CADILLAC-LaSALLE SHOP MANUAL

Adjustments, Repairs and Lubrication

Supplement

FOR

Cadillac 353—LaSalle 340

Service Department
CADILLAC MOTOR CAR COMPANY
DETROIT

Foreword

THE following pages contain complete specifications for Cadillac 353 and La Salle 340. They are supplementary to the pages covering the Cadillac 341-A and 341-B and La Salle 303 and 328. and should be inserted at the back of the present Shop Manual. For this reason the page numbering starts at 201 and the plates at 101.

Although the specifications given in these pages are complete, the illustrations are arranged primarily to show assemblies and adjustments that differ from the previous models.

CADILLAC MOTOR CAR COMPANY
Detroit, Michigan

50-FB-1-30
Printed in U. S. A.

Contents

The contents of this supplement are arranged as shown below. Unless otherwise indicated information applies to both Cadillac 353 and La Salle 340.

50—FB—1-30
Printed in U. S. A.

January 1930

CONTENTS

Front Axle

Subject	Cad.	LaS.	Specifications	Remarks
Camber of front wheel (angle with vertical)	353	340	1½°	Plate 101. Fig. 2
Angle between steering knuckle bolt and vertical	353	340	10¼°	
Angle between steering knuckle bolt and wheel spindle	353	340	10 3/4°	
Caster angle	353	.....	2½°	Plate 101. Fig. 3. Use wedges under springs to secure desired caster
	.....	340	1½°	
Angle between spring seat and vertical plane of I-beam	353	340	90°	
I-beam installation (identification mark)	353	340	.....	Unit number on upper front flange at R. H. end
I-beam twist (misalignment between steering knuckle bolts)	353	340	½° allowable variation between ends	
Pivot balls, out of round	353	340	Worn limit, not over .010 in.	
Road clearance under front axle	353	.....	7 15/16"	To be measured with tires inflated to 45 lbs. and no load in car
	.....	340	8 1/16"	
Steering cross-rod ball and socket adjustment	353	340	Automatic adjustment	
Steering cross-rod springs				
Free length	353	340	29/32" approximately	
Compression	353	340	90-110 lbs. compressed to 9/16"	
Steering knuckle bearing adjustment	353	340	Tighten adjusting plug only enough to eliminate play	
Stop-screw adjustment	353	340	½ to ¾" clearance between tire and shock absorbers	
Toe-in of front wheels	353	340	⅛" preferable, ¼" max.	Adjust by turning steering cross rod. See plate 3, Figs. 1, 2, 5, for use of wheel alignment gauges.
Tread—front wheels	353	.....	59"	
	.....	340	57½"	
Unit number location	353	340	Upper front flange at R. H. end	

50—FB—1-30
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FRONT AXLE

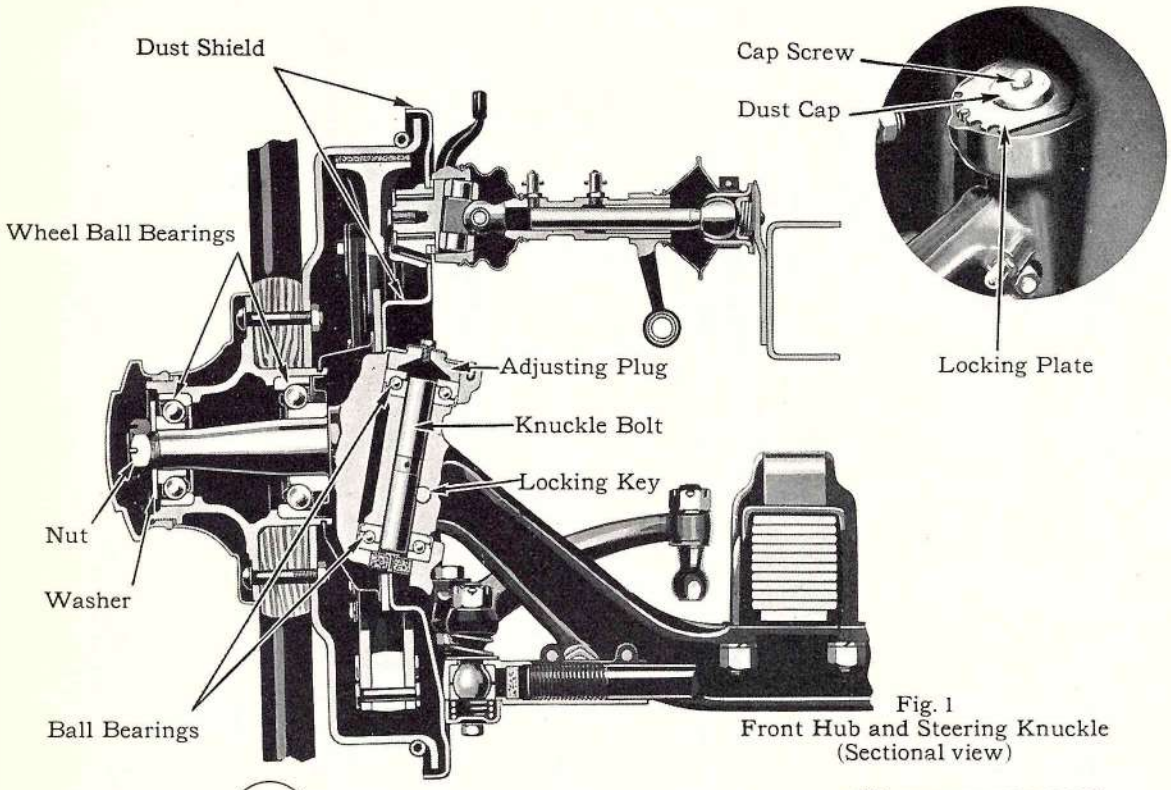

Fig. 1
Front Hub and Steering Knuckle
(Sectional view)

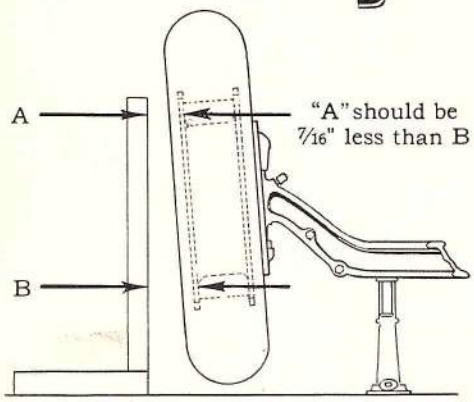

Fig. 2
Front Wheel Camber

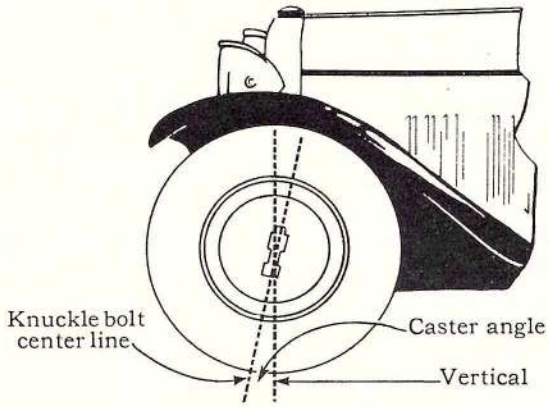

Fig. 3
Front Axle Caster

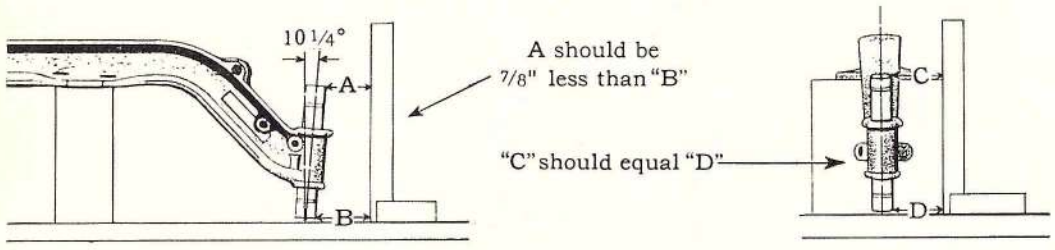

Fig. 4
Axle I-Beam Specifications

Plate 101. Front Axle Details
Cadillac 353—La Salle 340

FRONT AXLE

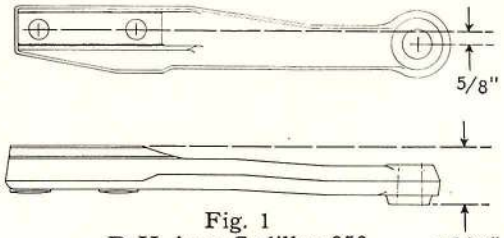

Fig. 1
R. H. Arm, Cadillac 353

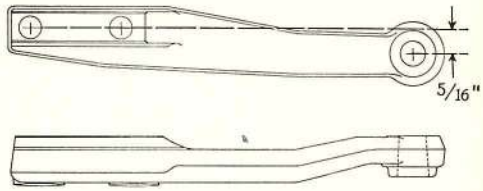

Fig. 2
R. H. Arm, LaSalle 340

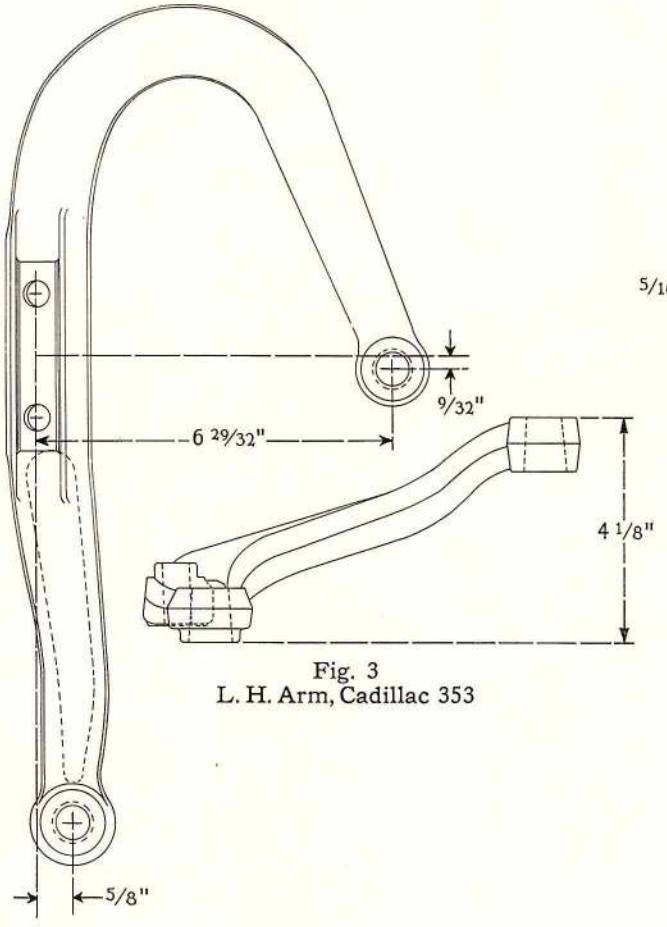

Fig. 3
L. H. Arm, Cadillac 353

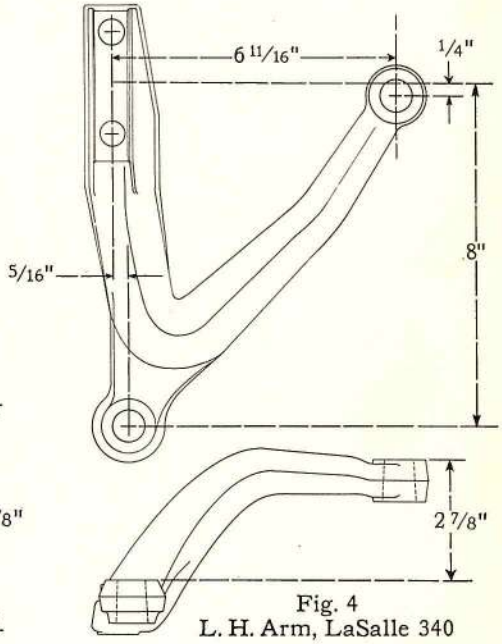

Fig. 4
L. H. Arm, LaSalle 340

Plate 102. Steering Knuckle Arms
Cadillac 353—La Salle 340

50—F B—1-30
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Rear Axle

Subject	Cad.	LaS.	Specifications	Remarks
Axle housing out of true	353	340	Not over $\frac{3}{32}$"	*See Plate 7. Fig. 4*
Axle shaft length	353	340	L. H. $32\frac{15}{32}$"—R. H. $35\frac{5}{16}$"	
Axle shaft out of true	353	340	Not over $\frac{1}{32}$"	Use Ideal Gauge, Tool No. 102789 to check alignment of rear wheels
Differential carrier installation	353	340		See Note No. 1
Drive shaft-clearance between spline and hub of universal joint	353	340	New limits .001"—.005" Worn limit, not over .006"	
Drive shaft length	353	.....	140" wheelbase $62\frac{11}{64}$" 152" wheelbase $74\frac{11}{64}$"	
	.....	340	134" wheelbase $58\frac{1}{8}$"	
Drive shaft out of true	353	340	Not over .010"	
Gear ratios				
High	353	.....	4.39:1	
	.....	340	4.07:1	
Medium	353	.....	4.75:1	
	.....	340	4.54:1	Stamped on top of differential carrier
Low	353	.....	5.08:1	
	.....	340	4.91:1	
Gear adjustment or replacement	353	340		See Note 2
Lubrication	353	340		See lubrication table, page 243
Removal of rear axle and torsion tube assembly	353	340		See Note 3
Road clearance under rear axle	353	.....	$8\frac{3}{8}$"	To be measured with tires inflated to 40 lbs. and no load in car
	.....	340	$7\frac{3}{4}$"	
Tread—rear wheels	353	340	$59\frac{1}{2}$"	
Type of axle	353	340	$\frac{3}{4}$" floating	*See Plate 103. Fig. 2*
Unit number location	353	340	Rear surface of housing—right-hand side	

1. Differential Carrier Installation

All the lubricant has been washed out of the bearings before the differential carrier assemblies are shipped by the Parts Division. It is important therefore to lubricate the front pinion shaft bearings before the assembly is installed, or they are liable to be damaged before the differential lubricant works its way up to them.

Place assembly on end with gears up and pour about a pint of differential grease on the pinion. Leave the assembly in this position until the grease has run down through the back bearing and has thoroughly lubricated the front bearing. The assembly is now ready for installation.

After installation, the differential case should, of course, be filled to the proper level.

2. Gear Adjustment

The pinion and driven gear are properly adjusted at the factory and this adjustment should not be changed. If adjustments or replacements are ever necessary the entire differential carrier assembly should be replaced and the old one together with its original shims, sent to the Factory Parts Division for exchange.

Use Puller (Tool No. 109404-T) when removing propeller shaft from pinion shaft. Do not use a hammer in removing the shaft or the pinion shaft may be damaged. A charge will be made for driven gear and pinion on all differential carrier assemblies returned for exchange with damaged pinion shafts.

3. Removal of Rear Axle

Many of the service operations on the rear axle can be performed to better advantage if the axle and torsion tube assembly is removed. To remove the assembly, take off the spring clips, drop the rear ends of the springs and disconnect the universal joint housing from the transmission case.

50—FB—1-30
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REAR AXLE

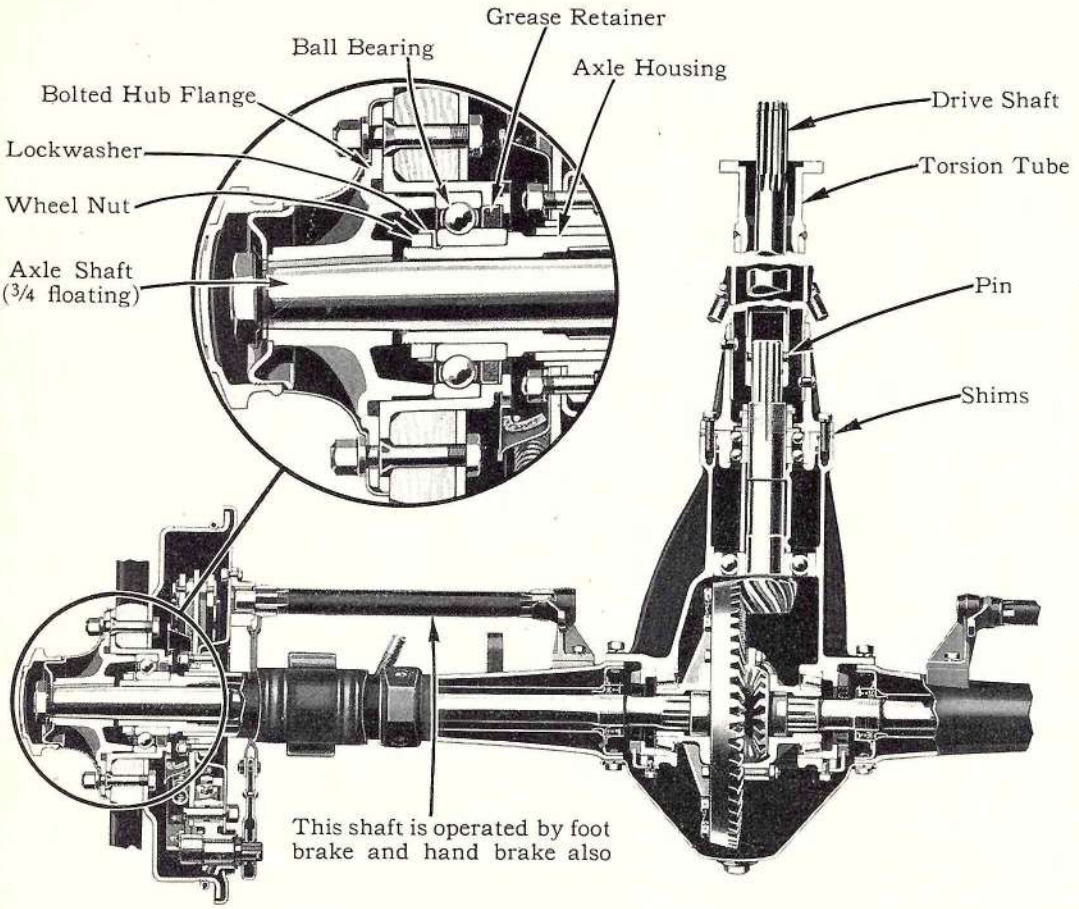

Fig. 1
Rear Axle — Three-quarter Floating Type — Wood Wheels
(Sectional view)

