The CADILLAC LA SALLE
SERVICE MAN

Volume VII, Number 1 — *January 1, 1933*

Gilbert

Preliminary Information Released for New Car Announcement

CADILLAC makes its bid to retain its leadership in the fine car field with four new models, well designed to meet the present day requirements of new and old owners and fully in tune with the year 1933. These cars, which will be known as the "C" series, are now being shipped to Distributors and Dealers, and service men must do their part to make them equal to the public's anticipation.

Service Responsibility

The new models differ from the "B" series principally in appearance items. The proven reliability and performance of the "B" series has been refined and maintained with no major changes. This, however, places a greater responsibility on the service man and makes it imperative that he be fully prepared to keep the 1933 Cadillac and LaSalle cars operating to the perfection they represent.

Full preparation has been made to provide service men with the information they need in plenty of time to be ready to properly service the new cars before they are publicly announced. Advantage should be taken of these preparations in carrying out the announcement program at once.

Preliminary Service Information

The most important source of service information on the new cars is the Preliminary Service Information Booklet which is being distributed with this issue of the "SERVICE MAN." Copies are being sent to distributors and dealers in quantities equal to their regular "SERVICE MAN" requirements and are included in the same mailing with the current issue. Additional copies may be obtained from the Service Department on request.

Service Guide No. 23, of the regular slide film service, which has been mailed to subscribers, deals exclusively with " 'Service Details' On The 'C' Series." The entire service story on the new cars is not given in the film. It does, however, offer an outline that the Service Manager may use in making an effective personal presentation, drawing from the Preliminary Service Information Booklet, to give a complete story that will be driven home by means of the personal element.

Preliminary Parts List

Copies of the Preliminary Parts List for the "C" series are also included with the mailing of this issue of the SERVICE MAN to dealers. Distributors have already received their copies in an

(Continued on next page, Column 1)

The CADILLAC LA SALLE
SERVICE MAN

JANUARY 1, 1933 — VOLUME VII
DETROIT, MICH. — NUMBER 1

Published on the first and fifteenth of each month in the interest of Cadillac Service

New Models Announced

(Continued from page 1)

advance mailing. Additional copies as required may be secured upon request to the Parts Division.

The majority of the Contract Maintenance operations for the "B" series cars apply unchanged to the new models and all of the "B" series operations should be used tentatively for both models. The changes that are found necessary will be issued in a Contract Maintenance bulletin in the near future.

The importance of sending in New Car Inspection Reports promptly on receipt of the new cars and Car Complaint Reports as necessary should not be overlooked. The information brought to light by these forms correctly filled out is of the greatest importance at the beginning of production on new models. Any unfavorable conditions of delivery or operation of the cars must be corrected at once to save the distributor and dealer unnecessary expense in later adjustments and to preserve owner satisfaction.

Make use of all the aids offered for a thorough understanding of service on the new models. The public watches new models critically. Every Cadillac-LaSalle service organization should therefore make a special effort to see that new cars are operating properly to create enthusiastic owner pride.

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November Parts Contest Winners are Announced

Two prizes have been awarded in the November Parts Interchangeability Contest. The winners are:

E. G. Buth, Buffalo, New York, for a suggestion covering the interchangeability of headlamp tie rods. Since Mr. Buth won a pen and pencil set in the September contest, he has been awarded a desk set for this idea in order to avoid duplication.

F. G. Wall, Philadelphia, Pennsylvania, was awarded a Cadillac fountain pen for an idea on the interchangeability of brake yokes.

Winners of the December contest, the last of the series that has been running for sixteen months, will be announced in the January 15 issue of the SERVICE MAN.

Educational Program Tied In With January Direct Mail Piece Will Keep Profits Coming

CADILLAC sincerely wishes every Cadillac-LaSalle service station a prosperous New Year, and backs up its wish with a January direct mail piece that will help add to the service volume of a normally dull month. The right start will give momentum that will carry through the entire year.

An Educational Plan

The January Direct Mail piece, shown in the illustration, is based on an educational plan—a plan that will let the owner sell himself on his service needs. The mail piece opens the way, but its effectiveness will be greatly increased by an educational display in the service station.

A special offer on valve grinding and another on brake relining for the month of January gives an excellent basis for the educational program. Both items are aimed at economy, not only in the prices offered, but also in the saving of larger service bills in the future resulting from neglect.

Service Station Display

The mail piece does its part in presenting the story concisely and convincingly. A graphic display in the service station of the results of neglect, however, will cinch the point. Valves in bad condition due to neglect on the part of an owner in not having the necessary work performed earlier will drive home the importance of valve grinding.

A display of two brake shoes, one with the lining worn to the rivets and the other newly relined, will offer a lesson in comparative brake action that the owner cannot overlook. The display of a brake drum scored by exposed rivets of a worn out lining will put across the lesson in economy. It should be made clear to the owner, of course, that valve grinding and brake relining are made necessary by normal wear, and that these operations are required at reasonable intervals.

Plenty of Prospects

Every owner of a Cadillac or LaSalle car that has been driven over 12,000 to 15,000 miles is a prospect for a brake relining or valve grinding job or both. This will include all owners registered in the retail area other than the majority of "B" model owners. The prospects are numerous enough to offer the possibility of a very profitable January.

Copies of the mail piece are available at $2.10 per 100. Order your supply at once. It should be sent out beginning about January 5th and the mailing should be followed in a few days with a telephone follow-up contact.

A dull season gives you more time to *merchandise* service. Make an opportunity of January and get a start toward twelve months of profitable operation!

The January direct mail piece features special prices on valve grinding and brake relining

Interchangeability Table of 370 and 452 Cylinder Heads and Gaskets

THE cylinder heads provided on 370-C and 452-C cars are designated HHC and the lower compression ratios are obtained by the use of special gaskets in the same way as on 370-B and 452-B cars. The "C" series head is interchangeable on "A", "B" and "C" series cars and hereafter the Parts Division will furnish only the "C" series heads for all 370 and 452 cars. The part numbers of the "C" series heads are 1096172 for 370 cars and 1096173 for 452 cars. These heads can be identified by the letter "C" in a circle stamped under the "HHC". On later cars the "HHC" is eliminated and the letter "C" in a circle is the only mark appearing.

Early Type Heads

Any of the earlier type heads remaining in distributors' and dealers' stocks should be used up on "A" and "B" series cars. They must not be used on "C" series cars since the "C" series heads are of a considerably higher compression ratio than the heads formerly provided for 370-A and B and 452-A and B cars, and the use of these earlier heads would necessitate a change of the distributor and the timing marks on the flywheel. The HC ratio of the "C" series head corresponds to the HHC ratio on "A" and "B" series cars and the difference is equally great on LC and HC ratios of these models.

The same gaskets are used on "C" model cars to obtain the various compression ratios with the "C" series heads as with the "HHC" heads used on "B" model cars and on some "A" model cars. In order to use the "C" series head on "A" or "B" series cars, however, it has been necessary to provide thicker gaskets under new part numbers so that the standard "A" and "B" series LC, HC and HHC ratios can be maintained on these cars, regardless of the increased compression of the "C" series heads. It is important that the new (thicker) gaskets, indicated in the table, be used when "C" series heads are used on "A" or "B" series cars so it will not be necessary to change the timing.

HC and LC Heads

At the beginning of production on "A" series cars, separate heads, machined to the required thickness, were used to provide HC and LC ratios. The ratios of these heads cannot be changed to any of the standard ratios by the use of special gaskets. Since a number of these heads are still in use, it is important that the heads be carefully identified before attempting to change the ratio by the use of the special gaskets.

Since any one of several heads have been used interchangeably on "A" and "B" series cars, it may sometimes happen that the heads on the right and left-hand blocks of a car differ and in such cases different gaskets will be required for these heads to maintain the same ratio for both banks of cylinders. It is therefore important that the identity of *both* heads be determined when replacing gaskets. Ordinarily, if the markings on both heads are similar, it may be assumed that both heads are of the same type.

Identification

In most cases, the cylinder heads are plainly marked so that they may be easily identified, but the safest method is to determine the thickness of the head as measured from the top flange to the surface which rests against the gasket. Both means of identification are given in the table of gaskets given on this page.

When the part number of a cylinder head is definitely established, the proper gasket to use in order to obtain the desired ratio may be determined by referring to the table.

In any case where the "C" series head with the "C" series gasket, part number 889361, is installed on 370-A or B cars, it will be necessary to install V-16 push rods, part number 84244, in place of the original V-12 rods to compensate for the difference in thickness of the heads. This is in addition to the changes in the timing required.

Series where used	*Cylinder Head Part Number*	*Identification*		*Part Number of gasket required to obtain ratios originally specified for various models*		
		Marking	*Thickness*	*LC ratio*	*HC ratio*	*HHC ratio*
370-A and 370-B	1091383†	LC	$5\frac{5}{32}$"	889361 (4.9 to 1)	.....*	.....*
	1091440†	HC	$5\frac{7}{64}$"	.....*	889361 (5.2 to 1)	.....*
	1091133	HHC	$5\frac{1}{16}$"	894392 (4.9 to 1)	894339 (5.1 to 1)	889361 (5.4 to 1)
	1096172	HHC © or ©	5"	889408 (4.9 to 1)	894392 (5.1 to 1)	894339 (5.4 to 1)
370-C	1096172	HHC © or ©	5"	894392 (5.1 to 1)	894339 (5.4 to 1)	889361 (5.6 to 1)
452-A and 452-B	1090245†	B or LC	$5\frac{1}{16}$"	881027 (4.9 to 1)	.....*	.....*
	1090486†	HC	$5\frac{1}{32}$"	.....*	881027 (5.1 to 1)	.....*
	1090240	HHC	$4\frac{31}{32}$"	896503 (4.9 to 1)	896450 (5.1 to 1)	881027 (5.4 to 1)
	1096173	HHC © or ©	$4\frac{57}{64}$"	883608 (4.9 to 1)	883609 (5.1 to 1)	896450 (5.4 to 1)
452-C	1096173	HHC © or ©	$4\frac{57}{64}$"	896503 (5.1 to 1)	896450 (5.4 to 1)	881027 (5.7 to 1)

†No longer furnished for service. *Not available with cylinder head indicated.

General Service Letters to Distributors and Dealers Will Carry Urgent Information

BEGINNING with the first necessary occasion after January 1, a new special bulletin to Cadillac-LaSalle distributors and dealers will be used as required to convey urgent service and policy information which cannot wait for the regular publication of the SERVICE MAN or which requires the especial attention of the Service Manager.

The new bulletins will be known as General Service Letters and will be made on a special grey stationery for immediate identification. A sample letter is shown in the illustration.

Numbered for Filing

The General Service Letters will be dated and numbered consecutively, beginning with number GS-1 and should be filed in numerical order for reference. A special heavy paper binder will be sent to all distributors and dealers with the first letter issued, for this purpose and it is of the utmost importance that those receiving the letters keep them for their personal use.

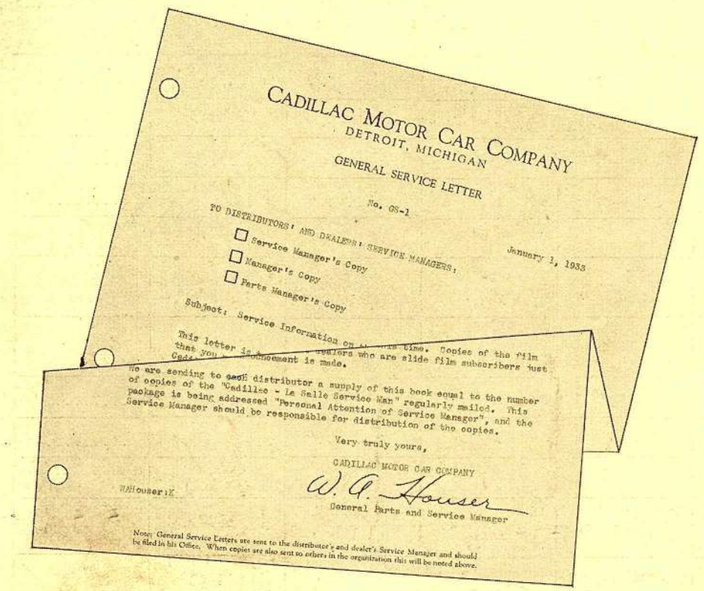
The letters will be addressed to the attention of the Service Manager. When the information given in the letter concerns the Parts Manager, a copy marked to the Parts Manager's attention will be included. Occasionally, the information contained in one of the letters will be of importance to the General Manager and at such times a copy marked to his attention will be included. The Service Manager should see that the letters are promptly turned over to these men.

Service Manager Responsible

The Service Manager will be expected to give these letters his immediate attention, passing whatever information he feels necessary through the proper channels. The information given in these letters frequently will be of a confidential nature, not intended for widespread distribution. The Service Manager must use his own judgment in passing the information to his subordinates.

Issued as Required

The General Service Letters will not be issued regularly, but only as the necessity arises. They will supplement the SERVICE MAN in giving Distributors and Dealers information quickly, and will help to increase service efficiency. These letters are an important addition to Cadillac service and every Service Manager should arrange to give them the attention they require.



CADILLAC MOTOR CAR COMPANY
DETROIT, MICHIGAN

GENERAL SERVICE LETTER

No. GS-1

TO DISTRIBUTORS' AND DEALERS' SERVICE MANAGERS:

January 1, 1933

☐ Service Manager's Copy
☐ Manager's Copy
☐ Parts Manager's Copy

Subject: Service Information on ... time. Copies of the film that you ... dealers who are slide film subscribers ... Code ... announcement is made.

We are sending to each distributor a supply of this book equal to the number of copies of the "Cadillac - La Salle Service Man" regularly mailed. This package is being addressed "Personal Attention of Service Manager", and the Service Manager should be responsible for distribution of the copies.

Very truly yours,

CADILLAC MOTOR CAR COMPANY

W. A. Houser

General Parts and Service Manager

WAHouser:K

Note: General Service Letters are sent to the distributor's and dealer's Service Manager and should be filed in his Office. When copies are also sent to others in the organization this will be noted above.

Sample letter made out on new General Service Letter form which will be sent to Distributors' and Dealers' Service Managers as required

Two Types of 370 Oil Pans Should Be Kept Separate

TWO types of oil pans have been furnished for 370 cars under the same part number, 1091074. These two types differ in the same way as the V-8 oil pans described on page 75, October 15, 1931 SERVICE MAN.

The late type oil pan, which can be identified by the extension and baffle at the rear end for the oil return, can be used on either 370-A or 370-B cars. The early type pan, however, can be used only on 370-A engines where the oil return opens directly into the pan. If the early type pan is used on 370-B cars, the oil return will be stopped. The same applies to the oil pan gaskets which, however, have been furnished under different part numbers for "A" and "B" cars. The "A" series gasket must not be used on 370-B cars as they, also, will stop the oil return.

Distributors and dealers should inspect their stock of oil pans, part number 1091074, to make sure that both types are not kept together and that there is no possibility of using the "A" type on 370-B engines.

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Measure Front Brake Rod In Released Position

THE dimension given for the front brake rod adjustment on page 22, plate 8, of the "B" Series Shop Manual, applies when the brakes are set, but since this measurement is ordinarily taken with the brakes released, the dimension should be changed.

The measurement from the front surface of the brake cable anchor support to the center of the pin in the operating lever, with the brakes in the released position, should be $3\frac{11}{16}$ inch instead of $3\frac{3}{16}$ inch. The dimension given for this measurement on the rear brakes is correct for the released position and only the dimension for the front brake rod adjustment need be changed.

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Wanted

WANTED: LaSalle 345-A Town Sedan or any body to fit 134" wheel base. Advise price and condition. Greenlease Motor Car Co., Kansas City, Missouri.

WANTED: Body for Cadillac 355-A. Town sedan preferred but 5- or 7-passenger sedan acceptable. Advise price and condition. Buick-Olds-Pontiac Sales Company, 512 Spring Street, N. W., Atlanta, Georgia.

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PRINTED IN U.S.A.

The CADILLAC LA SALLE
SERVICE MAN

Volume VII, Number 2 — February 1, 1933

New Training Course Is Exceptional Opportunity for Partsmen

AIMING toward improved parts service with men trained for the job, Cadillac offers a Qualified Partsman Training Course which will improve the ability and efficiency of every parts man, whether manager, stock clerk, counter salesman or helper. It will help every partsman to do his job better and it is a splendid opportunity for the man who wants to get ahead.

Worthwhile Advantages

The Cadillac Qualified Partsman Training Course offers every partsman the opportunity to improve his knowledge of the parts business.

It will help him to increase his income and better his position through a more thorough and practical understanding of the parts business.

It opens the way to special recognition within the Cadillac organization.

It offers special rewards in the way of prizes for the men who show consistently worthwhile accomplishment in the course.

Practical Sources

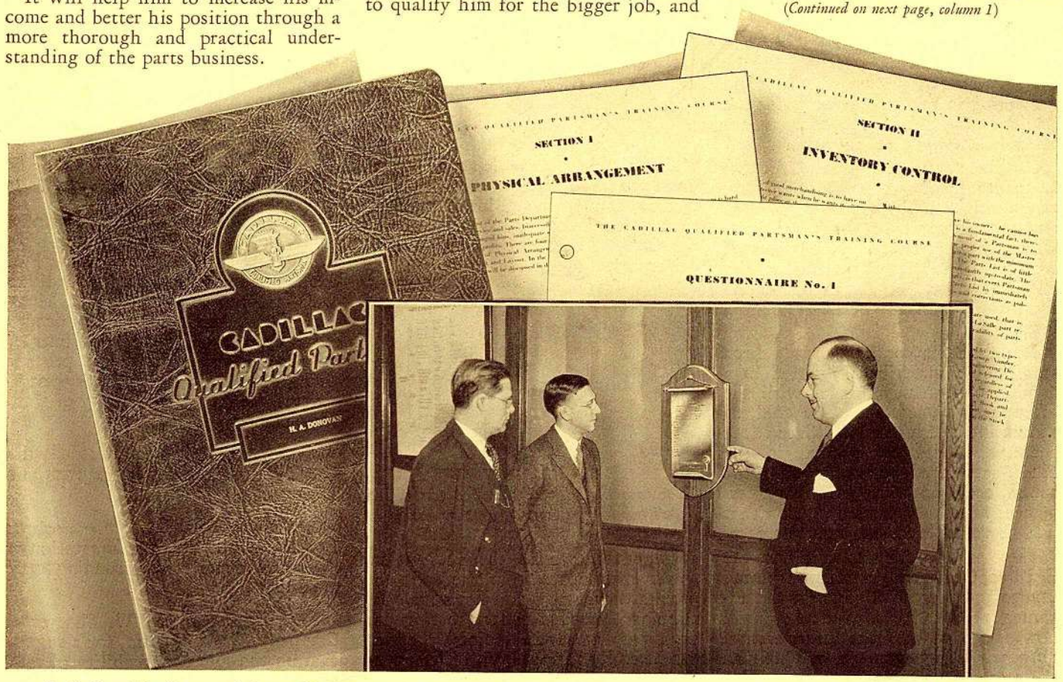
Well-trained, capable Cadillac Partsmen are greatly needed by Cadillac distributors and dealers. There is a scarcity of men known to be capable of responsible parts positions.

This training course, drawn from the experience of the best Cadillac partsmen in the field, as well as the factory, offers every Cadillac partsman the opportunity to secure the training necessary to qualify him for the bigger job, and it offers recognition to men who are qualified.

The training course consists of twelve chapters which will be sent to those enrolled for the course in twelve monthly installments, covering every phase of Cadillacpartsoperation. Each chapter will contain a questionnaire which is to be filled out and returned to the factory after the chapter has been thoroughly studied and mastered.

Every partsman who completes the course will receive the Cadillac Quali-

(Continued on next page, column 1)



R. C. Renolde, Parts and Service Promotion Manager, explains the importance of the plaque to W. A. Houser and R. Harvey

The CADILLAC LA SALLE SERVICE MAN

FEBRUARY 1, 1933 — VOLUME VII
DETROIT, MICH. — NUMBER 2

Published on the first of each month in the interest of Cadillac Service

Partsman Training Course

(Continued from page 5)

fied Partsman pin shown in the illustration. In addition, the partsman who has the highest ranking paper each month will have his name and the dealer's name engraved on an honorary plaque, which will hang in the Cadillac Parts and Service Department for everyone to see. At the completion of the course, an exact duplicate of the plaque will be presented to the distributor or dealer whose name appears most frequently.

The ranking list of subscribers will be carefully watched by distributors and dealers as well as the factory. The list will testify to the improved ability and efficiency of the men included and it will serve both to prove their value to their own organizations and as a list from which to draw when the most qualified Cadillac Partsmen are needed for greater responsibilities.

A Solid Grounding

The Cadillac Qualified Partsman training course makes it possible for every partsman to acquire a solid grounding in the fundamentals for the Cadillac parts job in a manner not obtainable elsewhere at any price.

Cadillac partsmen may enroll for this 12-chapter program at a cost of only 25c per month, $3.00 per year, payable in three installments, or all at one time, whichever is preferred. This covers all costs to the subscriber and makes him eligible for the special recognition and the awards which will be announced later.

The first chapter has already been sent out to subscribers, inserted in a handsome permanent binder with the subscriber's name stamped in gold, as shown in the illustration. Succeeding chapters should be inserted in the binder as received, and at the end of the course, each subscriber will own a permanent manual of parts operation that will be valuable for constant reference.

There is still time to enroll in the Cadillac Qualified Partsman Training Course and become eligible for the advantages the membership offers. Enroll now. Look toward the future with a purpose. Make yourself a Qualified Partsman.

Wire Wheel Trim Rings Are Easily Installed in Service

SEVERAL distributors' and dealers' service stations have been removing and installing chromium plated trim rings on wire wheels with such simple tools that it has been decided to furnish all wheels through the Parts Division less the trim rings. Hereafter, it will be necessary, therefore, for the service station to install the rings as required. The trim rings will be furnished under the following part numbers.:

Part No.	Wheel Dia.	Models
893080	17 in.	All "B" and "C" models except 452-B and 156" W.B. 355 and 370
896285	18 in.	452-B and 355 and 370 156" W.B.

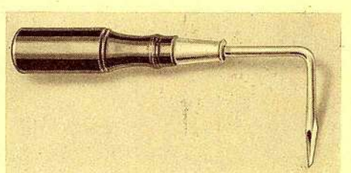
Installing the trim rings in the service station makes it possible to reduce the number of wheels listed in the parts list. Wheels which were similar in every respect except for the trim ring are now combined and are listed under one part number. The wheels affected are as follows:

Old Part No.	New Part No.
1096101 / 1096105	893079
1096103 / 1096107	891306
1083165 / 1081733	890980
1083166 / 1081734	891311

The LaSalle wheels provided on new cars as standard equipment did not have the trim rings, but they may be installed if desired.

Installation

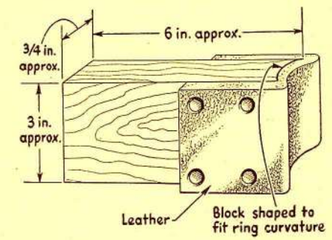
Two simple tools which can be made up in any service station are all that are required to remove and install the trim rings quickly and easily. For removing the rings, all that is required is a screw driver with the blade bent at a 90°



To remove the trim rings use a screwdriver with a long, thin edge bent as shown

angle, as shown in the illustration, about two inches from the end, and ground down to a thin flat edge. By slipping this edge under the ring and prying up at several points, the ring can be easily removed with little or no damage to the finish of the wheel.

A padded block is all that is required for installing the rings. A block of wood about 6" x 3" x ¾" should be shaped at one end to fit the curve of the ring as shown in the illustration. The end of the block should then be covered with a piece of leather or felt to protect the finish of the wheel. The leather or felt should extend high enough along the sides of the block so that there will be no possibility of the wood touching the wheel. Any nails, screws or tacks used to hold the padding should be countersunk to protect the wheel.



