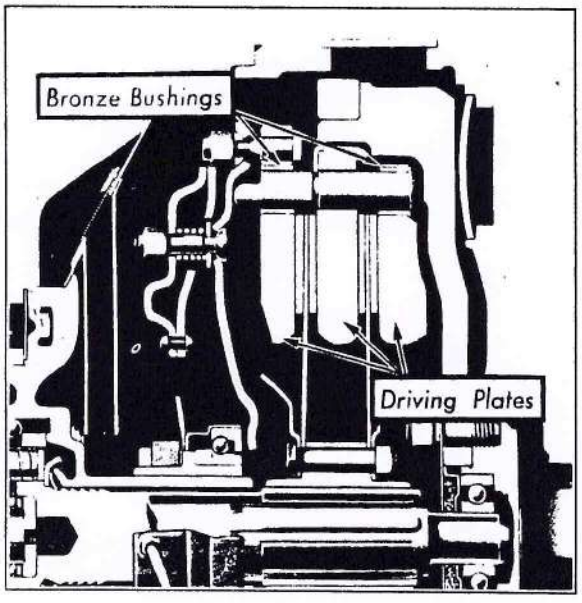

Fig. 8. Bronze bushings are used in the clutch driving plates.

The radiator on the La Salle 345 is the same as the La Salle 340, but is mounted vertically instead of being tipped backwards slightly as on the 340.

The Cadillac 355 radiator is new in shape and is not interchangeable with any of the others. It is mounted lower on the frame than the La Salle radiator and the top of the radiator is lower with relation to the engine than on the 345.

The portion of the upper tank over the fan on the 355 is not as deep as on the 345, and the fan is mounted 5/8" lower to correspond with the lower radiator position. This requires a shorter fan belt and shorter hose connections on the 355.

The fan belt on the new models should be adjusted exactly the same as on the 340 and 353, with 5/8" slack midway between the pulleys. The distance from center to center of the fan pulleys is 10 1/8" on the 345 and 9 1/2" on the 355.

The change in fan position is taken care of by using a different fan bracket on the 355. The fans, shafts and bearings are identical on both cars.

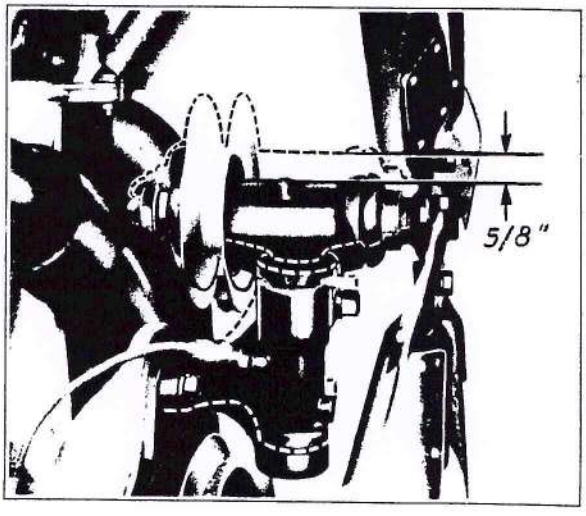

Fig. 9. The 355 fan bracket. The dotted line shows the shape of the 345 fan bracket.

The lower hose connection between the water pump and the radiator on the 345 is the same as on the 340 and 353. The upper hose connections are of different lengths on both models and are not interchangeable with those on the 340, 353 or with each other.

Electrical System

The electrical system is the same on both cars except for the rear lamps and horns. The general arrangement of both systems is similar to that on the La Salle 340.

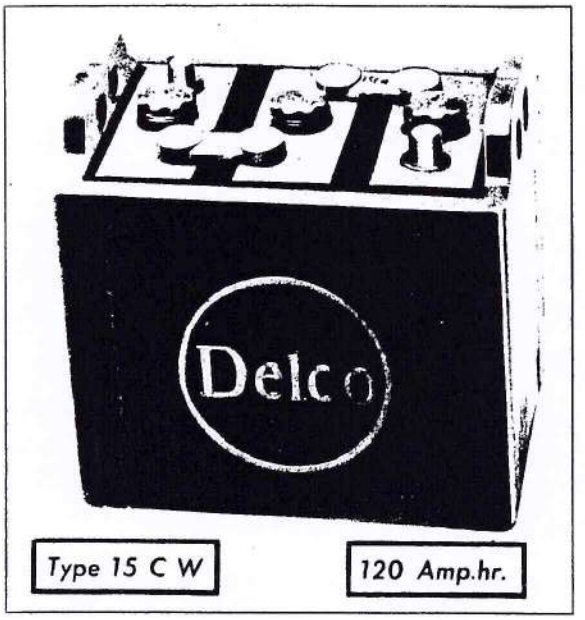

Fig. 10. Warranty service on the new Delco battery used on both cars is taken care of by the United Motors Service Corporation.

Storage Battery

The battery is the same on both cars. It is a Delco-Remy, type 15 C.W. 120 amp. hr. battery and has greater capacity than the 100 amp. hr. battery used on the La Salle 340. The battery is carried under the front seat on both cars and is readily accessible upon lifting out the front cushion.

Warranty service on the new Delco battery used on the 345 and 355 cars will be taken care of by the United Motors Service Corporation.