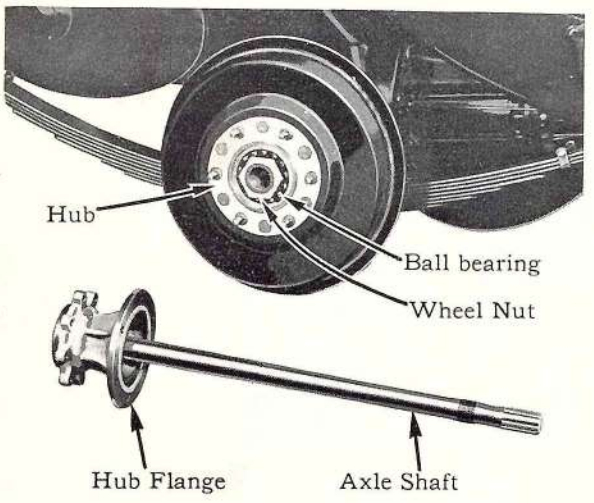

Fig. 2
Axle Shaft, Flange and Hub-Wire Wheel Equipment

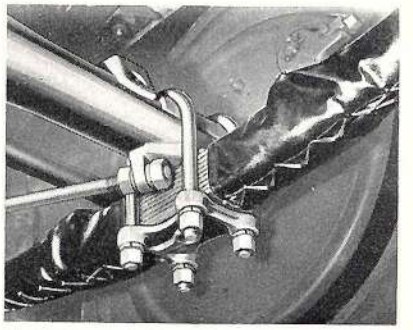

Fig. 3
Underslung rear springs

Plate 103. Rear Axle Details
Cadillac 353—La Salle 340

Brakes

Subject	Cad.	LaS.	Specifications	Remarks
Clearances				
Brake lining and drum	353	340	.007″ approximately	Clearance secured by turning adjusting nut on cam lever. *See Plate 105. Figs. 2, 4, 6*
Pedal and bottom of toe-board	353	340	3/8″ to 5/8″	*See Plate 106 Fig. 4*
Drums—nominal inside diameter	353	.....	16 1/2″ front and rear	
	.....	340	15″ front and rear	
Drums out of round	353	340	Not over .007″	
Drum thickness	353	340	7/32″ approximately	When regrinding. drums should never be ground down more than .040″ under original thickness
Lining				
Braking surface—total	353	.....	214 7/8 sq. in.	
	.....	340	173 3/4 sq. in.	
Length—short shoe	353	.....	7 1/8″	
	.....	340	6 11/32″	
Length—long shoe	353	.....	15 3/16″	When relining long shoes replace lead tips using lining rivets
	.....	340	13 13/16″	
Thickness	353	340	3/16″ (.183″—.198″)	
Width	353	.....	2 1/4″	
	.....	340	2″	
Pull back spring—front and rear brakes				
Free length	353	.....	8 3/16″ inside loops	
Tension	353	.....	80 to 90 lbs. at 9 1/4″ inside loops	
Pull-back spring front and rear brakes				
Free length	.....	340	7 5/16″ inside loops	
Tension	.....	340	60 to 70 lbs. at 7 15/16″ inside loops	

50—FB—1-30
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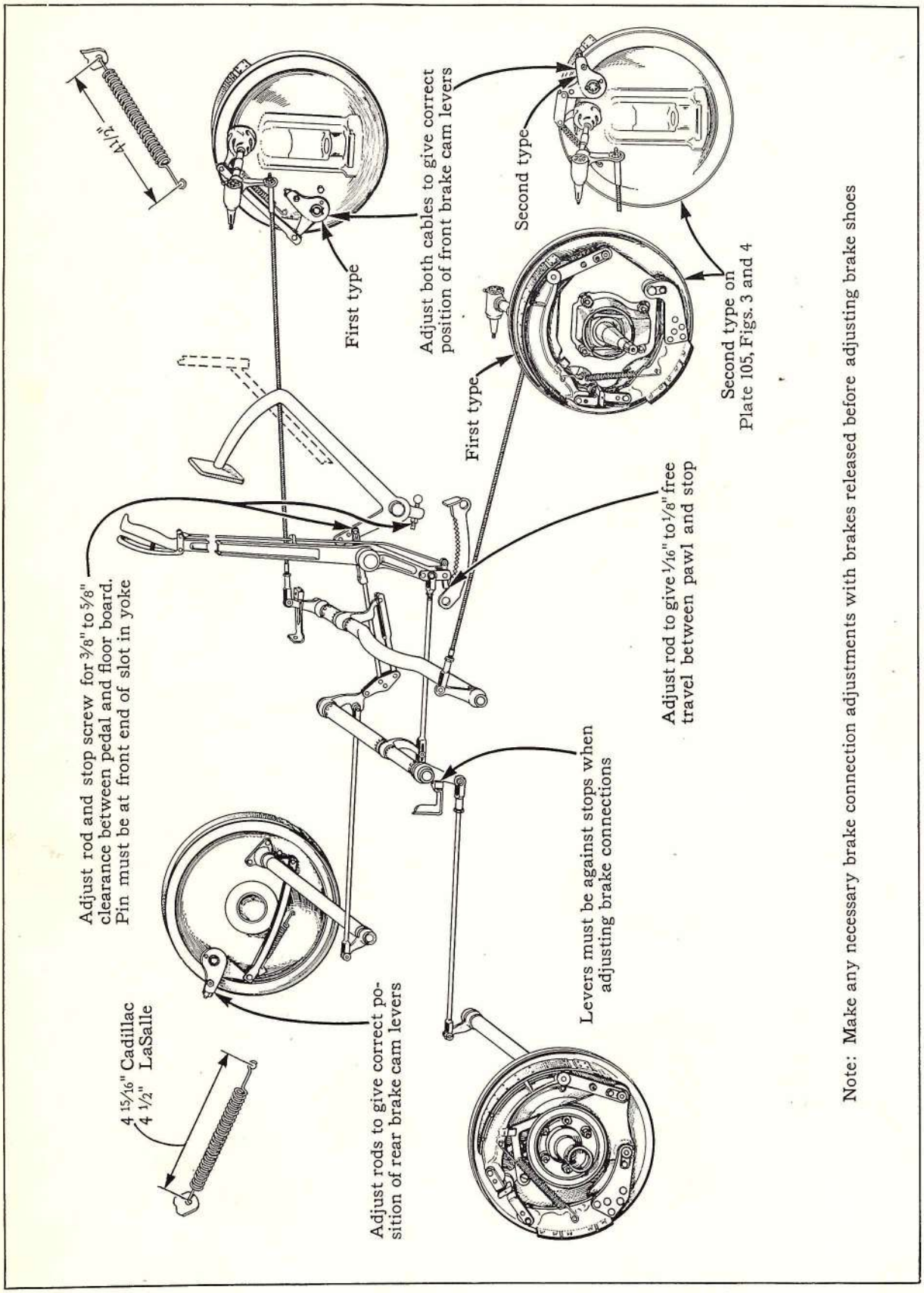

Plate 104. Brake Connections and Adjustments
Cadillac 353—La Salle 340

BRAKES

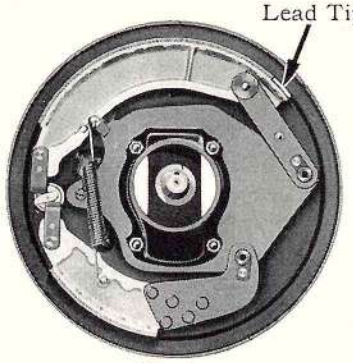

Fig. 1
Front Brake First type

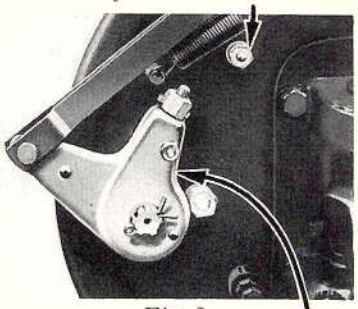

Fig. 2
Front Brake Cam Lever First type

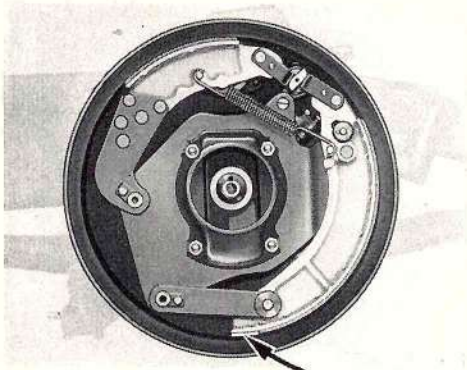

Fig. 3
Front Brake Second type

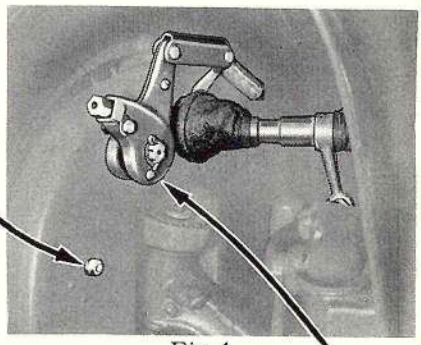

Fig. 4
Front Brake Cam Lever Second type

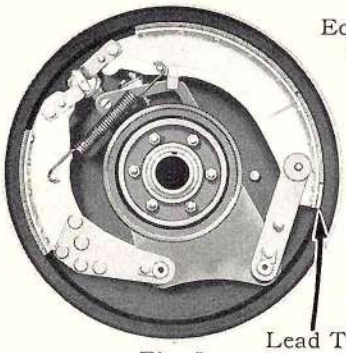

Fig. 5
Rear Brake

Equalize Cam Levers and adjust for pedal travel as before. On 353 chassis before 5-5085 and 340 before 6-8446 back off L. H. front and rear Cam Adjusting Nut one-half turn

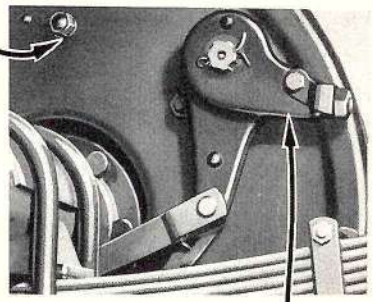

Fig. 6
Rear Brake Cam Lever

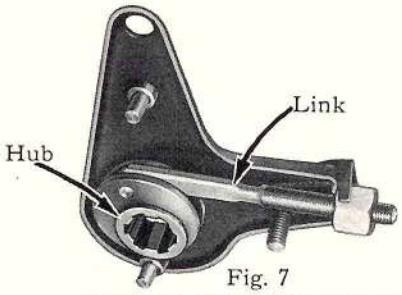

Fig. 7
Sectional view of Cam Lever

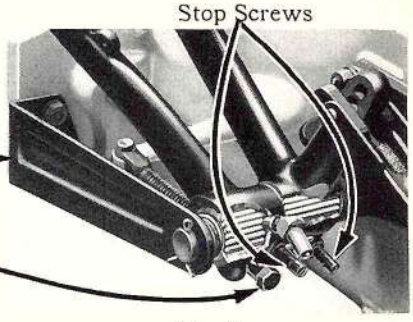

Fig. 8
The Pedals are carried on roller bearings

Plate 105. Brake Details
Cadillac 353—La Salle 340

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Clutch

Subject	Cad.	LaS.	Specifications	Remarks
Clearances				
Driving plates and driving pins..	353	340	New limits—.002″ to .0045″ Worn limit, not over .008″	
Hub and splines on clutch connection shaft.....	353	340	New limits—.0005″ to .002″ Worn limit, not over .005″	
Release bearing sleeve and transmission bearing cap.....	353	340	New limits—.001″ to .005″ Worn limit, not over .006″	
Pedal and bottom of toe-board....	353	340	3/8″ to 5/8″.....	*Plate 106. Fig. 4.*
Clutch pedal free movement.....	353	340	.....	See Note 1
Disc facings				
Diameter inside.....	353	340	7″	
Diameter outside.....	353	340	10″	
Thickness.....	353	340	.135 to .145″	
Disc thickness over all (including facings).....	353	340	New limits—.335″ to .360″ Worn limit, not under 7/32″ (.219″).	See Note 2
Limit of wear.....	353	340	.....	*Plate 106. Fig. 2.* See Note 3.
Removal of clutch.....	353	340	.....	See Note 4

1. Clutch Pedal Free Movement

Clutch pedal free movement measured at the pedal should be 1 1/8″ to 1 1/4″ for first 3000 miles and 1″ to 1 1/8″ thereafter. The initial adjustment for new discs is the same as for the first 3000 miles.

2. Clutch Disc Facings

Never install new facings on discs. Replace complete driven disc assemblies to insure correct overall thickness at all points.

3. Limit of Clutch Wear

If it should be necessary to remove the transmission the clutch wear should be checked and new discs installed if advisable, before reinstalling the transmission.

Clutch discs do not need replacing if clutch fingers are 1″ or more below surface of pressure plate as indicated in Fig. 2. Plate 106. The clutch wear may also be checked by noting the amount of clearance remaining between the rear driving plate and the shoulder on the pressure plate assembly stud. With new discs the clearance at this point should be 1/4″. Discs should be replaced if it is ever found that there is not at least 1/16″ clearance remaining.

4. Removal of Clutch

The clutch can be taken out after removing the 4 nuts indicated in Fig. 3. Plate 106.

50—FB—1-30
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CLUTCH

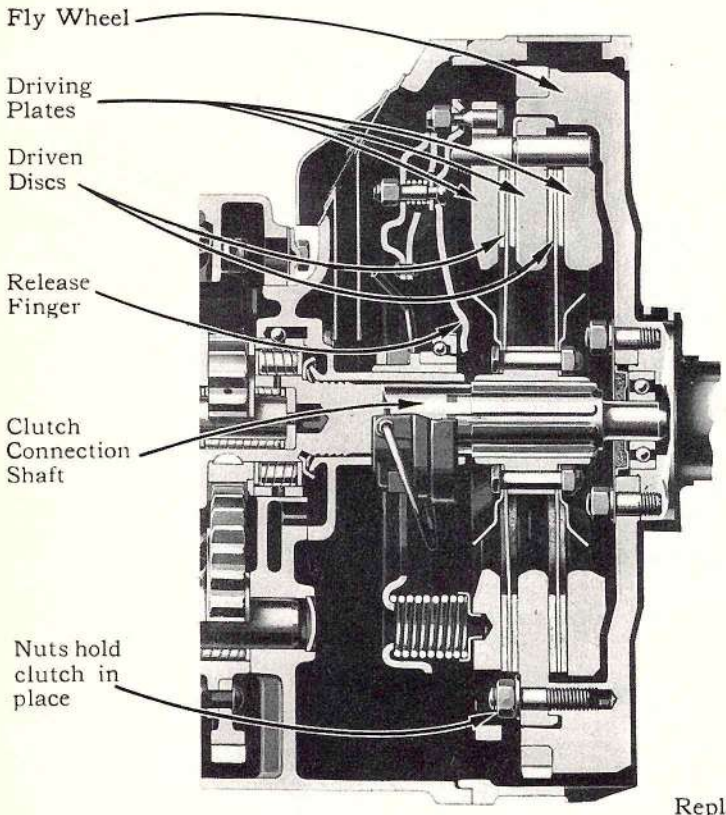

Fig. 1
Clutch and Engine Fly-wheel
(Sectional view)

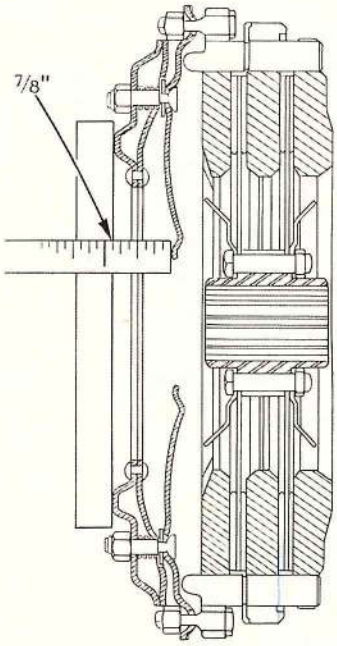

Fig. 2
Replace discs if distance between release finger and pressure plate is 7/8" or less

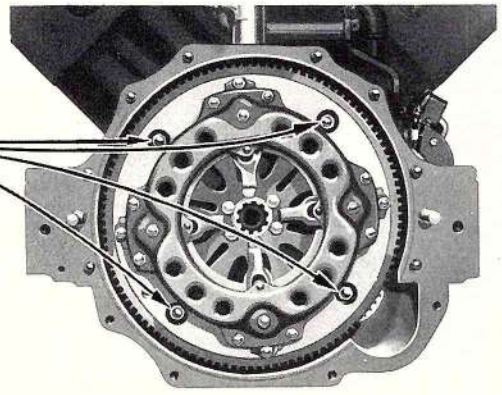

Fig. 3
The clutch is held in place by four nuts

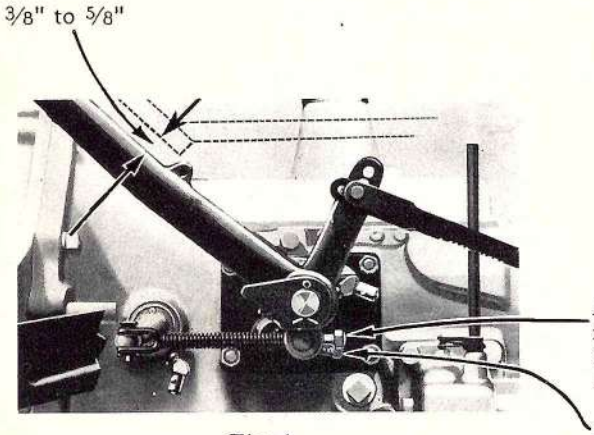

Fig. 4
Adjust stop screw to give 3/8" to 5/8" clearance between pedal and toe board

Plate 106. Clutch Details
Cadillac 353—La Salle 340

Cooling System

Subject	Cad.	LaS.	Specifications			Remarks
FAN						
Belt	353	340	Part No. 872220			
Adjustment	353	340				See Note No. 1
Tension	353	340	Slack 5/8"			*Plate 22. Fig. 3.*
Diameter of fan	353	.....	21"			
	.....	340	20"			
Identification marks	353	.....	Recessed hub			
	.....	340	No hub			
Lubrication	353	340				Force feed from crankcase. *Plate 107 Fig. 1A.*
HOSE CONNECTIONS						
			Length		Inside Dia.	
Cylinder to radiator (top)	353	.....	12 5/16"		1 1/4"	
	.....	340	11 1/4"		1 1/4"	
Cylinder to elbow	353	340	2 1/4"		1 1/4"	
Elbow to pump	353	340	16 5/8"		1 5/8"	
Pump to radiator	353	340	11"		1 7/8"	
RADIATOR						
Anti-freeze solution			Qts.	Sp. Gr. at 60° F.	% by Vol.	
Alcohol required for 10°F.	353	340	7 1/4	.9668	30	
– 0°F.	353	340	9	.9567	38	This table is based on use of 180 proof alcohol
–10°F.	353	340	10 3/4	.9485	45	
–20°F.	353	340	12 1/4	.9350	51	
–30°F.	353	340	13 3/4	.9260	57	
Capacity of cooling system	353	340	6 gals.			See Note No. 2
Flushing cooling system	353	340				See Note No. 3
Thermostatic shutter control						
Shutters start to open	353	340	155° to 165° F.			See Note No. 4
Shutters full open	353	340	180° F.			
Shutters start to close	353	340	165° to 175° F.			
Shutter rod adjustment	353	340	Adjustable rod 1/8" long			See Note No. 5. *Plate 23. Fig. 4.*
WATER PUMP						
Clearance between impeller and pump body	353	340	New limits—.055" to .065" Worn limit, not over .075"			
Clearance between drive sprocket and support	353	340	New limits—.003" to .005" Worn limit, not over .010"			
Clearance between pump shaft and bushings	353	340	New limits—.001" to .003" Worn limit, not over .005"			

50—FB—1-30
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COOLING SYSTEM

1. Fan Belt Adjustment

To adjust fan belt, loosen clamping nut on bracket and raise or lower fan support until correct tension is secured. After tightening clamping nut check belt tension again to see that adjustment has not changed during tightening operation.