Construction of the block for installing trim rings without damaging the wheel

To install, simply place the ring in the proper position on the wheel and tap it into place with the block. It should be tapped carefully around the entire circumference to prevent damage. If sufficient care is taken, little or no scratching of the wheel finish should result.

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Final Parts Contest Awards Show Old Timers in Running

THE final month of the Parts Interchangeability Contest was marked by a bit of real competition, but Paul Sheldon, Parts Manager of the Cadillac-LaSalle Corporation of Houston, Houston, Texas, seems to have gained a little experience as an old timer in winning prizes and took the pen and pencil set this time. His suggestion covered the interchangeability of glass-run channels.

Two runners-up were rewarded with Cadillac pencils for their suggestions. They were:

Arthur B. Graham, New Rochelle Branch, New York, for a suggestion on the interchangeability of running board mouldings.

Fred Horstman, G. W. Shroyer & Company, Dayton, Ohio, for a suggestion on the interchangeability of radiator casing anti-squeak.

Cadillac Lubrication Agreement in New Form Opens Way to New Merchandising Effort

APPEARING in an entirely new form at even lower prices, the new Cadillac Lubrication Agreement should bring greater profits to distributors and dealers who realize the value of selling service on a prepaid contract basis.

The new Lubrication Agreement is a coupon book containing twelve numbered coupons—one for each of the twelve lubrication operations. On the back of each coupon is listed all of the work covered in that operation, which gives the owner a definite understanding of the service to which he is entitled under the Agreement and serves as a reminder to the service station.

Use of Coupon

Under the new system, the owner presents the coupon book when the car is brought in for lubrication. The service station removes the coupon covering the operation to be performed and returns the book to the owner. In inter-organization billing of work performed under the Agreement, *the coupon must be attached to the invoice* when it is sent to the factory for approval.

A blank in the front part of the book is intended as a receipt and contains space for the owner's name, the engine number of the car, the mileage and date at which the Agreement expires and the signature of the selling distributor or dealer. In addition, this receipt contains a row of twelve small squares in which the order of the lubrication operations should be noted. For example, if the Agreement is sold to an owner of a car having had the first four operations performed, the order would be listed as 5, 6, 7, 8, 9, 10, 11, 12, 1, 2, 3, 4. The first operation to be performed under the Agreement would then be number 5 and coupon number 5 would be removed. It is extremely important that the operations be performed and the corresponding coupons removed in the exact order given on the receipt. *Check the order before performing any operation.*

The changes in the form of the Lubrication Agreement have been made in keeping with a new trend in the automotive industry—an effort on the part of several manufacturers to get new car owners into the service station regularly by giving them minor lubrication service operations, over a period of a year, which calls for little labor and very little material.

The interest in lubrication awakened by the special offers of other manufacturers can be turned to good advantage in the sale of Cadillac Lubrication Agreements. The prospective new car purchaser will want to know if Cadillac has any lubrication plan and the new car salesman can profitably use the Agreement as a selling point for the car as well as an item for sale with the new car. The price of the Agreement is obvious proof of economy.

Sell New Car Owners

The new Agreement will also have a definite appeal to owners who have in the past had their chauffers performing the lubrication work. The new prices are but slightly higher than the retail cost of the lubricant in quantities that the owner would purchase, and the advantage of having the work performed by experts will offset the slight difference.

The Cadillac Lubrication Agreement should be thoroughly explained at the next sales meeting so that salesmen will be equipped with a full understanding of this vital plan. Its use as a new car selling point will greatly increase the sale of Lubrication Agreements.

The lower prices will help in the sale of Agreements. By eliminating the seasonal changes of rear axle, transmission and steering gear lubricants, it has been possible to reduce the price to $30.00 for 12 lubrications on the La Salle and Cadillac V-8, and to $35.00 on Cadillac V-12 and V-16 cars. *This is a saving of from 37% to 41% over the cost of the 12 operations if performed and paid for individually.*

Although the savings available to the owner by the Agreement reduce the gross profit to the service station on these operations, the use of the Agreement as a leader for other service work will more than compensate for this reduction. Bigger profits come from regular customers, as intensive studies since the introduction of the Lubrication Agreement have proved.

The new Lubrication Agreement coupon books are now available at 10 cents each net. Order your supply at once and make 1933 a year of regular customers. The Lubrication Agreement will reach all your owners.

Specimen copies of the new Agreement are not available, but if they are desired, it is suggested that numbered copies be taken from stock and marked "void."

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Wanted

WANTED: Body for Cadillac 341-A, 140-inch wheelbase chassis. Touring preferred, but not essential. Advise style, price and condition. John D. Wendell, Inc., 256 Washington Avenue, Albany, New York.

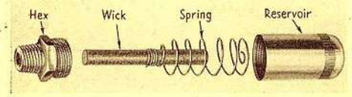
Service Man Issued Monthly

EFFECTIVE *after the January 1 issue, the Service Man will appear once each month instead of twice. The present issue, therefore, the second issue in 1933, is dated February 1.*

The General Service Letters to distributors and dealers, announced in the January 1 Service Man, will be used to convey information requiring immediate attention.

Wick Type Oiler Is Now Used on V-12, V-16 Brake Assister

CADILLAC 370-C and 452-C cars now being shipped are equipped with a new type brake assister oiler instead of the ratchet type grease cup formerly used. With the new type oiler, the lubrication requirements are different, an engine oil of S. A. E. viscosity 20 being required every 6000 miles.



An exploded view of the new type wick oiler used on V-12 and V-16 brake assisters

The new type oiler consists of a hex base which screws into the tapped hole formerly used for the grease cup, a wick to which a spring is attached to keep the wick in contact with the pull rod of the assister, and a reservoir to hold the oil.

The wick type oiler has several advantages. The reservoir holds sufficient oil for 6000 miles of operation and the wick, kept in constant contact with the pull rod by the spring, keeps the pull rod lubricated without a periodical turning down or adjustment. In addition, the engine oil does not stiffen noticeably enough to affect the lubrication of the pull rod and can be used the year round.

Grease Hardening

The first 370-C and 452-C cars shipped, as well as the A and B models were equipped with a ratchet type grease cup, part No. 112465. Wheel bearing lubricant was specified for use at this point, but in extremely cold weather difficulty was sometimes experienced with the lubricant hardening and interfering with the smooth operation of assister. This difficulty can be overcome by the use of a lighter cup grease meeting Cadillac specifications G-2½.

The new type wick oiler, part No. 885268 can be used on any 370 and 452 brake assister. To install, simply remove the grease cup and screw the oiler in place, tightening the hex securely. The brake assister pull rod should be removed and cleaned of all the old grease. After reassembling, the oiler reservoir should be filled with S. A. E. 20 engine oil and screwed in place. Lubrication is then required only on the regular number 6 and 12 lubrication operations.

With the ratchet type grease cup, lubrication is necessary every 1000 miles. Simply fill the grease cup with the light cup grease (G-2½) and turn down a few turns every 1000 miles. When the grease cup is used, it is extremely important that the G-2½ cup grease be used during cold weather.

« »

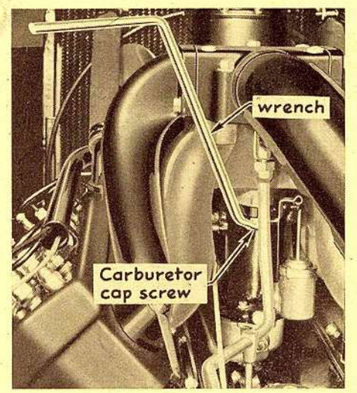
Carburetor Cap Screw Wrench for V-8 Cars Now Available

AFTER a number of requests from distributors and dealers, the Hinckley-Myers Company, Jackson, Michigan, Cadillac's official tool suppliers, has developed a special wrench to reach the cap screws holding the carburetor on 345-B, 345-C, 355-B and 355-C to the manifold flange. The time required for removing and installing or tightening the screws is materially shortened by the use of this wrench.

The handle of the new wrench is double offset to avoid interference with the manifolds, and its socket is sufficiently notched so that a new grip can be obtained on the head of the screw after as little as 1/12 of a turn. As may be seen in the illustration, the wrench can be used to tighten the carburetor to manifold flange screws without removing the air intake silencer and cleaner.

Every service station will find one or more of these wrenches a valuable addition to its equipment. It will more than pay for itself in the first few operations requiring removing and installing or tightening of the carburetor.

The wrench may be obtained under Part No. J-562 at $1.70 each net. Orders should be placed direct with the Hinckley-Myers Company.

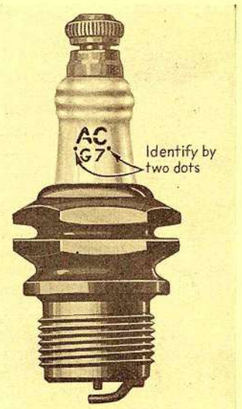


The carburetor cap screws may be tightened without removing any parts

Two Types of Spark Plugs Carry G-7 Identification

THE spark plugs used on 370-C and 452-C cars are a new development, designed to operate with the higher compression ratios in these cars. The new plugs, known as the type "G-7", are an extra heavy duty plug and must not be confused with the type "G-7" plugs listed on page 55, August 1, 1931 SERVICE MAN as a "cooler" plug for correcting pre-ignition at that time on V-12 and V-16 cars.

Two dots on the porcelain identify the extra heavy duty spark plugs



The new type G-7 spark plug is for heavier duty than the "D" series used on "B" model cars in production and for service on "A" model cars as described on page 55, July 1, 1932 SERVICE MAN.

The new type G-7 plug may be identified by the single dot on each side of the "G-7" marked on the insulator as shown in the illustration. Only plugs marked in this way should be used on 370-C and 452-C cars. The earlier type G-7 plug without the two dots should not be used on "C" series cars under any circumstances.

« »

For Sale

FOR SALE: Four new Series 353 bodies; three 5-passenger town car, Job No. 3912, and one 7-passenger town car, Job No. 3925. These bodies are in perfect condition and have never been used. Price $250 each. For further information, inquire of the Factory Parts Division.

FOR SALE: LaSalle 345-A town sedan body in good condition. Warner Motors, Gregg Building, Easton, Maryland.

80-1-33-V

PRINTED IN U.S.A.

The CADILLAC LA SALLE SERVICE MAN

Volume VII, Number 3 — March 1, 1933

Display Telephone Listing Helps Bring In Tourist Business

Providing a uniform classified telephone directory advertising heading for the use of Cadillac-LaSalle distributors and dealers throughout the country, Cadillac offers service stations a new aid in securing tourist business.

The availability of this classified listing has previously been announced to distributors and dealers and the majority have taken advantage of it. Some Service Managers, however, are not acquainted with this service, although it has particular advantages in assuring tourist service business.

Heading Paid For

This classified listing consists of a display heading of the Cadillac-LaSalle trade-mark in the "Where to Buy It" section of the telephone directory, under which the dealer or dealers served by the directory are listed in bold face type. Arrangements have been made through the American Telephone and Telegraph Company to permit Authorized Cadillac-LaSalle distributors and dealers to have the benefit of this listing locally by paying for a bold face listing only. Cadillac pays for the heading down to the "Where to Buy It." *Only Authorized Cadillac-LaSalle distributors and dealers will be permitted a listing under this heading.*

Identified Authorized Service

The display heading is a way of attracting attention which means that the distributor's or dealer's phone number is easily located in the directory by local or touring owners. It also makes it easier for the owner to recognize the *Authorized* Service Station without being confused by the listing of independent garages. Through the advertising of the telephone companies, the owner will know that only Authorized dealers are listed under the trade-mark in the "Where to Buy It" section.

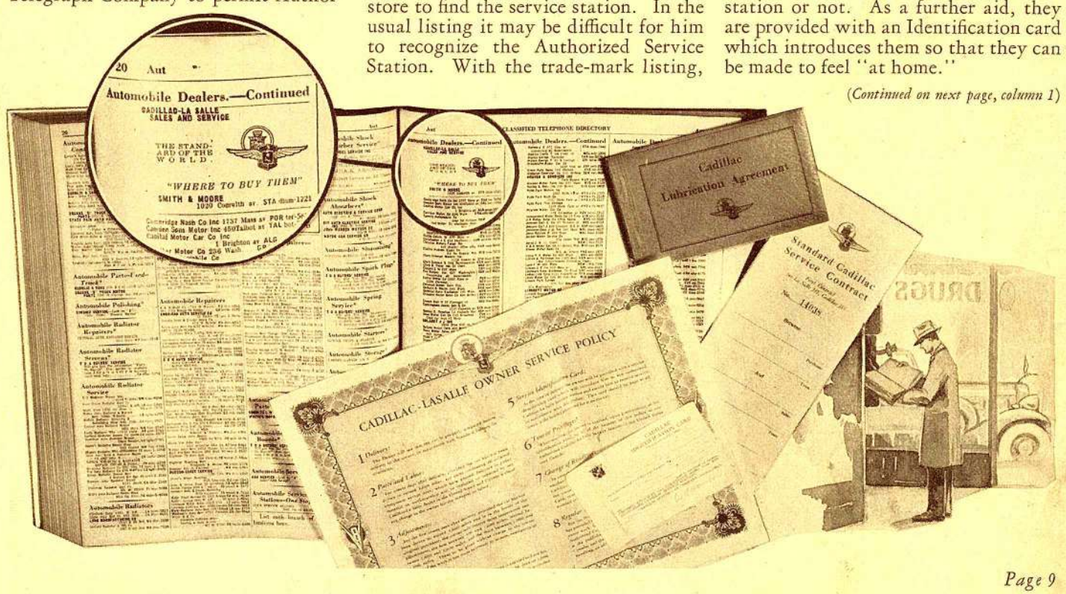
When a touring owner needs service in a strange town, he may consult the telephone directory in a corner drug store to find the service station. In the usual listing it may be difficult for him to recognize the Authorized Service Station. With the trade-mark listing, however, he will recognize it at once, and the Authorized Service Station will get the owner's business that otherwise might have gone elsewhere.

This is only one of the means offered by Cadillac to help bring the touring owner's service business to Authorized Service Stations. Others include the Inter-Organization billing system, used in conjunction with the Cadillac Service Policy, the Service Contract and the Lubrication Agreement.

Additional Aids

The Inter-Organization billing system is the foundation of Cadillac's Tourist Policy and the "package" plan of merchandising service. Through it, distributors and dealers are able to offer touring owners all the service to which they are entitled at their home service station with no inconvenience to the owner. Owners are therefore anxious to have *all* of their work performed at Authorized Service Stations whether it is to be charged to their home service station or not. As a further aid, they are provided with an Identification card which introduces them so that they can be made to feel "at home."

(*Continued on next page, column 1*)



The CADILLAC LA SALLE SERVICE MAN

March 1, 1933 — Volume VII
Detroit, Mich. — Number 3

Published on the first of each month in the interest of Cadillac Service

Bring In Tourist Business

(*Continued from page 9*)

The Service Contract and Lubrication Agreement, in addition to offering the owner a substantial saving, makes it possible for him to travel without carrying as much money or cheques as he would ordinarily require to pay for this service, and he is therefore more willing to buy needed service not covered in his Contract or Agreement. The touring owner holding a Service Contract or Lubrication Agreement generally gives *all* of his service business to Authorized Service Stations.

These aids help assure Authorized Cadillac-LaSalle Service Stations the enormous volume of tourist business, and each individual service station should make arrangements to take full advantage of the opportunities for increased volume that this tourist business offers.

Make sure your firm's name is listed prominently in the telephone directory. Be ready to offer prompt, complete and efficient service to touring owners. Remember the tourist is generally in a hurry. Quick service to tourists will help make more satisfied owners!

« »

Method of Installing V-12 and V-16 Manifold Gaskets

The possibility of V-12 and V-16 intake and exhaust gaskets blowing out can be greatly reduced by soaking the gaskets in water for a few hours and coating with graphite before installing. The water permits the asbestos of the gasket to set more easily when installed, making it unnecessary to draw up the manifold studs the second time after the car has been run awhile.

Coating the gaskets with graphite make it easier for the manifold to expand and contract without pulling or wrinkling the gasket which may in some cases cause the gasket to blow out.

« »

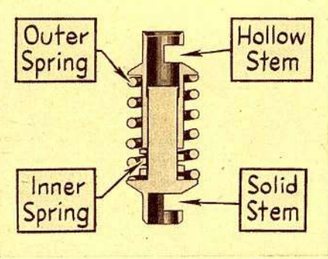
Wanted

Wanted: Cadillac 355-B body, any style other than 7-passenger. Advise price and condition. Cadillac-LaSalle Company, Inc., of Norfolk, Norfolk, Virginia.

"B" and "C" Series Shock Absorbers Can Be Made Interchangeable by Changing Control Valves

In order to reduce stocks, the Parts Division hereafter will furnish only the late type "C" series shock absorbers for all "B" and "C" series cars. These shock absorbers can be made to apply to any "B" or "C" series car by changing the control valve to correspond to the control valve used in the shock absorber being replaced. The shock absorbers furnished will be listed in the March 15 Parts List and Contract Maintenance Revisions.

The "C" series shock absorbers, as furnished by the Parts Division, are equipped with the new two stage control valve which may be identified by the inner spring in addition to the outer spring, as shown in the illustration. By removing this valve, which is located under the control lever, and installing the control valve used in the shock absorber being replaced, the late type "C" series Cadillac shock absorbers may be used on all "B" and "C" series cars except the 345-C. The new 345-C shock absorbers may be used only on 345-C cars.



How to distinguish the two ends of the two-stage control valve. The single-stage type is similar except that it does not have the inner spring.

Control Valves Furnished

In addition to the two two-stage control valves, four of the single-stage type are required to make the shock absorbers furnished interchangeable on "B" and "C" series cars. These valves may be identified by the finish of the springs as follows:

TWO-STAGE TYPE

1060148 . . . . . Copper finish
1060149 . . . . . Steel finish

SINGLE-STAGE TYPE

047704 . . . . . Copper finish
047706 . . . . . Nickel finish
047707 . . . . . Steel finish
047708 . . . . . Copper oxide finish

Since the control valve serves for both bumper and rebound action, it is important that the valve be placed in the shock absorber in the proper position to insure the proper action on the rebound. The valve should be placed in the shock absorber in such a way that the hollow end is toward the inside and the solid end is toward the outside as explained on page 20, March 1, 1932 Service Man. With the two-stage valve, this means that the end containing the inner spring should be toward the outside of the shock absorber.

452-B Control Valve

All 452-B as well as 452-C shock absorbers should be equipped with the two-stage control valves. Some 452-B cars, however, may be found equipped with single-stage valves and in such cases all four control valves should be changed, using valve, part No. 1060149, in the front and part No. 1060148 in the rear shock absorbers.

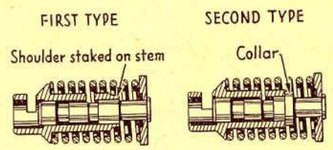
Check Valves

Two *check* valves are furnished for service, but replacement should ordinarily be with valves of the same type as the ones removed. Any change in the arrangement of the check valves as furnished on the car and in the shock absorbers supplied for service should be made only in individual cases to correct specific difficulties.

The two check valves may be distinguished by the number stamped on the spring seat washer. The check valves furnished are as follows:

Part No.	*Identification*
047677	Stamped 1
047678	Stamped 5

In this connection, the late type of these check valves can no longer be identified positively from the early type by the "X" staking mark on the end of the stem, as indicated on page 43, June 1, 1932 Service Man. Since that time, some of the late type valves have been sent out without this staking mark, and the late type should be identified only by the collar on the stem as shown in the illustration.



The second type check valve should be identified by the collar on the stem.

Past Model Owners Offer Profitable Field for Additional Lubrication Agreement Sales

THE great increase in Lubrication Agreement sales since the introduction of the new Agreement, announced in the February 1 SERVICE MAN, proves that owners are interested in lubrication and that the new Agreement will make them regular customers. It is therefore obvious that the greater the number of owners who know about the new Agreement, the greater will be the number of sales.

The problem of letting owners know about the new Agreement can be solved by the use of a new direct mail piece which has been prepared by the Service Department and can be obtained at $1.90 per 100, net, including envelopes. This mail piece is a large size folder presenting the Authorized Lubrication story as well as comprehensive information on the price and convenience of the new Lubrication Agreement. The presentation is made in large pictures and concise words that will get the information across at a glance.

Every owner is a prospect for the new Lubrication Agreement, regardless of the age of his car. The Agreement can apply to all models and the price is within reach of all. It offers a substantial saving that no owner will ignore.

Past model owners offer a particularly worthwhile market for Agreement sales, and should not be neglected in the campaign with the direct mail piece. Not only is this market larger, but cars that have been driven a considerable mileage need more service that can be sold when the owner brings his car in for the regular lubrication.

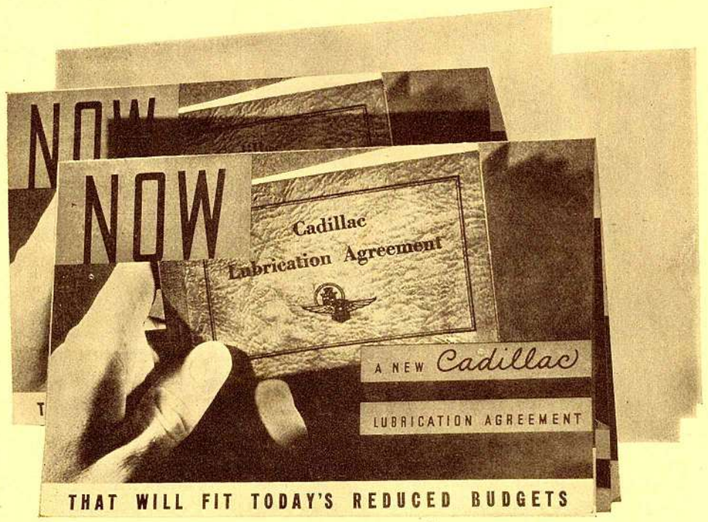
LUBRICATION AGREEMENT SALES
According to Mileage

Speedometer Reading at time Agreement was signed	*% of Total Sales*	
With New Car or under 1,000 miles	7%	
1,000 to 5,000 miles	8.5%	
5,000 to 10,000 miles	12%	
10,000 to 20,000 miles	24%	
20,000 to 30,000 miles	22%	47% of total
Above 30,000 miles	27%	

Proof that past model owners are live prospects was brought to light by a recent survey of the sale of Lubrication Agreements. *Forty-seven per cent of Lubrication Agreement sales are being sold to owners whose cars have been driven 20,000 miles or more!*

New car owners are good prospects and it pays to get them in the habit of patronizing your service station. The fact remains, however, that profits lie in volume and there are more past model cars operating than new ones.

Look over the chart of Lubrication Agreement sales broken down according to mileage. The figures tell their own story. Order a supply of the new Lubrication Agreement mail piece and build your volume. Concentrate on past model owners!



Type G-7 Spark Plugs Now Used on V-8 Cars

THE type G-7 spark plug, described on page 8, February 1 SERVICE MAN and used on 370-C and 452-C cars since the beginning of production, is now being used on all 345-C and 355-C cars leaving the factory. This plug differs from the D-8 plug formerly used, in that it is designed for heavy-duty usage, which means that it will operate satisfactorily at higher temperatures and will give better service over a longer period of time.

Hereafter, only the new G-7 plug should be used in service on "C" series cars. It is recommended that this plug be used also for replacement on previous model cars, particularly in engines that are subjected to severe operating conditions. The part number of this plug is 843542.