Generator

The generator on both of the new cars is a Delco, type 927-D. This is the same type that was used on the 340 and 353 models. The driving chain for the generator is adjusted in the same manner on all these models. The generator cut-out is mounted on top of the generator as before.

Horns

The La Salle 345 has one horn only, mounted under the left headlamp as on the 340, while the Cadillac 355 has two horns, one under each headlamp. The horns on both cars are the same as used on the 353.

The horns used on the Cadillac 355 are tuned in pairs the same as on the V-16. In case of difficulty with the horns on this job, only the one giving trouble need be replaced, because of the ease with which these horns may be adjusted.

The same service instructions apply as on the Cadillac 353.

Ignition

The ignition system is the same on both cars with the exception of the spark advance control, and is like the Cadillac 353.

The 345 spark control is like that used on the 340 and 353 while the 355 spark control is of the push-pull type as used on the V-16.

The ignition coil on both of the new cars is the same type as is used on the V-16. This coil has improved windings that give it increased efficiency. It is mounted horizontally between the radiator support rods almost directly above the distributor. The wires from the coil to the distributor are protected by a heavy rubber conduit.

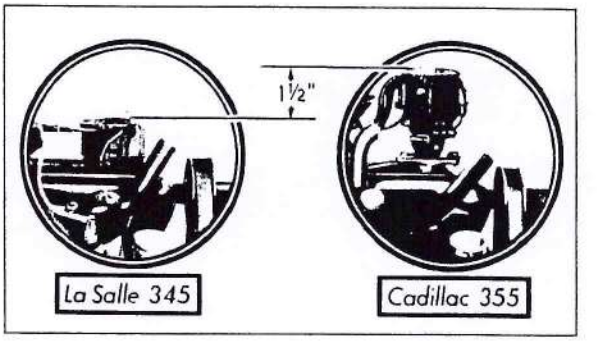

Fig. 11. The 355 distributor is 1½" higher than the 345.

The distributor is 1½" higher on the Cadillac 355 than on the La Salle 345.

The ignition is timed exactly the same as on the 353 and 340, with the spark fully advanced and the IG/A mark (2¼" ahead of center on the fly-wheel) in line with the indicator in the timing inspection opening. The contact gap should be adjusted to .018" to .022" the same as before.

All other service operations on the electrical system are the same as on the 340 and 353 models.

Starting Motor

The starting motor on both of the new cars is a Delco type 728-D. This is the same starting motor that is used on the 340 and 353 models and it is interchangeable on all four cars.

Wiring

The general arrangement of the chassis wiring on both cars is similar to that on the La Salle 340 and Cadillac 353, except for the horn circuit and for the connections at the terminal block. The connections at the terminal block on the 355 are similar to those on the later V-16 cars. On the 345 these connections are the same as on the 340.

The wiring diagram shown is for the La Salle 345. The circuits on the Cadillac 355 are arranged in the same manner but of course provide for the two rear lamps and two horns used on this model.