2. Radiator Filling Level

The recommended level to which the radiator should be filled is half way to the top of the upper tank. It is especially important not to fill the radiator too full in the winter because expansion will cause a loss of anti-freeze solution through the overflow.

3. Flushing Cooling System

The cooling system should be flushed out about every 4000 miles to prevent the excessive accumulation of sediment and scale.

Disconnect lower hose from radiator and attach flushing hose to radiator outlet. The water pressure for this flushing operation should not exceed 20 to 25 pounds or the radiator may be damaged. The flushing should be continued until water runs clean from the **lower** hose connection.

4. Test for Radiator Thermostat

To test the thermostat, immerse it in water of the correct temperature. The plunger should start to move at not less than 150° and should finish its stroke ($\frac{13}{32}$″) at not over 175°.

5. Shutter Rod Adjustment

The shutter operating rod should be adjusted so that the center of the hole in the adjustable end is about $\frac{1}{8}$″ beyond the center of the holes in the operating arms when the rod is detached. Plate 24. Fig. 4.

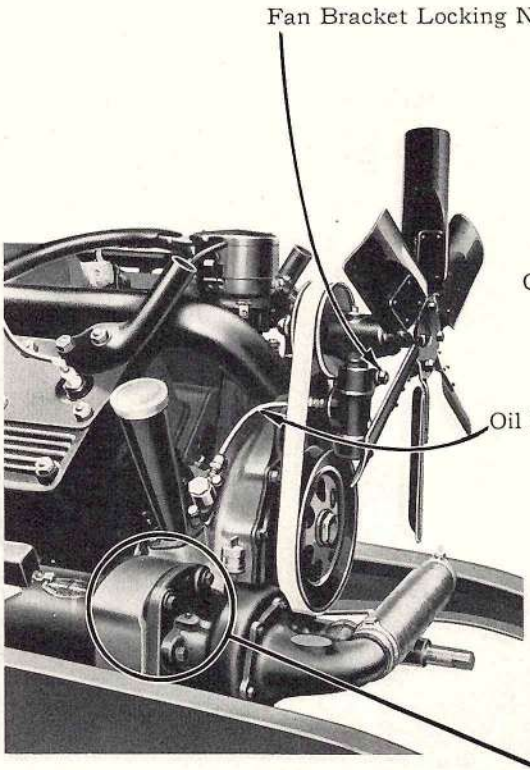

Fig. 1
Front End of Engine — LaSalle 340
Cadillac 353 is similar except:
Fan and Spark Plug Covers

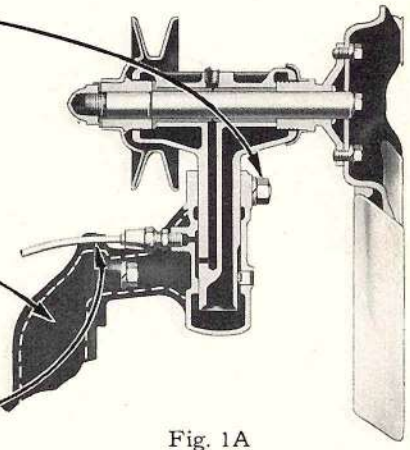

Fig. 1A
Sectional View of Fan Mounting — Cadillac 353
LaSalle 340 is similar except: Fan Assembly

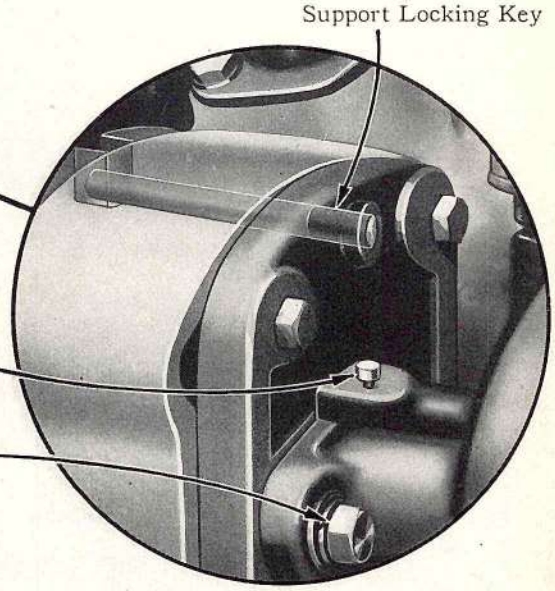

Fig. 1B
Water Pump Mounting

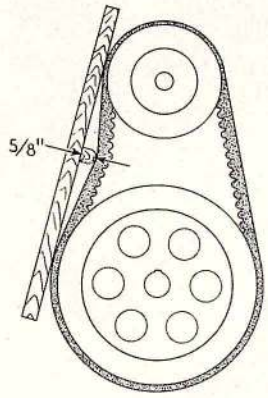

Fig. 2
Fan Belt Tension

Plate 107. Fan and Water Pump Details
Cadillac 353—La Salle 340

Electrical System

Subject	Cad.	LaS.	Specifications	Remarks
BATTERY	353	.....	Exide type—3 L X R V—15—20	
	.....	340	Exide type—3 M X V—15—1	
Capacity				
Rated capacity	353	.....	130 ampere hours	
	.....	340	100 ampere hours	
Lighting	353	.....	5 amperes for 26 hours	
	.....	340	5 amperes for 20 hours	
Starting	353	.....	137 amperes for 20 minutes	
	.....	340	114 amperes for 20 minutes	
Charging rate on bench—start	353	340	10 amps.	
Charging rate on bench—finish	353	340	4 amps.	
Corrosion at terminals	353	340	.....	See Note No. 1
Dimensions	353	.....	$20\frac{7}{16}$" x $5\frac{1}{2}$" x $8\frac{11}{16}$" high overall	
	.....	340	$10\frac{3}{16}$" x $7\frac{1}{8}$" x $9\frac{11}{32}$" high overall	
Ground connection	353	340	Positive battery post	
Plates—number of	353	340	15	
Testing—electrolyte	353	340	.....	See Note No. 2
Testing—voltage	353	340	.....	See Note No. 3
Voltage—rated	353	340	6 volts	
Water—addition of	353	340	.....	See Note No. 4
CIRCUIT BREAKER	353	340	Delco-Remy 5759	
Operation				
Lockout opens	353	340	25-30 amperes	
Vibrator starts	353	340	25-30 amperes	
CUT-OUT RELAY	353	340	Delco-Remy 2663	
Air-gap—between armature and core. (Contacts held closed)	353	340	.014"—.021"	Hold contacts together lightly while measuring air-gap.
Contact gap	353	340	.015"—.025"	
Operation				
Contacts close	353	340	Approximately 7.5 volts	420 R. P. M. armature speed. 8-10 M. P. H. car speed.
Contacts open	353	340	0—2.5 amperes discharge	See Note No. 5
GENERATOR	353	340	Delco-Remy 927-D	
Armature				
Commutator out of round	353	340	Not over .002"	
End play of shaft	353	340	Not over .005"	
Side play in bearings	353	340	Not over .004"	
Brushes				
Limit of wear	353	340	.....	See Note No. 6. *See Plate 108. Fig. 5.*
Spring tension	353	340	16-20 oz.	*See Plate 108. Fig. 4.* Also see Note No. 7.

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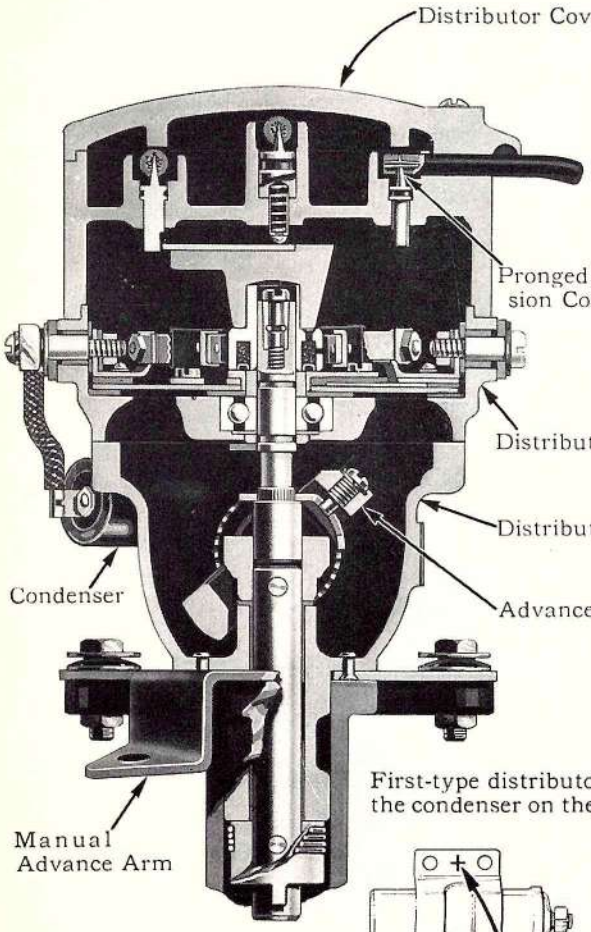

Fig. 1
Sectional View of Timer Distributor
For both internal and external condenser replacement use latest external type only, identified by "+" as shown

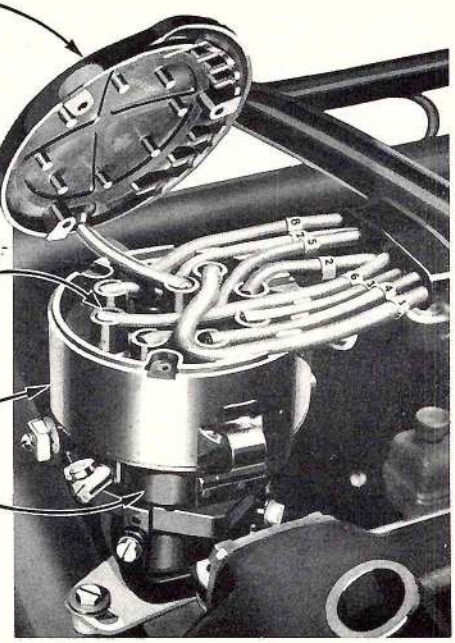

Fig. 2
High Tension Connections at Timer Distributor

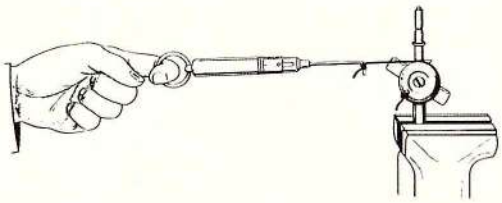

Fig. 3
Testing Automatic Advance Weight Spring

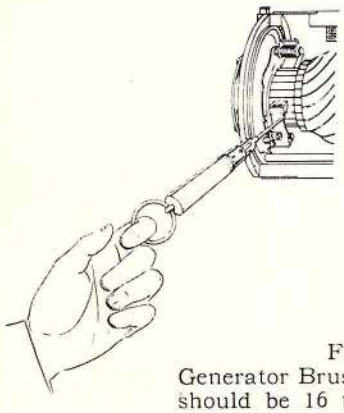

Fig. 4
Generator Brush Spring tension should be 16 to 20 oz. just as brush is lifted off commutator

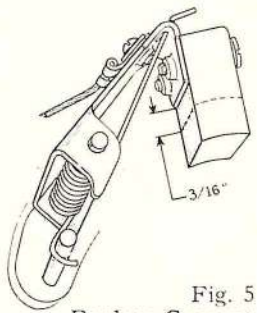

Fig. 5
Replace Generator Brushes before they are worn down to 3/16" from brush arm

Plate 108. Ignition and Generator Details
Cadillac 353—La Salle 340

ELECTRICAL SYSTEM

Subject	Cad.	LaS.	Specifications	Remarks
Charging rate on bench				
700 R. P. M.—cold	353	340	7 amps. at 7.2 to 7.4 volts	
1400 R. P. M.—cold	353	340	18 amps. at 8.2 to 8.6 volts	
1600 R. P. M.—hot	353	340	10-12 amps. at 7.3 to 7.7 volts	See Note No. 8
Charging rate on car	353	340	Maximum 15-20 amps.—cold	See Note No. 8
Current regulation	353	340	3rd brush—thermostat	*Plate 24. Fig. 4.* See Note No. 10
Open circuit operation	353	340		See Note No. 11
Starts to charge (cut-out contacts close)	353	340	420 R. P. M. armature speed 7.5 volts	
Stops charging (cut-out contacts open)	353	340	0—2.5 amps. discharge	See Note No. 5
Thermostatic control	353	340	Resistance in series with field coils	See Note No. 8. Page 52.
Contacts open	353	340	175°F generator temperature	
Voltage (rated)	353	340	6 volts	
HORN	353	340	Delco-Remy K 19-B type 1100	
Adjustments				
Air-gap (between armature and field core)	353	340	.025	*Plate 25. Fig. 2.*
Contact gap	353	340	To secure desired tone	*Plate 25. Fig. 2.*
Current consumption	353	340	7-8 amperes	
Position of vibrating spring	353	340	Slightly below horizontal	*Plate 25. Fig. 2.*
IGNITION				
Coil	353	340	Delco-Remy type 530-B	
Current consumption	353	340	2 amperes stalled 2.5 amperes running	
Condenser	353	340		See Note No. 9
Distributor	353	340	Delco-Remy type 4055	
Angle between contact arms	353	340	30°	See Note No. 10, page 52
Contact gap	353	340	.018"—.022"	
Firing order	353	340	1L-4R-4L-2L-3R-3L-2R-1R	
Side play—timer shaft ball bearing	353	340	Worn limit, not over .003"	
Spark advance—automatic	353	340	28° on flywheel	
Spark advance—manual	353	340	39° on flywheel	
Tension of contact arm springs	353	340	16-20 oz	Measure with spring scale tool No. 100242. *Plate 27. Fig. 1.*
Tension of spark advance weight spring	353	340		See Note No. 15
Timing	353	340	Full manual advance 2¼" (7° 20') before center	See Note No. 12
SPARK PLUGS	353	340	A.C. type G-10	See Note No. 13
Spark point gap	353	340	.025"—.028"	
Thread	353	340	Metric	

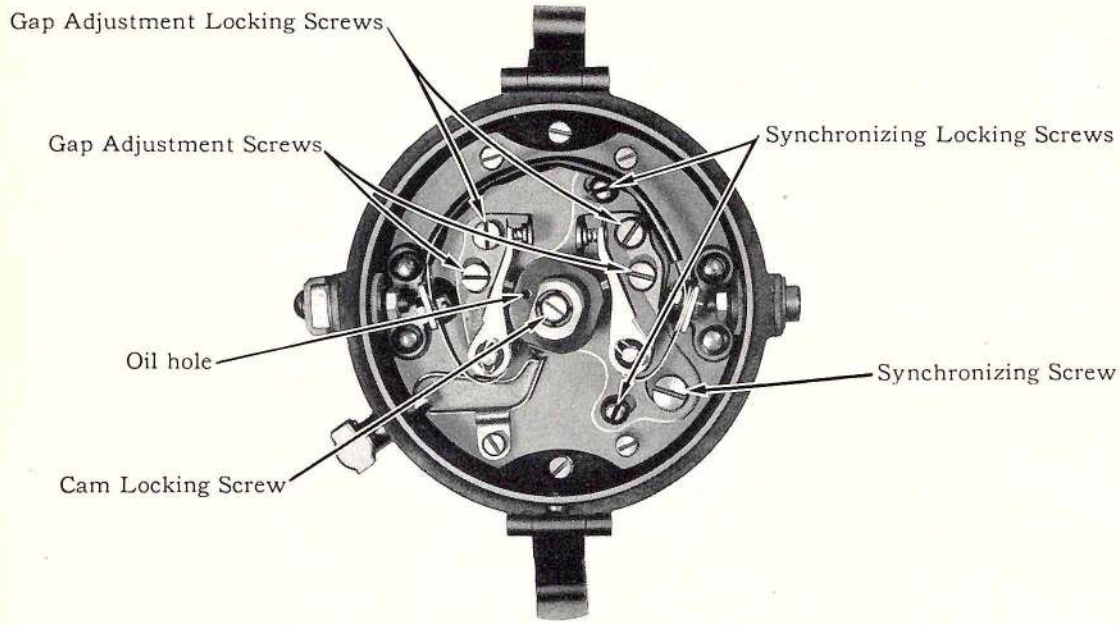

Fig. 1
Timer Distributor Adjustments

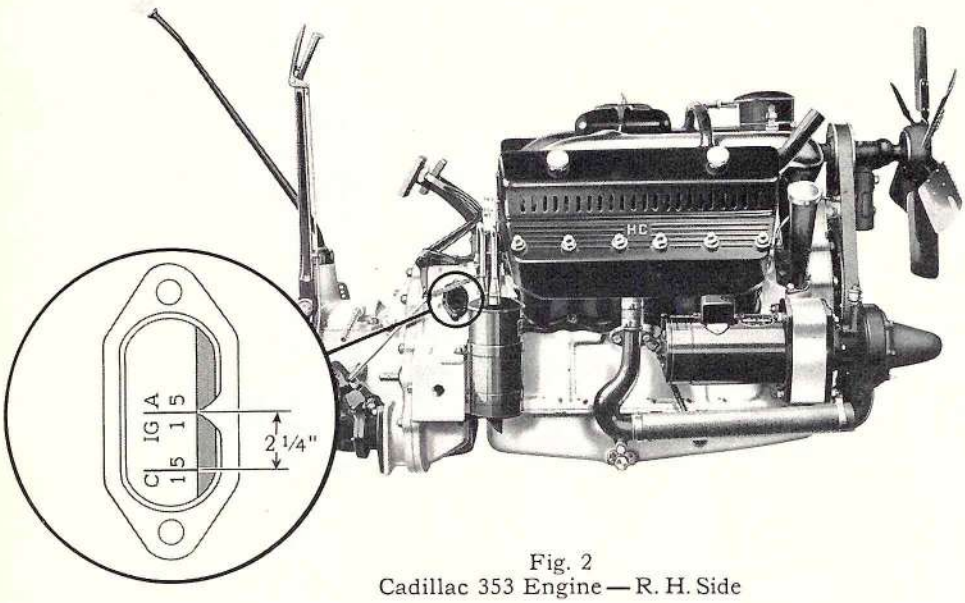

Fig. 2
Cadillac 353 Engine — R. H. Side

Plate 109—Ignition Timing
Cadillac 353—La Salle 340

ELECTRICAL SYSTEM

Subject	Cad.	LaS.	Specifications	Remarks
STARTING MOTOR	353	340	Delco-Remy type 728-D	
Armature				
Clearance between shaft and bearings	353	340	Worn limit, not over .010″	
Commutator out of round	353	340	Worn limit, not over .002″	
End play—armature shaft	353	340	Worn limit, not over .025″	
Brushes	353	340	4	
Tension of brush springs	353	340	24-28 oz.	Test with spring scale, tool No. 100242
Clutch spring (on splined shaft)				
Free length	353	340	2¼″ approx.	
Compression	353	340	46 to 52 lbs. at 1″	
Gear ratios	353	340		*Plate 110. Fig. 1.*
Armature shaft pinion	353	340	14 teeth	
Driven gear on sliding gear shaft	353	340	29 teeth	
Fly wheel gear	353	340	113 teeth	
Sliding gear	353	340	9 teeth	
Total external reduction	353	340	1 to 12 5/9 actual	Ratio between sliding gear and flywheel
Total internal reduction	353	340	1 to 2 1/14 actual	Ratio between armature shaft and sliding gear shaft
Total overall gear reduction	353	340	1 to 26 approximately	Ratio between armature shaft and fly wheel
Number of poles	353	340	4	
TELEPHONE	353	340	Stentor	See Note No. 14

1. Battery Terminal Corrosion

Warm water, poured slowly over corroded battery terminals, will dissolve the copper sulphate that has been deposited there so that it can be brushed off and flushed away easily. This method prevents the danger of neutralizing the battery electrolyte through the use of ammonia or other alkaline solutions.