This new plug should not be confused with a plug marked G-7 that was supplied several years ago to remedy pre-ignition on V-12 and V-16 engines, but which was discontinued soon afterwards. The present G-7 plug is an entirely new plug, which may be identified by the dot on each side of the G-7 as shown in the February 1 SERVICE MAN.

In this connection, the new "Universal" spark plugs placed on the market by the AC Company are not intended for use on Cadillac and LaSalle cars. The universal plugs may be distinguished by the double letters, "AA", "GG", "KK" and "FF" under the "AC" on the porcelain of the plug.

« »

Five Inch Wheel Rims Now Used on 341-B Disc Wheels

DISC wheels originally furnished for 341-B cars under part number 878840 had 6-inch rims. Service requirements on this type of wheel are now so small, however, that it is impossible to get a rolling of steel or a supply of rims from the rim manufacturer in this size.

In order to supply disc wheels for these cars and overcome the difficulties mentioned above, a 5 inch wheel rim has been designed and the engineering department has approved its use in place of the 6 inch wheel rim. Wheels furnished hereafter under part number 878840, therefore, will have 5 inch rims.

Vacuum Pump Service Parts Furnished by Parts Division

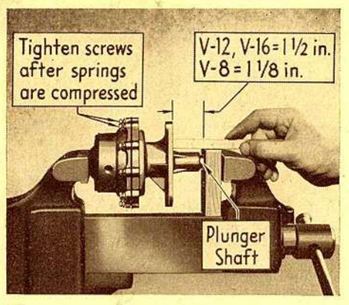
THE Parts Division is now furnishing the component parts for the windshield cleaner vacuum pump used on all "B" and "C" series cars so that distributors and dealers may service the pumps without returning them to the factory or the United Motors Service Station. The parts necessary for complete service on this unit were listed in the February 15 issue of the Parts List and Contract Maintenance Revisions.

The replacement of parts on the vacuum pump is, in general, quite simple, but special precautions should be taken in removing and installing the diaphragm to avoid any possibility of damage to the diaphragm.

Installing Diaphragm

To remove the diaphragm, the two parts of the pump housing should be held together securely while the ten screws around its circumference are removed. The top may then be eased off to prevent the springs from throwing the diaphragm.

When installing the diaphragm, particular care should be taken to tighten the screws with the diaphragm under full pressure so that there will be no danger of the fabric cracking or breaking when the pump is put in operation. This can be done by first properly assembling the various parts and installing the screws loosely. The pump



The screws should be tightened with the diaphragm under pressure obtained by compressing the plunger

should then be placed in a vise, with a piece of wood to protect the end of the plunger shaft from damage, and the vise should be tightened to compress the springs to approximate their full tension in operation. This condition is obtained when the distance from the lower side of the pump base to the bottom of the plunger shaft is 1½ in. on V-12 and V-16 cars and 1⅛ in. on V-8 cars as shown in the illustration. The screws should then be securely tightened. With this procedure there should be no danger of the diaphragm cracking in operation.

Oil Consumption

A cracked or broken diaphragm in the vacuum pump will cause *excessive oil consumption* and it is therefore extremely important that the precautions above be taken when installing the diaphragm.

Since a cracked or broken diaphragm is not evident from outward inspection, the pump should be one of the first things investigated in *every* case of excessive oil consumption on "B" and "C" cars. The only certain way to determine whether or not the pump is at fault is to remove the pump from the engine, disassemble it and inspect the diaphragm for any points of leakage.

« »

Distributor Head Rotor Spring Must Make Contact with Carbon

A FEW cases of poor performance of V-8 engines have been found to be due to poor contact of the rotor spring in the distributor head. If the rotor spring does not make proper contact with the carbon point on the center terminal of the distributor head, the carbon will burn away, setting up a resistance to the high tension current that results in missing or in sluggish engine performance.

In any cases of poor engine performance on "B" or "C" series V-8 cars, which are not attributable to ordinary causes, the distributor should be inspected to make sure that the rotor spring makes proper contact with the carbon point in the head. If it does not, it can be easily bent to make contact, but if the point is badly burned, the distributor head and rotor should both be replaced.

« »

Spring Direct Mail Piece Will Be Ready Shortly

WITH the gradual let-up in the severity of winter weather now evident, distributors and dealers should be concentrating on plans for a campaign to get the spring service business. Cadillac has been preparing a spring service direct mail piece which will be announced shortly after March 15, to help make the spring campaign effective and distributors and dealers should reserve a place for this aid.

Correct Lock Washer Needed to Adjust Body Bolts Properly

THE recommended procedure for adjusting body hold down bolts, as given in the SERVICE MAN and in the Shop Manual, is to tighten the nut just enough to flatten the lock washer. This recommendation obviously necessitates the use of a lock washer with the correct tension if the resulting adjustment is to be accurate.

There have been some instances in which heavier lock washers have been used on the body bolts, which have resulted either in the rubber body pad being too tightly compressed or even in preventing the lock washer from being drawn flat at all. Body misalignment, ineffectively cushioned bodies, or both may result from this condition.

Lock Washer Thickness

In case of difficulty with body bolt adjustment, the lock washers under the rubber pads should be inspected. The correct lock washer, part number 116182, is exactly 1/16-inch thick. Lock washers 3/32-inch thick will be found on some cars. These washers need not be replaced, as they approximate the correct adjustment, but any washers heavier than 3/32-inch thickness should be replaced with 1/16-inch washer.

This applies only to the lock washers used under the *rubber* body pads; the two front bolt do not have rubber pads and they require a heavier lock washer, ⅛-inch thick, which must be drawn up tight.

No attempt should be made to align the body by altering the body bolt adjustment. If correct body bolt adjustment does not align the doors, realignment should be secured by the use of thin fabric shims as required on top of the rubber pads.

« »

Wanted and For Sale

WANTED: Cadillac 353 engine in good condition. Advise price, Dew Motor Company, St. Petersburg, Florida.

FOR Sale: Cadillac 341-B Convertible Coupe body in excellent condition, including top and paint. Color, moonstone grey. Warner Motors, Easton, Maryland.

FOR Sale: Cadillac 353, 5-passenger Coupe body complete with fittings. In good condition. Reasonable. Dew Motor Company, St. Petersburg, Florida.

78-3-33-V

PRINTED IN U.S.A.

The CADILLAC LA SALLE
SERVICE MAN

Volume VII, Number 4 — April 1, 1933

7 POINTS TO A 90-DAY PROGRAM OF SERVICE PROFITS

Beginning April 1 and continuing through April, May and June, Cadillac Distributors and Dealers will conduct a 90-Day Service Drive—the most intensive sustained campaign for service business in the history of Cadillac. This drive takes in every phase of service, offering a stimulus for chassis service sales, body service sales, parts sales, and accessory sales. It is a campaign that should turn 1933 into a profitable service year.

To bring every division of Cadillac service into the picture, a seven-point program has been arranged as outlined on this page. This program will be more fully presented in slide films, flashes, and special bulletins so that every Cadillac service station will start the drive April 1. Every member of every Cadillac organization has a definite part to play in the program. Limber up for this business-getting drive and put your shoulder to the task.

The first three points of the 7-point program consist of three timely direct mail pieces, released as the seasonal need approaches, around which the entire 90-Day Drive revolves. The first is the Spring Conditioning Special, illustrated on page 14. As soon as this mail piece is sent out to owners, the rest of the program follows swiftly.

4 BRING THEM BACK DRIVE

A 30% savings on parts will be offered to owners of 341-B—328 cars or earlier to get past model owners back as service customers. See page 16 for details.

5 LUBRICATION AGREEMENT CONTEST

A cash bonus will be paid to individuals of the 5 organizations selling the greatest percentage of Lubrication Agreements per car registered.

6 SPECIAL 90-DAY FOLLOW-UP

To make the other six points of the 7-point program fully effective, an aggressive follow-up campaign must be carried on. This means full use of the

(Continued on next page, column 1)

7 ACCESSORY SELLING PROGRAM—90 days intensive selling of seasonal accessories

Get on the Track of Increased Volume

with the APRIL mail piece

The CADILLAC LA SALLE SERVICE MAN

April 1, 1933 — Volume VII
Detroit, Mich. — Number 4

Published on the first of each month in the interest of Cadillac Service

90-Day Service Drive

(Continued from Page 13)

personal call and the telephone to reach *every* owner during the 90-Day Drive.

Schedules should be set and quotas established for the telephone follow-up so that every owner can be reached at least twice during the Drive. The owners listed in the follow-up records

The April Mail Piece will be made more effective by the use of the telephone follow-up

should be thoroughly classified so that concentrated effort on a particular point may be made more effective. Spring reconditioning prospects, appearance service prospects, vacation service prospects and prospects for the sale of past model parts can often be segregated. There will be considerable overlapping, of course, but an owner of a past model car is a better prospect for chassis service at the reduced prices than for appearance service.

The Spring Conditioning mail piece should be sent out at once and quickly followed up by telephone or personal call. This mail piece, the first point in the 90-Day Service Drive, will start the ball rolling by getting the owner into the service station through the special offer at $10.85.

Spring reconditioning is a good starting point for a concentrated drive. It is something every car needs and a need that every owner recognizes. Its need arises at a time when the owner begins to use his car more often and for longer drives. He takes more pleasure trips during the spring and summer and his service needs are, therefore, more apparent. Get him into the habit of patronizing your service station by performing the spring reconditioning service.

The Spring mail piece should be sent out at once to get the owner in before the independents reach him. Every Cadillac and LaSalle owner is a prospect for this service and every one should receive the mail piece.

Order your supply from the Service Department now. The price is $2.25 per hundred net, including the special envelope or a considerable saving may be had by ordering the April, May and June folders at one time at the special price of $5.50 per 100 sets. Get *your* 90-Day Service Drive under way. Start the ball rolling.

« »

Stiffer Accelerator Pedal Retracting Spring Now Used

In any case where the free-wheeling unit is permanently removed from "B" series V-8 cars, it will be necessary to replace the accelerator pedal retracting spring, part number 891972 with a stiffer spring, part number 877744. With the free-wheeling unit removed the accelerator pedal retracting spring no longer receives the assistance of the springs in the valve unit and it is necessary to provide greater tension.

Some of the first "C" series cars shipped had the lighter spring, part number 891972, and in any case of the accelerator pedal sticking on these cars the stronger retracting spring should be installed.

The Parts Division is no longer furnishing the lighter spring since the heavier spring, part number 877744, can be used whether the car is equipped with free-wheeling or not. Any of the lighter springs in distributors' or dealers' stocks should be used up on "B" series V-8 cars equipped with free-wheeling.

« »

Bills of Lading Should Be Included with R. G. N.

The importance of prepaying transportation on parts which are returned to the factory has been brought to the attention of distributors and dealers several times in the Service Man.

In order that the Parts Division may check in shipments of returned goods, report any shortages to the transportation companies and know that the carrying charges have been prepaid, it is *very important* that the *bills of lading* accompany the returned goods notices which are mailed to the factory on the date shipment of goods is made.

The returned goods notice numbers should be shown on the bills of lading in numerical order and the bills of lading must indicate that the charges have been *prepaid*.

New Car Delivery Date Is Important on Report

Some distributors and dealers fail to show the date of delivery of the car on the New Car Delivery Report Card which results in considerable difficulty at the factory. The space for the date of delivery is plainly indicated in bold face type on the card, as shown in the illustration, and should not be overlooked.

The delivery date is extremely important in making out the Identification Card which is mailed to the owner as soon as the Delivery Report Card, correctly filled in, is received at the factory. When the delivery date is not shown, the Identification Card must be held up until full information is received from the distributor or dealer making the delivery. Delay in mailing the Identification Card may seriously inconvenience the owner, especially if he is about to take his car on a trip away from his home service station.

NEW CAR DELIVERY REPORT CARD 355-C

ENGINE NO. 3005556

SHIPPED TO Brooklyn, N. Y. DATE 3-1-33 BODY STYLE T. Sedan

DATE OF DELIVERY March 18, 1933

NAME OF OWNER MR. MRS. MISS (CROSS OUT TWO) Mr. Edward W. Wight

STREET ADDRESS 1672 Townsend Avenue

CITY Brooklyn COUNTY Kings STATE N. Y.

SOLD BY DISTRIBUTOR / DEALER / ASSOC. DEALER (CROSS OUT TWO) Cadillac Motor Car Company

CITY Brooklyn STATE N. Y.

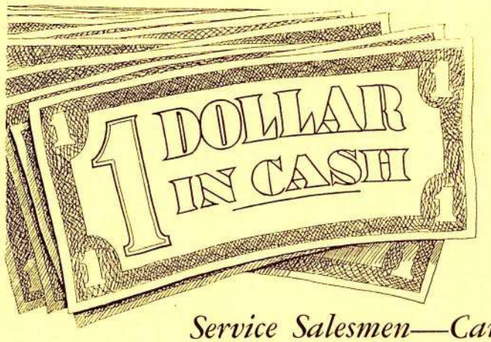
SERVICE OBLIGATIONS TO BE ASSUMED BY Cadillac Motor Car Company

CITY Brooklyn STATE N. Y.

FINANCED BY CASH ☐ CASH AND TIME ☐ TIME AND USED CAR ☐ CASH AND USED CAR ☒ (PLEASE TYPE)

CAR IN TRADE — MAKE Buick — YEAR 1932 — BODY STYLE Sedan — ALLOWANCE $580.00

A SATISFIED OWNER NEVER COMPLAINS



will be paid by Cadillac for each

LUBRICATION AGREEMENT

sold by the FIVE WINNING TEAMS *in each of*

Three 30-Day Contests

Service Salesmen—Car Salesmen—Counter Salesmen—Cashier!

HERE is an opportunity for you to make some extra cash by aggressively selling Cadillac Lubrication Agreements during the 90-Day Service Drive.

To promote the sale of Lubrication Agreements three national contests will be conducted during April, May and June and cash awards will be made to each of five distributors or dealers selling the most lubrication Agreements in percentage of retail registrations during each of the three 30-day periods. Awards will be made after the completion of each 30-day contest and all teams will start from scratch on the contest following. The awards will be based on the number of Agreements sold and will amount to $1.00 per Agreement—paid at the completion of each of the three contest periods—payable to the individual members of the organization making the sales.

Each distributor's and dealer's organization will be considered as a team. Because of the method of scoring, every team, regardless of size, will have an equal chance and it is, therefore, up to the individual members to put forth their best efforts to sell a Lubrication Agreement to every owner who comes into the service station. This includes service salesmen, parts salesmen, accessory salesmen, new car salesmen, used car salesmen, the cashier and anyone else who contacts the owner.

Read the rules and polish up your sales talk. Keep plugging every day and win the awards through your team. Special bulletins will be issued from time to time to show the standings of the leading teams. Watch for mention of your team.

RULES AND REGULATIONS

Time— First Contest, Starting April 1, 1933—Ending April 30, 1933. Second Contest, Starting May 1, 1933—Ending May 31, 1933. Third Contest, Starting June 1, 1933—Ending June 30, 1933.

Entries— All Cadillac distributors and dealers.

Teams— The members of each distributor's or dealer's organization will be considered a team.

Scoring— The sale of each Lubrication Agreement reported to the Factory in the usual manner will be credited to the team making the sale.

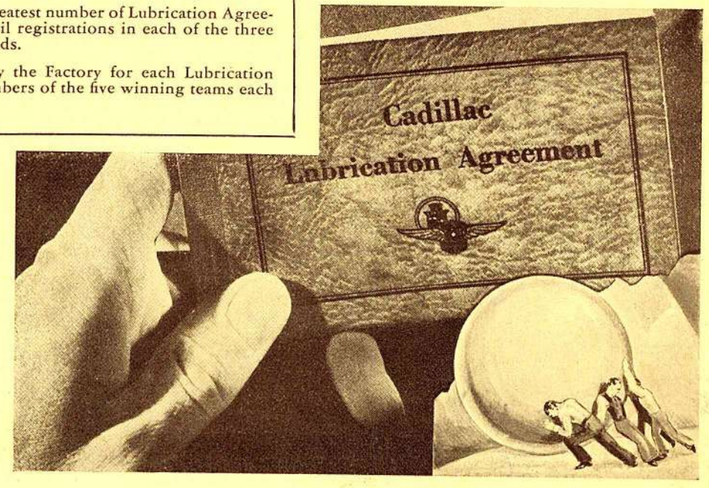
Winners— The five teams selling the greatest number of Lubrication Agreements in proportion to retail registrations in each of the three contests will share the awards.

Awards— $1.00 cash will be paid by the Factory for each Lubrication Agreement sold by the members of the five winning teams each month.

THE Cadillac Lubrication Agreement has been recognized by Cadillac distributors and dealers as a means of assuring regular service contacts with owners. It is an automatic follow-up that keeps the owner coming in regularly where he can be sold additional needed service and accessories. It is of the greatest value to the service station because it assures a regular flow of business from holders of the Agreement without constant and repeated effort to bring the individual owners in.

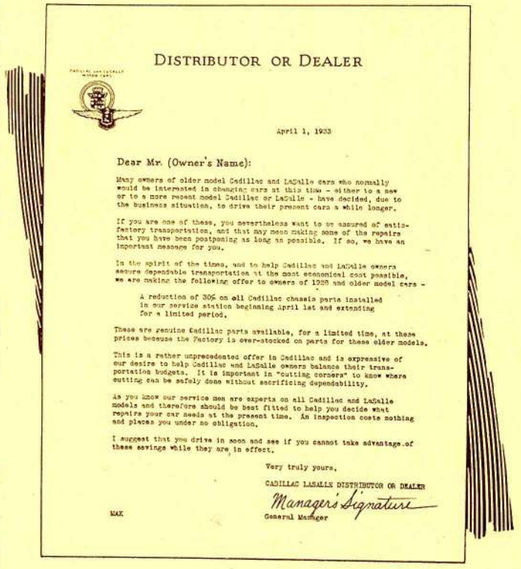
Here is an opportunity to sell more Lubrication Agreements—a chance for members of the organization to earn extra money. Enlist all of them in this work. Call a meeting of the entire personnel to review the many advantages of the Lubrication Agreement and to arrange an efficient set-up for the nation-wide contest. Put every effort possible behind this activity during the 90-Day Service Drive. Get your team under way to win the awards.

TEAM WORK WILL KEEP THE BALL ROLLING



"Bring Them Back" With a 30% Saving on Parts

AN important part of the 90-Day Service Drive is an intensive effort to get the past model owner to come back to the Cadillac service station. With the changing picture of registrations—where the percentage of recent models is becoming less and the percentage of past models is increasing—the successful service station can no longer specialize in service to comparatively new cars. The volume market is changing to the older model car and the service station must cater to this market to show a profit at the end of the year.



DISTRIBUTOR OR DEALER

April 1, 1933

Dear Mr. (Owner's Name):

Many owners of older model Cadillac and LaSalle cars who normally would be interested in changing cars at this time - either to a new or to a more recent model Cadillac or LaSalle - have decided, due to the business situation, to drive their present cars a while longer.

If you are one of these, you nevertheless want to be assured of satisfactory transportation, and that may mean making some of the repairs that you have been postponing as long as possible. If so, we have an important message for you.

In the spirit of the times, and to help Cadillac and LaSalle owners secure dependable transportation at the most economical cost possible, we are making the following offer to owners of 1928 and older model cars -

A reduction of 30% on all Cadillac chassis parts installed in our service station beginning April 1st and extending for a limited period.

These are genuine Cadillac parts available, for a limited time, at these prices because the factory is over-stocked on parts for these older models.

This is a rather unprecedented offer to Cadillac and is expressive of our desire to help Cadillac and LaSalle owners balance their transportation budgets. It is important in "cutting corners" to know where cutting can be safely done without sacrificing dependability.

As you know our service men are experts on all Cadillac and LaSalle models and therefore should be best fitted to help you decide what repairs your car needs at the present time. An inspection costs nothing and places you under no obligation.

I suggest that you drive in soon and see if you cannot take advantage of these savings while they are in effect.

Very truly yours,

CADILLAC LASALLE DISTRIBUTOR OR DEALER

Manager's Signature

General Manager

MAK

A Four-Fold Opportunity

As a broad step toward getting a new foothold in this market, Cadillac is cooperating with distributors and dealers in this offer of 30% *saving on parts installed by the service station* on 341, 328 and older cars during the period of the 90-Day Service Drive. This will definitely overcome any price objection that might previously have been lodged in the owner's mind.

The *Bring Them Back Drive* is a four-fold opportunity to distributors and dealers.

1. It will *Bring Them Back* for sales of needed parts and repairs *now*.
2. It will *Bring Them Back* for regular service work *in the future*.
3. It will make it possible for many present customers to afford the repairs they have delayed—which means parts and labor sales *now*.
4. It will help secure new and used car prospects.

To make the most of these opportunities a letter similar to the one reproduced on this page should be sent out at once to owners of 341-328 and older cars. This mailing should be followed up immediately by telephone or personal call. Quoting examples of savings on operations that the owner might require is a very effective method of getting the owner in.

The saving to the owner is the thing that will get the business and these savings must be brought to the owners attention. As a basis, a small card has been prepared, showing, on one side, the actual savings in dollars and cents of some of the more common operations. On the reverse side are listed a number of operations with the 1930 price and the present price to show that standard Cadillac prices have come down in line with the trend. These can be quoted to show the owner that Cadillac prices are not out of line.

Price Cards

Copies of this card are included with this issue of the SERVICE MAN in mailings to distributors and dealers. These should be given to everyone in the organization contacting the owner so that they will know the actual savings when an owner requests the information. If reductions have been made locally on other operations not listed in the Flat Rate book, these can be added to the list. Additional copies may be had on request for the use of service salesmen and other members of the organization. This card should not, however, be handed out to owners.

Get started on this *Bring Them Back Drive*. Get the past model owner in the habit of coming to your service station and make him a Regular Customer of yours.

Inspection Will Reveal Damage To Connecting Rods

CONNECTING rods used in Cadillac and LaSalle engines are carefully designed and are held to extreme precision limits in manufacture in order to assure smooth, continuous operation of the engine for the maximum life possible. Since connecting rods are continually subject to the most severe operating conditions, strength, balance and accurate fitting are essential to long life.

In recognition of this, Cadillac rebabbitts connecting rods on an exchange basis, which gives owners as well as distributors and dealers the advantage of reconditioned connecting rods held to the same precision limits as new rods. The same machinery is used and the same strict tolerances must be met in the rebabbitted rods as in the new rods.

Damaged Rods

Since the reconditioned rods are held to such close limits, the factory naturally cannot accept any rods on the exchange basis which are damaged in any way that will prevent their meeting Cadillac specifications. Such damage may be the result of carelessness in the service station or the methods used by outside repair shops, which, of course, cannot afford the precision equipment used by Cadillac, in attempting to rebabbitt the rods.

Damaged rods which are returned to the factory on the exchange basis cannot be accepted for rebabbitting and are held for instructions from the distributor or dealer on their disposition. Service men and parts men should therefore carefully inspect the rods when they are removed from the engine so that the cost of replacing the damaged rods can be charged to the proper source.

Placing Responsibility

It is obvious that if the rods were originally installed in the shop making the replacement, the cost must be borne by the service station. If the original installation was made elsewhere, the full cost of the new rod should be charged to the owner.

Rods which have been damaged through careless handling, marking for identification, or through rebabbitting by outside repair shops can ordinarily be readily discovered upon inspection. Below are listed a number of indications of damage to rods which renders them useless for accurate rebabbitting. With this information, parts men and service men should be able, in the majority of cases, to recognize rods which will not be accepted by the factory.

Recognizing Damage

1. Rods with file marks, chisel marks, evidences of filing or grinding, or other marks nicking or damaging any part of the rod, particularly on the boss for the connecting rod bolt or shank, whether for identification or not. Filing the boss makes it impossible to locate the center of the bearing and the rod cannot be accurately rebabbitted. Marks at any other point may cause the rod to fracture and result in later failure.