Engine

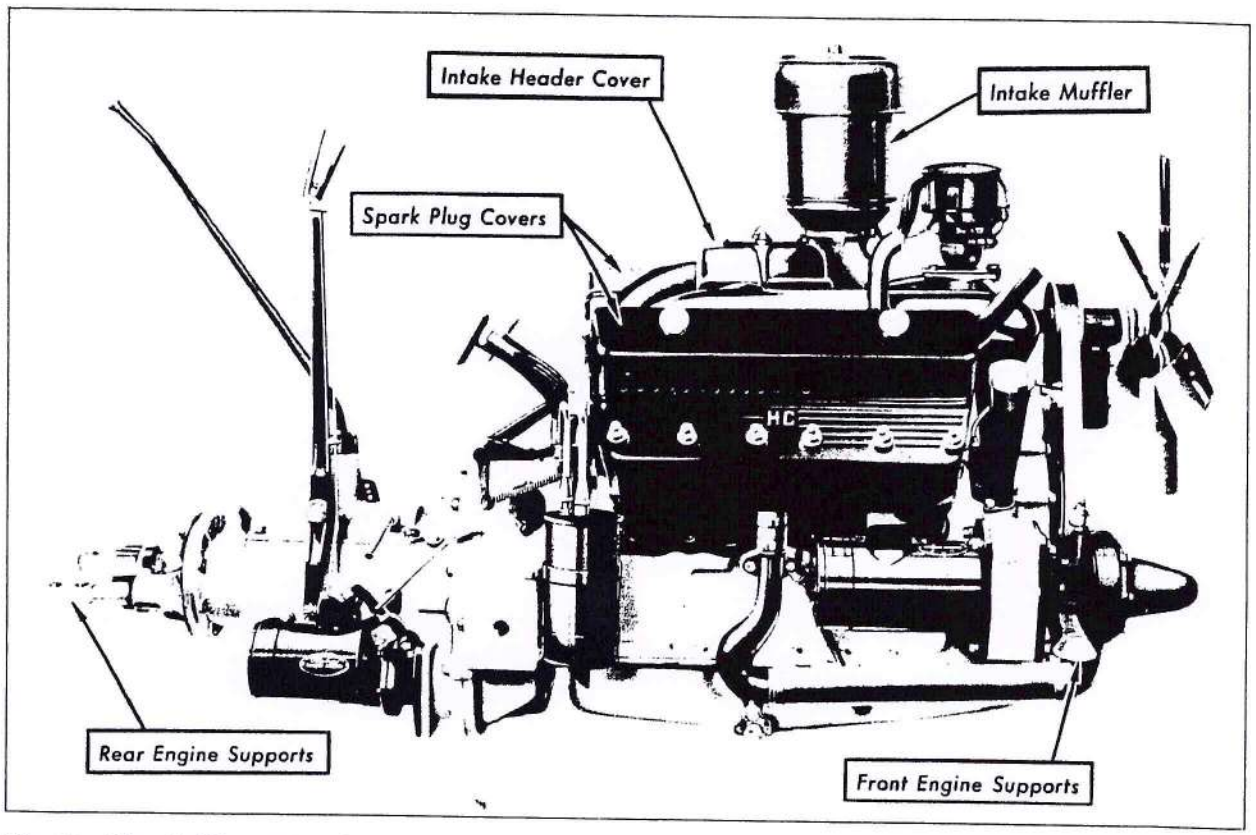

Fig. 12. The Cadillac 355 engine. The La Salle 345 is the same except in appearance and method of mounting.

The engines used on both cars are identical with the exception of appearance and mounting details. The bore is 3⅜"; the stroke 4-15/16"; the piston displacement 353 cubic inches, and the N.A.C.C. rating 36.45 H.P.

All engine parts except the front covers and fan supports are interchangeable on both cars and on the Cadillac 353.

The La Salle 345 engine is supported at three points in exactly the same manner as on the 353 and 340.

The Cadillac 355 engine has five-point suspension following the manner of the Cadillac V-16, and the same type of rubber insulated supports are used as on the V-16. The front

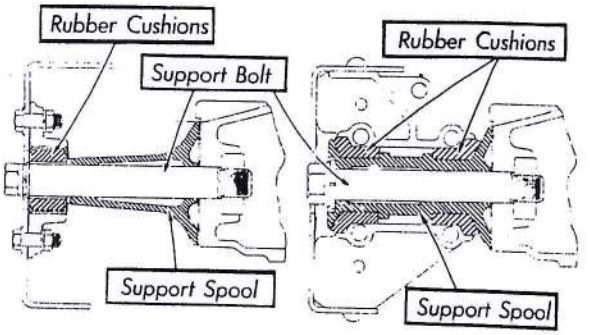

Fig. 13. The 355 engine supports at the flywheel housing are different than on the 345.