Apply a heavy coating of vaseline to the terminals after they have been cleaned, to retard further corrosion.

2. Battery Electrolyte Tests

The Electrolyte (Battery solution) should be tested with a hydrometer. The specific gravity as registered by the hydrometer should be 1.270 to 1.290 at 60°F if the Battery is fully charged. A gravity reading of 1.150 or below indicates that the Battery is entirely discharged and it should be removed from the car and recharged.

Whenever a reading under 1.250 is due to a temporary abnormal demand for current through excessive use of lights or starter, the charging rate should be sufficient to bring the Battery up to a fully charged condition again. On the other hand, if the current requirements have been normal and it appears that the charging rate is not high enough to meet the requirements of the electrical system, the generator should be adjusted for a slightly higher charging rate.

If the electrolyte tests below 1.225 the battery should be recharged from an outside source.

3. Battery Voltage Tests

Battery voltage tests must be made with proper instruments to be of any value. Ordinarily, tests of this nature should be made by an experienced battery man.

4. Adding Water to Storage Battery

The correct level for the battery electrolyte is just below the bottom of the filler tubes. If the liquid comes above the bottom of the tubes it may be forced up and overflow because of pressure generated within the battery by its "gassing."

Inspect the battery every 1000 miles during the winter and every 500 miles (or every two weeks) during the summer, to make sure the electrolyte is up to the proper level. Only distilled water or fresh rain water kept in a glass, rubber or porcelain lined container, should be used to replace liquid lost due to evaporation.

If electrolyte has been lost through overflow or spilling, it should be replaced by a competent battery repair man.

5. Discharge Current at Cut-out Opening

When the cut-out contacts are properly adjusted, the ammeter should show a discharge of not more than 2½ amperes when the cut-out contacts open, provided all the car lights are turned off.

6. Limit of Brush Wear

Generator brushes should be replaced before they become worn down to within $\frac{3}{16}$″ of brush arm.

7. Checking Brush Spring Tension

Attach spring scale to brush arm as shown in Fig. 4, Plate 108. Scale should register 16-20 oz. just as brush is lifted away from commutator.

8. Charging Rate

The charging rate on the car should be checked when the generator is cold and with only the ignition switch turned on. Run the engine at the speed where the maximum charging rate is shown—corresponding to about 25 to 30 miles per hour. The ammeter should register not less than 15 amps nor more than 20 amps. If the cold reading is within these limits the hot reading will take care of itself and will be automatically reduced after a long enough period of operation.

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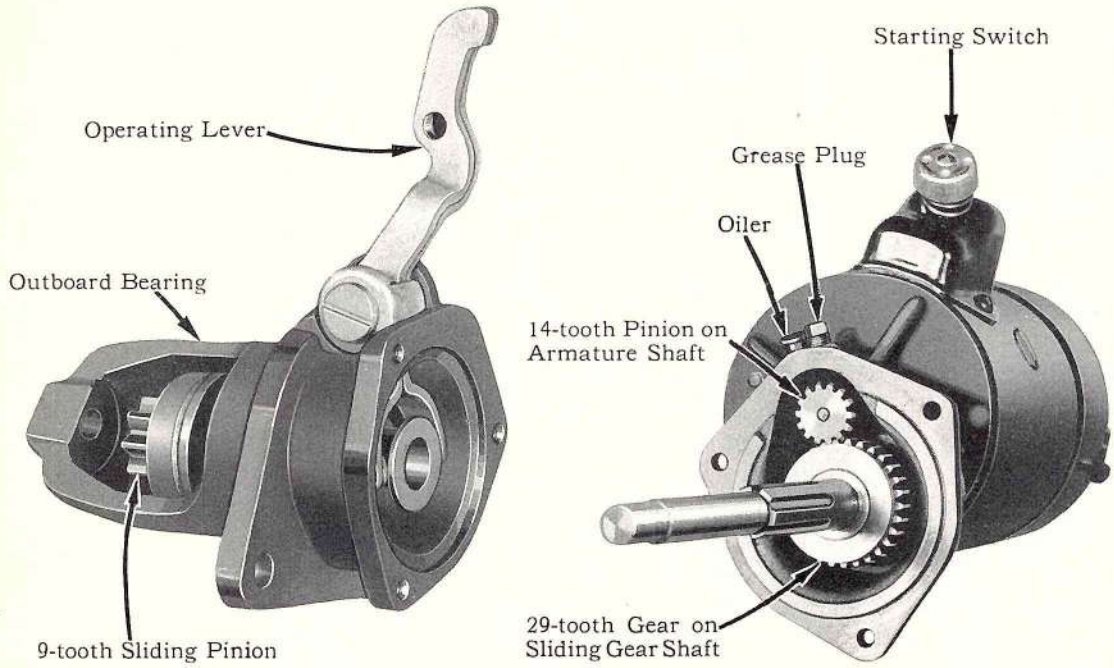

Fig. 1
The Starting Motor has a 2 to 1 internal gear reduction

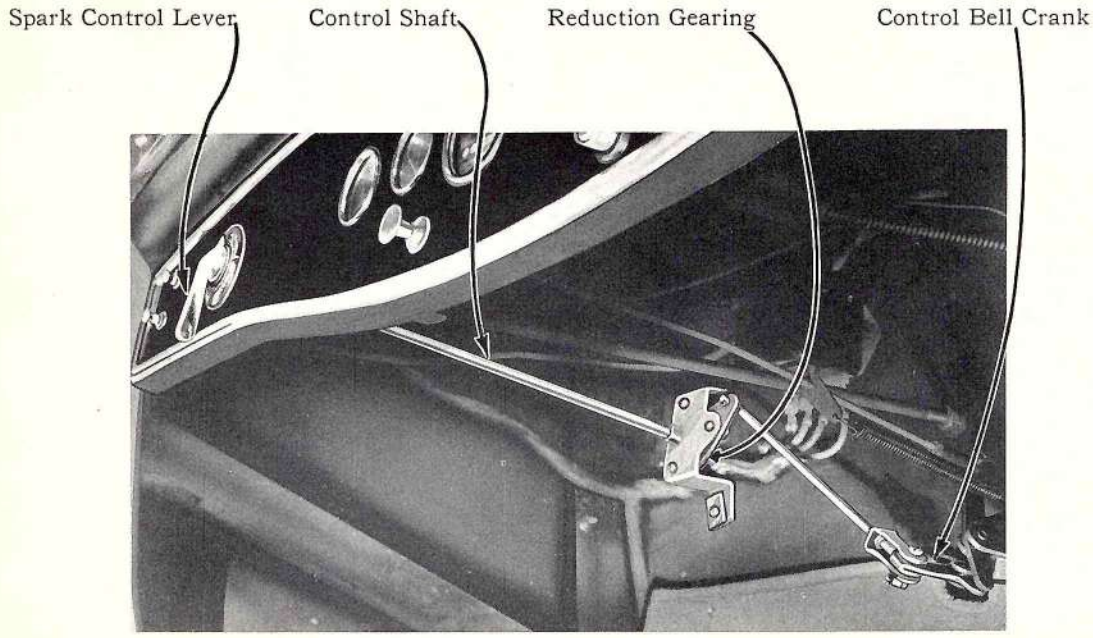

Fig. 2
The manual spark control lever on the instrument panel operates through reduction gears and a bell-crank on the dash

Plate 110. Starting Motor and Spark Control
Cadillac 353—La Salle 340

9. Condenser Replacement

When replacement of inside (first) type condenser is necessary, take out dummy screws on outside of distributor body and install latest type outside mounted condenser identified by + stamped on mounting pad.

10. Third Brush Regulation

The Generator starts to charge at an armature speed of 420 R. P. M. and delivers its maximum output at about 1400 R. P. M. At speeds beyond the maximum output range the generator output will be gradually reduced by the regulating action of the third brush. This prevents the battery from be coming heavily overcharged as a result of prolonged high speed operation.

In addition to this inherent 3rd brush current regulation an automatic thermostat within the Generator shunts the field current through a resistance unit as soon as the Generator temperature rises to 175° thus affecting a further current reduction. See Page 52, Note 8.

11. Open Circuit Operation

If it should ever be necessary to operate the engine without the battery connected in the circuit the Generator must be grounded first or it will be damaged. One end of the grounding wire should be connected to the front binding post on the cut-out and the other end connected to ground under one of the cut-out mounting screws.

12. Ignition Timing

When checking or resetting the ignition timing the spark control lever on the instrument panel should be turned to full advance or as far as possible in a counter-clockwise direction and the marks IG/A on the fly wheel in line with the indicating point on the fly wheel housing. (See Plate 109. Fig. 2.) Check cam setting at IG/A—1/5 with No. 1 piston at firing point and synchronize movable contacts at IG/A—2/6 with No. 2 piston at firing point.

13. Duco on Spark Plugs

Any duco on the spark plugs (especially on new cars) should be removed with thinner or alcohol.

14. Stentor Phone Replacement

The stentor phone units in Fleetwood Imperial and Town cars are installed in matched pairs. If it is ever necessary to replace either unit they should both be removed and a new matched pair installed in their places.

In the event of weak signals with pairs known to be properly matched, check carefully for loose connections and possible shorts or grounds in the wiring caused by staples or tacks.

15. Testing Automatic Spark Advance Spring

Attach a small flexible wire to drum covering advance weight spring and with spring scale (Tool No. 100242) check up on tension of advance spring. Scale should register approximately 4½ pounds just as advance pin reaches bottom of slot in advance plate. Necessary adjustments can be made by loosening the screw in the drum and turning the drum to secure the desired tension.

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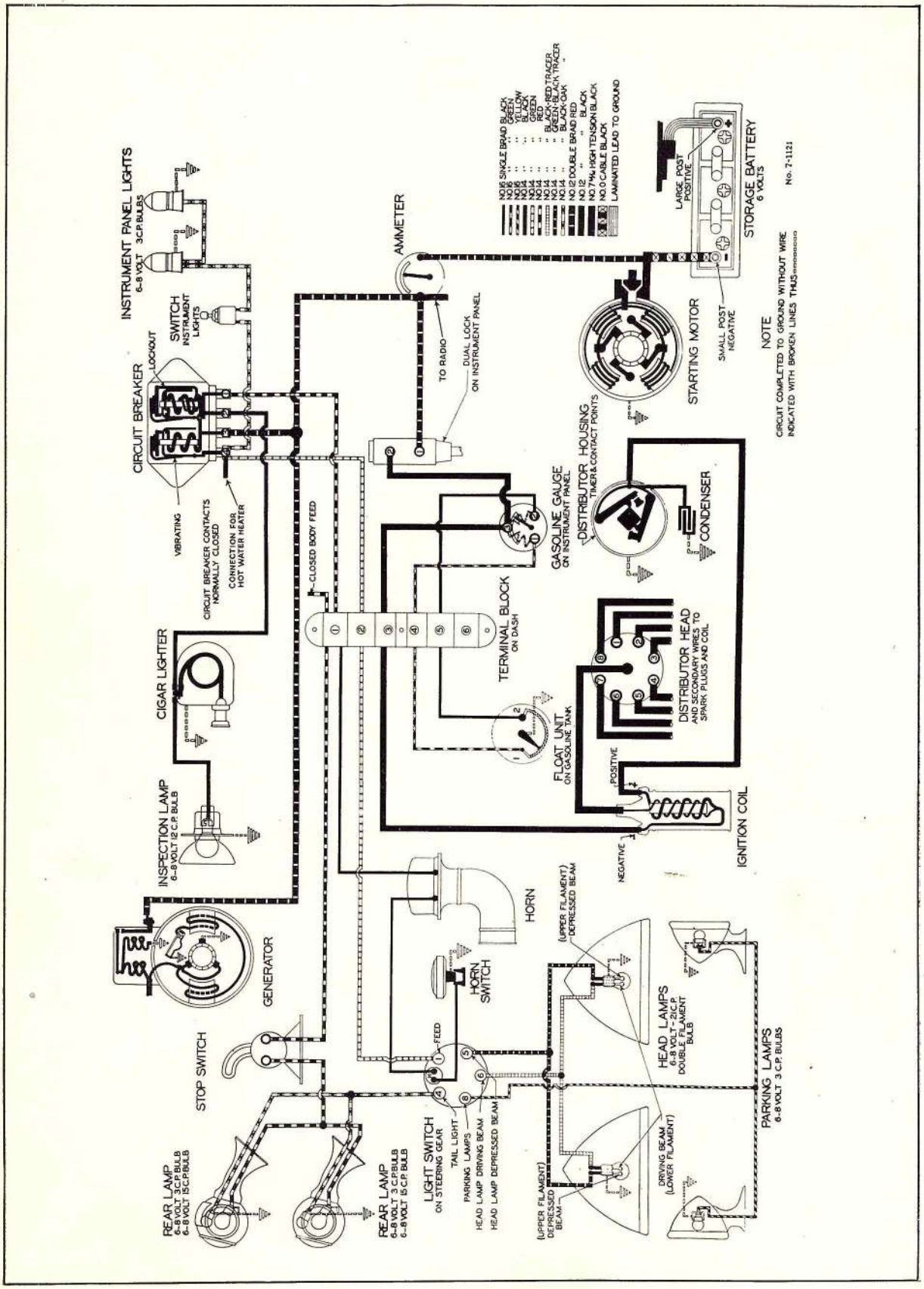

Plate 111. Chassis Wiring Diagram
Cadillac 353

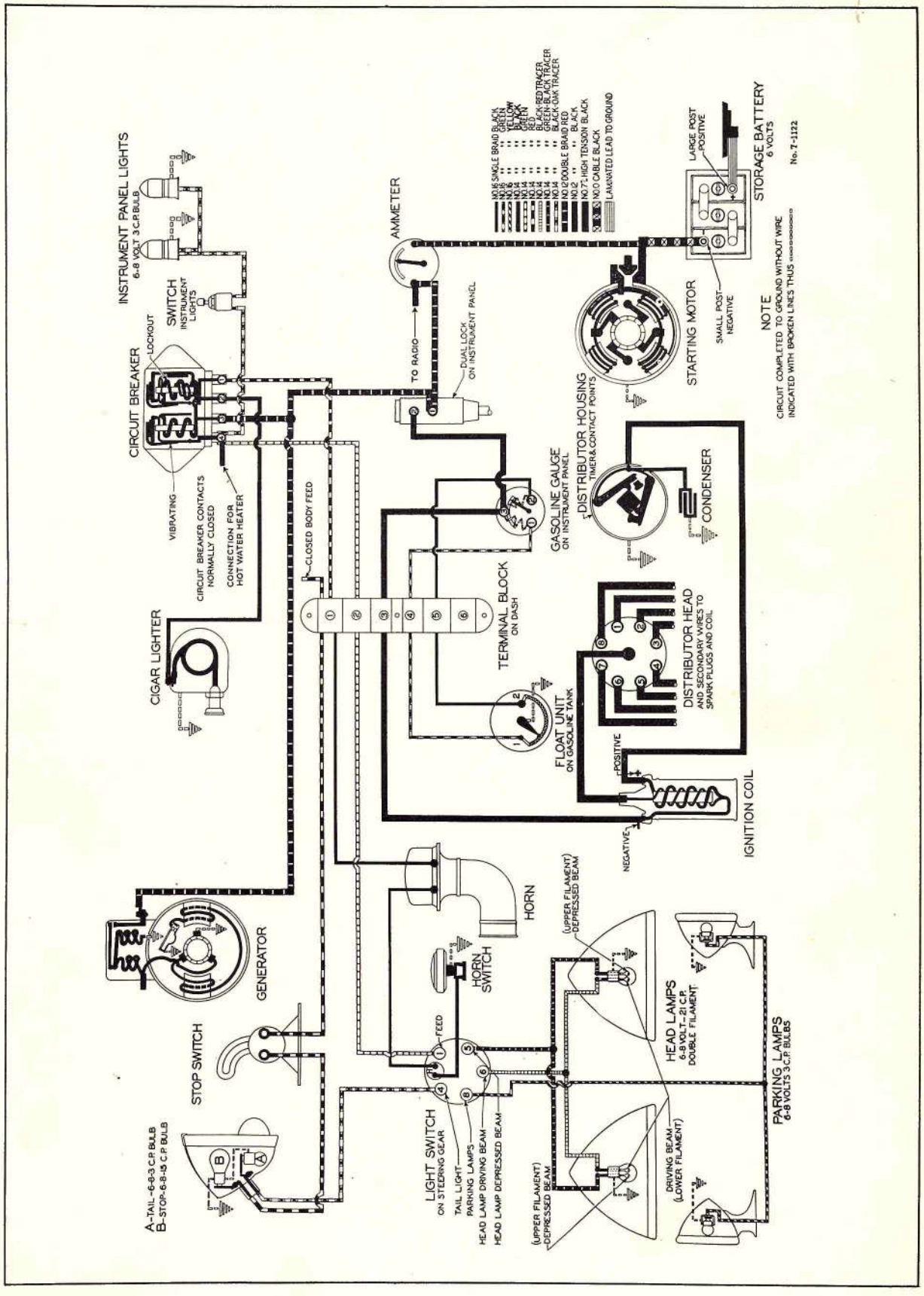

Plate 112. Chassis Wiring Diagram
La Salle 340

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Engine

Subject	Cad.	LaS.	Specifications	Remarks
Bore	353	.....	3⅜″	
	.....	340	3 5/16″	
Compression ratio				
L. C. heads	353	340	4.92	
H. C. heads	353	340	5.05	
Horse power—rated	353	.....	36.45	
	.....	340	35.1	
Identification marks	353	340	.....	High compression—"H. C." Low compression—no mark.
Piston displacement	353	.....	353 cu. in.	
	.....	340	341 cu. in	
Stroke	353	340	4 15/16″	
CAMSHAFT				
Bearing clearance	353	340	New limits, .0027″ to .0037″ Worn limit, not over .005″	
Bearings out of round	353	340	Not over .005″	
End-play in camshaft	353	340	New limits, .005″ to .015″ Worn limit, not over .020″	
CAM SLIDES	.....	.....	.....	See Note No. 1
CHAINS				
Camshaft chain	353	340	Morse-type No. 645	A limited number of Diamond chains were also used. See Note No. 10
Adjustment	353	340	None	
Number of links	353	340	54	
Pitch	353	340	½″	
Width	353	340	1¾″	
Generator and water pump drive chain	353	340	Morse-type No. B-45	A limited number of Diamond chains were also used. See Note No. 10.
Adjustment	353	340	⅛″ slack measured at top of sprocket housing	See Note No. 2
Number of links	353	340	57	
Pitch	353	340	½″	
Width	353	340	1¼″	
CONNECTING RODS				
Alignment	353	340	.....	See Note No. 3
Assembly	353	340	.....	See Note No. 4
Center to center length	353	340	10½″	
Clearances				
Bushing and piston pin	353	340	.....	See Note No. 5
Lower bearing and crank pin	353	340	New limits—.001″—.0025″ Worn limit, not over .006″	See Note No. 6
End-play—lower bearing	353	340	New limits—.006″ to .012″ Worn limit, not over .015″	