2. Filing of cap or rod to take up bearing.

3. Hammer marks on the bottom or sides of the rod.

4. Scoring or filing on the side surfaces of the bearing end of the rod.

5. Excess of babbitt on the outside of the rod showing careless rebabbitting by outside repair shops.

6. Where the bevelled edge of the rod has been babbitted and machined.

7. Oversize oil holes drilled in the rod or babbitt, or any holes drilled in the rod or cap.

8. Oil grooves in the babbitt crudely cut or other than standard.

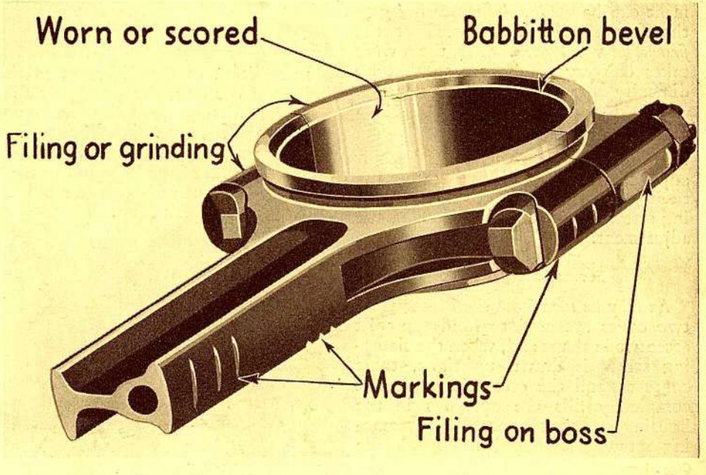
9. Holes drilled in the rod or cap to anchor the babbitt.

10. Metal of the rod itself scored from continued operation after the bearing has been burned out, or when the machined serrations that hold the babbitt have been worn or pounded out. In such cases the surface becomes polished from wear on the crankshaft. Babbitt will not hold to a surface hardened and polished in this way.

11. Bent or damaged rods.

In most of the above cases, it may readily be seen upon inspection that the rods cannot accurately be rebabbitted at the factory under the close limits and tolerances permitted and the rods therefore cannot be accepted. Careful checking of all rods by parts and service men before accepting them for exchange will protect distributors and dealers from loss on rods rejected by the Factory.

In returning rods for rebabbitting, particular care should be taken to make sure the proper caps are installed on the rods.



Important points to watch in connecting rod inspection

Four Types of Spark Plugs Furnished By Parts Division

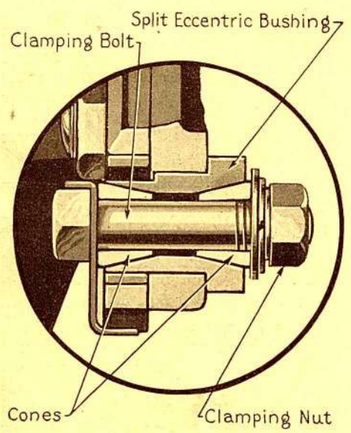
FOUR types of spark plugs are now furnished by the parts division to cover the requirements of all series cars. These plugs are listed as follows:

Type	*Where Used*	*Part No.*
"G-7"	All A, B and C series cars	885282
"G-10"	341-B, 353, 328, 340	871957
"Y"	303, 341-A after March 1928	871956
"A"	All cars before March 1928	870575

The March 1 SERVICE MAN gave the part number of the new type G7 spark plug as 843542 which is the number used in production. The number under which these plugs are furnished by the Parts Division differs however and type G7 plugs should be ordered under part number 885282.

Readjust Steering Gear at First 1000-Mile Inspection

THE steering gear adjustment on new cars in production is purposely left on the low limit of the high spot because of the difficulty in obtaining the proper adjustment without excessive tightness during the breaking-in period and so that the owner will not get the impression of hard steering when he first takes delivery of the car. This original adjustment lasts only during the breaking-in period. After the car has been run about 1000 miles, the high spots are worn down so that the steering gear loosens and a final adjustment can be made. The steering gear therefore should be adjusted at the *first regular inspection* after the owner takes delivery of the car so that no difficulty may arise from loose steering.



The clamping nut should be backed off only enough to permit the eccentric to turn

Some difficulty has been experienced by several service stations in locating the high spot in the worm and sector adjustment. This is generally the result of loosening the eccentric clamping screw too much when making the adjustment.

Eccentric Adjustment

As may be seen from the illustration, two cones are used to hold the split eccentric in shape and, when the clamping screw is drawn up tight, these cones expand the eccentric so that it completely fills the openings in the housing, and the support. If the clamping screw is loosened too much the cones may slide out and allow the eccentric to collapse when it is turned. Under these conditions, of course, no adjustment can be secured.

In loosening the eccentric clamping screw, the nut should be backed off only enough to permit the turning of the eccentric.

When adding lubricant to the steering gear, difficulty is some times experienced with air locking because of the length of the small tube leading into the steering gear housing, giving the impression that the steering gear is full when, as a matter of fact, very little lubricant has reached the housing. This difficulty may be overcome by using a long nozzle grease gun or a rubber tube reaching down into the housing far enough so that the air can escape around the outside of the tube or nozzle, permitting the lubricant to reach the housing.

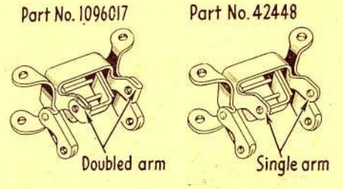
« »

Two Type Carburetor Hinge Assemblies Appear Similar

As soon as the present stock is exhausted, the Parts Division will furnish a new type carburetor float hinge assembly under part number 42448 for all V-8 cars from 61 to 345-A, 355-A, 370-A and 452-A cars. The new type assembly is very similar to the assembly, part number 1096017, used on "B" and "C" series V-8 cars but is not interchangeable.

The difference between the two assemblies is in the float lever contacting the head of the needle valve. The face of the lever which contacts the needle valve is lower on the assembly 42448 than on the assembly 1096017 and if the wrong assembly is used the operation of the needle valve will be seriously affected.

In addition to the difference in the height of the face, the two assemblies may be distinguished by the construction of the arms of the levers. The lever in assembly 42448 has single arms while the arms of the lever in assembly 1096017 are turned back double as shown in the illustration.



The most obvious difference between the two assemblies is in the construction of the lever

Differential Carrier Vent Tube Should Not Be Removed

SOME distributors and dealers have been returning differential carriers on the regular repair return basis from which the vent tube extending from the breather to the under side of the carrier has been removed. This breather tube, used on all "B" and "C" series cars, serves an important purpose in preventing clogging of the breather from the accumulation of dirt on the differential carrier and if it is removed or damaged before returning to the factory it must be replaced at added cost.

In this connection, the differentials used on series 353, 340 and the early 345-A, 355-A and 452-A cars had a spacer for the pinion and equalizing gears. Engineering research determined that this spacer was not essential and its use was therefore discontinued, both for new assemblies and for service on the earlier cars.

The spacers for this point were formerly listed in the Parts List under part numbers 970109 and 971617 but have now been eliminated; consequently there should no longer be any occasion for ordering them.

« »

Clutch Plates Must Be In Line When Assembled

A NUMBER of clutches, after having been disassembled and reassembled by distributors' and dealers' service stations, have been returned to the factory for an out of balance condition or because the clutch will not release properly. In practically every case it has been found that these clutches were assembled incorrectly and correct assembly eliminated the difficulty.

Before a clutch leaves the factory, it is properly balanced and each of the three plates are marked in line so that the plates can be lined up without rebalancing any time the clutch is disassembled. The marking consists of a circle in which a letter may appear. If the circles on each of the three plates are lined up whenever the clutch is reassembled after disassembly, there should be no difficulty experienced of an out of balance condition.

« »

For Sale

FOR SALE: Cadillac 355-A engine, engine number 801408—mileage 19,000. Price complete, $300.00. Jones Motor Car Company, Inc., Broad at Allen Avenue, Richmond, Virginia.

78-3-33-V

PRINTED IN U.S.A.

The CADILLAC LA SALLE SERVICE MAN

Volume VII, Number 5 — May 1, 1933

Service Meetings Help In Outstanding Service Attainment

EIGHTY-ONE per cent of the owners registered in the retail area as regular service customers (at least every 60 days)—one-third more labor sales per car registered than the national average—three years without a factory owner complaint—this is the outstanding accomplishment of the Fritz Motor Company of Wichita Falls, Texas. This brief and purely statistical summary indicates that this distributor has put forth some fundamental effort that has helped to keep his owners satisfied and thus maintain his service volume; and a letter from Mr. Joe Pistocco, Service Manager, reveals an effective through simple tool—*the regular service meeting.*

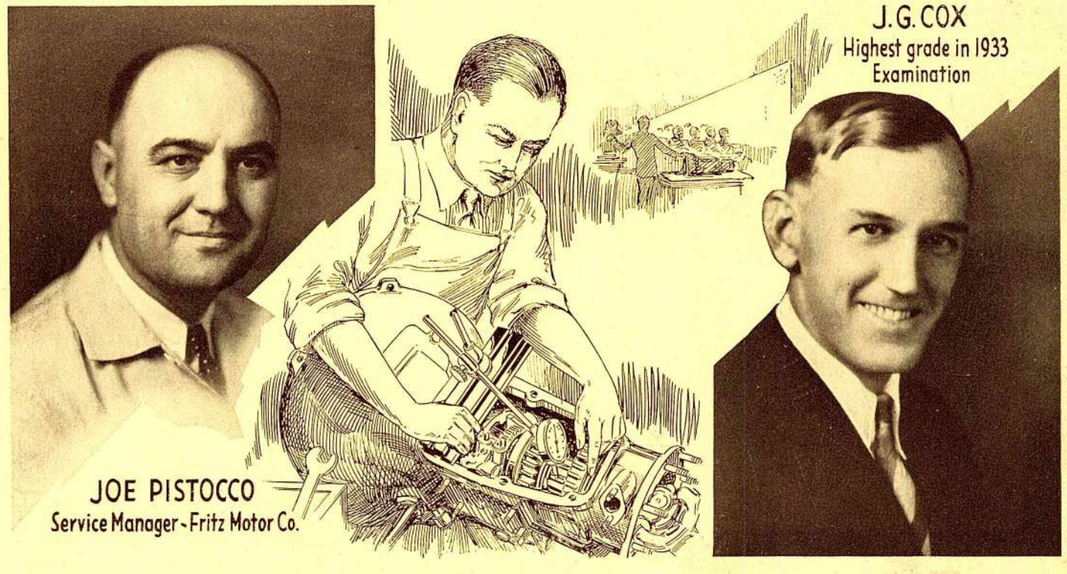
Trained Men

Naturally enough, there is a close tie-up between satisfied owners and satisfactory volume. Without satisfied owners there cannot be sufficient volume and on this point Mr. Pistocco makes himself clear. "In my opinion," he says in his letter, "based on experience in the service end of the automobile business for the past fourteen years, to keep owners satisfied it is necessary to have well trained mechanics. The determining factor as to whether the owner comes back or goes elsewhere for his service work depends on how well the repair job stands up after the car has been delivered to the owner. Though I realize the importance of proper service salesmanship and proper parts management, I believe that the heart of good service and satisfied owners is the man at the bench."

The regular service meetings conducted at the Fritz Motor Company are aimed to help the mechanic understand how to perform any service operation so that it will correct the trouble that the owner has experienced. He is aided in applying the information given in the SERVICE MAN and other booklets and bulletins to his own problems through a thorough understanding and he is expected to remember and use the information thus acquired. His memory is tested in annual examinations in which the man receiving the highest grade receives a cash prize. J. G. Cox, whose picture appears on this page, was the high man in the 1932 examination.

Attendance

The service meetings are held monthly and the roll is called as a check on late and absent members. Each man is expected to be present and on time at each meeting which usually lasts about an hour and a half. He is not only there to listen, but to take an active part in the meeting. (*Continued on next page*)



The CADILLAC LA SALLE SERVICE MAN

MAY 1, 1933 — VOLUME VII
DETROIT, MICH. — NUMBER 5

Published on the first of each month in the interest of Cadillac Service

Wichita Falls Service Record

(*Continued from page 19*)

Whenever possible, the meeting is built around the Service Guide, slide film and lecture service. About one week before the regular meeting date, each mechanic and department head is furnished with a copy of all questions listed in the Service Guide lecture and is required to answer them, turning the answers in to Mr. Pistocco. In this way a constant check is kept on the effectiveness of the meeting as well as on the thoroughness with which the members of the organization are studying the information.

Questions and Answers

After the questionaires have been turned in, the new slidefilm is shown and discussed. The questions are then brought up, each man answering them in turn. A general review of the latest SERVICE MAN is held also.

These service meetings are held the year 'round. The members of the organization are seldom late or absent without good reason because they find the meetings of interest and value to them. They find them valuable aids in understanding the service information, making it possible for them to make more money by doing better work.

Annual Examination

To get an accurate idea of the progress being made, Mr. Pistocco holds a general examination annually, thoroughly covering the information of the past year, and awards a cash prize for the highest grade made. At the end of each year, all mechanics, the shop foreman and parts men are advised to get ready for the annual examination, the date of which is set for six or eight weeks later. Each man is asked to review the Shop Manual and all issues of the SERVICE MAN for the past 12 months. He is also furnished with a complete set of all questions presented in the issues of the Service Guide Lecture during that year and is expected to review them.

After six or eight weeks of review, the examination is held and the papers are sent to the District Parts and Service Manager to be graded. The man receiving the highest grade is awarded a cash prize. After the papers have been returned properly graded, each man is required to be able to answer any question which he may have answered incorrectly in the examination.

Performance

The grades of the examinations each year are compared with those of previous years and, according to these records, about 90% of the men are consistently improving, making better grades each year. In addition, the grades are averaged and compared each year to see how the organization as a whole is progressing. An idea of the effectiveness of these meetings and examinations in providing a better trained organization may be obtained from comparing the record of the average grades in the annual examinations over the last five years.

Year	*Average*
1928	77%
1929	79%
1930	85%
1931	85%
1932	87%

Service Guide Release

Cadillac Service Guide Number 25, "Bridging the Gap," the first issue of the 1933 series, will be released within a few weeks. It will have a timely and vital message for the entire sales and service organization.

Service today plays a more important part than ever in the successful operation of a distributorship or dealership and calls for the participation of everyone, from salesman to mechanic.

This is the first of four issues in the 1933 series. The number of releases in the Sales Managers' Service this year has been reduced to twelve, four of which will be on service. This reduction has been made to help meet the reduced budgets of distributors and dealers. The total cost of the Sales Managers' Service subscriptions has been reduced correspondingly to $36 per year.

Those subscribing to the Service Guide only will continue to receive copies at the regular charge of $3.00 per issue.

A definite and worthwhile improvement is indicated by this record and proof of the results may be seen in the Fritz Motor Company's record of labor sales and owner complaints. "I would not attempt to operate a service department without monthly service meetings and annual examinations," says Mr. Pistocco. The accomplishments of his service department prove the value of his statement.

For Every Service Station

Every service organization, regardless of size, can benefit similarly from *regular* service meetings. Proper training is the first essential of efficient operation in every department of the service business. It is up to every individual to train himself and to take part in the training opportunities offered by the Service Station.

Cadillac has long recognized the need of training and has put forth every effort to aid the individual and the group in this important work. For the individual, there are the following:

- Shop Manual
- Service Manual
- Partsman Training Course
- Tester's Guide
- Soliciting Service Business By Telephone
- Special booklets and bulletins

Group Training Aids

For the group, there is, principally, the Cadillac Service Guide, a part of the Sales Managers' Service that provides a comprehensive program for service meetings as well as specific information on particular phases of service. In addition, a monthly questionaire, covering the mechanical information released during the preceding month, is available to distributors and dealers on request.

Individual Benefits

It is up to the individual to make the most of the training facilities offered by Cadillac. It must be remembered, however, that the exchange of ideas and experiences with other members of the organization offers training that can be obtained in no other way, and the ***regular service meeting*** is therefore the most important phase of an individual's training.

Watch for *your* next service meeting. Make a note of questions *you* want answered. Give the others the benefit of your experience when the opportunity arises. Take your place in *your* service meeting.

Second Month of the 90-Day Service Drive Gets Under Way with New Direct Mail Piece

THE second month of the 90-Day Service Drive is already under way and distributors and dealers throughout the country are achieving contacts with a greater number of owners through the timely seasonal service specials, the offer of savings on past model parts, and the wider presentation of the Lubrication Agreement.

May Direct Mail Piece

With the freshness of May in the air, owners are becoming conscious of the appearance of their cars, and in recognition of this, the May direct mail piece, "In Step With The Season," is released. Featuring a "spring beauty treatment" this mail piece plays particularly on the woman's interest in the car. It covers a group of needed appearance service items offered at a saving of $7.70 on the group.

Freshness of Spring

The mail piece has the "fresh and clean appearance" offered for the owner's car. In the bright and cheery colors of spring it carries its appeal to pride in appearance in pictures as well as in words, and its special offer will help to maintain the contacts with the owner. Women drivers in particular will appreciate the opportunity to improve the appearance of the car at the special price.

30% Savings

Here is an offer that is in time with the owner's service needs and desires of the season. It is an offer of smart brightness—that new car appearance—at a saving of over 30%.

Placing Orders

Distributors and dealers that ordered the April, May and June mail pieces as a set will receive their copies of the "In Step With The Season" mail piece automatically. Those who did not take advantage of the complete offer should send in their order at once for as many copies as they require. The price is $2.10 per hundred including the special envelope.

Using the spring-time appeal of immaculate freshness, the May Direct Mail Piece offers the owner a group of timely appearance service items at a 30% savings

Two Types of Fastenings Are Used on Door Finishing Panel

THE door finishing panels used on "C" series Cadillac cars are now held in place by two hangar plates in addition to the bayonet type fastenings used in the past. These hangar plates are attached by means of screws to the rear face of the finishing panel and over the regulator board and the screws holding the plates to this board must be removed to take out the panel. This construction assures against loosening.

In any case of the door finishing panel loosening up on early cars these hangars can be easily installed. The parts required for each panel are as follows:

No. Req.	*Name*	*Part No.*
1	Hangar plate	4024712
1	Hangar plate	4038003
6	Screws	102172

In this connection, the method of fastening the I.C.V. ventilator handle to the finishing panel on cars now being shipped provides a more positive hold. On the first few cars shipped, the handle was fastened directly to the finishing panel by four screws through the retainer of the handle and into the finishing panel. With the present construction, however, four lugs on the end of the handle retainer extend through a metal plate and are burred over. This metal plate is countersunk in the rear face of the finishing panel and held by two wood screws.

The usual method of removing the handle from the ventilator is to remove the finishing panel of which the handle is a part. If the handle only is to be replaced, however, it can be removed by simply grinding off the four lugs on the rear side of the metal plate.

Position of Handles

On cars now being shipped the I.C.V. ventilator control handle is of the crank type instead of the T-type used heretofore. With this type of handle special attention should be paid to the position of the various handles on the doors for the greatest convenience of the operator.

All four handles should be placed so that they lock in the closed position on the downward swing. This gives the operator the most advantageous leverage in locking the ventilators to prevent leaks.

The door window regulator handles should be placed in such a position that they point away from the I.C.V. handle when the window is all the way up. This position affords more clearance between the ventilator handle and the window regulator handle when the window is all the way up or down.

Adjustable Rim Weights Simplify Wheel Balancing

FRONT wheels and tires out of balance are one of the most frequent causes of high speed "tramp" and "shimmy." The out-of-balance condition of a front wheel should never exceed one ounce at any point on the rim if these difficulties are to be avoided. The front wheels are properly balanced on new cars leaving the factory, but tire changes, repairs, or replacements frequently result in a seriously unbalanced condition.

New Type Weights

In order to simplify the task of balancing front wheels, the factory Parts Division is now furnishing a new type of wheel balancing weight, which has several advantages over the more familiar methods of weighting. These new type weights clamp to the inner edge of the rim, where they are out of sight, and where, being as far as possible from the the wheel center, they exert a maximum of corrective force. They are, furthermore, fastened in place with set screws which permit easy adjustment or readjustment as required.

The weights are made in two styles, one for the rolled-edge drop-center rim now used in production and one for the plain type of rim previously used on all models. The part numbers are:

892498. . . Balancer for rolled-edge rim
1280290. . . Balancer for plain type rim

Two Weights Per Wheel

The list price of both styles of balancing weights is $0.40 each, subject to the usual discounts. Two weights are ordinarily required to balance a wheel, although one may be sufficient in some cases. It is recommended that both styles of weights be kept in stock in all authorized service stations, for even the smallest stations will have sufficient work of this nature to justify a stock of 10 or 12 of each style.

Although a balancing stand gives the best results, front wheels can ordinarily be balanced with sufficient accuracy on their own spindles, provided the bearing adjustment is first loosened and the grease removed.

To balance a wheel, first partly deflate the tire as a completely deflated tube will go out of balance, let the wheel turn until the heavy spot is down and mark the tire. Place two balance weights on the inner edge of the rim, diametrically opposite the heavy spot, and adjust them by moving one to the right and the other to the left until a perfect balance is obtained. Then tighten the set screws securely and inflate the tire to the correct pressure.

The balance weights as furnished weigh 2½ ounces each. Due to their location at the outer edge of the rim, this weight is adequate for proper balancing in most cases. If it is not, one or two additional weights can be used as required.

« »

Locking Handle for Left Front Door Is Available

SOME owners frequently prefer to leave or enter their cars from the left or driver's side and under some parking conditions it is more convenient to do so. Ordinarily, however, this means that the car must be left unlocked and unprotected at such times. In any case where an owner frequently finds it more convenient to use the left front door, it is possible to install a locking handle on this side and afford him the same protection as if he used the right front door.

The handle used on the right rear door of Imperial body styles and furnished for this position by the Parts Division is of the locking type and can be installed in place of the regular left front door handle on other body styles. Whenever this handle is installed on the left front door it is necessary, of course, to change the door lock assembly to obtain the locking effect.

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Electro-Plated Pistons Can Be Fitted to Closer Limits

IT has been found that Electro-plated pistons can be held to closer limits than has been recommended heretofore. New limits have therefore been set up in production and will hereafter be recommended for fitting pistons in service for both standard and oversize cylinder blocks.

The "B" series Shop Manual specified the use of a .0025 feeler gauge for all cars with a pull on the spring scale of 4 to 9 pounds on V-8 cars and 6 to 9 pounds on V-12 and V-16 cars. These recommendations are now changed as follows:

V-8 and V-12 cars (with Electro-plated pistons), use .0025 feeler gauge with pull of 6 to 15 pounds on the spring scale.

V-16 cars (unplated pistons), use .003 gauge with pull of 6 to 9 pounds on the spring scale.

Quadrant Adjustment Will Overcome Hard Shifting

A FEW cases of hard shifting have been reported to the factory recently which evidently resulted from the coupling and internal gear teeth not aligning properly because of the synchronizing drums failing to release immediately. A simple adjustment of the quadrants on the sides of the transmission case usually corrects this trouble. Service men should check the transmission carefully for this adjustment in any similar case.

Quadrant Adjustment

Failure of the gears to mesh properly is usually caused by the sticking of the synchronizing drum and cone. This sticking can in most cases be overcome by tipping the cones slightly, which is accomplished by varying the adjustment of the two quadrants in the set controlling the yoke travel of the gear affected.

Ordinarily, the quadrants on one side of the transmission case are adjusted exactly the same as on the other side. In case of improper meshing, however, one of the quadrants of the gear affected should be set several notches ahead of the quadrant of the same speed gear on the other side of the case. In some cases a difference of as many as four notches between the two quadrants may be required to overcome the sticking of the cone and drum.