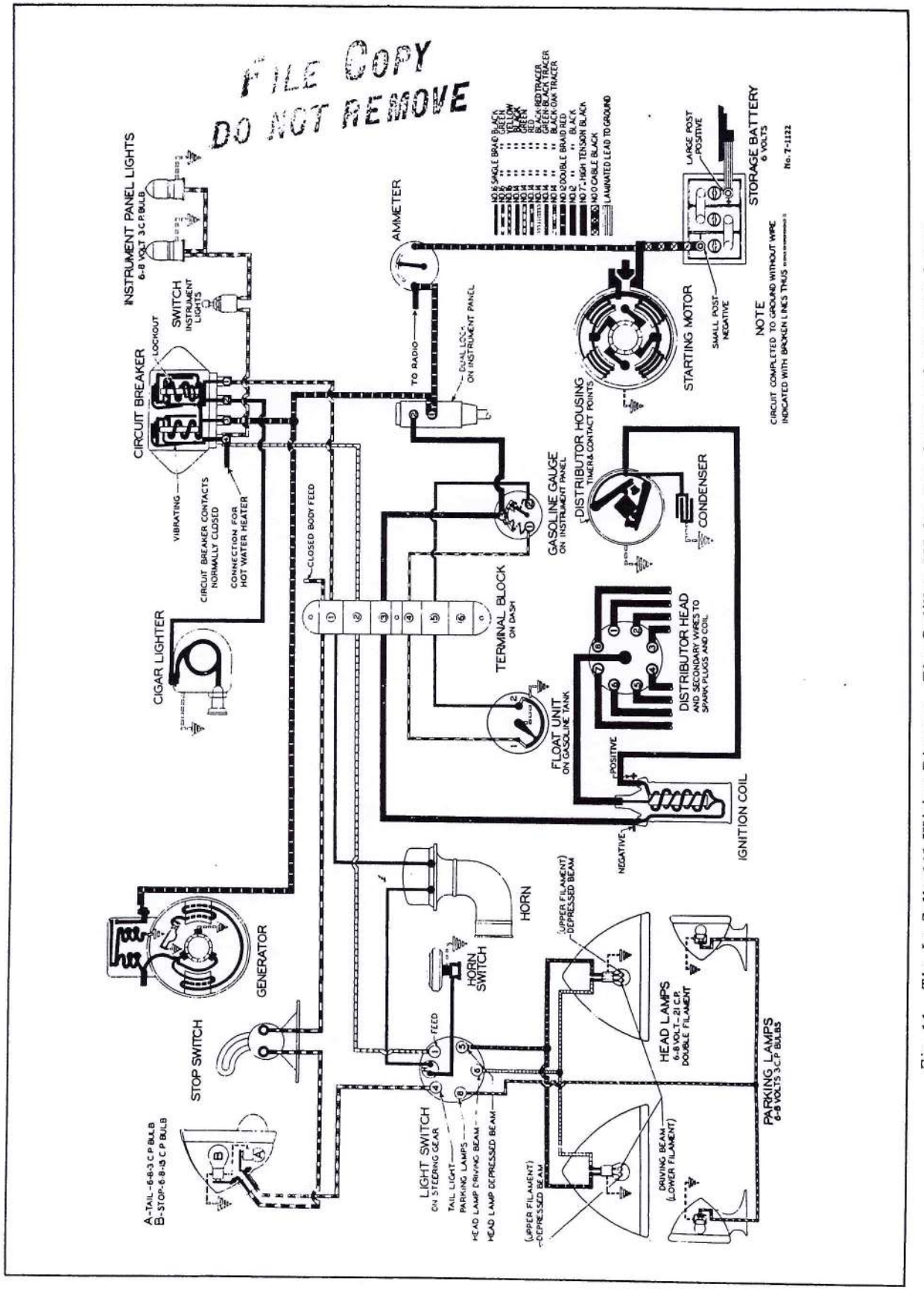

Fig. 14. The La Salle 345 Wiring Diagram. The Cadillac 355 has two horns and two rear lamps, with the terminal block connections the same as on the late V-16 cars.

supports at each side of the timing chain cover differ slightly from the Cadillac V-16. Only one through-bolt is used on each side on the Cadillac 355 instead of two as on the V-16. This bolt passes directly through the center of the supporting cone on the motor support bracket and should be tightened in the same manner as on the V-16, by drawing the nut down until there is no more play in the bolt and then tightening the nut exactly one and one-half turns further before putting the cotter pin in place.

The supports at the sides of the flywheel housing are designed differently than on the V-16, because of the greater width of the 355 frame at this point.

The supports at the rear of the transmission on the Cadillac 355 are identical with those on the Cadillac V-16 and are interchangeable with them.

All other service operations are identical with those on the La Salle 340 and Cadillac 353.

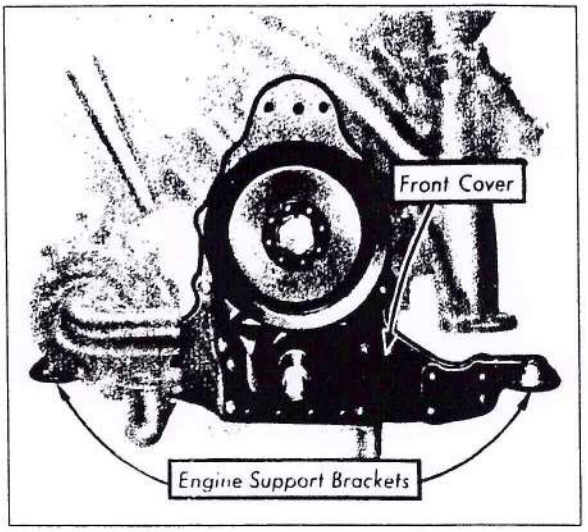

Fig. 15. The Cadillac 355 engine has a new front cover with an engine support bracket on each side similar to the V-16.

Exhaust System

The exhaust system on both cars is the same, but a new and more effective muffler is used. This muffler has the same dimensions as used on the 340 and 353 and can be used interchangeably on all four cars.

The heat control valve for the intake manifold is identically the same as on the 340 and 353, and the same service operations apply.

Frame

The frame on the La Salle 345 is identically the same as the frame used on the La Salle 340. The Cadillac 355, however, has an entirely new frame, especially designed for the five point motor support and the new type of spring suspension now used on this job.

The wheelbase on both models is 134 inches, the same as the La Salle 340. The side bar section on the Cadillac 355 frame is identically the same as the La Salle 340.

Gasoline System

The gasoline system is the same on both cars and is like that on the 340 except for the use of an intake muffler. The tank on the 345 is exactly the same as the 340 and is interchangeable with it. A new tank of 21 gallons capacity, however, is used on the 355. This tank is not interchangeable with any other.

Intake Muffler

The intake muffler silences the roar of the intake characteristic at certain engine speeds under open throttle. It is mounted on an elbow attached to the bottom of the auxiliary air intake of the carburetor. From the lowest point on this elbow a duct leads to the primary air intake at the bottom of the carburetor.

This intake muffler operates on an entirely new principle. The silencing is not accomplished by baffle plates, but by means of opposing vibrations set up within the muffler itself.

The accompanying sectional view of the intake muffler shows that there is an unrestricted flow

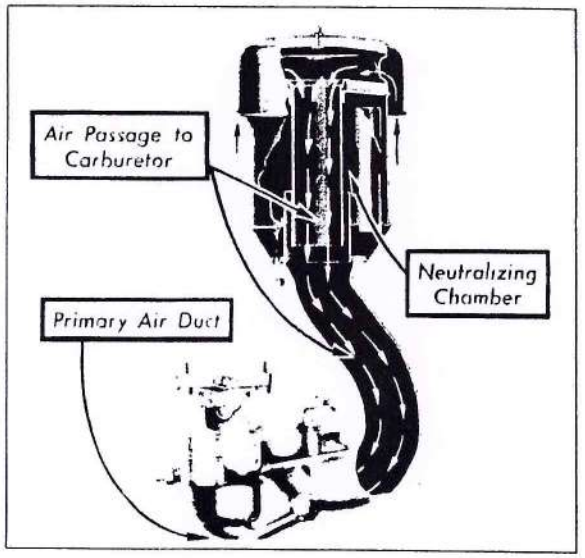

Fig. 16. The intake muffler does not affect the carburetor adjustments. They are made exactly as on the 340 and 353 cars.

of air through the muffler and elbow to the carburetor. The flow of air through the intake manifold is not continuous, however, but is constantly being interrupted by the opening and closing of the intake valves. These interruptions cause vibrations that would develop into a pronounced roar at certain engine speeds under open throttle, were it not for the intake muffler.