50—FB—1-30
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ENGINE

Subject	Cad.	LaS.	Specifications	Remarks
CRANKSHAFT AND MAIN BEARINGS				
Crank pin diameter	353	340	2.3745″ to 2.3750″	
Crank pin out of round	353	340	New limit—.0002″ Worn limit, not over .004″	
End-play of crankshaft	353	340	New limits—.002″ to .004″ Worn limit, not over .010″	
Length of crankshaft—overall	353	340	28¼″	
Length of crankshaft—front to rear bearing inclusive	353	340	23 25/32″	
Main bearing—clearance	353	340	New limits—.001″ to .002″ Worn limit, not over .004″	See Note No. 7
Main bearing journal—diameter	353	340	2.374″ to 2.375″	
Main bearing journal out of round	353	340	New limits—.002″ Worn limit, not over .005″	
LUBRICATION				
Crankcase capacity	353	340	8 qts.	
Thinning lubricant with kerosene	353	340		See lubrication table, page 243
OIL FILTER				
Cartridge	353	340	Type B—3—A.C.	
Cartridge replacement	363	340	Every 12,000 miles	Remove and clean oil pan and screen at same time
OIL PUMP				
Back lash—spiral drive gears	353	340	Not over .018″	
Clearances				
Bushing and drive shaft	353	340	New limits—.001″ to .0025″ Worn limit, not over .010″	
Idler gear bushing and shaft	353	340	New limits—.001″ to .0025″ Worn limit, not over .005″	
Pump body and gears	353	340	New limits—.003″ to .005″ Worn limit, not over .008″	
End-play in pump gears	353	340	New limits—.003″ to .008″ Worn limit, not over .020″	
End-play in spiral gear on drive shaft	353	340	New limits—.005″ to .015″ Worn limit, not over .020″	
Gasket—pump cover	353	340	.009″—.011″ thick	
PRESSURE REGULATOR				
Adjustment			None necessary	
Clearance—plunger and housing	353	340	New limits—.003″ to .006″ Worn limit, not over .008″	
Pressure—normal	353	340	7-10 lbs. idling speed 30 lbs. at 30 M. P. H.	When oil is warm
Spring—free length	353	340	1¾″	
Spring—compression	353	340	2 lbs.—3 oz. at 1 5/16″	
Valve opens	353	340	20 lbs.	

ENGINE

Subject	Cad.	LaS.	Specifications	Remarks
PISTONS—CYLINDERS				
Cylinders out of round	353	340	New limit—.0005″ Worn limit, not over .002″	
Piston out of round	353	340	New limit—.0005″ Worn limit, not over .002″	
Piston clearance at top land	353	340	Not less than .015″	
Piston clearance at skirt	353	340	New limit—.003″	See Note No. 8
Cylinder bore—standard	353	 340	3⅜″ 3 5/16″	All bores in same block are held within .0005″ of each other
Cylinder bore—oversize	353	340		Oversize cylinders are honed to fit the pistons with which they are supplied
Limits on Pistons				
Standard No. 1	353	.....	3.3715″ to 3.3720″	
Standard No. 2	.....	.....	3.3720″ to 3.3725″	
Standard No. 3	.....	.....	3.3725″ to 3.3730″	
Standard No. 4	.....	.....	3.3730″ to 3.3735″	Marked "STD. No. 1," etc., measured at bottom of skirt
Standard No. 1	.....	340	3.3090″ to 3.3095″	
Standard No. 2	.....	.....	3.3095″ to 3.3100″	
Standard No. 3	.....	.....	3.3100″ to 3.3105″	
Standard No. 4	.....	.....	3.3105″ to 3.3110″	
PISTON PINS				
Clearances				
Pin and bushing	353	340		See Note No. 5
Pin and piston	353	340	Hand push fit on free end; 100 lbs. to 600 lbs. press fit on lock screw end	See Note No. 5
Diameter	353	340	.8742″ to .8750″ standard	
Lubrication	353	340	Pressure through hole drilled in connecting rod	
PISTON RINGS				
Clearances				
Gap	353	340	New limits—.008″—.0018″ Worn limit, not over .025″	
Ring and sides of grooves	353	340	New limits—.0015″ to .0025″ Worn limit, not over .004″	
Compression rings	353	340	3—above piston pin	
Oil rings	353	340	1—below piston pin	Install oil rings with champfer at top
Width of rings	353	340	Top compression—3/16″ Lower compression—(two) ⅛″ ea. Oil 3/16″	
VALVE MECHANISM				
Clearances				
Cam slide and guide	353	340	New limits—.0015″ to .002″ Worn limit, not over .005″	
Cam slide roller and pin	353	340	New limits—.0015″ to .0025″ Worn limit, not over .004″	Furnished only in complete assemblies of camslide with button, roller and screw

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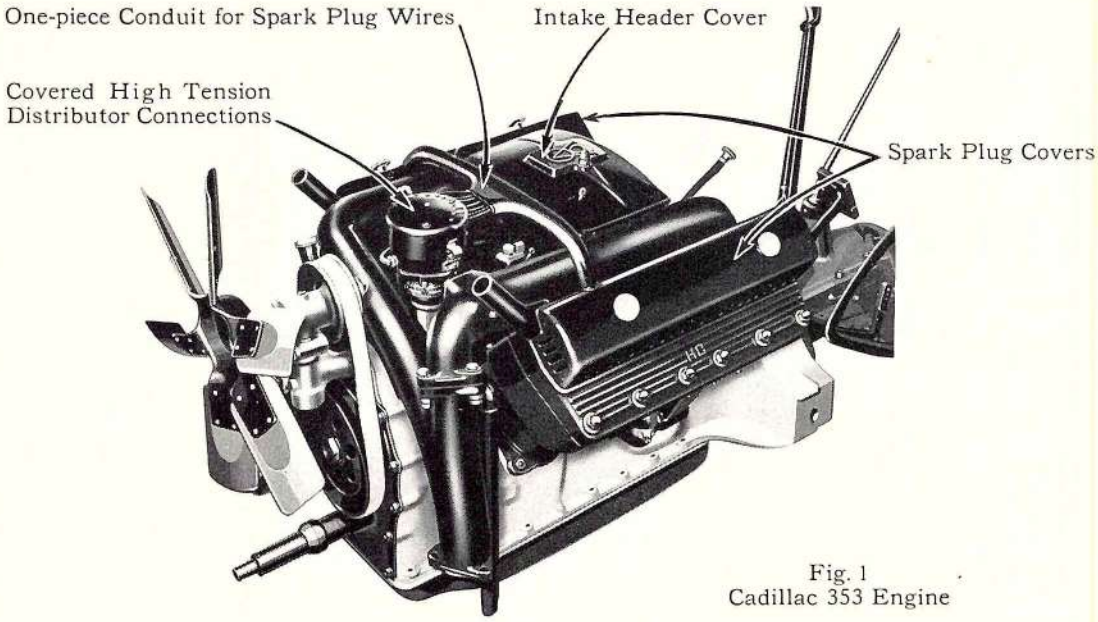

Fig. 1
Cadillac 353 Engine

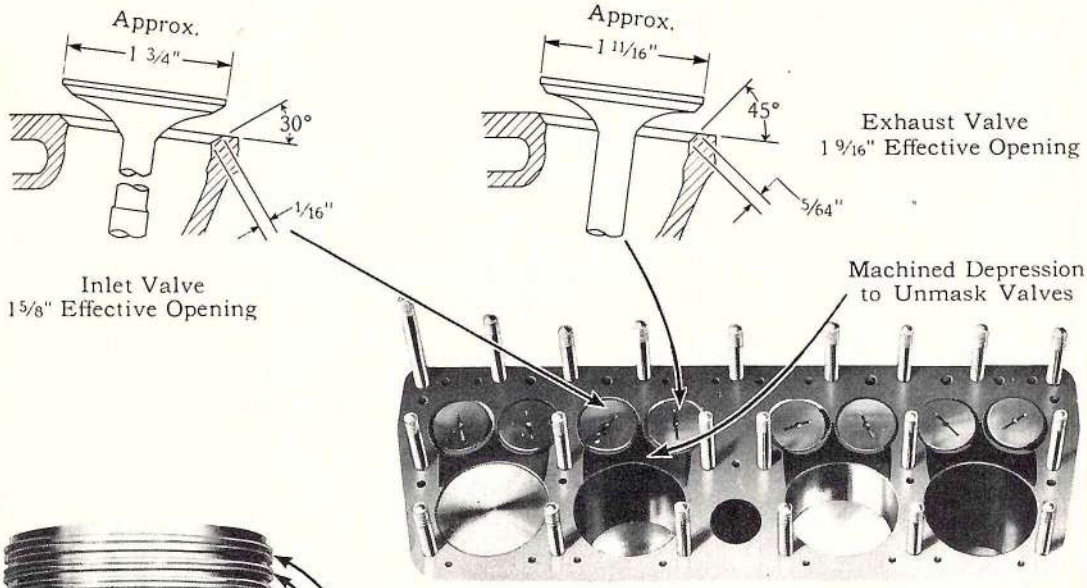

Fig. 2
Valves

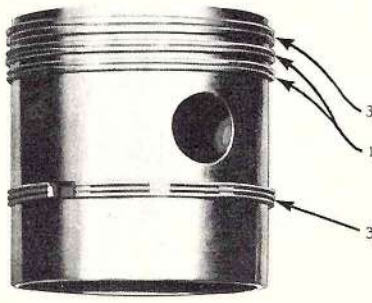

Fig. 3
Piston and Rings

Plate 113. Engine Details
Cadillac 353—La Salle 340

ENGINE

Subject	Cad.	LaS.	Specifications	Remarks
VALVES—EXHAUSTS				
Clearances				
Stem and guide	353	340	New limits—.002″ to .0045″ Worn limit, not over .006″	
Stem and cam slide	353	340	.006″—cold	Adjust while engine is cold. See Note No. 9
Diameter of head	353	340	1.696″—1.702″ overall	
Length—overall	353	340	$6\frac{1}{4}$″	
Lift	353	340	$\frac{23}{64}$″	
Seat angle	353	340	45°	
Seat width	353	340	$\frac{5}{64}$″	
Stem diameter	353	340	.3705″—.3715″	
VALVES—INLET				
Clearances				
Stem and guide	353	340	New limits—.001″ to .0035″ Worn limit, not over .006″	
Stem and cam slide	353	340	.004″ cold	Adjust while engine is cold. See Note No. 9.
Diameter of head	353	340	1.785″—1.791″ overall	
Length—overall	353	340	$6\frac{17}{64}$″	
Lift	353	340	$\frac{23}{64}$″	
Seat angle	353	340	30°	
Seat width	353	340	$\frac{1}{16}$″	
Stem diameter—body	.....	.....	.3715″—.3725″	
Stem diameter—under head	353	340	$\frac{5}{16}$″	
VALVE SPRINGS	353	340	.....	Conical shape
Free length	353	340	2.835″—2.853″	
Compression	353	340	77 to 81 lbs. compressed to 2.5″	Corresponding to valve closed
			156 lbs. to 164 lbs. compressed to 2.148″	Corresponding to valve open
VALVE TIMING				
Intake opens	353	340	$9\frac{1}{2}$° before top center	See Note No. 9
Intake closes	353	340	$58\frac{1}{2}$° after bottom center	
Exhaust opens	353	340	46° before bottom center	
Exhaust closes	353	340	5° after top center	

1. Cam Slide Installation

Valve Cam Slides should always be lubricated before installing because if installed dry they are liable to become scored before the oil from the crankcase reaches them.

2. Chain Adjustment

Before adjusting the Pump and Generator drive chain, loosen the water pump mounting screws so that the pump will be free to turn and align itself as the sprocket support is moved.

Plain washers must always be used under the lockwashers on these mounting screws because of the oversize holes in the flange, and also to prevent the mounting screws from bottoming on the chain housing and forcing the sprocket support away from the housing when drawn up tight enough to hold the pump securely.

3. Connecting Rod Alignment

Always use Tools No. 109214—109215 and 109216 when reaming piston bushings to insure proper alignment between piston pin and lower bearing.

The alignment of Cadillac and La Salle connecting rods by straightening is not recommended as the rod is liable to return to its former shape because of the toughness of the alloy steel used in its construction.

In an emergency, if straightening must be resorted to, the rod is more liable to hold its shape if it is bent a little farther than necessary and then bent back again until it is straight to offset the tendency of the metal to assume its original shape.

50—F B—1-30
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ENGINE

4. Assembly of Connecting Rods

When assembling connecting rods to the crank shaft, be sure that the numbers on the rods are towards the bottom of the engine and that they correspond with the numbers of the caps. The champfered side of the bearing should be next to the crank shaft cheek.

5. Fitting Piston Pins

When pressing pins into or out of piston, always place locking screw side of piston down to prevent forcing piston out of round.

Ream piston pin bushings using tools No. 109214—109215 and 109216. Fit pins dry. Pins should turn freely in bushings with no perceptible play or looseness.

In production, piston pins are a tight press fit in the lock screw side of the piston. It is not expected that this press fit will always be duplicated in service and a snug push fit should be satisfactory.

6. Connecting Rod Clearance

Check clearance in connecting rod bearing with dial indicator (Tool No. 109414).

Do not attempt to adjust connecting rod bearings. If clearance exceeds limits given install new or rebabbitted rod and return old one to factory for exchange. No credit will be allowed on rods if cap or rod has been dressed down.

7. Main Bearing Clearance

Use dial indicator and special fixture (Tool No. 65530) for checking bearing clearances. If bearings are found to be worn beyond specified limits they should be replaced. Replacement bearings are furnished to exact size and do not require reaming or scraping. No shims or liners are used on the main bearings and no attempt should be made to take them up if worn.

Always install new wooden plugs in grooves in sides of rear main bearing cap to prevent oil leaks around the cap.

8. Piston Clearances

Use Tool No. 119929-T, feeler ribbon with spring scale, for checking piston clearances. Piston must not be over .0005" out of round at skirt. Clearances should be measured between skirt of piston and cylinder wall half way between wrist pin holes with piston half way down on its stroke and wrist pin hole parallel with crank shaft. Both piston and cylinder wall should be clean and free from oil. If the clearance is correct, a pull of 2½ to 5 pounds will be necessary to withdraw the feeler.

9. Valve Adjustment

Valve clearances should be adjusted while the engine is cold. Valves should always be readjusted after tightening cylinder block hold down nuts.

Valve adjustments should be made very carefully. A careless adjustment may cause a variation of 10° in valve timing.

10. Diamond Chains

The Diamond chains used are of the roller type and require a sprocket having three rows of teeth. It is necessary, therefore, to install sprockets of the correct type if a Diamond chain is being used to replace a Morse and vice versa.