Dash Pot Plunger

In some inst nces it may be found that improper action of the dash pot plunger is causing the hard shifting. In such cases the valve in the plunger may not extend through the plunger piston far enough to permit the oil to escape from the dash pot through the oil bleeder hole in the valve. This can be determined by inspection, checking the valve to make sure that the valve extends far enough through the shoulder of the piston to clear the oil hole. If it does not, the plunger should be replaced.

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Wanted and For Sale

WANTED: Cadillac 355-A. 5-Passenger Sedan or Club Sedan body. Advise price and condition. Joliet Cadillac Company, Joliet, Ill.

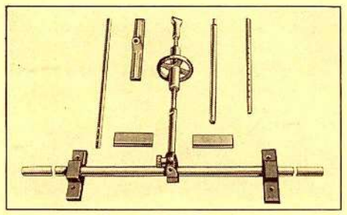
FOR SALE: Cadillac 341-B Convertible Coupe body in excellent condition. Warner Motors, Easton, Maryland.

New Tool Aids In Installing Windshield and Window Glass

THE Hinckley-Myers Company, Cadillac's official tool suppliers, has just released a new tool to aid in installing windshield and rear quarter window glass to prevent leaks. Because of the tight fit required it is almost impossible to install the glass at these points without the new tool.

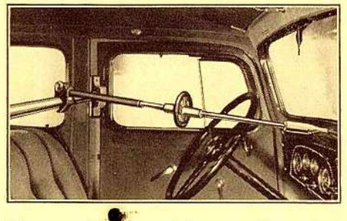
For All G. M. Cars

This tool, shown in the illustration, acts as a press for the garnish moulding. It is fully adjustable to fit all 1933 General Motors cars without additional parts. The tool consists of an adjustable rod to which is fitted a pressing end with a soft rubber tip. The pressing end is placed against the garnish moulding at the point at which



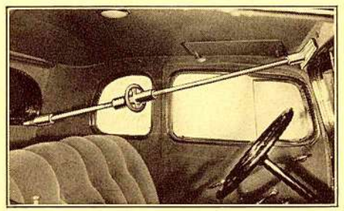
The complete windshield and rear and quarter window garnish moulding press fits all 1933 General Motors cars

a screw is to be installed. The other end of the rod is braced against a cross bar placed between the door posts, as shown in the illustration, for windshields on all cars and rear windows on sedans. For the rear quarter windows on all cars and the rear windows of coupes a thrust foot with a sponge rubber facing is placed on the rod and braced over the windshield or over the window on the opposite side, as shown in the illustration.



The cross bar is used for installing windshield glass on all cars and rear window glass on sedans

With the tool in position, the rod can be adjusted to press the garnish moulding securely in place while the screw is installed at that point. Care should be taken not to exert too much pressure as the pillar posts may be sprung, preventing the door from closing properly. The entire tool should then be moved to the point where the



The thrust foot is used for installing rear quarter window glass on all cars and rear window glass for coupes and close-coupled jobs

next screw is to be installed and the same operation repeated until all of the screws have been installed. In this way the glass can be made sufficiently tight against the weather stripping to prevent leakage.

The tool, part number B-177, is priced at $11.25 complete. Orders should be placed direct with the Hinckley-Myers Company, Jackson, Michigan.

« »

Removing and Installing Large Hub Caps on V-16

THE new large hub caps used on 452-C cars are held in place in the same manner as the hub caps used on V-8 and V-12 cars and may be removed and installed in the same way except that the sponge rubber in the disc must be compressed sufficiently to allow the lugs to engage or disengage. To remove, simply turn the hub cap to the left until the catch is felt to release and then pull straight out.

To install the hub cap, place it in such a position that the lugs of the cap fit into corresponding notches in the hub and, pressing the hub cap firmly against the wheel, turn the hub cap its full limit—about one-sixth of a turn to the right.

It is important that the hub cap be pressed firmly against the wheel when installing in order to compress the sponge rubber in the disc enough to permit the hub cap lugs to catch securely. If the hub cap is not securely caught and turned the limit, it may come off and be lost.

Owners should be cautioned to watch filling station attendants who remove the hub caps to inflate the tires, to make sure that the hub caps are correctly installed and firmly caught.

Gasket Is Now Furnished for Cuno Oil Filter Plug

HERETOFORE the Parts Division has not listed a gasket for the plug on Cuno oil filters used on 370 and 452 "B" and "C" cars. It has been found, however, that a spark plug gasket, part number 840460, is satisfactory in every respect for use at this point and it is being used by the Parts Division to fill all orders for plug gaskets.

This part will be listed as soon as possible in the Parts List for use on the Cuno filter, but in the meantime, gaskets for this purpose should be taken from stock of part number 840460.

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Authorized Service Stations Are Listed In Hobb's Guide

WITH the touring season opening, distributors' and dealers' service stations will occasionally be asked by owners for lists of Authorized Cadillac-LaSalle Service Stations along particular routes. As in the past, Cadillac offers a tourist map service, making up a list of service stations along any route selected, upon application of the owner or the service station.

The Hobbs Guide Company, 414 Water Street, Akron, Ohio, is now publishing maps and touring guides of the important routes over the country which list authorized service stations by makes of cars as well as hotels, restaurants, camps, scenic points and road information. These guides will be of considerably more value to the owner than the factory tourist maps because they contain much valuable information in addition to the lists of authorized service stations.

Full information and copies of the Guide, which are reasonably priced, can be obtained from Goodrich Tire Dealers or from the Hobbs Guide Company, Akron, Ohio.

The Hobbs Guide Company has facilities to keep its maps and lists up-to-date and has a reputation for giving unbiased and reliable information on the various concerns along the route catering to tourists.

Setting Generator Charging Rate to Maximum Requires Special Precautions

SETTING the generator charging rate is not a cure-all for electrical troubles of a car indicated by a low battery, and careless setting to the maximum charging rate may result in generator troubles much more serious than recharging the battery occasionally from an outside source.

Ordinarily the maximum charging rate should be more than enough to keep the battery fully charged, but whenever it is necessary to set the generator at its maximum, special precautions must be taken to keep the armature from burning out.

Car Ammeter

The car ammeter must not be relied upon when setting the generator anywhere near its maximum limit. There are two discrepancies in the car ammeter for which allowances must be made if it is to be used at all in setting the charging rate.

1. The ammeter does not show the actual generator output, but shows the difference between the output and the ignition current which is about 2½ amperes per coil.

2. The car ammeter is not a precision instrument and the possible error may amount to as much as 2 amperes.

Actual Output

With allowances made for the ignition and the possible error therefore, the difference between the actual generator output and the reading of the ammeter may amount to 4½ amperes on V-8 cars and 6 to 7 amperes on V-12 and V-16 cars.

From this it can readily be seen that the only safe way to set the charging rate near the maximum is to use a precision ammeter connected at the generator. On "B" and "C" series cars the charging rate should not exceed 22-24 amperes cold, measured at the generator.

Fully Charged Battery

Equally essential to the accuracy of this adjustment is a *fully charged* battery. If the battery in the car is partly run down, the generator charging rate will increase as the battery becomes more fully charged, resulting in the output exceeding the safe limit.

In some cases reported where it was impossible to set the generator to the maximum output, it was found that the difficulty was caused by a low battery. By installing a fully charged battery the maximum charging rate could be reached. Had it been possible to set the generator to the maximum with the low battery, the armature would probably have burned out as soon as the battery became more fully charged.

Inspect Terminals

It is extremely important in setting the generator to the maximum charging rate that a fully charged battery be used in the car and that the output be measured with a precision ammeter connected at the generator.

It is also a good plan to inspect the battery terminals to make sure that they are clean and tight. Loose or corroded terminals will increase the voltage to such an extent that the entire electrical system will be overheated and the generator, lamp filaments and contact points may be burned out.

Armature Commutator

A similar condition may be found in any case where, through overheating, the solder holding the armature wires to the commutator has been melted and thrown out. In such cases, the armature wires may be loosened by centrifugal force at high speeds, making poor contact and permitting the charging rate to drop excessively even though at ordinary speeds the charging rate is sufficient. This condition in the armature may not always show up as an open circuit in a bench test, but if the commutator shows signs of having thrown the solder, the commutator should be resoldered.

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Proper Spark Plug Gap Should Prevent Low Speed Missing

SEVERAL cases have been reported of the engine missing at low speed on "B" and "C" cars. Ordinarily this will be found to be the result of too great a spark plug gap and the remedy, of course, is to check the gap and reset if necessary. A gap of .025 to .028 in. is recommended for current model cars, but in case of low speed missing it is advisable to keep toward the lower limit. The distributor points should be checked also.

Two Corks Insure Against Oil Leakage at Cross-Rod End

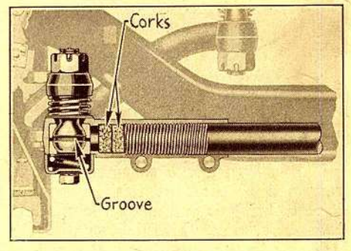
ON cars now being shipped, two corks are used in the front axle cross rod ends. Heretofore, only one cork has been used but it has been found in a few cases that the one cork sometimes tipped, permitting the lubricant to leak out through the slot where the end is clamped to the cross rod.

In any case where lubricant is found to be leaking at this point, the cross rod end should be removed and an additional cork, part number 879921, installed. The additional cork should prevent any possibility of tipping and provide an effective oil seal.

Binding at Ends

In any case where binding is found at this point causing hard steering or squeaking, the pivot should be inspected to make sure that the grooved type is used. The pivots used on most of the "B" series and a few of the first "C" series cars had a flat surface around the circumference of the pivot. The pivots now used, however, have a groove at this point, as indicated in the illustration, which provides a better distribution of the lubricant. The pivots, part number 871206, furnished by the Parts Division are grooved.

Whenever the replaced pivot shows any signs of wear, the seats also should be inspected and replaced if necessary.



Two corks in the cross rod end prevent tipping which would allow the lubricant to leak out of the slot and the grooved pivot assures adequate lubrication of the bearing surfaces

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V-16 Throttle Pump Plunger

IN any case where the carburetor throttle pump plunger rod, part number 882254, on 452-A cars is bent, the clamp, part number 882257, for the rod is probably bent also. It is important, therefore, to replace both the rod and the clamp whenever the rod is found bent.

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The
CADILLAC LA SALLE
SERVICE MAN

Volume VII, Number 6 — *June 1, 1933*

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The CADILLAC LA SALLE SERVICE MAN

Volume VII, Number 6 — June 1, 1933

Vacation Service Offers Opportunity to Build Owner Confidence

THE final service mail piece of the 90-Day Service Drive, featuring Vacation Service for the month of June, is now available and is already being mailed out by Distributors and Dealers throughout the country. It is one of the finest mail pieces yet offered for the Service Department and will assure contact with the owner through the free vacation inspection offer.

Confidence

The mail piece endeavors to instill confidence on the part of the owner in the capability of the Authorized Service Station, and it is up to the service salesman and the mechanic to see that this confidence is maintained.

The mail piece compares vacation inspection service to the preliminary inspection of an airplane before its take-off. The experienced pilot would never take off for even a short overland flight without first having his ship carefully gone over by a skilled mechanic. When the engine is started and the mechanic pulls the blocks out from under the wheels, calling "all set," the pilot knows that his ship is in condition for the flight and will carry him safely on his trip.

The pilot has confidence in his mechanic. He knows that his mechanic realizes that the success of the trip depends on perfect operation of the ship and he knows that his mechanic will not call out "all set" unless the ship is operating perfectly.

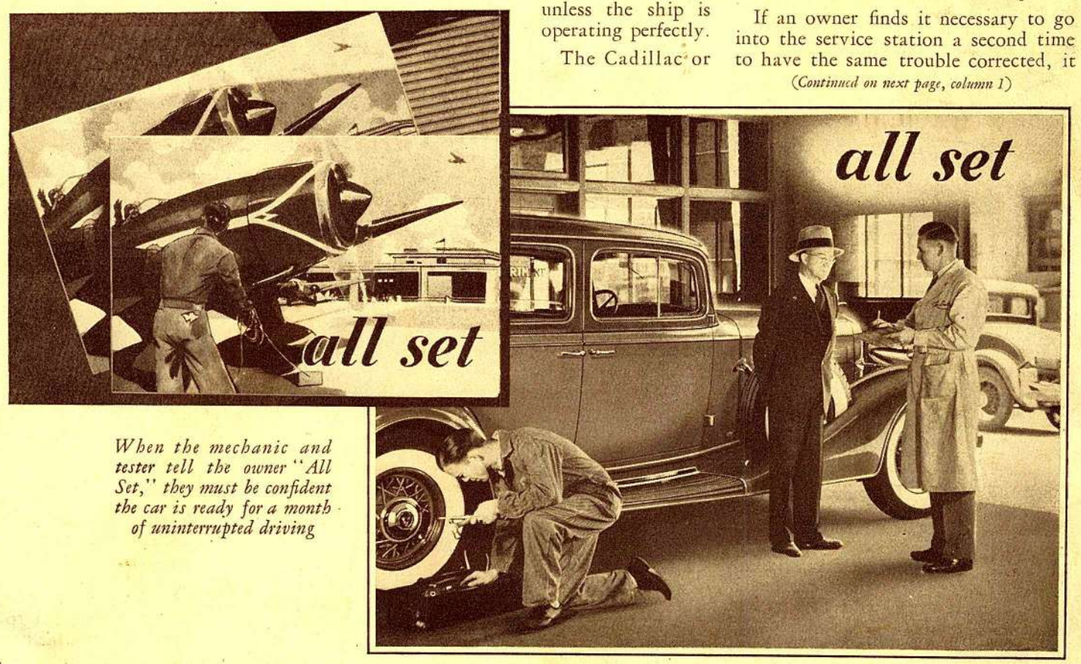
The Cadillac or LaSalle owner has a right to expect the same exacting care in the inspection and servicing of his car by the Authorized Service Station. When the mechanic and the tester have put their okey on his car, he wants to know that the car will give him uninterrupted satisfaction on his trip.

Correct Diagnosis

This means that the service salesman must diagnose the condition of the car correctly and prescribe the proper operation to correct any trouble. It is then up to the mechanic to do the job right and, if he finds additional work necessary, he should notify the tester so that the owner may be acquainted with the additional service required.

If an owner finds it necessary to go into the service station a second time to have the same trouble corrected, it

(Continued on next page, column 1)



When the mechanic and tester tell the owner "All Set," they must be confident the car is ready for a month of uninterrupted driving

The CADILLAC LA SALLE SERVICE MAN

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DETROIT, MICH. — NUMBER 6

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Build Owner Confidence

(Continued from page 25)

simply means that the service salesman or the mechanic failed to do the job right the first time and the owner loses confidence in the service station. If the job is done right the first time, the owner's confidence is confirmed and whenever the mechanic and service salesman tell him his car is "all set" he will know that he can look forward to a month of trouble-free enjoyment of his car.

More Business

This confidence means more service business to the service station and more work for the service salesman and the mechanic. An owner with confidence in Authorized Service will go out of his way to have *all* of his work performed by an Authorized Distributor or Dealer.

A few years ago, a Cadillac owner from the central part of Iowa was visiting a small town in another state when he found his brakes in need of adjustment. He spoke of his needs to a friend and asked where the nearest Authorized Cadillac Service Station was located. He was told that the nearest one was 15 miles away and it was suggested that he take the car to a local garage where, the friend stated, he would be sure of good service.

"No," the owner replied. "I am going to take it to an Authorized Service Station. They know the car and will do the job right."

Doing the Job Right

The car was taken to the Authorized Service Station and upon inspection it was found that the brake drums were scored. The service salesman showed the score to the owner and suggested regrinding to do the job right. The owner signed for the regrind job and relining. His confidence in the ability of the Authorized Service Station to do the job right was again confirmed. The Authorized Service Station, in addition to satisfying the owner and assuring his future service business, earned the regrind and relining job.

If every Cadillac and LaSalle owner was made to feel this same confidence in Authorized Cadillac Service, his business would be assured. Building this confidence is the job of the service salesman and the mechanic. This does not mean during the vacation inspection period only, but every day throughout the year.

Correct the Trouble

If an owner brings his car into the service station because of faulty operation of the engine, he expects the trouble to be corrected. If a carburetor adjustment is prescribed, regardless of how well the job is done, it means nothing to the owner unless it corrects the trouble. If the following day it is necessary for him to bring his car back for the same faulty engine operation and it is found to be due to spark plugs, the original service was poorly performed. The owner did not come in to have his carburetor adjusted; he came in for the necessary service to make his engine operate smoothly. Even though the carburetor contributed to the difficulty, its adjustment, in the eyes of the owner, was an unnecessary expense if he had to come in a second time before the trouble was corrected.

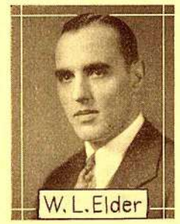
Vacation Service

Mechanics and service salesmen should be prepared to earn the confidence of the owner through the vacation preparatory service and thus assure his future business. The car should be gone over thoroughly and any trouble likely to interfere with the pleasure of the trip should be noted and a recommendation for its correction made to the owner. When the owner comes for his car and the service salesman tells him it is "all set" both he and the mechanic should be assuring the owner that the car is ready for the vacation trip without interruption until time for the next regular inspection and lubrication.

Mail Piece

Distributors and Dealers should take advantage of the opportunity to build this confidence by mailing out the June service mail piece with the free vacation inspection offer. Those who ordered the full series of mail pieces for the 90-Day service drive have already received their copies. Additional copies may be obtained at a price of $2.25 per 100 net, including special envelopes.

Send in your order at once so that you can mail out this high quality folder before the vacation season opens. Insure a pre-vacation contact with every owner through the free inspection offer and take this opportunity to increase the confidence of the owner in the ability of your service station to tell him the actual condition of his car and to put it in perfect condition.



W. L. Elder, Service Manager of the Detroit Branch and for many years associated with the Cadillac organization, died on May 10 after three months' illness.

Mr. Elder was well known throughout the Cadillac organization through his varied positions during his 16 years of service. Starting in 1917 as an engine repair man at the factory, he rose to car tester and finally head tester. His interests were with the service side of the industry, however, and in 1923 he accepted a position with General Motors Products of Canada, Limited, as a Field Service Representative.

Returning to Cadillac in 1926, he served as Field Service Representative in the New York district until 1928 when he was assigned to the position of Service Manager at the Detroit Branch.

Although only 34 years old when he died, Mr. Elder had proved himself a capable service executive and had earned the confidence and respect of his associates.

Wanted and For Sale

FOR SALE: LaSalle 303 7-passenger sedan body in good condition. Cadillac-Oldsmobile Company, 1235 Broad Street, Chattanooga, Tennessee.

WANTED: Body to fit LaSalle 340 134" W.B. chassis. Convertible Coupe, 5-passenger Coupe or Sedan will do. Advise price and condition. Primmer Auto Service Company, East Orange, New Jersey.

Careful Inspection Will Locate Noise in Clutch, Brake and Transmission Controls

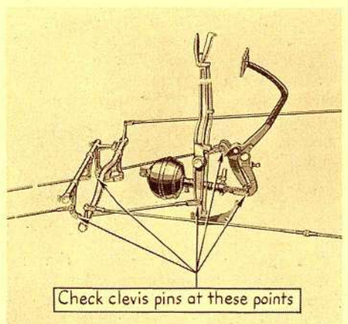
Every case of a vibrating rattle seeming to come from the gear shift lever does not always actually occur in the transmission or the gear shift lever and, before performing any service operations to correct this noise, a careful inspection of every possible point should be made to avoid any unnecessary expense. This type of vibration, appearing to come from the gear shift lever, may occur at any one of the following points:

Brake linkage
Hand brake lever
Floor boards
Pedal shaft bearings
Clutch release fork
Transmission mainshaft bearings
Gear shift lever

Brake Linkage

Looseness in the various clevises in both the hand and foot brake linkage may be the unsuspected cause of the noise. To eliminate this possibility, every clevis in the clutch and brake linkage should be carefully inspected. Any looseness can be overcome by squeezing the jaws of the clevis yoke together so that they fit the levers snugly but without binding. A small spring washer, Part No. 035498, should then be installed, preferably under the head of the clevis pin. It is important that every clevis be checked, including the ones on the lower end of the hand brake lever and those in the brake pedal eccentric operating the brake assister.

The hand brake lever assembly should also be well lubricated with a heavy lubricant, such as transmission oil or chassis lubricant, to avoid any vibration that might occur between dry metal to metal contact points. The hand brake lever is the most common source of this vibration and should be given special attention.



Closing a loose clevis and installing the spring washer will eliminate vibration at these points

The vibration may also occur in the roller bearings between the brake and clutch pedal and the shaft. If these bearings are well packed with lubricant, however, there should be no possibility of vibration at this point.

Miscellaneous Points

Loose nuts or any one of the number of small items around the transmission may cause the noise. This should be investigated by close inspection before carrying out any more extensive service operations. The floor board should not touch metal to metal or metal to wood at any point of the transmission.

If the difficulty cannot be located at any of the above points, the noise may be found in the transmission itself. The pin in the gear shift lever ball should be a close fit in the ball and a snug hand press fit in the cover. If the pin is well fitted in the ball, the noise should not originate at this point.

Where the spring is used in the bottom of the gear shift lever, a broken spring will cause the noise, or the cotter pin in the bottom of the lever touching the transmission cover in either a forward or rear position of the gear shift lever may cause the noise.

The Timken bearings for the low and second speed gears on the transmission mainshaft may be loose and, if so, the proper adjustment should eliminate this point as the source of noise.

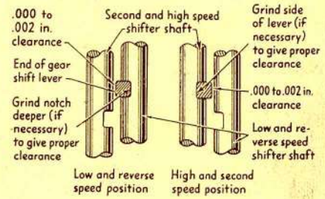
Clutch Release Fork

Vibration sometimes occurs through up and down play of the clutch release fork on the clutch release bearing collar. This can be determined by a simple test with the car running at the normal speed at which the noise occurs. The foot should be placed against the clutch pedal enough to put a little drag on it. If the rattle ceases, the release fork is at fault. To remedy this difficulty the fork should be closed up to eliminate any up and down play.

On some of the earlier cars, the noise may possibly be caused by too much play between the control lever and the shifter shafts. On later cars, a new type of control lever is used, beginning with transmission unit No. 30-2250. It differs from the lever used heretofore in that the knob on the lower end is .010" oversize and has its sides machined flat to fit more accurately in the shifter shaft notches and thus prevent sideplay. The new lever, Part No. 890567, is carried under the same part number as the early type. Only the new type is now being furnished by the Parts Division.

When installing this new type lever in the transmission top cover, the lower end of the lever must be fitted to the notches in the shifter shafts. *An accurate fitting is essential to quiet operation.*

The clearances shown in the illustration must be maintained. If the binding occurs between the low and reverse speed shifter shaft and the lever knob when in the second or high speed position, dress down the side of the *gear shift lever knob*. If binding occurs at the second and high speed shifter shaft when in the low or reverse speed position, grind the notch deeper in the low and reverse speed *shifter shaft*.



Check in the high and second speed position first and dress down, if necessary, only sufficient to avoid binding

Care should be taken to avoid removing too much metal when dressing down the lever knob or the shifter shaft, as explained above. Not more than .002 clearance should be allowed.

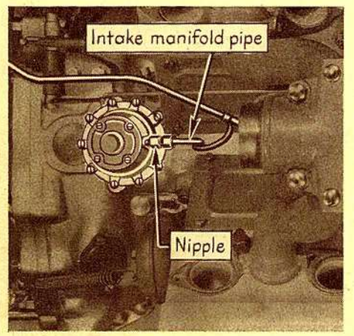
It is important that these clearances be checked while the lock springs for the shifter shaft are assembled in the transmission cover. Also fit the lever in the high and second speed position before fitting the low and reverse speed position.