The vibrations thus caused set up counter vibrations within the neutralizing or dead-air chamber of the muffler. Through scientific designing of this dead-air chamber, these opposing vibrations are of the exact frequency necessary to effectively neutralize the vibrations in the inrushing air passing through the carburetor.

The intake muffler requires no attention and the service operations on the rest of the gasoline system are the same as on the 340 and 353.

Carburetor

The same carburetor is used on both of the new cars. It is fully interchangeable on these models but not with those on the 340 and 353 because of the use of the intake muffler on the later models. The spray nozzle, No. 16, is the same on 340, 345, 353 and 355 models.

Lighting

The headlamps on the La Salle 345 are the same as on the La Salle 340. Those on the Cadillac 355 are similar in design to those on the Cadillac V-16. The parking lamps on the fenders are the same as used on the La Salle 340.

The arrangement of the rear lamps on both cars is the same as in the past although the lamps are entirely new in design.

Springs

The front springs on the new cars are alike, but are not fully interchangeable as rights and lefts. The left-hand front spring on all except a few of the first cars shipped, has the second leaf wrapped about a quarter of a turn around the front eye to give additional support at this point for the steering modulator. The right front spring, however, does not have this construction as there is not sufficient clearance at the front outrigger. The right and left springs are, therefore, not interchangeable. The left-hand front springs, however, are interchangeable on the 340, 345 and 355 as are the right-hand front springs.

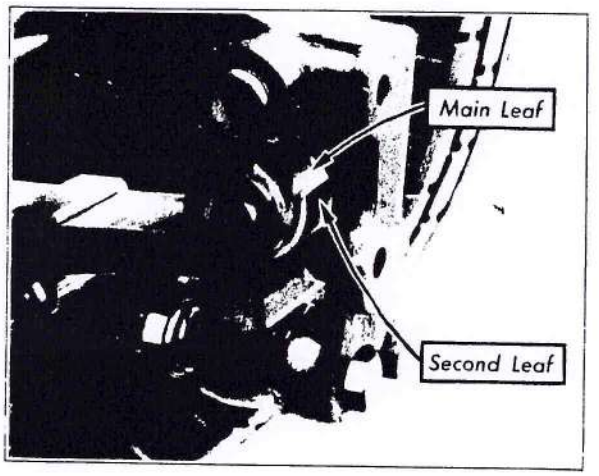

Fig. 17. The main leaf on the left-hand front spring is reinforced at the front end.

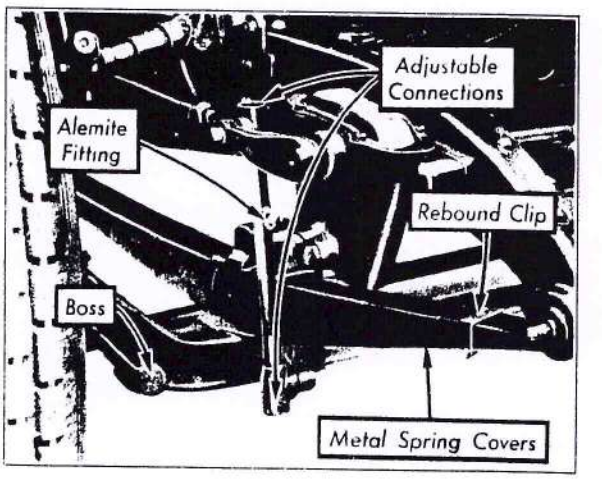

Fig. 18. The 355 shock absorber is attached under the spring clip nuts as shown above. The 345 front axle has the boss drilled for this connection.

The rear springs on the 345 are the same as on the 340, but those on the 355 are different on account of the new frame used on this car. On the Cadillac 355 the rear springs are suspended directly underneath the frame instead of alongside the frame side bars as in former Cadillac practice.

Metal spring covers on the front and rear springs of both models insure permanent lubrication. All the springs are provided with rebound clips, one at each end, to reduce side sway. The rear springs on both cars are underslung as in the past.

Shock Absorbers

The new type of shock absorber link with adjustable connections and an alemite fitting is used on the 355. On this model the front shock absorber links are attached under the spring clips, as on the V-16 and the rear shock absorbers are mounted on the frame side bar in front of the rear axle instead of behind it. On the 345, however, the front and rear shock absorbers are attached as on the 340.

The metering pin and relief valve equipment on both cars is the same and is listed below.