Frame

Subject	Cad.	LaS.	Specifications	Remarks
Length of car—overall	353		210⅝" approx. (140" W. B.)	Bodies used on 152" W. B. chassis determine their overall length.
		340	201¾" approx.	
Wheelbase	353		140 or 152	
		340	134	
Width of car—overall	353		75"—140" W. B.	
		340	71⅜"	
FRAME				
Chassis (unit) number location	353	340		L. H. side radiator cross member
Side bar depth	353		9"	
		340	8"	
Side bar thickness	353	340	5/32"	Measured at deepest part of frame
Side bar width	353		3¼" top—2 5/16" bottom	
		340	3" top—2¼" bottom	
Width—front	353		31¾"	
		340	29"	
Width—rear	353		36½"	
		340	36¾"	

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FRAMES

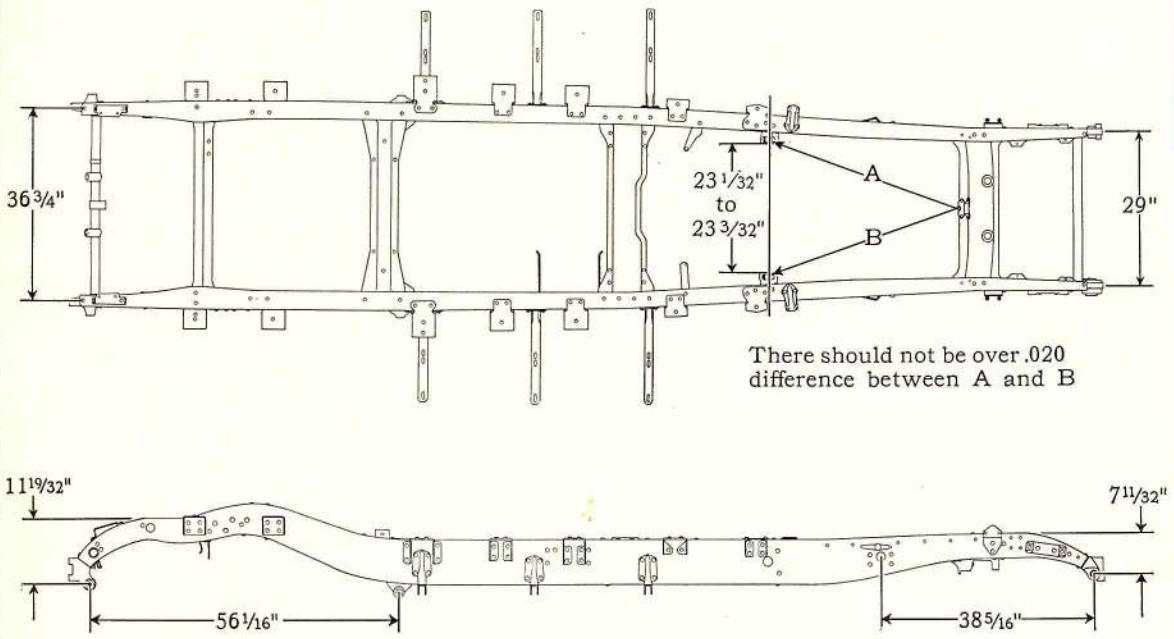

Fig. 1
Frame for LaSalle 340

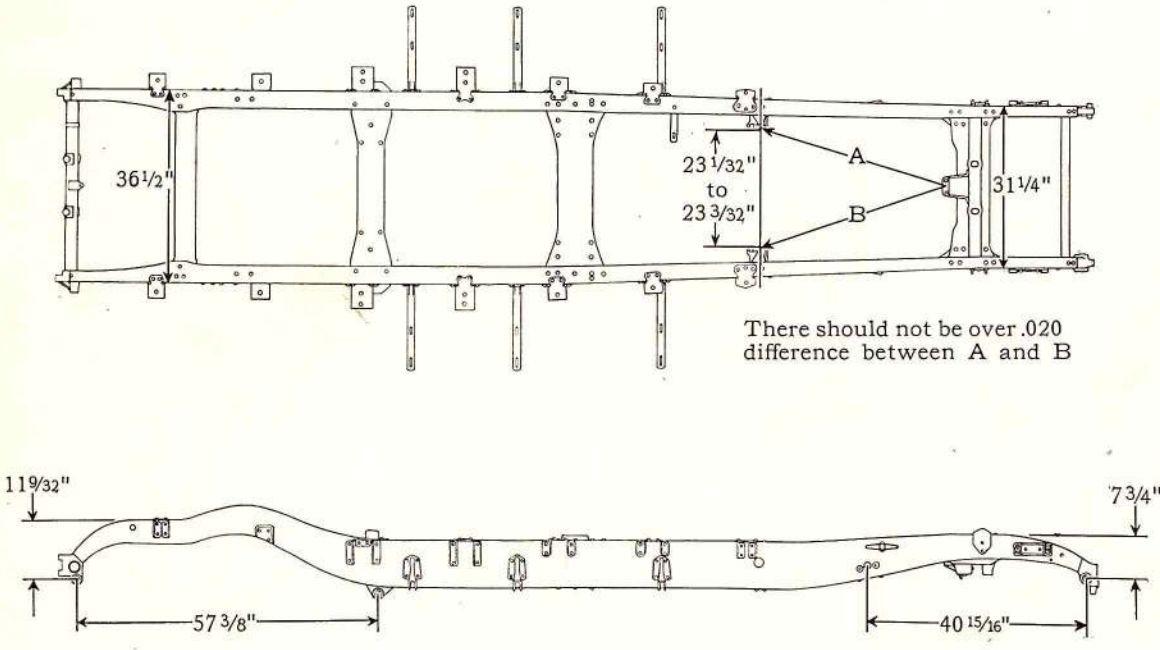

Fig. 2
Frame for Cadillac 353

Plate 114. Frame Diagrams
Cadillac 353—La Salle 340

Gasoline System

Subject	Cad.	LaS.	Specifications	Remarks
Check valve location	353	340	On intake header	
Feed	353	340	Vacuum with auxiliary vacuum pump	
Gasoline line location	353	340	R. H. side of frame	
Gasoline gauge	353	340	Electric. (Nagel)	On instrument panel
Adjustment	353	340		See Note No. 1. *See Plate 116. Fig. 3.*
Tank capacity (supply)	353	.....	25 gal.	
	.....	340	23 gal.	
CARBURETOR				
Air valve adjustment	353	340		See Note No. 2. *See Plate 116. Fig. 2.*
Clearance—throttle disc and carburetor body	353	340	New limit—.003″ Worn limit, not over .005″	
Float setting	353	340	$\frac{15}{32}$″	
Size	353	340	2″	
Size nozzle	353	340	No. 16	
Thermostats				
Air valve—free movement	353	340	$\frac{1}{16}$″ to $\frac{3}{32}$″	
Throttle pump control closes	353	340	74°F } Inner Thermostat	
Throttle pump control opens	353	340	78°F }	
Vent control closes	353	340	125°F } Outer Thermostat	
Vent control opens	353	340	130°F }	
Throttle pump adjusting screw	353	340		See Note No. 3
Throttle shaft end play	353	340	New limit—.0015″ Worn limit, not over .005″	
Unit number location	353	340	Top front flange at R. H. side	
VACUUM PUMP				
Clearances				
Connecting rod and crank pin on camshaft	353	340	New limits—.001″—.003″ Worn limit, not over .005″	
Piston and cylinder	353	340	New limits—.001″—.0015″ Worn limit, not over .003″	

1. Gasoline Gauge Adjustment

If the Gasoline Gauge does not register correctly and the variation from accuracy is the same over the entire scale, a readjustment of the float on the tank unit should correct the trouble. The float adjusting screw at the side of the float rod gear is accessible if the tank unit of the gauge system is removed from the tank.

Accurate readings between 0 and 4 gals. should not be expected.

2. Auxiliary Air Valve Adjustment

Make sure air valve has correct amount of free travel before attempting to adjust thermostat. With engine warmed up to normal operating temperature turn adjusting screw clockwise until engine slows down from a rich mixture. Then turn counter-clockwise, counting the number of notches carefully, until engine slows down from a lean mixture. Now turn screw clockwise just one half the number of notches counted. The accuracy of this method depends upon being able to determine the exact point at which the operation of the engine is affected by the adjustment.

3. Throttle Pump Adjusting Screw

Ordinarily the adjusting screw on the throttle pump should be screwed all the way in so that the by-pass will be closed. However, if high test gasoline is used in the summer time it may be desirable to open the by-pass part way by backing the adjusting screw two or three turns off its seat.

50—FB—1-30
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GASOLINE SYSTEM

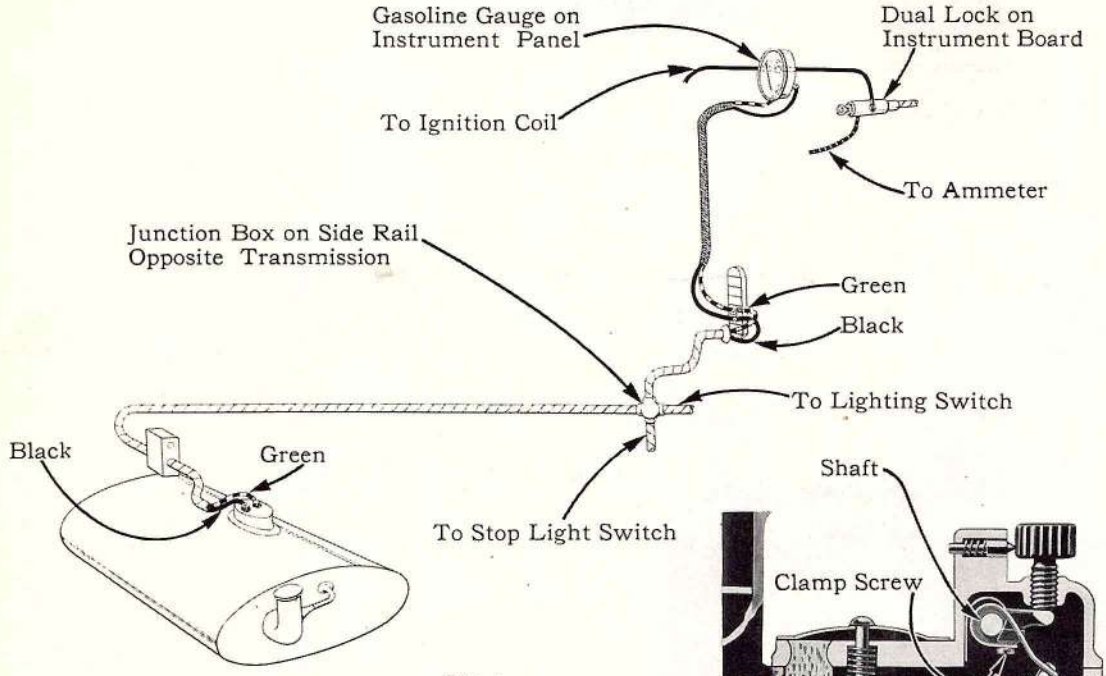

Fig. 1
Gasoline Gauge Wiring System

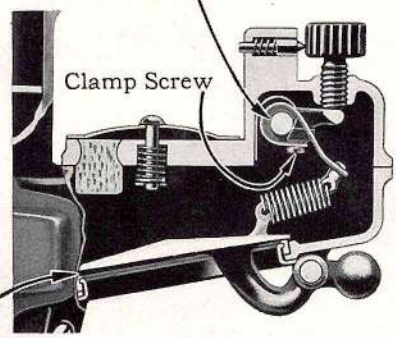

Fig. 2
Auxiliary Air Valve Adjustment
If air valve does not have 1/64" to 3/32" free movement when control lever is held back against stop, loosen clamp screw and turn shaft slightly. (See Note No. 1)

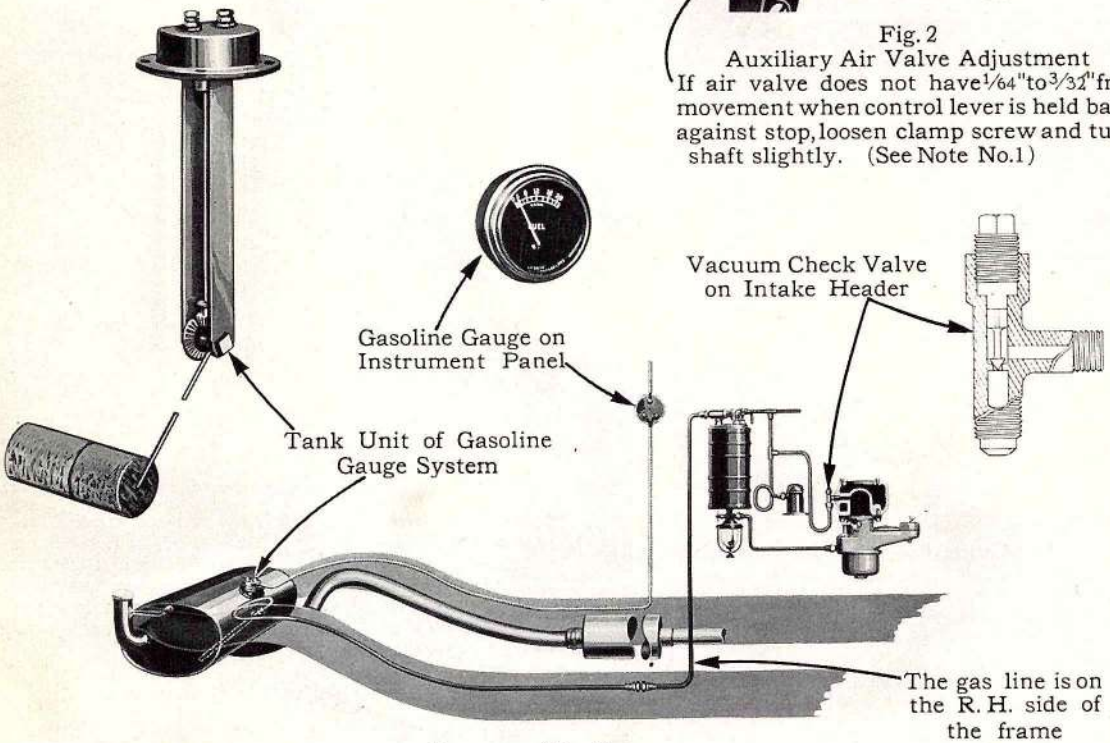

Fig. 3
The Arrangement of the Gasoline System

Plate 115. Arrangement of the Fuel System
Cadillac 353—La Salle 340

Lighting System

Subject	Cad.	LaS.	Specifications			Remarks
Bulb data			C. P.	Contacts	Mazda No.	
Dome—closed cars	353	340	3	S. C	63	
Headlamp	353	340	21-21	D. C.	1110	
	353	340	32-21	D. C.	1116	Some states permit use of this bulb. See Note 1.
Instrument lamps	353	340	3	S. C.	63	
Parking lamp	353	340	3	S. C.	63	
Rear quarter lamp	353	340	3	S. C.	63	
Running board lamp	353	340	3	S. C.	63	
Stop lamps	353	340	15	S. C.	87	
Tail lamps	353	340	3	S. C.	63	
Trouble lamp	353	.....	15	S. C.	87	
Bulb voltage	353	340	6-8 volts—all bulbs			
Headlamps						
Cleaning reflector	353	340	.....			See Note 2
Connections	353	340	.....			See Note 3
Lens diameter	353	.....	12″			
	.....	340	10½″			
Overall diameter	353	.....	13″			
	.....	340	11″			
Stoplight switch adjustment	353	340	Switch in "ON" position with brake lever depressed ¾″ to 1″			

1. Headlamp Bulbs

When 21-32 C. P. bulbs are used be sure that the word "TOP" on the base is up when installed.

2. Cleaning Headlamp Reflectors

Great care should be exercised in polishing the headlamp reflectors to preserve the reflecting qualities. A good cleaning paste can be made by mixing rouge or talcum powder with alcohol. Dry lamp black and alcohol are just as satisfactory and may be more convenient. Apply the paste with a clean soft cloth and rub from the center outward in straight lines. Never polish reflectors with a circular motion because the fine circular lines break up the light rays and appreciably reduce the illumination.

3. Headlamp Connections

The headlamp wires are concealed in the telescoping vertical tube between the lamp and the frame. The upper half of the tube can be pushed down against the spring holding it in place and the plug connector at the bottom of the lamp can then be disconnected. When reconnecting the head lamps be sure the plug is turned the right way so that the lower bulb filament burns when the lighting switch is in the "Bright" position.

50—FB—1-30
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Lubrication

Subject	Cad.	LaS.	Specifications	Remarks
Distributor cam	353	340		See Note No. 1
Engine Pressure	353	340	7-10 lbs. at idling speed when oil is warm	
Fan	353	340		Pressure feed from crankcase
Special items	353	340		See Note No. 4
CAPACITIES				
Engine	353	340	8 qts.	See chart below for recommendations
Rear axle	353	340	3 qts.	To overflow level
Transmission	353	340	5 pts.	To overflow level
LUBRICANTS				See lubrication diagrams, pages 244 and 247 for chart showing places requiring lubrication
Chassis lubricants	353	340	G-11 (A-200 plus 5% calcium soap)	
Distributor cam	353	340	Light engine oil	See Note No. 1
Engine oil	353	340		See chart below
Gear lubricant	353	340	A-200 (viscosity 200 secs. at 210°F)	See Note No. 2
Spring lubricant	353	340	G-9 (petroleum jelly)	
Steering gear lubricant	353	340	A-200 with 5% graphite	See Note No. 3
Water pump grease	353	340	G-5 (calcium soap grease consistency 82-145)	
Wheel bearing grease	353	340	G-12 (sodium soap grease consistency 250-315)	

ENGINE OIL RECOMMENDATIONS

Type of Service	Summer	Winter		
	All Temperatures Above 32° F.	Between 32° and 15° Above	Between 15° Above and 15° Below Zero	Colder than 15° Below Zero
Average Driving (No prolonged high speed driving)	S. A. E. viscosity 40 or 50	S. A. E. viscosity 20	S. A. E. viscosity 10 or S. A. E. viscosity 20 thinned with 1 qt. kerosene to 7 qts. oil	S. A. E. viscosity 10 thinned with 1 qt. kerosene to 7 qts. oil or S. A. E. viscosity 20 thinned with 2 qts. kerosene to 6 qts. oil
	These oils are *not* suitable for prolonged high speed driving. Change to oil shown below before starting on long trip at speeds above 45 m. p. h			
Prolonged High Speed Driving	Cadillac Approved "Heavy Duty" Oils—Summer and Winter These are oils having an *S. A. E.* viscosity of 50—60 which are required to meet certain specifications as to volatility in order to demonstrate their fitness for prolonged high speed driving. NOTE: Approved lubricants vary in their suitability for winter use. If an oil with a high pour test is used in winter and the car is not kept in a heated garage, add from one to two quarts of kerosene after a long drive at high speed before the car is stored for the night. Also when draining the crankcase, add from one to two quarts of kerosene to the fresh oil, unless starting immediately on a long trip at high speeds.			