Whenever a transmission top cover is removed for the installation of the new transmission control lever, the low and reverse shifter shaft should be inspected to see whether the nut that holds the shifter fork on the shaft is locked by means of a lock washer or a cotter pin. If a lock washer is used, the washer and nut should be removed and a ½" x 20 castellated nut, part number 122761, installed. The shaft should be drilled and a cotter pin installed to lock the nut in place. A loose nut at this point may sometimes cause the vibration rattle.

Vacuum Pump Should Be Given Regular Inspection

In order to avoid any possibility of excessive oil consumption caused by a cracked or broken diaphragm in the vacuum pump on "B" and "C" series cars, it is very important that the pump be inspected at regular intervals. The simplest way to make sure of a regular inspection is to arrange to perform it in conjunction with the regular No. 6 and No. 12 lubrication operations.

It is not necessary to remove the pump for this inspection. A cracked or a broken diaphragm means that oil is being pumped into the vacuum pump and in turn is being drawn out through the pipe line to the intake manifold. It is therefore possible to determine whether or not the diaphragm is broken by inspecting the pipe connection leading to the intake manifold.



The nipple may be removed after disconnecting the pipe to the intake manifold

Making the Test

To make this test, disconnect the intake manifold pipe at the pump and look for oil. Next remove the nipple to which the pipe is connected in the head of the pump and look inside of the passage. If there is *any* trace of oil whatever in this nipple, the diaphragm is probably cracked or broken and the pump should be disassembled for further inspection. The slightest trace of oil in the nipple is sufficient evidence. The suction of the intake manifold draws the oil out of the vacuum compartment and through the pipe with such force that there is seldom likely to be more than a thin film of oil in the nipple.

A further test for a broken diaphragm can be made by disconnecting the line to the intake manifold and testing the operation of the windshield wiper on the action of the pump alone. If the windshield cleaner does not operate, or operates too slow, it is evident that the pump is not doing its job and the diaphragm is probably cracked or broken.

Whenever any evidence is found of a cracked or broken diaphragm, it is extremely important to disassemble the pump and replace the diaphragm to avoid excessive oil consumption.

Full directions for the removal and installation were given on page 12 of the March 1 Service Man.

Several vacuum pumps have recently been returned to the factory for diaphragm breakage or noise when all that was required to correct the difficulty was to replace the diaphragm. Service men should inspect the vacuum pump carefully before replacing the entire unit and if the installation of the diaphragm is all that is required the added expense of replacing the entire unit will be avoided.

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Reground Blocks Now Fitted With Late Model Pistons

Factory reground .015 and .030 oversize cylinder blocks for 340, 341, 345-A and B, 353, 355-A and B cars, are now furnished by the Parts Division fitted with the late model pistons. All standard cylinder blocks will be fitted with the late type pistons and .005 oversize pistons will be of the late type as soon as the parts are available.

This means that the pistons now furnished in past model reground jobs, in addition to having the regular oil rings are provided with the two ½" compression rings in the second groove, the same as current models. The late pistons have numerous advantages over the earlier type in preventing blowby and loss of power and in keeping oil consumption at a minimum.

Distributors and dealers thereby are equipped with an additional selling point in getting the owner to sign an order for a regrind job rather than attempting to get by with a makeshift job with an outside concern which will be of only temporary assistance and which may harm the cylinder blocks.

This change is being made in accordance with Cadillac's policy of furnishing late model improvements for early model cars wherever possible. Service salesmen should take advantage of this in selling factory reground jobs. Only the factory attempts to offer up-to-date parts for past model cars. Other sources are not in a position to offer improvements and simply provide something to fit.

Booklet Contains Valuable Information on Spark Plugs

Included with each mailing of this issue of the Service Man to Distributors and Dealers are copies of a booklet on Spark Plug Information brought out by the A C Spark Plug Company. This booklet contains some valuable information on engine performance and spark plugs, explaining fully the A C "Heat Range" system. Additional copies may be obtained by writing to the factory.

The spark plugs specified for Cadillac and LaSalle cars call for the application of this "Heat Range" system and Distributors and Dealers should be in a position to remedy "fouling" or "preignition" in an owner's car by installing the proper "Heat Range" type of spark plug. There is so much variation in the driving habits of different owners that a single type of spark plug cannot give entirely satisfactory results under all conditions.

Universal Plug

The A C Spark Plug Company recently announced a new line of universal spark plugs for use where "Heat Range" is not important. It should be understood, however, that the best performance cannot be obtained on Cadillac and LaSalle cars unless the proper type of heat range plug is used. The universal plug is not recommended for use in Cadillac and LaSalle cars.

The universal plug has its place, however, in the servicing of old model cars where the owner considers expense above fine performance or in cases where the distributor or dealer is servicing all makes of cars and his volume does not warrant carrying the full "Heat Range" plugs for all cars.

Under such circumstances, it is advisable to use the A C universal plug rather than an inferior line or an incorrect type for these cars but for use on the late model Cadillac and LaSalle cars only the correct type of "Heat Range" plugs should be carried in stock and used.

« »

"So You'll Remember," Sales Publication, Discontinued

"So You'll Remember," the biweekly reminder of sales points from the service angle, has been discontinued, effective after the May 1 issue. New car salesmen who desire past issues for reference, however, may obtain them upon application to the factory Service Department.

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The CADILLAC LA SALLE SERVICE MAN

Vol. VII Number 7 July 1, 1933

Service Guide and New Booklet Cover Front Axle Alignment

THOROUGHLY covering the diagnosis and correction of front axle, steering, and wheel troubles traceable to wheel misalignment, Cadillac offers Service Guide No. 26, "Front Wheel Alignment"—showing the intricate phases of wheel alignment service in easily understood pictures—and a new booklet, "Front Axle Alignment Manual," supplementing the slide film and offering information in greater detail.

Service Guide No. 26 has just been mailed and should reach subscribers within a few days. Copies of the "Front Axle Alignment Manual" are included with the mailing of this issue of the SERVICE MAN to distributors and dealers in quantities based on their probable requirements. Additional copies may be obtained upon request. In the larger organizations, copies should be distributed to the Service Manager, the shop foreman, the testers, and the wheel alignment specialist.

Increased Importance

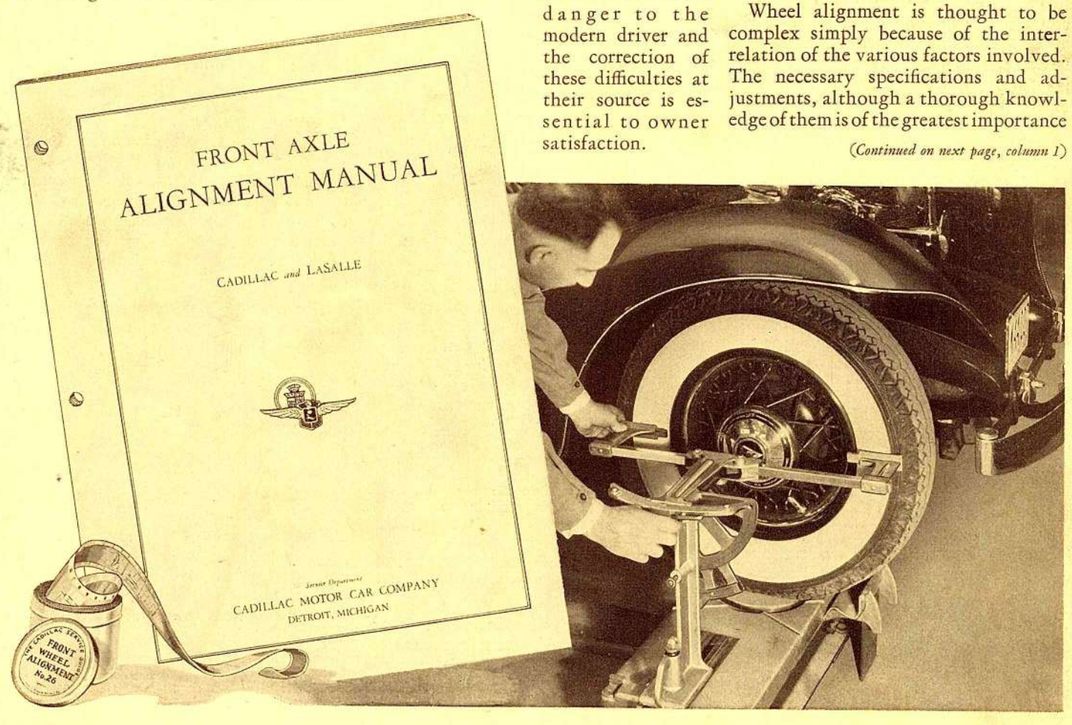
Wheel alignment has become of increasing importance with the larger tires and higher speeds of the later model cars. Hard steering, excessive tire wear, tramp and shimmy constitute a serious danger to the modern driver and the correction of these difficulties at their source is essential to owner satisfaction.

Service men have long regarded wheel alignment as beyond their sphere because of the complex nature of its interrelated factors; but with the aid of modern equipment and the simple explanations shown by pictures in Service Guide No. 26, supplemented by the "Front Axle Alignment Manual," it should not be any more difficult than the proper timing of an engine. An experienced mechanic or tester should be able to diagnose and correct Cadillac wheel alignment troubles in a very short time.

Proper Checking

Wheel alignment is thought to be complex simply because of the interrelation of the various factors involved. The necessary specifications and adjustments, although a thorough knowledge of them is of the greatest importance

(*Continued on next page, column 1*)



The CADILLAC LA SALLE SERVICE MAN

JULY 1, 1933 — VOLUMN VII
DETROIT, MICH. — NUMBER 7

Published on the first of each month in the interest of Cadillac Service

Front Axle Alignment

(*Continued from page 29*)

in wheel alignment, are no more complex than those set up for other units of the car, and can easily be mastered. The important part of wheel alignment is checking and correcting the various factors in the proper order. When this is done, the process is simple.

The Cadillac Service Guide shows exactly what to look for when steering and axle troubles manifest themselves in tire wear, hard steering, shimmy, road shock, wandering, or pull to one side; and it shows the proper order to make the check. See it at your next service meeting. Study the film in conjunction with the "Front Axle Alignment Manual," and review it from time to time to keep the relation between the various factors clear while mastering the specifications and adjustments given in the manual.

« »

Additions to Body Parts List Sent to Distributors

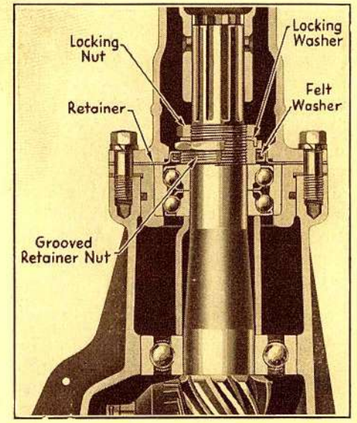
Additional new pages covering the "B" and "C" Series body parts, and a revised Numerical Price List Section and Alphabetical Index for the Master Body Parts List, effective July 1, have been shipped to each distributor in quantities sufficient for their own and their dealers' requirements.

The new pages covering the "B" and "C" Series body parts are arranged according to groups and should be inserted in the Master Body Parts List in their respective groups in accordance with the instruction sheet contained in each package. The new Numerical Price List and Alphabetical Index supersede those now in the Master Book.

Dealers will receive sets of the additional Body Parts List pages from their distributors in the same manner as they received copies of the fourth edition of the Master Chassis Parts List which was issued effective May 20.

Late Type Axle Oil Retainer Available For Past Models

BEGINNING with rear axle unit number 30-4292 on "C" series cars, a new type of oil retainer is being used on the pinion shaft between the torque tube and the differential carrier. The new retainer is similar to the one furnished for earlier model cars but incorporates several improvements. The new retainer assembly consists of a double plate spot welded at two points containing a felt washer, and a new bearing retaining nut with a spiral oil return groove cut in the outer surface.



The new retainer is spot welded at two points and the retainer nut has a special oil return groove

For Past Models

The Parts Division, in line with its policy of making new improvements available for past model cars, will furnish the improved type of retainer for service replacement on all 341, 340, 345, 353, 355, 370 and 452 cars. Only two assemblies are necessary to service all of these models. The assemblies furnished and the models to which they apply are as follows:

Models Affected	*Parts*	*Assembly No.*
341, 353, 452A 355A, 370A, 152"	1 retainer assembly 1 bearing retaining nut	1098387
340, 345 355A, 370A, except 152" 355BC, 370BC, 452BC	1 retainer assembly 1 bearing retaining nut	1081881 891890

To install the new retainer on any of the models affected, first remove the rear axle assembly from the car, and remove the torque tube and propellor shaft from the axle assembly. Remove both bearing retaining nuts, locking washer and thrower washer from the front end of the pinion shaft. Discard the wide retaining nut and oil thrower washer, but save the narrow locking nut and the locking washer.

Place a few drops of oil on the felt washer and install the new retainer with the well containing the felt extending toward the front of the car as shown in the illustration. Next, install the new bearing retaining nut on the pinion shaft with the hexagonal shoulder toward the front of the car; then install the locking washer and locking nut on the front end of the pinion shaft. The propellor shaft and torque tube may then be assembled and the axle installed in the car.

« »

Revised Recommendations For Ball Bearing Adjustment

A FEW cases of excessive wear on the ball bearings used in the wheels and on the knuckle pins have come to the attention of the factory where it was found that the wear resulted from too much looseness or play. In order to avoid excessive looseness and consequent wear in cars where the ball bearing type of bearing is used at these points, the following revised recommendations should hereafter be followed:

Adjustment Instruction

Knuckle pin bearing adjustment:—Using a wrench with a handle 12" to 15" long, tighten the adjusting plug as tight as possible by hand. Check the thread to make sure that the nut is able to come against the bearing. If the thread is not long enough the bearing may not be tight even though the nut has been drawn up as far as possible.

The bearing at this point serves an entirely different purpose from similar bearings at other points of the car. While the bearings at other points usually rotate continuously, on the knuckle pin it serves merely to oscillate within a limited radius.

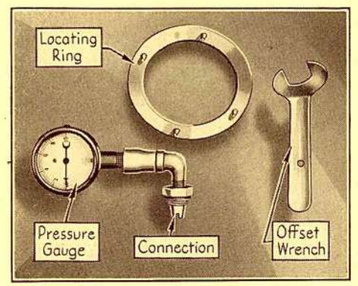
Wheel bearing adjustment:—Using a wrench with a handle 12" to 15" long, draw the adjusting nut up as tight as possible by hand; then back off the nut to the second cotter pin slot. No play is necessary. It is preferable to have the adjustment on the tight side rather than the loose side providing it does not require more than one-half of a notch.

These revised recommendations supercede previous instructions and should be noted in the Shop Manual.

Service Instructions For Fuel Pumps Used On "B" and "C" Model Cars

THE Parts Division is now furnishing all of the component parts of the fuel pump used on "B" and "C" series cars, and Cadillac-LaSalle service stations may now equip themselves to handle the service on this unit. The parts necessary for complete service on the fuel pump are listed in the new Master Parts List. In addition to the diaphragm assembly, part number 856076, including the pull rod, washers and nut now listed in the Parts List, the July 15 Parts List Change Notice will list the diaphragm cloths only under Part No. 855389, which includes the five cloths required, at a price of 37 cents for the set of five. Ordinarily, these cloths are all that are required to replace the diaphragm unless the other parts of the assembly are bent or damaged.

The fuel pumps used on Cadillac and LaSalle cars are of such simple and rugged design and construction that



The complete set of special tools are necessary to properly service the fuel pump diaphragm

trouble should seldom, if ever, occur. Any trouble that manifests itself in insufficient fuel reaching the carburetor is not necessarily proof of an inoperative pump. If the service man, however, is reasonably sure that the gasoline lines and strainers are free from any dirt or leaks that might retard the flow of gasoline, and the carburetor float and inlet valve are operating properly, the fuel pump should be investigated. A leak in the fuel line will frequently manifest itself in air bubbles appearing in the strainer bowl.

Special Tools

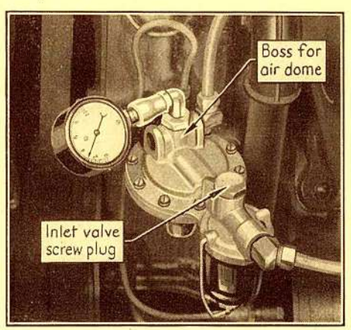
Ordinarily, any trouble in the fuel pump will be found to be in the diaphragm, the linkage springs, or the valves. The valves and springs may be serviced without difficulty, but servicing the diaphragm requires the use of a set of special tools, as explained in the testing and replacing operations. The complete set of the tools, shown in the illustration, which should be a part of every service station's equipment, may be obtained from the Hinckley-Myers Company under part number 585-J at a price of $2.75 net. The following tools are included in the complete set:

1 Pressure gauge with connection
1 Locating ring
1 Offset wrench

Testing

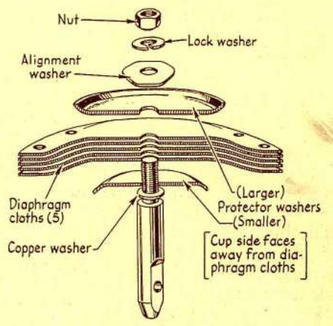
The first step in checking the operation of the fuel pump should be an inspection of the pump inlet valve. Remove the screw plug in the top cover of the pump above the strainer bowl, and take out the spring and fibre valve. Make sure that no dirt or foreign matter is holding the valve open and that the fibre valve is flat and free from cracks. Then reinstall the valve assembly, or replace with new, if needed. Next, remove the air dome from the boss above the pump body and inspect the outlet valve at this point.

The pressure gauge should then be attached, screwing the connection nipple into the boss where the air dome has been removed, and screwing the gauge into the connection. It is important that the spring and fibre valve be in place when this test is made. Start the engine and note the pressure. If the diaphragm is not cracked or broken and the linkage springs have sufficient tension, the gauge should indicate from 2 to 3 pounds (the average is about 2¾ pounds) with the engine running. If the pressure is less than 2 pounds, the pump should be removed from the engine, disassembled and the diaphragm and springs inspected.



After inspecting the inlet and outlet valves, the pressure gauge should be attached and the pressure tested

To remove the diaphragm after the pump has been removed from the engine, first mark the top cover and pump body so that they can be aligned properly when reassembling; then remove the ten screws in the top cover and take off the cover. If the diaphragm is cracked or broken or shows signs of excessive wear it should be replaced. The fabric alone may be replaced or the entire



The parts must be assembled in the proper order and position to permit proper operation and to avoid breakage

diaphragm assembly, including the pull rod, may be replaced. If the diaphragm is in good condition, the linkage springs should be replaced to correct insufficient pressure.

Diaphragm Service

The diaphragm may be removed from the pull rod by removing the hex nut, the lock washer, the hexagonal alignment washer and the upper protector washer. To remove the pull rod assembly, it will be necessary to remove the three screws in the bottom cover, remove the cover, remove the springs, remove one of the clips in the pin holding the pull rod to the operating levers, and pull out the entire diaphragm and pull rod assembly from above.

Installing the diaphragm and reassembling the pump requires particular care. If the diaphragm is not in the proper position when the top cover is installed, it will not be possible to line up the screw holes without twisting the diaphragm cloths which would cause excessive wear and breakage. The offset wrench and locating ring are provided to aid in the proper installation.

To install the diaphragm, place one of the flanges of the fuel pump body in a

(Continued on next page, column 1)

Fuel Pump Service

(Continued from page 31)

bench vise. Place the small copper washer over the threaded end of the pull rod and place the lower (smaller) diaphragm protector washer, cup side *down*, over the copper washer. The five diaphragm cloths should then be dipped in kerosene or gasoline and placed over the smaller protector washer. Line up the holes in the layers of the diaphragm cloth, using the locating ring. Place the upper (larger) diaphragm protector washer over the diaphragm cloths with the cup side *up*. Make sure that the cup side of both the upper and lower protector washers face away from the diaphragm cloth to prevent cutting.

Alignment

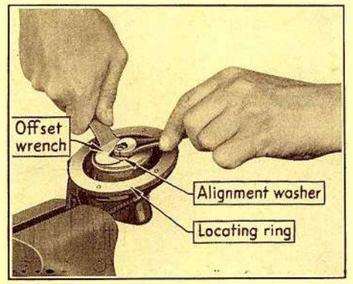
Place the hexagonal alignment washer over the upper protector washer; then install the lock washer and pull rod nut, but do not tighten securely. To tighten the assembly, use the offset wrench to hold the diaphragm alignment washer stationary and prevent the diaphragm from turning; and, with the locating ring still in place, tighten the pull rod nut securely. The locating ring may then be removed.

It is extremely important that the diaphragm be held exactly in alignment while the pull rod nut is being tightened. If it is allowed to twist or become distorted the life of the diaphragm will be considerably shortened. In this connection, if the entire diaphragm assembly, including the push rod, is replaced, it may be necessary to loosen the pull rod nut, place the diaphragm cloth in the proper position and, holding it with the locating ring, tighten the pull rod nut in the same manner as above before installing the top cover.

When installing the top cover, after the diaphragm has been installed, it is important that the diaphragm be in the extreme up position. If the bottom cover of the pump is in place, the diaphragm will be in the extreme up position; but if the bottom cover has been removed to install the entire pull rod and diaphragm assembly, it will be necessary either to install the bottom cover with the springs before installing the cop cover, or to place the pull rod in the extreme up position with the end of a wrench and hold it in this position while the top cover is being installed.

Top Cover Installation

To install the top cover, lay the cover on the pump in the proper position, determined by the marks made before the pump was disassembled, and, with the diaphragm in the extreme up position, insert the screws with lock washers from the top through the cover and diaphragm into the pump body. Do not tighten the screws immediately. First, install all the screws, drawing them up evenly but not tightly; then tighten them securely but in alternate order so that there will be no chance for bunching or stripping at any point.



The alignment washer should be held with the offset wrench while the diaphragm nut is tightened

When installing the bottom cover make sure that the proper spring is used at the proper point and that the springs and spring caps are in place. The shorter spring should be placed over the boss at the shallow end of the bottom cover to bear against the rocker arm while the longer spring should be placed over the boss in the deep end of the cover to bear against the diaphragm pull rod. Particular care should be taken to make sure that the springs and spring caps remain in their proper positions while the bottom cover is being put in place and the screws installed and tightened.

Final Check

A simple check of the suction and pressure should be made before installing the pump on the car. This can be done by holding the fingers over the inlet and outlet openings of the pump and manipulating the rocker arm by hand. The pump may then be reinstalled on the car and tested. It should prime itself—that is, fill the strainer bowl—in about 30 seconds with the starter button depressed. If it fails to provide sufficient pressure, the diaphragm has been incorrectly installed preventing the full stroke of the push rod or the springs do not have sufficient tension; and it will be necessary to disassemble the pump to reinstall the diaphragm correctly or to replace the linkage springs if this has not been done.

Important

A further reduction in the recommended inflation pressure for tires on all "B" and "C" model cars has just been made. A pressure of 35 pounds on both front and rear tires is now recommended for these cars. For high speed driving, however, it is advisable to keep the pressure of the front tires up to 40 pounds.

This change in inflation pressure recommendations has been made possible by improvements in steering, springing and wheel balancing. The lower pressures will add to the rideability of Cadillac and LaSalle cars.

It is important, however, that the tires be kept inflated to the recommended pressure and not be permitted to drop below. Underinflation is a frequent cause of excessive tire wear and shimmy.

The change applies only to "B" and "C" cars. Previous models should be kept at the previously recommended pressure of 40 pounds front and rear, and for high speed driving—45 pounds front.

For cars whose owners habitually or frequently drive at high speeds, the recommended high speed driving pressures should be maintained at all times.