	Metering Pins	Relief Valves
Front		
Snubber	25	E
Bumper	27	G
Rear		
Snubber	28	G
Bumper	32	J

The markings indicating the metering pin and relief valve equipment on the shock absorbers as they leave the factory will be found on the snubber relief valve, as indicated in the accompanying illustration. In explanation of these marks, "1576" denotes the type of shock absorber. The "R" denotes the location on each car as shown in the chart below.

345	355	Location
A	N	R.H. Front
B	P	L.H. Front
K	R	R.H. Rear
J	S	L.H. Rear

The number following this letter indicates the metering pin equipment. The various combinations and the corresponding key numbers are given below.

Key No.	Snubber Pin	Bumper Pin
43	25	27
44	28	32

The last two letters indicate the snubber and relief valves. In each of these instances the snubber designation is given first.

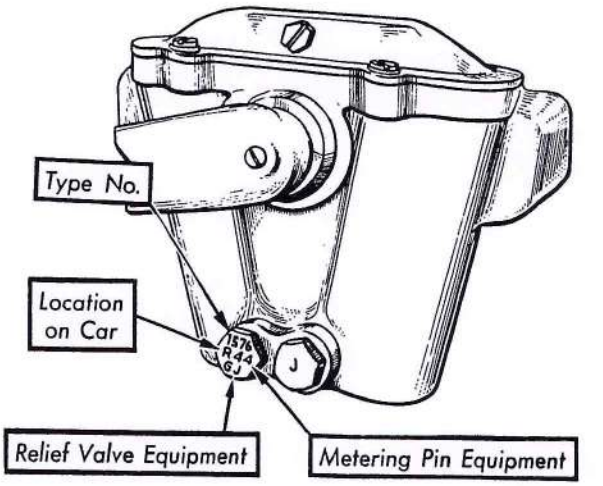

Fig. 19. These markings indicate the metering pin and relief valve equipment when the car was shipped.

On relief valves furnished by the Parts Division, only the marking of that relief valve will be shown. If there is any question about the size of the metering pin or if the original snubber relief valve has been changed, it will be necessary to remove the top cover to determine the metering pin equipment.

Steering Gear

The steering gear on both cars is identical. It is of the hour-glass worm and sector type like that used on the Cadillac V-16.

On the La Salle 345 the gear is mounted the same as on the 340, with the sector shaft horizontal.

On the Cadillac 355, however, the steering gear is mounted with the sector shaft inclined upward at an angle with the side of the frame to provide sufficient clearance and proper alignment of the steering connecting rod with the steering arms.

The gears are the same except for the different method of mounting. These mounting differences are taken care of by the shape of the mounting flanges on the steering gear support.

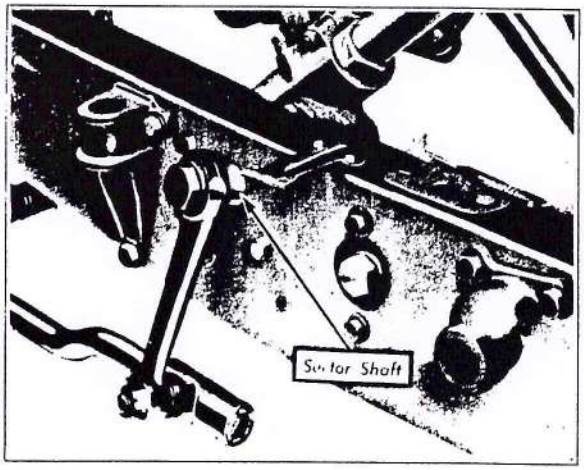

Fig. 20. The 355 steering gear sector shaft is tipped upward at the outer end.

Adjustments

The adjustments of the steering gear are made in the same manner as on the V-16, excepting for the amount of drag on the steering wheel.

A brief description of the construction of the gear will better enable the service man to make these adjustments correctly.

The two parts of the housing are held together by three studs, a pivot bolt and an eccentric bolt. The holes for the three studs are oversize, permitting the small amount of movement necessary to adjust the sector back-lash. The other two adjustments—worm up-and-down play and sector shaft end-play—are similar to the Cadillac 353.

Before making any of these adjustments, **disconnect the steering connecting rod from the steering gear arm.** Then proceed in the following order:

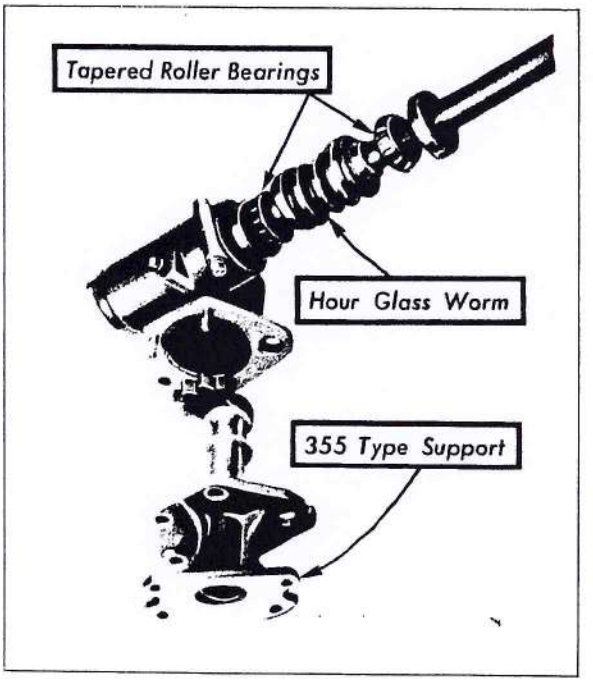

Fig. 21. The steering gear on both cars is the same type as on the V-16, but is not as heavy.