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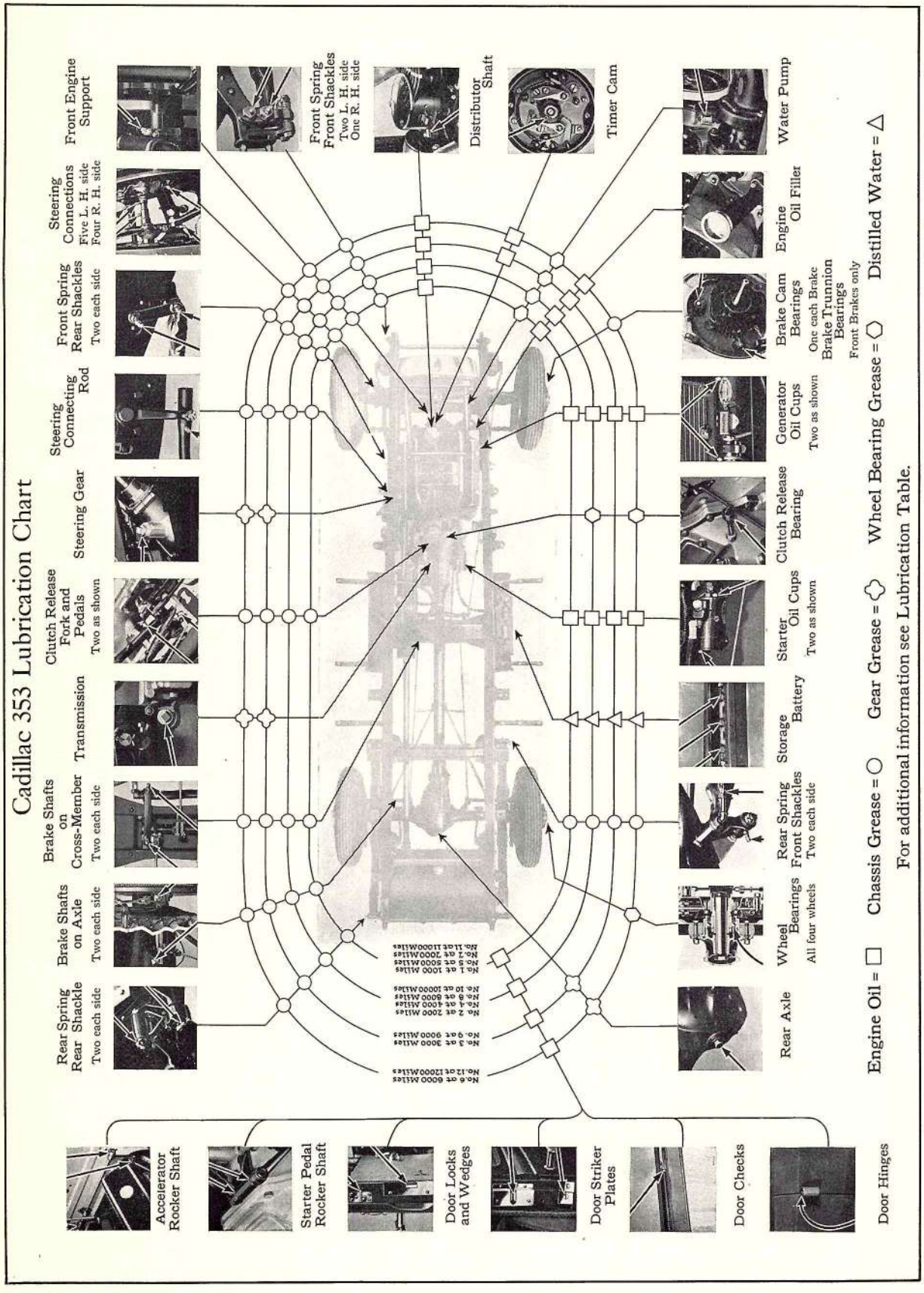

Plate 116. Lubrication Chart
Cadillac 353

1. Distributor Cam Lubrication

Remove the distributor cap and rotor every 3,000 miles and apply a few drops of light engine oil at the oil hole in the distributor cam.

2. Thinning Gear Lubricant with Kerosene

Gear lubricant for the transmission and differential need be thinned only at the beginning of cold weather if a sufficient quantity of kerosene is added to take care of the lowest expected temperature. The lubricant for the steering gear should not be thinned.

3. Use of Graphite in Lubricant

The steering gear should be lubricated in the summer with A-200 lubricant. In each case there should be thoroughly mixed with the lubricant 5% by volume of G-20 graphite. Either Acheson No. 38 or Dixon No. 066 may be used.

4. Special Items for Lubrication Diagrams

The following items cannot be placed on the regular 1000-mile schedule, so they should be performed at the recommended intervals.

Every day—Check level of liquid in radiator.

Every week—Check tire pressure.

Cold Weather—At the beginning of cold weather thin the rear axle and transmission lubricants with kerosene. The engine oil should be drained and replaced with lighter oil as specified or thinned with the proper amount of kerosene.

At beginning of warm weather—Drain thinned lubricant and replace with fresh lubricant.

Once each year—Remove spring covers and repack with petroleum jelly.

Every 12000 miles—Check level of special oil in shock absorbers.

Every 12000 miles—Replace oil filter cartridge. Remove and clean engine oil pan and screen at same time.

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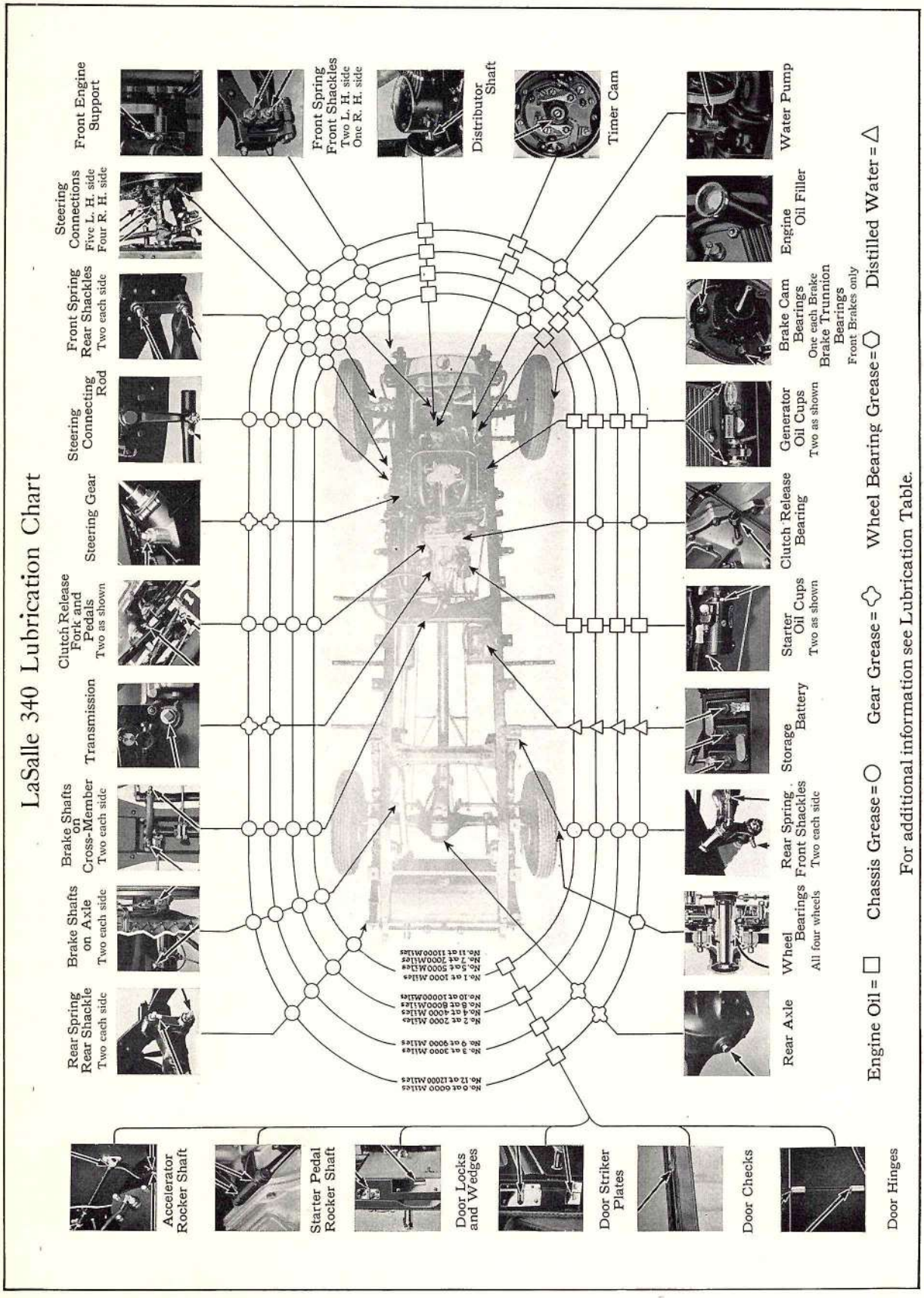

Plate 117. Lubrication Chart
La Salle 340

LUBRICATION

FORM 104-A
50M 8-29 MCO.

LUBRICATION SCHEDULE

CADILLAC 353, 341A, 341B
LaSALLE 340, 328, 303

OWNER'S NAME_____

ADDRESS_____

ENGINE NO._____ DATE DELIVERED_____

DO NOT WAIT FOR SCHEDULE LUBRICATIONS BEFORE ADDING ENGINE OIL. THE OIL LEVEL SHOULD BE CHECKED EVERY 100 TO 150 MILES AND OIL ADDED IF THE INDICATOR BALL IS BELOW "FULL." THIS IS ESPECIALLY IMPORTANT ON CARS DRIVEN AT HIGH SPEEDS.

		LUBRICANT	LUBRICATION NO. AND MILEAGE AT WHICH DUE											
			1	2	3	4	5	6	7	8	9	10	11	12
			1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
LUBRICATION NOS. 1, 5, 7 AND 11	ADD LIQUID TO RADIATOR		O	O	O	O	O		O	O	O	O	O	
	ADD ENGINE OIL AS NECESSARY	ENGINE OIL	O		O		O		O		O		O	
	STARTER, GENERATOR AND DISTRIBUTOR OIL CUPS	ENGINE OIL	O	O	O	O	O	O	O	O	O	O	O	O
	FAN (303, 328, 341 ONLY)	ENGINE OIL	O	O	O	O	O	O	O	O	O	O	O	O
	BRAKE PINS AND CONNECTIONS	ENGINE OIL	O	O	O	O	O	O	O	O	O	O	O	O
	DOOR HARDWARE	ENGINE OIL	O	O	O	O	O	O	O	O	O	O	O	O
	SPRING LEAVES (WITHOUT SPRING COVERS)	ENGINE OIL	O	O	O	O	O	O	O	O	O	O	O	O
	GREASE GUN CONNECTIONS	CHASSIS GREASE	O	O	O	O	O	O	O	O	O	O	O	O
	WATER PUMP GREASE CUP	WHEEL BEARING GREASE	O	O	O	O	O	O	O	O	O	O	O	O
	*ADD WATER TO STORAGE BATTERY		O	O	O	O	O	O	O	O	O	O	O	O
	CHECK TIRE INFLATION		O	O	O	O	O	O	O	O	O	O	O	O
LUBRICATION NOS. 2, 4, 8 AND 10	DRAIN AND REPLACE ENGINE OIL	ENGINE OIL		O		O		O		O		O		O
	CLUTCH RELEASE BEARING	WHEEL BEARING GREASE		O		O		O		O		O		O
LUBRICATION NOS. 3 AND 9	TRANSMISSION—ADD LUBRICANT	GEAR LUBRICANT			O			O			O			O
	REAR AXLE—ADD LUBRICANT	GEAR LUBRICANT			O			O			O			O
	STEERING GEAR—ADD LUBRICANT	GEAR LUBRICANT			O			O			O			O
	TIMER DISTRIBUTOR CAM (340, 353 ONLY)	LIGHT ENGINE OIL			O			O			O			O
LUBRICATION NOS. 6 AND 12	FRONT BRAKE TRUNNIONS (ALL CARS) BRAKE CAM BEARINGS (340, 353 ONLY)	CHASSIS GREASE						O						O
	WHEEL BEARINGS	WHEEL BEARING GREASE						O						O
	SPEEDOMETER DRIVE SHAFT	WHEEL BEARING GREASE						O						O
	**REFILL SHOCK ABSORBERS	SPECIAL OIL						O						O
	**FLUSH COOLING SYSTEM							O						O
	**REPLACE OIL FILTER CARTRIDGE AND CLEAN OIL PAN AND SCREEN						EVERY 12,000 MILES							O

*IN SUMMER INSPECT BATTERY EVERY 500 MILES OR AT LEAST EVERY 2 WEEKS.
**RECOMMENDED BUT NOT INCLUDED IN LUBRICATIONS 6 AND 12.
THE FOLLOWING OPERATIONS CANNOT BE PLACED ON A MILEAGE BASIS AND ARE NOT INCLUDED IN THE ABOVE SCHEDULE:
THIN REAR AXLE AND TRANSMISSION LUBRICANT—AS REQUIRED FOR LOW TEMPERATURES.
DRAIN AND REPLACE REAR AXLE AND TRANSMISSION LUBRICANT—AT BEGINNING OF MILD WEATHER IN SPRING.
REMOVE SPRING COVERS ONCE A SEASON AND REPACK WITH PETROLEUM JELLY.

RECORD ON OTHER SIDE

Plate 118. Lubrication Record Card
Cadillac 353—La Salle 340

50—FB—1-30
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Springs

Subject	Cad.	LaS.	Specifications	Remarks
SHACKLE BOLTS				
Bushings	353	340		Furnished in standard and .006″ oversize
Clearance—bolt and bushing	353	340	New limits—.001″ to .004″ Worn limit, not over .006″	
Diameter of bolts	353	340	.747″ to .748″	
SPRINGS				
Arch—under load			Load	
Front	353	.....	$2\frac{15}{16}$ to $3\frac{3}{16}$″ 1050 lbs.	See Note No. 1
	.....	340	$2\frac{5}{8}$″ to $2\frac{7}{8}$″ 1100 lbs.	
Rear	353	.....	$1\frac{11}{16}$″ to $2\frac{7}{16}$″	See Note No. 2
	.....	340	$2\frac{1}{4}$″ to $2\frac{1}{2}$″	
Models and Part Numbers			W. B. Leaves Load Part No.	
Front	353	.....	140″ 10 1050 lbs. 878723	
			152″ 10 1050 lbs. 884377	
R. H.	.....	340	134″ 9 1100 lbs. 872754	
L. H.	.....	340	134″ 9 1100 lbs. 872755	
Rear	353	.....	140″ 9 1275 lbs. 884245	Used on 2-pass. Roadster, 2-pass. Coupe and 2-pass. Convertible Coupe
			140″ 9 1400 lbs. 884243	Used on 5-pass. Town Sedan, 5-pass. Coupe and 5-pass. Standard Sedan
			140″ 10 1500 lbs. 884244	Used on 7-pass. Standard and Imperial Sedans
			152″ 10 1800 lbs. 884246	
Rear	.....	340	134″ 11 1500 lbs. 872629	Used on 7-pass. Standard and Imperial Sedans
			134″ 10 1225 lbs. 872630	Used on 2-pass. Standard and Convertible Coupes, 5-pass. Coupe and 4-pass. Phaeton
			134″ 11 1350 lbs. 872632	Used on 4-pass. Town Sedan and 5-pass. Sedan
Width	353	.....	$2\frac{1}{4}$″ front; $2\frac{1}{2}$″ rear	
	.....	340	2″ front; 2″ rear	
SHOCK ABSORBERS	353	340	Lovejoy two-way	
Metering Pins			Std. A B C	Use standard combination for normal speeds on city streets or good country roads
Front—bumper	353	.....	19 19 19 14	
—rebound	.....	.....	18 18 18 31	Use combination "A" for 45 to 50 mile speeds on rough roads
Rear —bumper	.....	.....	14 29 19 14	
—rebound	.....	.....	17 17 18 30	Use combination "B" for speeds over 50 miles on rough roads
Front—bumper	.....	340	14 21 29 19	
—rebound	.....	.....	31 31 18 31	Use combination "C" to secure very easy riding where spring control is a secondary consideration
Rear —bumper	.....	.....	14 29 19 14	See Note No. 2
—rebound	.....	.....	30 17 18 30	

50—FB—1-30
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SPRINGS

Subject	Cad.	LaS.	Specifications		Remarks
Part numbers			Pin No.	Part No.	
			14	39314-D	IMPORTANT!
			17	39317-D	
			18	39318-D	Read note No. 2 before changing metering pins
			19	39319-D	
			29	39129-D	
			30	39130-D	
			31	39131-D	
Relief valves	353	340			See Note No. 3
STEERING MODULATOR	353	340			See Steering Gear—Pages 251-252

1. Spring Arch

The Spring arch should be measured from the bushing center line to the surface of the spring seat. Remember that the spring seat is the surface of the axle and is at the bottom of top mounted springs and at the top of underslung springs.

When checking the spring arch on a car, the car should stand level with no passengers in it. The arch can also be measured on springs not installed by inverting the spring on a timber or I-Beam of sufficient length laid across a platform scale. Apply a load by means of a jack braced against a joist or timber above. The load specification for each spring is given opposite "Models, part numbers and loads."

2. Changing Metering Pins

In a case of a hard riding car, always check for tight shackle bolts as a possible cause of the trouble before changing metering pins. Too tight shackle bolts will not only cause rough riding, but may also result in broken springs.

Never attempt to use shock absorbers with metering pins removed, or the shock absorber is likely to be broken.

High speed driving over rough roads may require different metering pins to insure comfort. The combinations noted should give satisfactory operation under the driving conditions for which they are specified.

3. Relief Valves

Use only the type "J" relief valve on the rebound side.

Type "J" relief valve may also be used on the bumper side to secure easier riding. Still further riding ease may be secured by using type "D" relief valve on the bumper side. Either of these valves in the bumper side will result in the spring bottoming more easily on account of the lessened bumper resistance.