Wanted and For Sale

FOR SALE: Cadillac 353, 140" W. B. 5-passenger coupe body in excellent condition. Perry Buick Corporation. Norfolk, Virginia.

FOR SALE: LaSalle 303 7-passenger sedan in good condition. Cadillac Oldsmobile Company of Chattanooga.

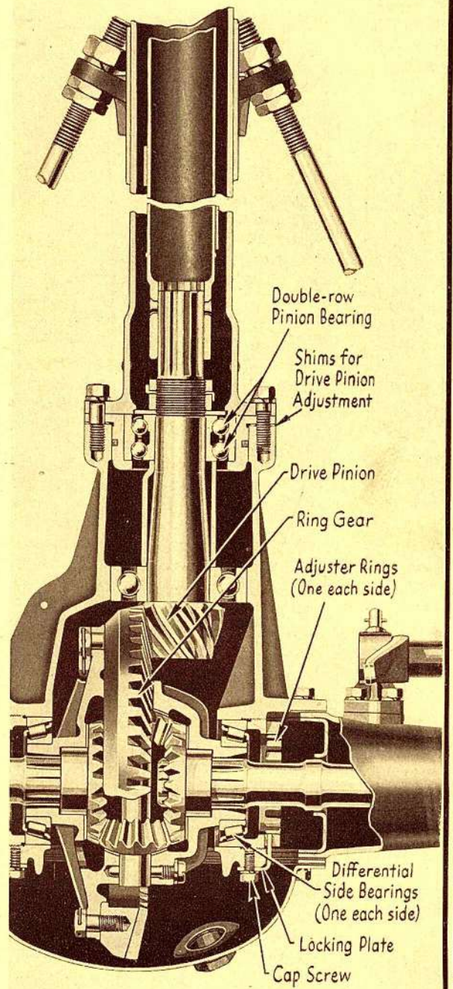
FOR SALE: Cadillac 355-A engine, number 809383, in first class condition. Run slightly over 7000 miles. Staebler & Sons, Inc., Ann Arbor, Michigan.

WANTED: Body for LaSalle 303. Five-passenger sedan preferred. Advise price and condition. Cadillac Motor Car Company, Columbus Branch, Columbus, Ohio.

The CADILLAC LA SALLE
SERVICE MAN

Volume VII, Number 8 — August 1, 1933

Service Stations Will Handle Ring Gear and Pinion Replacement



IN ORDER to assure quiet operation and long life of Cadillac and LaSalle rear axles, the factory, in the past, has handled all replacement and adjustment operations on the pinion and ring gear of differential assemblies on an exchange basis. This has been done to insure such accuracy as could be maintained only by careful matching of parts from a sufficiently large stock.

Recent improvements in materials and in gear cutting methods, however, have made it possible to hold the manufacture of these parts to such close limits that the necessity for matching the parts has been reduced to a minimum. Hereafter, therefore, replacement and adjustment of the pinion and ring gear on 345-B, 345-C, 355-B, 355-C, 370-B and 370-C cars, is to be handled by distributors' and dealers' service stations. The ring gear and pinion are listed in the Parts List and should be ordered hereafter from the Parts Division for service on the differential. Any complete differential that may be in distributors' stocks should be used as in the past and the old differential should be sent back to the factory for credit-repair until the stocks are reduced.

While this does not apply to 452 cars at present it is expected that in the future, further development will make it possible to change only the gears on these cars as well.

The new basis of handling rear axle gear service has several advantages for distributors and dealers in lower inventory and greater service volume, but at the same time it places an important responsibility on the service station. The work should be entrusted only to capable and well-trained men who realize the importance of accurate workmanship.

The adjustment instructions given here will aid the men selected for this work in an understanding of the requirements, and should be studied thoroughly. It is similar to the procedure followed at the factory where each new assembly as well as each service assembly is individually tested and adjusted according to Cadillac standards.

Gear Mesh

An understanding of the terms used here in regard to the gear tooth form and of the principle underlying the design of the spiral gears will aid in an understanding of the adjustments.

Figure 1A in the illustration showing the principles of design, indicates the terms used to refer to the various elements of the tooth form. The small end of the tooth is called the *toe* while the large end is called the *heel*. The portion of the tooth above the pitch line is called the *face* while the portion below the pitch line is called the *flank*.

(Continued on next page column one)

Rear Axle Gear Adjustments Required When Gears Are Replaced

(Continued from page 33)

The bearing contact features of gear teeth in mesh are described as *lengthwise*, meaning the contact along the length of the tooth, and as *profile*, meaning the contact from top to bottom of the tooth.

Backlash (the play between meshing teeth) is allowed for in every case of gear mesh. This is provided for by means of *clearance*—the difference between the active depth and the total depth of the tooth; as shown in Figure 1B.

Ring Gear and Pinion

Figure 2A shows a diagram of a ring gear and pinion set in the ideal running position. In this position all tooth dimensions would converge to the cone centers indicated and the tooth contact would be distributed along the entire length of the tooth. As a matter of fact, however, this condition can never actually occur.

In the ideal position, only the pitch lines of the gear and pinion coincide. All other proportions of the tooth shape converge toward the cone centers of the gears and are in no place parallel to the pitch line. It is therefore obvious that the slightest shifting of the gears from the ideal position results in throwing the pitch lines out of parallel and changing the contact of the gear and pinion from a full contact toward either the toe or the heel of the ring gear.

If the ring gear is moved *away* from the pinion, the contact is toward a *heel* bearing as shown in Figure 4A. If the ring gear is moved *toward* the pinion, the contact will be moved toward the *toe* as shown in Figure 3A. When the ring gear is moved away, the backlash and clearance will be taken up first at the heel of the tooth and the bearing is at this point. If the gear is moved toward the pinion the backlash and clearance will be taken up first at the toe.

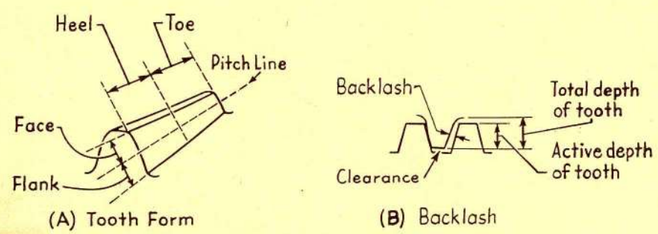


Fig. 1

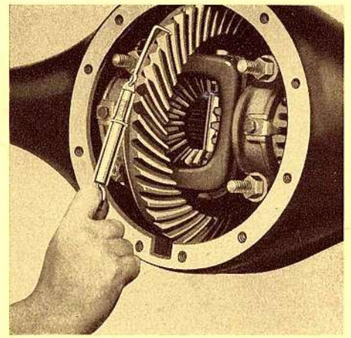
An understanding of the terms used in describing the principal features of gears and gear teeth is essential to an understanding of the adjustments.

Since the perfect contact can not be achieved or maintained under operating conditions the problem of adjusting the ring gear and pinion is to achieve the proper balance of these conditions to provide the quietest operation and longest life. This should be done as follows:

Differential Side Bearings

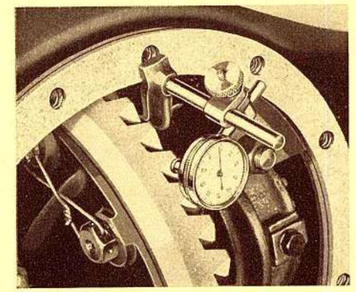
Before any tests or adjustments are made on the differential, the lubricant should be drained from the housing and the parts should be cleaned with gasoline or kerosene and thoroughly dried with air.

With the differential cover removed the differential side bearings should be tested for tightness. A pull of 8 to 10 pounds, measured at the circumference



The side bearing adjustment may be checked by turning the ring gear with a spring scale hooked over one of the gear teeth.

of the ring gear should be required to turn the gear. This test should be made with a spring scale hooked on one of the ring gear teeth as shown in the illustration. An initial pull of



The backlash may be checked with a dial indicator clamped on the axle housing and bearing against one of the ring gear teeth.

about 15 pounds will be required to start the gear, but as soon as it is started the pull should drop to 8 to 10 pounds.

Adjustment

The side bearings can be adjusted for the proper pull by removing the reinforcement plate and the locking plates for the adjuster rings, loosening the bearing caps slightly, and turning the adjusters until the correct pull is obtained. After the adjustment is completed, the bearing caps should be tightened and the locking plates installed.

These adjusters are used in the adjustment of the ring gear for proper tooth contact, but this need not disturb the side bearing adjustments. In adjusting the ring gear the two adjusters are turned an equal amount so that although the position of the ring gear in relation to the differential case is changed, the side bearing adjustment in relation to the ring gear remains unchanged.

Ring Gear Tooth Contact

Although the ring gear tooth contact is the next important consideration, the backlash should be checked before checking for tooth contact, as both backlash and tooth contact are controlled by the same adjustment and backlash must be kept within the specified limits of .004 to .012 in. while adjusting tooth contact.

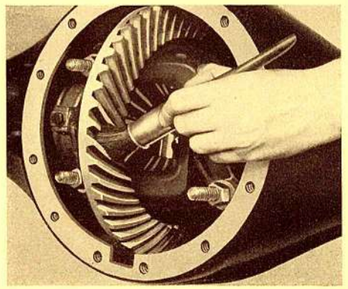
When checking the backlash, the axle shafts should be pulled out of the differential side gears and the drive pinion held stationary. The amount of backlash can be measured by means of a dial indicator with holder (tool No. HM91220) clamped to the axle housing

and in contact with a tooth on the ring gear as shown in the illustration. If the backlash is within these limits the gears can be checked for proper meshing.

Tooth Contact

The meshing of the gears can best be determined by painting the working surfaces of the ring gear teeth with a light coat of red lead thinned with gasoline, as shown in the illustration, or with Prussian blue. When the gears are turned the red lead or Prussian blue is wiped off at the point where the teeth of the ring gear and pinion mesh.

Turning the ring gear several revolutions *by hand* will give the tooth contact under light load. It is important to make this light load test first so that an initial adjustment can be made if the gears are not correctly meshed. The tooth form may easily be ruined by running the gears under load when not correctly meshed.



The meshing of the gears can best be checked by painting the gear tooth surfaces with a light coat of red lead and turning the gears.

To test the gear mesh under load, the rear wheels should be raised off of the floor and driven in both directions by means of the engine. The necessary load can be obtained by applying the brakes. Care should be taken in making this test not to run the ring gear more than 10 or 12 revolutions at a time before checking the tooth contact.

The desired tooth contact for both driving and reverse is shown in Figure 2B and C on this page. This contact is suitable from the standpoint of both lengthwise and profile contact and if the backlash is within the proper limits the gears are in need of no further adjustment.

Lengthwise Contact

It will be noted that the tooth contact for the forward speeds under light load is at the toe of the tooth. This is necessary due to spring in the housing and the bearings under driving loads in the forward speeds which causes the tooth contact to shift toward the heel of the tooth. Under no condition should the tooth contact on the ring gear under light load be at the heel of the tooth, since a heavy load on the gears in any of the forward speeds would tend to concentrate the load at this point.

In reverse, the tooth contact does not shift as far toward the heel under load as the driving contact. It is therefore permissible to have the contact on the reverse side more nearly at the center of the tooth than is the case on the driving side.

When the toe contact on both the driving and reverse sides of the tooth is extended too close to the end of the tooth, as shown in Figure 3 (B) and (C) respectively, increase the backlash between the gears, keeping it under .012 in., however, by moving the ring gear away from the drive pinion. This may also change the profile or top-to-bottom contact slightly which should be corrected by adjusting the pinion as explained later.

To correct a heel contact on both the driving and reverse sides of the tooth, illustrated in Figure 4 (B) and (C) respectively, move the ring gear toward the drive pinion. This will increase the lengthwise contact but may also change the profile contact slightly. It will decrease the backlash also, and this should be checked to see if it is within the minimum limit of .004 inch.

(Continued on next page, column 1)

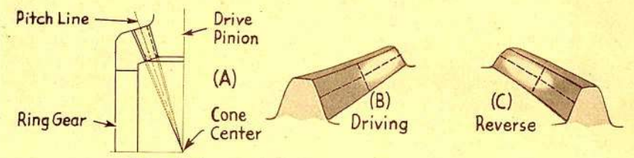


Fig.2 Correct Ring Gear Tooth Contact

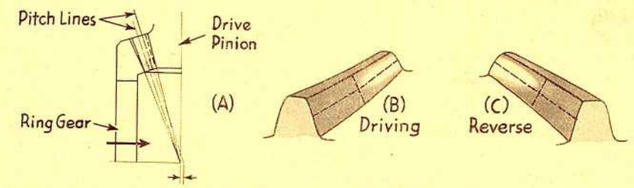


Fig.3 Excessive Toe Contact

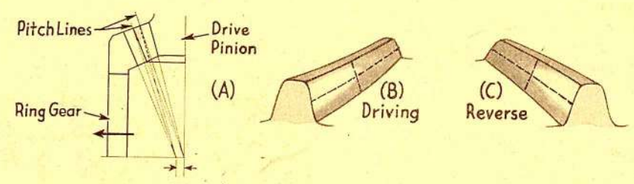


Fig. 4 Excessive Heel Contact

Fig. 5

The required adjustment is determined by the position of the tooth contact. The line drawings in this illustration show the reason for the variations in the contacts.

The profile contact may appear at any position throughout the length of the tooth. For proper meshing of gears the greater part of the profile contact on the ring gear should be about the middle of the tooth at the pitch line slightly below the outer edge. Referring to Figure 2 it will be noted that the contact surface for the desired condition extends only slightly below the pitch line and almost to the edge of the tooth. If the contact surface favors a lower position on the flank of the ring gear tooth as shown in Figure 2 (B) the profile contact is too low. If, on the other hand, the contact surface is totally above the pitch line and also shows a decided contact on the top point or face of the tooth, the profile contact is too high.

Correcting Profile Contact

If the profile contact tends toward either the face or flank, an adjustment of the drive pinion should be made. This adjustment is controlled by the thickness of the shims between the front pinion bearing retainer and the front end of the differential carrier. An initial adjustment of the drive pinion is made when assembling the differential and drive pinion assembly by installing sufficient shims to give a total thickness of .075″ to .090″ but further adjustment may be necessary. Shims are supplied by the Parts Division in thicknesses of .010″, .015″ and .035″.

To correct a low profile or flank contact, move the drive pinion away from the ring gear by increasing the total thickness of the shims. This adjustment will increase the backlash and it may be necessary to move the ring gear toward the drive pinion to keep the backlash within the limits. Changing the position of the ring gear will alter the lengthwise contact on the tooth and to obtain correct tooth contact, illustrated in Figure 2 (A) and (B), several adjustments for lengthwise and profile contact, may be required as explained later.

To correct a high profile or face contact, move the drive pinion toward the ring gear by decreasing the total thickness of the shims. This will decrease the backlash and it may be necessary to move the ring gear away from the pinion to maintain the proper amount of backlash. Changing the position of the ring gear will change the lengthwise contact on the tooth and to obtain a correct tooth contact, illustrated in Figure 2 (A) and (B), several adjustments for lengthwise and profile contact may be required. After obtaining the proper tooth contact under load, check the backlash to see if it is within the limits.

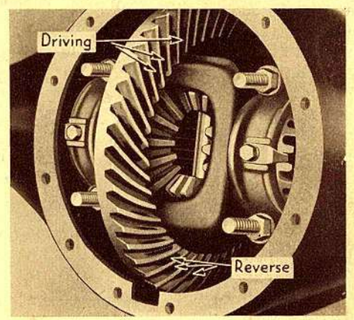
If the tooth contact obtained under load varies widely from the tooth contact illustrated and described, it would indicate that the gears are worn. In this event, the gears should be replaced. Old gears that have been noisy for sometime can seldom be adjusted to eliminate the noise. It is almost always necessary to replace the gears in such cases.

Replacing Gears

In replacing the gears, the double row ball radial thrust bearing on the front end of the pinion should be replaced as well as the ring gear and drive pinion, which are furnished in matched sets. Experience has shown that this bearing is always worn whenever the gears are worn sufficiently to require replacement, and trouble may develop if the bearing is not replaced at the same time.

It is also advisable to replace the cork gasket on the retainer for the front pinion bearing and, in cars which have the late type axle oil retainer described on Page 30, July 1, Service Man, the felt washer should be replaced. In this connection, whenever axle is down for inspection or replacement of gears, the retainer nut should be inspected and the grooved type installed whenever the plain type is found.

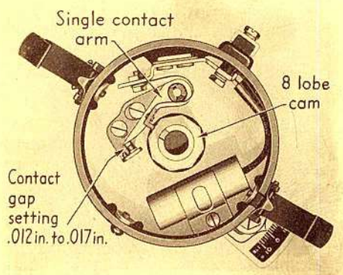
When installing the ring gear, the retaining screws should be drawn up as tight as possible by hand using an 18″ wrench. The locking wire should then be installed wiring the screws together in sets of twos, crossing the wires between the screws.



After the ring gear has been painted with red lead and turned a few times, the tooth contact can be seen.

Single Arm Distributor Is Now Used In V-8 Cars

Beginning with engine unit 30-3607, LaSalle and Cadillac V-8 cars have been equipped with a new timer-distributor, type 661-P, having an 8-lobe cam and a single arm in place of the former type with the 4-lobe cam and double arm.



The contact gap setting is the only difference in the adjustment of the single and double arm types.

The setting for the contact point on the new type distributor is .012″ to .017″. The timing is done in relation to the No. 1 cylinder only. No synchronizing adjustment is necessary. Other than this, the adjustments are the same as on the previous type with the double arm.

« »

Axle Alignment Manual Should Be Corrected

The specification chart on page 18 of the Front Axle Alignment Manual announced in the July 1, Service Man and sent out to all distributors and dealers contains an error that should be corrected in every book. In the column "Inclination of Steering Knuckle Bolt," the booklet indicates that the inclination with the car weight on the wheels is less than with the weight off of the wheels. Actually it should be ½° to ¾° *more* than with the car weight off the wheels.

Gummed strips of the corrected column "With Car Weight On Wheels" which are intended to be pasted in the book over the column in error have been sent to all distributors and dealers so that all booklets can be corrected.

Everyone having a copy of this booklet should check it with the wall chart of Front Axle Specifications, which is correct and which was sent out after the booklets were distributed, and should correct the booklets to agree with the wall chart.

Ferodo

New Type Of Brake Lining Listed For All Model Cars

ALL cars now being shipped are equipped with a new type brake lining having several advantages over the previous types used, and, according to exhaustive engineering tests, the new lining is the best available for Cadillac and LaSalle cars. It embodies the best combination of desirable qualities of any linings that have been previously used—it has a higher coefficient of friction; it has less tendency to seize or score; it largely eliminates objectionable brake odor; and it has longer life.

All Brakes

Applicable to the band type of brakes as well as the shoe type on all Cadillac and LaSalle cars, either past model or present, it has the additional advantage of simplifying parts stocks and reducing surplus or obsolescence. It was listed in the June 15 Parts List Change Notice for *all* model Cadillac and LaSalle cars.

The lining is furnished in 50 foot rolls of 2", 2¼" and 2½" widths at the lowest prices at which any reputable brake lining can be obtained.

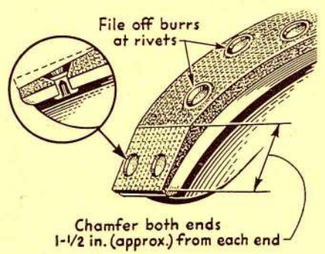
When relining the brakes on any car, it is important that the same type of lining be used on both rear or both front brakes. No two types of lining have exactly the same coefficient of friction and the rate of wear frequently differs; therefore, unless the same type of lining is used on both sides of any set of either front or rear wheels, serious difficulties in equalizing the adjustment may be encountered.

Accurate Adjustment

Any lining giving longer life, less frequent adjustment and softer pedal action must necessarily be slow wearing which also means that it is slow in wearing-in. Since the lining wears-in slowly it is essential that the installation and adjustments be extremely accurate. Wear will not take out high points or compensate for slip-shod adjustment for a considerable length of time and, in the meantime in such cases, a squeak may develop.

To obtain the full benefits of the new lining, it must be accurately installed. The rivets must be tight and the heads should be countersunk to a point at least half-way through the lining. The slight bulges which occur around the openings for the rivets when countersunk must be ground off with emery cloth wrapped around a block of wood or with a rough file.

It is important that the linings be chamfered at both ends of each shoe to a point at least 1½" from each end as shown in the illustration. The chamfer on the ends should be half the depth of the countersink for the rivet



Burrs should be filed off and the ends chamfered to a distance of approximately 1½ in.

heads. For any shops having grinders that swing in a true arc, it is advisable to grind the linings after they are installed on the shoes.

Brake Drums

The brake drums should be in good condition, round and smooth within the limits shown in the Shop Manual. The brake supports should be tight and the brake anchor pins should be tight and properly aligned. It is extremely important the brake shoes be properly centralized upon installation.

With the proper installation and accurate adjustments, the new type linings will offer longer life, less frequent adjustment and softer pedal action than any lining available at the present time.

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Clutches Should Be Handled Carefully in Service Stations

CARE in the handling of clutches in distributors' and dealers' parts and service departments is of the utmost importance. Rough handling, carelessness in packing and unpacking or dropping of a clutch may throw it out of adjustment.

Clutch service is handled by the Parts Division on an exchange basis because of the importance of accurate adjustment which can be accomplished only by the use of expensive equipment. Extreme care is taken to keep the adjustment within close limits and the clutches are carefully handled in stock and when packed. Distributors and dealers should take equal care to preserve the adjustment.

A few cases of clutch disc odor have been found to result from the use of discs that have been kept in stock for excessively long periods of time. If clutch discs lie in stock too long the sulphur in their composition works to the surface and when they are finally put in use the friction burns the sulphur, giving the odor.

Stocking Discs

The possibility of clutch discs remaining in stock too long may be eliminated by using up the older discs first. Some distributors' and dealers' parts men place new shipments of discs in the bins on top of the old ones with the consequence that the new ones are used first. This sometimes means that the old ones may stay in the bottom of the bins for six months and more before they are used. If the new discs are placed under the old ones so that the old ones are used up first there should be no occasion for clutch disc odor.

In this connection, the clutch discs with the wide facings now being shipped by the parts division, which are interchangeable on past model clutches where the narrow facing was originally furnished, are relieved .005" on the inside edge for a distance of ¾". This effects a relief for the shoulder which may be worn on the driving plates of clutches originally equipped with narrow faced discs, and thus eliminates the possibility of a slight engagement squeak or chatter.

For All Models

These discs can be used on all clutches for which they are listed. The relieved edge of the facing will not interfere with the use of the disc on wide faced clutches. After the disc has been used for a short time it will be worn down even with the relieved edge and in full contact.

It is important in every clutch service operation to check the clutch pedal free-play and keep it within the 1¼" to 1½" limits so that there will be no possibility of clutch slippage or excessive wear on the thrust bearing.

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Parts Managers—Notice

PARTS managers having any of the following parts in stock are requested to advise the Factory Parts Division, giving the total number of each item on hand:

Part No.	*Group No.*	*Name*	*Series*
82049	8.0627	Starting crankshaft	303
82534	8.0931	Flywheel	314
82537	8.0627	Starting crankshaft	314

New Method Required to Fit Lock Cylinder to Key

THE cylinder locks used in all "C" series door handles and furnished for service replacement on both "B" and "C" series cars are of a new improved design which makes it impossible to change the lock to fit the key by changing the tumblers as on previous models and as explained on page 35, May 1, 1932 SERVICE MAN.