1. With the sector well off the high spot (center position) make sure the sector shaft is free from end-play, but not tight. This rarely requires adjustment after leaving the factory.

2. Turn the steering wheel to the extreme right. Tighten the worm adjusting nut until a pull of one or two pounds at the rim of the steering wheel is necessary to move the wheel toward the left. This pull should be measured with a spring scale attached to the rim of the steering wheel. The spring scale furnished with Tool 119929-T for fitting pistons can be used for this purpose. In making this check, hold the scale as close to the wheel as possible so that the line of pull will be practically tangent to the wheel. After tightening the clamp bolt, re-check the pull with the spring scale.

If the adjustment is too tight, back it off until the wheel spins free and then tighten it again very carefully to secure proper adjustment.

3. Before disturbing the eccentric adjustment, check with the spring scale at the high point of the sector. If the pull at this point is between four and five pounds, then no further adjustment of the gear is necessary.

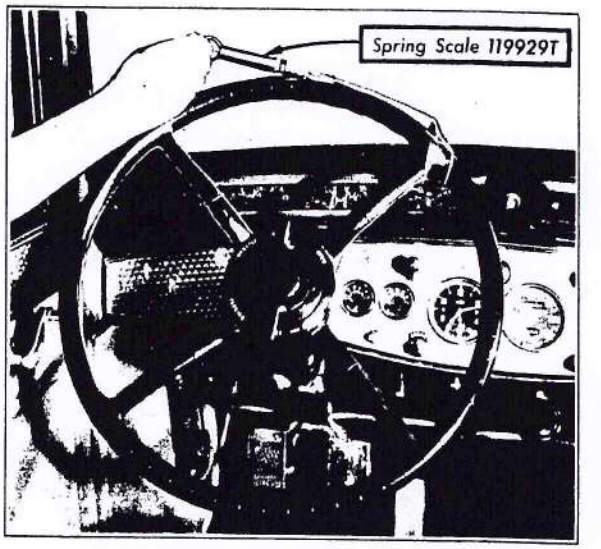

Fig. 22. Check the steering wheel drag carefully. The limits of drag on the new cars are 1 lb. less than on the V-16.

If the pull at the high point of the sector is less than four pounds, the back-lash between the worm and the sector should be reduced. This adjustment is accessible from below after dropping the splash pan.

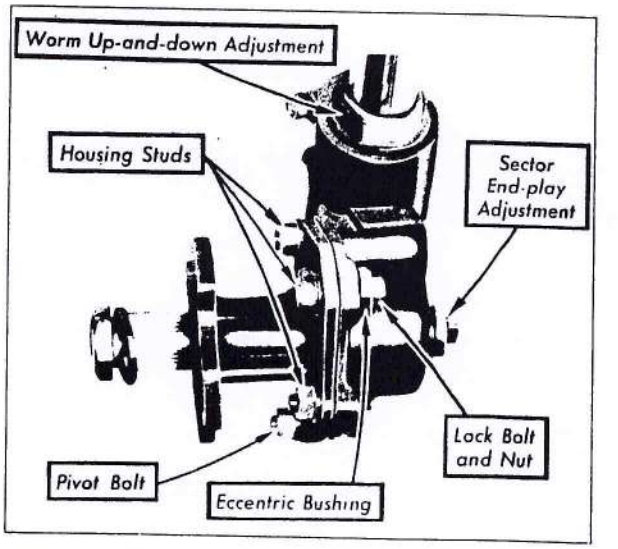

Fig. 23. The adjustments of the steering gear are the same as on the later V-16 type gear.

It is made by means of a split eccentric bushing that is locked by two cones which expand the bushing when drawn together with a bolt and nut.

To make this adjustment, loosen the nuts on the three housing studs not more than one-sixth turn each, and the nut on the bushing clamp bolt one-half turn. **Do not loosen the pivot bolt nut, but make sure that it is drawn up tight.**

As installed at the factory, the eccentric bushing must be turned clockwise (looking from the engine side of the gear) to move the sector toward the worm. The adjustment is correct when a pull of four to five pounds at the rim of the steering wheel is necessary to pull the wheel through the high spot in the center of the sector. In securing this adjustment, always advance the sector toward the worm. If the sector should be moved too far, bring it back and advance it again toward the worm.

Before tightening the nut on the bushing clamp bolt, turn the eccentric back very slightly, not more than one-sixteenth of a turn. After all the stud nuts and lock nuts have been drawn up the adjustment should be carefully checked, to make sure that it remains the same.

The **drag** on the up-and-down adjustment of the worm and the high point of the sector is in each instance about **one pound less than on the Cadillac V-16.** This is on account of the lighter construction of the 345 and 355 gears.

Steering Connecting Rod

It is important on cars using the hour-glass type steering gear to set the high spot of the sector exactly at the straight ahead position. This adjustment must be made accurately as follows:

Find the exact location of the high spot by noting the point at which the spring scale shows the maximum pull. Mark this point by placing tape at the top center of the wheel.