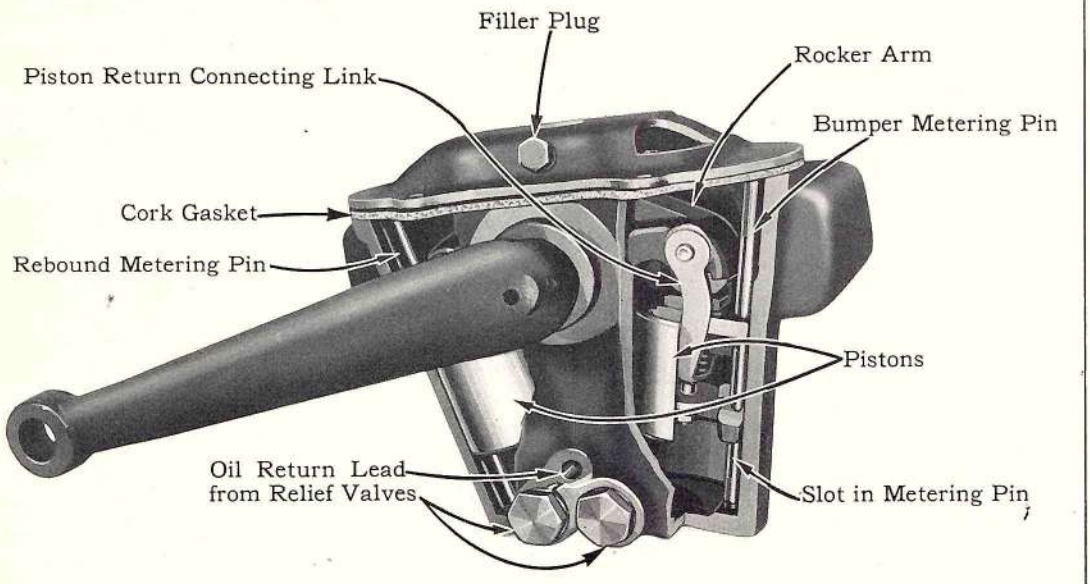

Fig. 3
Cut-away View of Two-way Shock Absorber

Plate 119. Shock Absorbers
Cadillac 353—La Salle 340

Steering Gear

Subject	Cad.	LaS.	Specifications	Remarks
CONNECTING ROD				
Springs				
Compression	353	340	325 lbs. to 400 lbs. at 7/8"	
Free length	353	340	1"	
GEAR				
Clearances				
Worm shaft and bushings	353	340	New limits—.002" to .004" Worm limit, not over .006"	
Sector shaft and eccentric bushing	353	340	New limits—.001" to .003" Worm limit, not over .005"	
Unit number location	353	340	Top face of gear housing	
Ratio—total	353	340	16¾ to 1	Movement of steering wheel to movement of axle spindle in degrees
Turning radius				
Left	353	.....	140" W. B., 24' 7"	Radius of circle swept by outer wall of front tire
	.....	340	134" W. B., 24'	
Right	353	.....	140" W. B., 26' 10"	
	.....	340	134" W. B., 23' 3"	
Wheel Diameter	353	340	19"	
STEERING MODULATOR				
Adjustment	353	340		Tighten nuts only enough to bring them flush with studs. In case of weak or broken springs, install complete set of four new springs.
Springs	353	340	4—part No. 872456	
Free length	353	340	1½"	
Compression	353	340	95 lbs. to 105 lbs at 1 3/16"	

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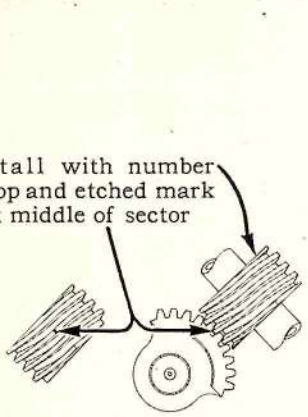


Fig. 1
Correct Installation of Worm and Sector

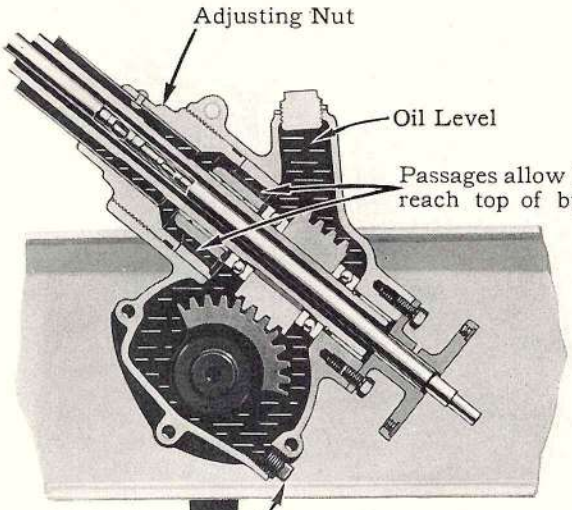


Fig. 2
Steering Gear
(Sectional view)

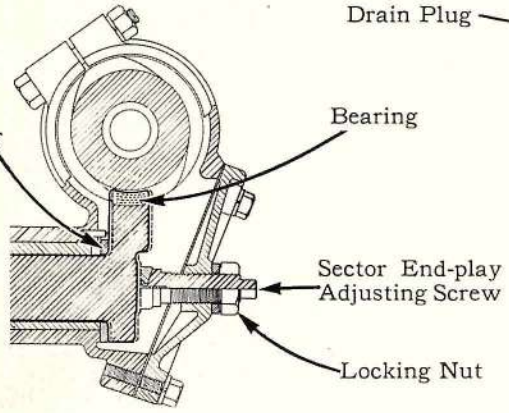
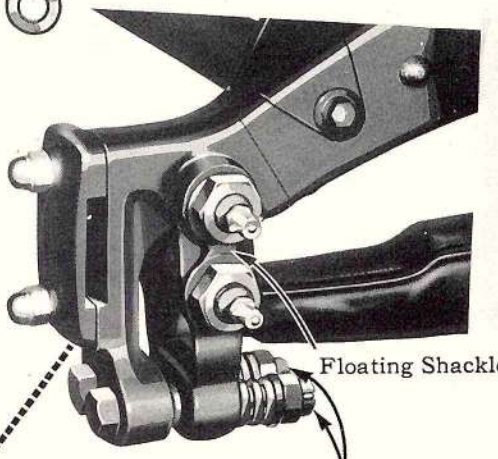


Fig. 3
Use washer of correct thickness to bring bearing at middle of sector tooth



Nuts should be drawn up just flush with ends of studs

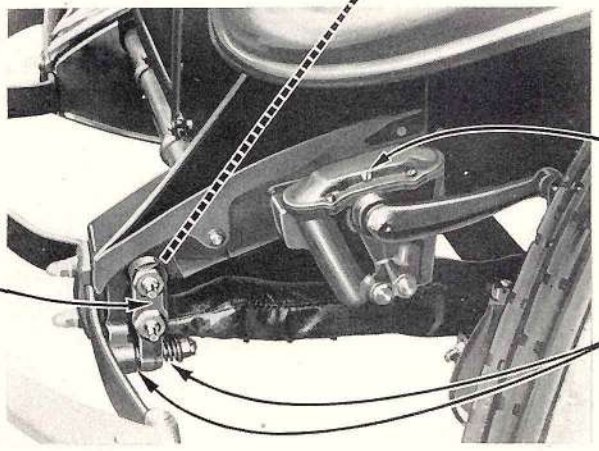


Fig. 4
Steering Modulator and Two-way Shock Absorber

Plate 120. Steering Gear and Steering Modulator
Cadillac 353—La Salle 340

Transmission and Universal Joint

Subject	Cad.	LaS.	Specifications	Remarks
TRANSMISSION				
Gear ratio, low gear	353	340	2.966 to 1	
Gear ratio, second gear	353	340	1.794 to 1	
Gear ratio, high gear	353	340	1 to 1 (direct drive)	
Gear ratio, reverse gear	353	340	3.595 to 1	
Lubricant	353	340	Chassis lubricant A-200	
Lubricant, amount required	353	340	5 pints	
Unit number, location	353	340	On center of left flange next to fly-wheel bell-housing	
COUNTER-SHAFT GEAR ASSEMBLY				
End play of gear unit	353	340	New limits—.003—.013″ Worn limit, not over .025″	
Play in jackshaft bearings	353	340	Worn limit, not over .007″	
MAIN SHAFT ASSEMBLY				
Clearances—second speed gear and bushing	353	340	New limits—.002″—.004″ Worn limit, not over .006″	
Splines on main shaft and splineways of bushing in second speed gear	353	340	New limits—.000″—.003″ Worn limit, not over .008″	
Splines on main shaft and splineways in shifter gears	353	340	New limits—.001″—.004″ Worn limit, not over .005″	In 341-B and 328 cars, these limits apply only to low-and-reverse shifter gear
Splines on main shaft and splineways in sliding gear coupling	353	340	New limits—.001″—.004″ Worn limit, not over .005″	
Clutch connection shaft, out of true	353	340	Not over .0025″	
End-play between clutch connection shaft and main shaft	353	340	New limits—.004″—.008″ Worn limit, not over .020″	
Main shaft, out of true	353	340	Not over .0025″	
Shake between clutch connection shaft and main shaft	353	340	Not over .006″	
REVERSE GEAR ASSEMBLY				
Clearance between reverse pinion shaft and bushing	353	340	New limits—.001″—.0025″ Worn limit, not over .004″	
End-play in reverse pinion	353	340	Worn limit, not over .025″	
Reaming size for reverse pinion bushing	353	340	.938″—.939″	

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TRANSMISSION

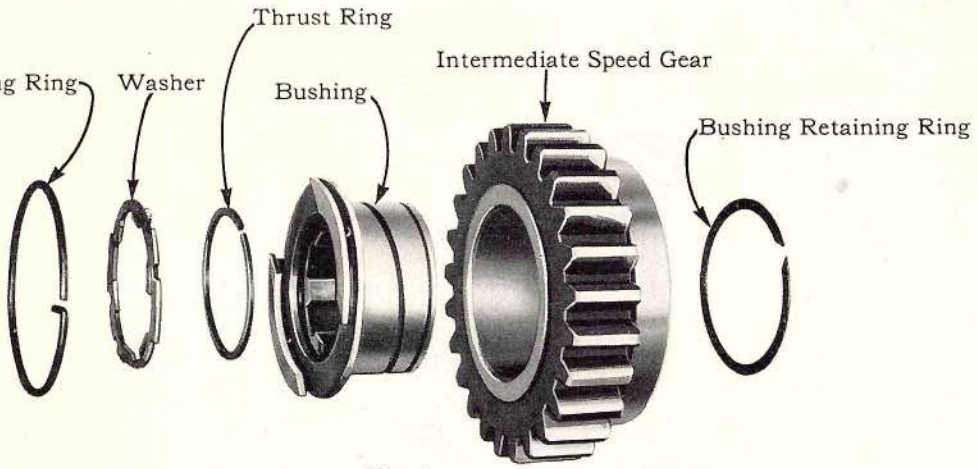

Fig. 1
Intermediate Gear and Bushing

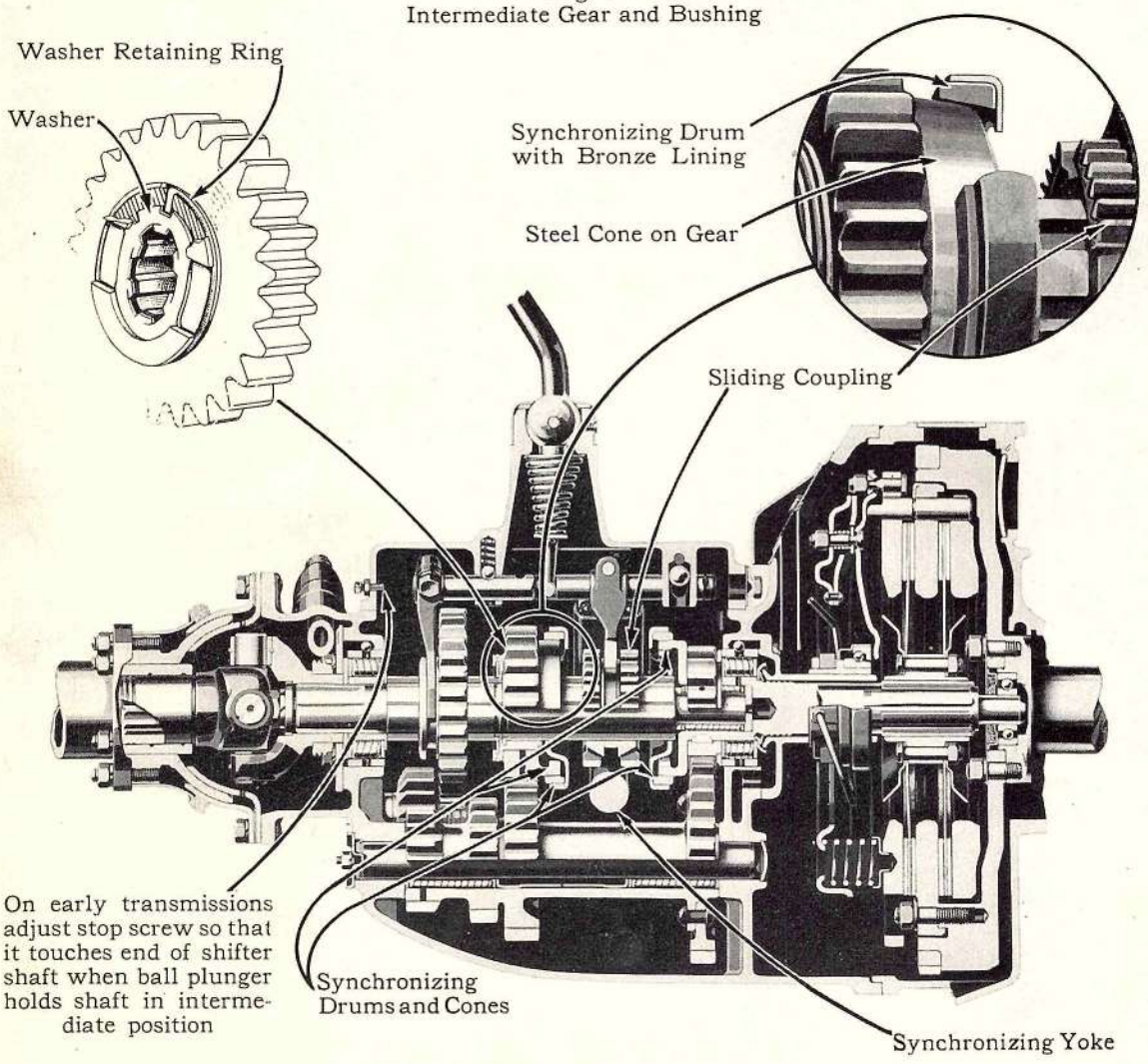

Fig. 2
Sectional View of Transmission and Clutch

Plate 121. Transmission Detail
Cadillac 353—La Salle 340

TRANSMISSION and UNIVERSAL JOINT

Subject	Cad.	LaS.	Specifications	Remarks
SHIFTING MECHANISM				
Clearance between shifter fork and shifter gear	353	340	New limits—.012″—.020″ Worn limit, not over .035″	
Shifter shaft lock spring, free length	353	340	1 3/16″, approximately	
Shifter shaft lock spring, compression	353	340	20-23 lbs. at 3/4″	
Stop screw	353	340		Stop screw used on early transmission covers should just touch shaft when ball-plunger holds shifter in intermediate.
YOKE ASSEMBLY				
Clearances				
Guide block and drum	353	340	New limits—.002″—.006″ Worn limit, not over .010″	
Plunger and yoke bore	353	340	New limits—.001″—.003″ Worn limit, not over .005″	
Plunger main spring				
Free length	353	340	1 1/64″ approximately	
Compression	353	340	24-26 lbs. at 9/16″	
Plunger valve spring				
Free length	353	340	5/8″ approximately	
Compression	353	340	2 3/4-3 1/4 lbs. at 7/16″	
Yoke return springs				
Free length	353	340	31/32″ approximately	
Compression	353	340	14-16 lbs. at 41/64″	
Yoke throw from neutral to applied position	353	340	New limits—1/8″—3/16″ Worn limit, not over 1/4″	Measured at top of transmission case. *Plate 56. Fig. 5.*
SPEEDOMETER GEARS				
Driving gear	353	340	7-tooth, part No. 848176	
Driven gear (7:00 x 19 tires)	353	340	Gear ratio / No. of teeth: 4.39 to 1 — 21 / 20 / 19; 4.75 to 1 — 22 / 21; 5.08 to 1 — 23 / 22; 4.07 to 1 — 18 / 19; 4.54 to 1 — 21 / 20; 4.91 to 1 — 23 / 22	Part No. / Rolling radius: 878208 — 14 5/16″ to 14 15/16″; 848122 — 14 15/16″ to 15 3/4″; 848178 — 15 3/4″ to 16 3/4″; 848124 — 14 7/8″ to 15 7/16″; 848123 — 15 7/16″ to 16 1/4″; 848125 — 15 1/8″ to 15 13/16″; 848124 — 15 13/16″ to 16 9/16″; 876374 — 15 7/16″ to 16 1/4″; 848178 — 14 5/8″ to 15 7/16″; 848123 — 14 13/16″ to 15 1/2″; 848122 — 15 1/2″ to 16 5/16″; 848125 — 14 3/4″ to 15 5/16″; 848124 — 15 5/16″ to 16″
SPEEDOMETER SHAFT				
Length	353	.....	56 7/8″	
	.....	340	49 3/8″	See Note No. 1

TRANSMISSION and UNIVERSAL JOINT

Subject	Cad.	LaS.	Specifications	Remarks
UNIVERSAL JOINT				
Ball and socket joint adjustment..	353	340	Remove gaskets until friction can be felt in joint, then add one gasket	
Ball member bushing assembly....	353	340	Oil grooves must cross on right side and open toward top and bottom of ball	
Clearance between crosses and bushings.....	353	340	New limits—.0025″—.004″ Worn limit, not over .006″	
Clearance between yoke and ball member bushing.....	353	340	New limits—.005″—.007″ Worn limit, not over .010″	

1. Installation of Cable Flange

Two different distances between centers of driving gear and driven gear are used; one for pinions with 16 to 19 teeth and one for pinions with 20 to 23 teeth. To make this possible, the end of the speedometer cable is eccentric. In one position the cable gives the correct center distance for pinions with 16 to 19 teeth. When revolved 180° the cable gives the correct center distance for pinions with 20 to 23 teeth. The flange of the cable end has the figures "16-19" on one side and "20-23" on the other side. The cable should always be turned so that the figures corresponding to the number of teeth on the pinion are at the top.

2. Determining Correct Speedometer Gear by Rolling Radius

There are occasionally owners who desire to install on their cars tires of a different make from standard, or tires of special sizes. Any change in the make or sizes of the tires affects the speedometer reading and, in many cases, a new speedometer gear will be necessary.

It is impossible to specify the correct gear merely from the nominal size of the tire. Tires of various makes differ. It is necessary to know the "rolling radius" in order to determine the correct speedometer gear.

To find the rolling radius of any tire, simply measure the distance from the center of the hub cap of a rear wheel to the pavement.

Before doing this, however, make sure that the tires are inflated to the normal pressure of 40 pounds and that the car is weighed down to its normal load.

Once the rolling radius is known, the correct gear can be determined by referring to the specification table.

Wheels, Rims and Tires

Subject	Cad.	LaS.	Specifications	Remarks
BEARINGS				
Front—adjustment	353	340		See Note No. 1
Rear—adjustment	353	340		None
RIMS AND WHEELS				
Brake drums out of round	353	340	Not over .007″ indicator reading	Check with drum mounted on wheel
Felloe—out of true radial or lateral	353	340	Not over $\frac{1}{16}$″	
Rim size	353	.....	19″	
	.....	340	19″ demountable rim wood wheels only 18″ wire, disc and demountable wood wheels	
TIRES				
Balancing mark location	353	340	Should be placed in line with valve stem	
Pressure			Normal — High Speed	
Front	353	340	45 — 50	
Rear	353	340	40 — 50	
Size	353	.....	7.00″ x 19″	
	.....	340	6.50″ x 19″ (19″ rims) 7.00″ x 18″ (18″ rims)	

1. Front Wheel Bearing Adjustment

When adjusting front wheel bearings, first make sure the wheel is all the way on. Then turn the adjusting nut up by hand as far as possible and back it off to the second cotter pin slot.

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