With the front wheels in the straight ahead position, shorten or lengthen the steering connecting rod as necessary so that the steering arm can be installed without moving the steering wheel from the marked position. The standard washers which have been furnished in the steering connecting rod are ⅛ inch thick; one of these washers will make a difference of 3 inches measured at the steering wheel rim. In order to permit a finer adjustment than this, washers 1/16 inch thick have been released and can be procured on order from the Parts Division under part number 885143.

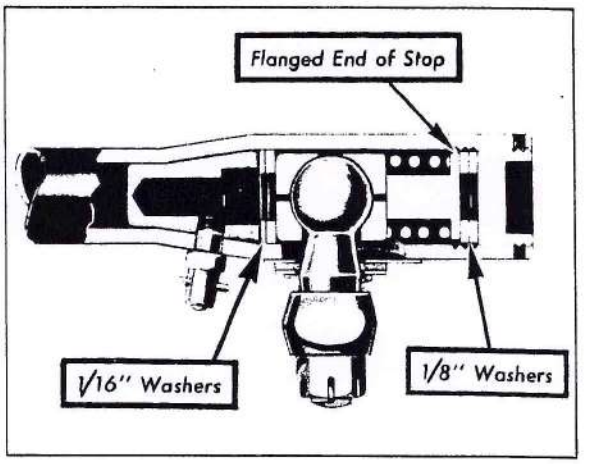

Fig. 24. Be sure to place the washers against the flanged end of the stop as shown when adjusting the length of the steering connecting rod.

It is important when making this adjustment to place the washers in the proper position. The washers should go next to the flanged end of the stop. If they are placed over the small diameter of the stop, they would then have no effect on the length of the rod and would only increase the spring pressure on the seats.

After reconnecting the steering rod, leave the tape on the wheel and road-test the car. With the car moving straight ahead, the tape should not be more than one inch to the right or left of its original position. If necessary, re-arrange the washers in the steering connecting rod.

Transmission

The same transmission is used on both of the new cars. It is the same type as on the Cadillac 353 and is identical with the Cadillac V-16, with the same gear ratios:

High	1 to 1
Intermediate	1.5 to 1
Low	2.5 to 1
Reverse	3.0 to 1

All transmissions shipped by the Parts Division for service on the 345, 355 and V-16 cars will be sent out without the ball-joint socket, and will thus be interchangeable on all of these models.

The removal of the transmission on the Cadillac 355 is like that on the V-16. The transmission is attached to the crankcase in exactly the same manner as on the 353, but the additional support at the rear of the transmission case must also be disconnected before the transmission can be dropped. When reinstalling the transmission, it is a good plan to loosen the front engine support bolts. This permits the rubber cushions to become properly equalized at all five points of

support. After the through bolts at the rear support have been drawn up tight, the front engine supports should be adjusted as directed in the engine section.

The removal of the transmission on the La Salle 345 is identical with that on the 340 and Cadillac 353.

Speedometer Drive

The same type of speedometer drive is used on both models as on the 340 and 353. The pinions differ, however, and the correct speedometer drive pinion for each gear ratio is given below.

Gear Ratio	4.00	4.40	4.50	4.75
Pinion	19	20	21	22

These pinions take care of the 6.50 x 19 as well as the 7.00 x 18 tires, as both of these tires have practically the same overall diameter and rolling radius.

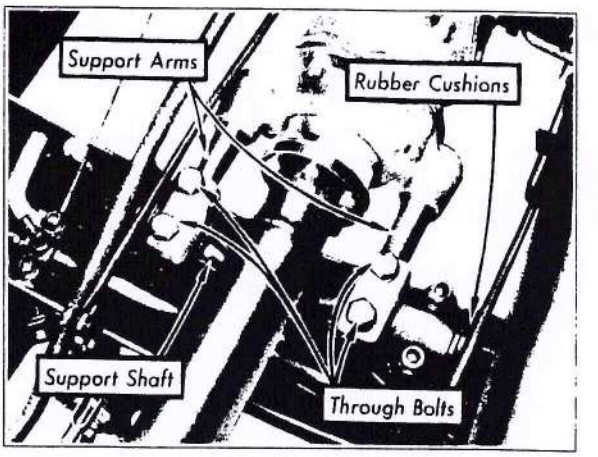

Fig. 25. The 355 rear engine support as seen from underneath. The through bolts at the rear support on the 355 must be removed before the transmission can be dropped.

Wheels

Wood wheels with demountable rims are standard equipment on both of the new cars. Demountable wheels, either wire, disc or demountable wood, are optional equipment at extra charge.

Tire Sizes

All of the new La Salle 345 cars, excepting the 7-passenger models with demountable wheels, are equipped with 6.50 x 19 tires. This includes 7-passenger cars with standard wood wheels. 7-passenger La Salle cars with demountable wheels either wire, disc or demountable wood are equipped with 7.00 x 18 tires.

On the Cadillac 355 all cars with demountable rims are equipped with 6.50 x 19 tires, while all cars with demountable wheels are equipped with 7.00 x 18 tires.

The correct pressure for these tires is 45 pounds for the front and 40 pounds for the rear, the same as the 340 and 353.

100—9-30
PRINTED IN U S A