Since the combination of the lock cylinder cannot be changed once it has been made up for a particular key, the cylinders provided by the Parts Division for service replacement are not made up for any specified key number and it is left to the service station to make the lock apply to the key desired. This is accomplished in the following manner:

Service Cylinders

The lock cylinders furnished by the Parts Division have all tumblers of equal length. When the key which is intended to fit the lock is inserted in the cylinder, the tumblers extend out from the surface of the cylinder in varying lengths on both sides. Since, with the key in place, the cylinder should be in the unlocked position—that is, with the tumblers flush on both sides of the cylinder—the desired combination may be obtained by simply grinding the tumblers flush with the cylinder while the key is held securely in place.

The grinding can be done with a file or on an emery wheel. Particular care must be taken, however, to grind the tumblers flush with the cylinder. This can be done without difficulty on the side where the tumblers do not give, but for grinding the side where the tumblers do give requires holding the tumblers securely in place with a block or with a special fixture similar to the one shown in the illustration, which can be made up in any shop.

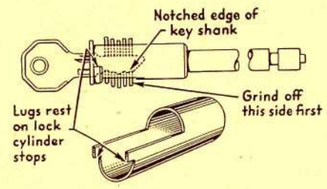
The fixture can be cut out of a piece of ½" inside diameter tubing about 1½" long. It should be cut in such a way as to leave a lug on each side not more than ⅛" long to rest against the stops on the lock cylinder. The tubing should be cut back about ¾" at a depth great enough to permit grinding the tumblers.

Procedure

In grinding the tumblers the following procedure should be followed:

Place the key with which the lock is to operate in the lock cylinder. Notice that on one side the tumblers give when pressed with the finger while on the other side they do not give.

The side that does not give is the side where the inside cut out edges of the tumblers rest against the notched edge of the key shank. The tumblers should be ground off on this side first. Make sure they are ground off flush with the contour of the lock cylinder.



After the tumblers on the side near the notched edge of the key have been ground off the fixture should be installed.

Insert the lock cylinder in the special fixture in such a way that the tumblers that have been ground flush rest against the tubing while the uncut side extends out of the opening. If the fixture is not used hold the cut side firmly against a block. Then with the key still in place grind off the tumblers on the remaining side flush with the contour of the lock cylinder.

Inspect the tumblers on both sides of the lock cylinder, with the key in place, to make sure that none of the tumblers extend above the surface of the cylinder. The cylinder may then be installed in the lock.

« »

Carburetor Heat Control Valve Is Discontinued

THE Parts Division will no longer furnish a carburetor heat control valve, Part No. 83962, for 340, 345-A, 353 and 355-A cars, since it is not entirely essential to the operation of the engine. The bushings, Part No. 873807, likewise will be discontinued. Whenever the valves are removed from any of these cars for any reason the hole in the flange and the exhaust manifold should be plugged.

Plug Openings

The flange, Part No. 83963 for these models is no longer furnished and the flange, Part No. 872246 (not drilled) should be used hereafter in its place. The exhaust manifold, Part No. 83966, will have the hole for the heat control valve plugged hereafter. If the valve is removed without replacing either the flange or manifold it will be necessary to plug the valve holes. The following parts are required to plug each hole:

Quantity	*Part No.*	*Name*
1	106325	Screw
1	123210	Nut
1	112581	Lock Washer
2	110957	Plain Washer

In using these parts as a plug, the old bushings should be left in the opening in the flange and manifold. They should be installed with one plain washer under the head of the screw and the other against the opposite side of the flange or manifold to serve as a bearing surface for the lock washer. The lock washer and nut should then be installed.

Wheel Hubs Permit Over-Flow of Excess Lubricant

THE wheel hubs of "C" model cars have two ¼" holes drilled through from the bearing to permit excess lubricant to drain outside so that it will not reach the brake linings. If the lubricant should reach the brake linings, the brakes would not hold or would grab and it would be necessary to reline them.

These holes, although highly important, are purely a precautionary measure. Under ordinary circumstances no lubricant should drain off, but in case of excessive lubrication at the bearings the excess must be permitted to drain so that it will not reach the brake linings.

Some service stations, finding the lubricant dripping on the side walls of the tires have plugged up the holes. This is simply inviting trouble. The dripping is an indication that too much lubricant has been applied to the inner bearing in case of dripping on the front wheels or, in case of dripping on the rear wheels, that there is an excessive leak from the differential. These difficulties should be corrected at their source.

Under no circumstances should the drain holes be plugged. In case of excessive lubrication, it is better to let the lubricant drip on the tires than to make it necessary to reline the brakes at frequent intervals.

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Wanted

WANTED: Six 19" natural wood wheels for Cadillac 355-B. Will exchange six wire wheels, painted any color desired, for same model. Will pay all costs of transfer. Randolph Cadillac Company, 1027 Fairfield Ave., Bridgeport, Connecticut.

78-8-33-V

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The CADILLAC LA SALLE SERVICE MAN

Volume VII, Number 9 — September 1, 1933

New Shop Manual Supplement Covers "C" Series Cars

Complete service information on the "C" series Cadillac and LaSalle cars is now available in convenient reference form in the "C" series Shop Manual supplement now being distributed. The publication of this supplement will enable each Cadillac LaSalle service man to bring his file of mechanical information on all four model cars right up-to-date.

An entirely new Shop Manual for the "C" series cars will not be required. All of the necessary information has been included in a set of additional or corrected pages which, when inserted in the proper places in the "B" Manual, will make this manual apply to "C" as well as to "B" series cars.

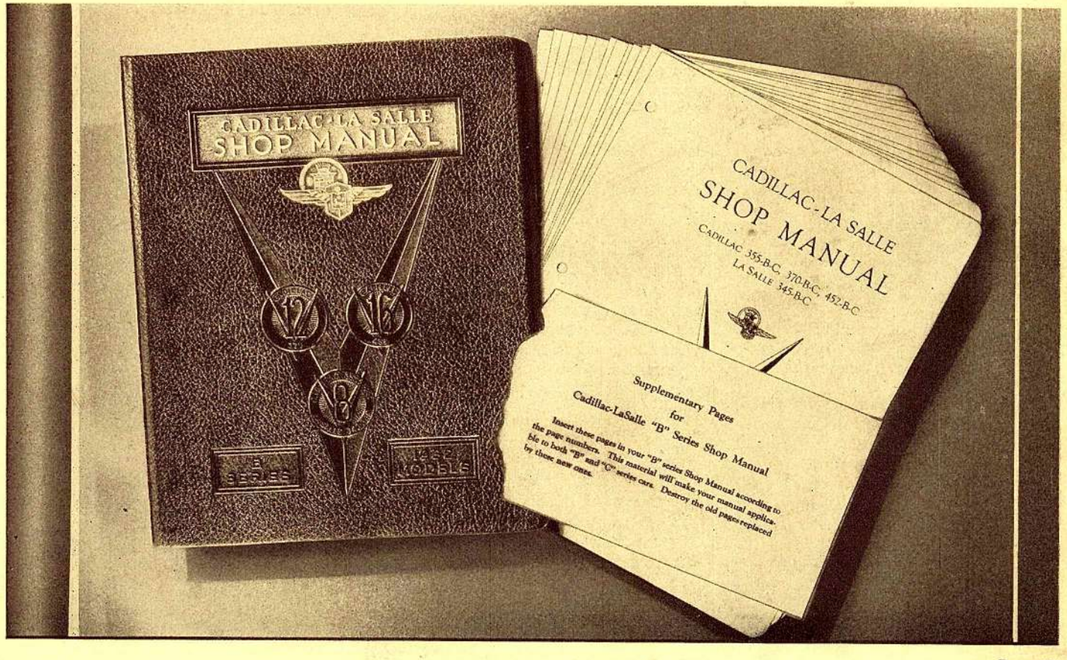
The information given in these pages is arranged according to the usual Shop Manual grouping and arrangement into illustrations, specification tables, and notes. Eighteen full page illustrations are included and, in addition, a number of smaller illustrations. Specifications are given for the "C" series cars, and new instructions on performing a number of difficult operations. In some cases these instructions also apply to earlier models.

Latest Information

These new pages include all of the essential information that appeared in the Preliminary Service Information Booklet published at the time the "C" series cars were announced, and present this information in a form particularly suited to easy reference. In addition, they include all of the essential service information that has been released since that time, and consequently provide a complete, up-to-date reference on both "B" and "C" series cars.

One set of these supplementary pages has been prepared for each "B" series Shop Manual. The supplements are distributed at no charge to holders of the "B" manual and each service man who has one of these manuals should arrange to have his employer secure a supplement for him.

Service men who do not possess a manual should purchase one. The Shop Manual is the standard Cadillac reference book on repair methods. It is filled with essential service information, conveniently arranged and thoroughly illustrated. The "B" series manual, complete with the new "C" supplement, can be secured from the factory Parts Division for $2.50 net.



The CADILLAC LA SALLE SERVICE MAN

September 1, 1933 — Volume VII
Detroit, Mich. — Number 9

Published on the first and fifteenth of each month in the interest of Cadillac Service

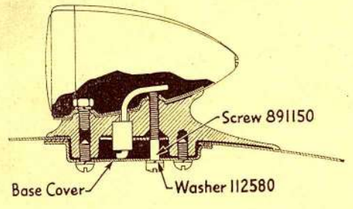
Keep Fender Lamp Screws Tight To Prevent Corrosion

A few cases have been reported of poor ground connections to the fender lamps and in almost every case the poor connection has been found to be the result of corrosion caused by moisture getting under the base cover on the underside of the fender. It is important that the two screws holding the cover to the base be securely tightened to prevent moisture reaching the inside of the cover where it may cause corrosion.

On cars now being shipped, a good connection is doubly insured by using a longer screw to hold the lamp head to the lamp base and extending it through the bottom cover as shown in the illustration.

Additional Contact

In case of poor contact at this point on 355, 370 and 452 "B" and "C" cars, the longer screw can be installed to provide an additional point of contact. To make the installation it is necessary to remove the lamp by removing the two screws in the bottom cover on the under side of the fender and locate and drill a $\frac{5}{16}$ in. hole in the bottom cover, using the lamp-base as a template.



Position of screw and washer

The longer screw, part number 891150, can then be placed through the bottom cover from the underside of the fender and through the fender and lamp base into the lamp. A washer, Part No. 112580, should be placed between the head of the screw and the bottom cover.

When installing the cover screws, it is important to draw them up tight to prevent moisture from entering.

Cold Weather Program Should Include Preparations for Service to Cooling System

Preparation of the cooling system for winter driving is fully as important as the selection of the proper anti-freeze, and the service station should plan now for a definite routine of inspection during the fall preparation and winter driving seasons. After all, it is protection from freezing that the owner seeks from the service station, and unless the cooling system is in good condition, free from leaks, the addition of anti-freeze may be simply a waste of money.

Permanent Solutions

This is particularly true in the case of a permanent anti-freezing solution such as Cadillac Anti-Freeze. In the first place, when permanent anti-freeze is used, any leaks are visible because the anti-freeze, being permanent, does not evaporate as alcohol or water, leaving no trace, but remains, attracting attention to even the smallest leaks.

Secondly, there is the possibility of loss of protection. An owner ordinarily expects the only losses of the cooling liquid to be the result of evaporation. The owner who uses a permanent anti-freeze, however, knows that the anti-freeze will not evaporate and replaces any losses with water. Any solution that leaks out therefore is likely to be replaced with water, reducing the freezing protection until the car may be in actual danger of freezing-up.

The third consideration is the matter of expense. The owner who uses a permanent anti-freeze has paid a premium for *permanent* protection. Losses by leakage must be replaced with additional anti-freeze, and when that is necessary, the advantages of the permanent protection have been lost.

Service Operations

Service to the cooling system is necessary regardless of what type of anti-freeze is used, but no service station should accept the responsibility of the installation of a permanent anti-freeze without first performing the following operations.

Drain and flush the cooling system thoroughly, under pressure, using the reverse flow method.

Inspect all hose connections and replace all that are worn or show signs of rotting or otherwise deteriorating.

Tighten all hose clamps and, where a hot water heater is used, make sure the heater drain plug is tight.

Tighten the water pump gland nut or repack if necessary to prevent leakage.

Make sure the drain hole in the water pump body is open to permit any of the cooling liquid seeping past the packing to drain outside instead of into the crankcase.

Run the engine for a few moments until it is hot; then tighten all cylinder head bolts securely.

When a permanent anti-freeze is used, a warning tag should be wired on the radiator drain cock and another on one of the radiator tie rods to caution mechanics or filling station attendants against draining.

Regardless of what type of anti-freeze is used, the cooling liquid should be tested with the proper hydrometer at the regular 1000-mile inspection and additional liquid added when required. When a permanent anti-freeze is used, the addition of water should be sufficient, but if the level is excessively low, the cooling system should be checked for leaks.

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Price Revisions Announced By Hinckley-Meyers Company

The Hinckley-Myers Company, Jackson, Michigan, Cadillac's official tool suppliers, announce the following price revisions on service covers listed in the Hinckley-Myers Tool Catalogue:

Part No.	Part Name	Price
J-113-1	Fender Covers—Plain—Pr.	$6.20
J-113-1A	Fender Covers—Fenderwell—Pr.	6.55
J-113-2	Door Covers—36"—Pr.	2.35
J-113-3	Cowl Covers—Ea.	1.45
J-113-4	Front Seat Covers—Ea.	2.35
J-113-5	Steering Wheel Covers—19"	.55
J-113-6	Shift Lever Cover	.15
J-113-7	Head Lamp Covers—Pr.	1.45
J-113-8	Radiator Covers—Ea.	1.65
J-113-9	Double Door Covers—38"—Pr.	2.55

The importance of protecting the car from dirt, grease and scratches while service is being performed on an owner's car cannot be over-emphasized. Cleanliness aids in creating a favorable attitude toward authorized service on the part of the owner.

Spark Plug Switch

For a limited time, the Spark Plug Shorting Switches, shown on page 29 of the Hinckley-Myers tool catalogue, will be available to Cadillac distributors and dealers at the reduced price of $11.00 each. The former price was $15.00.

The reduced price is being put in effect to dispose of a surplus. Orders should be placed direct with the Hinckley-Myers Company, Jackson, Mich.

Laboratory Statement on Commercial Anti-Freeze Products

WITH the definite passing of the summer driving season, distributors and dealers should begin at once their plans for the fall preparation and winter driving season. Of the utmost importance in these plans is the question of suitable anti-freezing solutions—suitable from the standpoint of the individual owner's requirements, and suitable from the standpoint of the responsibility the service station assumes in providing the owner with freezing protection during the cold weather season.

As an aid to the service station in the selection of anti-freezing solutions suitable from both standpoints, the following unbiased laboratory statement, based on extensive tests made on cars in operation as well as in the laboratory, is given here. With this information at hand, little difficulty should be experienced in providing the individual owner adequate and economical protection for his car.—*Editor's note.*

THE available commercial materials for preparing anti-freezing solutions for automobile radiators are denatured alcohol, methanol (synthetic wood alcohol), distilled glycerine and ethylene glycol.

Denatured Alcohol and Methanol

Denatured alcohol and methanol solutions are, at present, the most generally used anti-freezing solutions. Denatured alcohol and methanol are widely distributed, afford protection against freezing and are not injurious to the materials used in the cooling system.

There are two principal objections to denatured alcohol and methanol. These materials are lost by evaporation, especially on heavy runs, and, unless the solution in the radiator is tested periodically and sufficient anti-freeze added to replace the loss by evaporation, the engine or radiator, or both, are likely to be damaged by freezing. The car finish is damaged by contact with denatured alcohol or methanol solutions or vapors, and any material accidentally spilled on the finish should be flushed off immediately with a large quantity of water.

Methanol, for anti-freeze purposes, is sold in the United States in the correct concentration to give the same protection against freezing as denatured alcohol. Its characteristics as an anti-freeze are, to all practical purposes, similar to denatured alcohol and it may be used as safely in the same proportions.

Glycerine and Ethylene Glycol

Distilled glycerine and ethylene glycol solutions are, in first cost, more expensive than denatured alcohol and methanol but, as they are not lost by evaporation, only water need be added to replace evaporation losses. Any solution lost mechanically, however, either by leakage or foaming must be replaced by additional new anti-freezing solution. These solutions, under ordinary conditions, are not harmful to the car finish.

The principal objections to glycerine and ethylene glycol are the tendency of these solutions to loosen rust and scale which forms in the water passages of the cylinder blocks and heads, and the difficulty of securing and maintaining tight, leakproof connections. It is absolutely necessary that the entire cooling system be thoroughly cleaned and flushed before glycerine or ethylene glycol is used.

It is also necessary to tighten or replace the cylinder head gaskets, hose connections and pump packing. The cylinder head gaskets must be kept tight to prevent the solution from leaking into the crankcase where it might cause gumming and sticking of the moving parts. The pump packing must be kept tight to prevent air from being drawn into the cooling system in order to avoid excessive foaming and other difficulties which may result when air is present.

Ethylene glycol (Prestone), sold in the United States for anti-freezing purposes and radiator glycerine, produced under the formula approved by the Glycerine Producers' Association, are chemically treated to overcome the difficulties mentioned in the above paragraph, and under normal operating conditions, with tight hose connections and cylinder head gaskets, should be satisfactory for use in the cooling system.

Glycerine and ethylene glycol should be used in accordance with the instructions and in the proportions recommended by the anti-freeze manufacturer.

Other Anti-Freezing Solutions

Salt solutions, such as calcium or magnesium chloride, sodium silicate, kerosene, honey, glucose and sugar solutions are not satisfactory for use in automobile radiators.

« »

Factors Affecting Hydrometer Readings Must Be Considered

THE hydrometer used in testing the strength of anti-freezing solutions should be a reliable instrument. Readings taken with a cheap hydrometer may be in error sufficiently to make a difference of twenty or thirty degrees from the actual freezing point of the solution. The hydrometers for use in the service station should therefore be checked and replaced if necessary before the first cold spell.

In using a hydrometer to determine the temperature at which a solution will freeze, the test must be made with the solution at the temperature at which the hydrometer is calibrated. If the solution is warmer or colder, it must be brought to this temperature or a correction made according to an accurate scale, to prevent large errors. In some cases the possible error may be as great as 30 degrees Fahrenheit.

Freezing point hydrometers are not interchangeable, a different float being required for denatured alcohol, methanol, glycerine and ethylene glycol. Care should be taken to see that proper types are available for whatever solutions may be tested during the winter months.

Rust Preventives

The presence of radiator rust preventives in the cooling system has a definite effect on the hydrometer readings of the anti-freeze solution and a sufficient margin of safety must be allowed to cover the difference.

With the recommended rust preventive in the cooling system, the actual freezing temperature of an alcohol or methanol solution is five degrees higher than indicated by the hydrometer. In other words, if the hydrometer reading indicates protection down to zero, the actual protection would be only down

(*Continued on Next Page Column 1*)

Hydrometer Readings

(*Continued from Page 41*)

to five degrees above zero, and similarly throughout the scale.

Cadillac Anti-Freeze, ethylene glycol (Prestone) and radiator glycerine produced under the formula approved by the Glycerine Producers' Association, already contain inhibitors acting in the same manner as the rust preventive recommended for use in Cadillac and LaSalle cars and when these preparations are used, the proportion of the inhibitor should not be increased by the additional use of the recommended rust preventive in the cooling system. Too large a percentage of the inhibitor will increase rather than retard foaming and result in the more rapid formation of rust and scale as well as the loss of the anti-freeze solution by spillage.

« »

Correct Level of Cooling Liquid Will Avoid Losses

MAINTAINING the correct level of liquid in the cooling system is of the utmost importance during cold weather to prevent excessive loss of the anti-freeze solution through spillage and surging.

The correct level for the cooling liquid on "C" series cars is a point about 1⅜ inches above the floor of the upper tank. On previous models the correct level is 4 inches below the top of the overflow pipe.

Anti-freezing solutions, especially the permanent type, expand considerably more than water when heated. If the level of the liquid is kept near the overflow pipe, therefore, considerable of the liquid will be lost when it expands. Additional losses might occur, if the level is too high, through surging and sloshing when starting, stopping, accelerating and decelerating under all driving conditions. The danger of these losses is in the possibility that water only may be added to bring up the level, weakening the solution each time until the protection to the lowest temperatures might be lost.

Condenser Tanks

The condenser tanks used on some models overcome these difficulties even though the cooling system is overfilled, and where alcohol or methanol are used evaporation losses are kept at a minimum. The capacities of the cooling systems, however, are calculated on the basis of the recommended levels and under ordinary circumstances there should be no occasion for maintaining a higher level.

It must be remembered that for proper operation of the condenser tank there should be no air leaks whatever in the cooling system. Especial care should be taken to see that the radiator filler cap is tight.

The condenser tank, of course, should be drained at the same time as the rest of the cooling system and a solution of anti-freeze added to protect it from damage by freezing.

« »

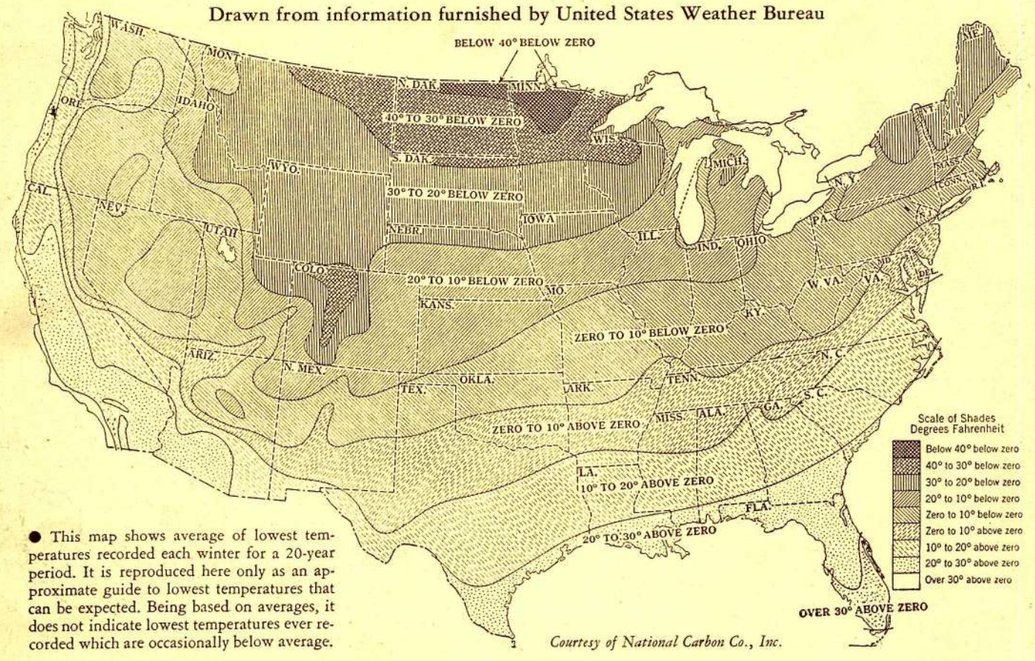
Core Only of Hot Water Heater Need Be Returned

IN spite of previous instructions, some distributors have been returning leaky Hot Water heaters complete for credit instead of returning the core only. It is necessary in such cases to return only the core since the remainder of the heater has nothing to do with the leak.

The labor involved in disassembling the heater to remove the core and the additional shipping charges unncessarily increase the expense to the factory. Distributors can disassemble the heater at little expense and may thus save the difference in shipping costs by returning the core only.

Average Annual Mininum Temperature On Which Anti-Freeze Recommendations May Be Based

Drawn from information furnished by United States Weather Bureau



● This map shows average of lowest temperatures recorded each winter for a 20-year period. It is reproduced here only as an approximate guide to lowest temperatures that can be expected. Being based on averages, it does not indicate lowest temperatures ever recorded which are occasionally below average.

Courtesy of National Carbon Co., Inc.

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The CADILLAC LA SALLE
SERVICE MAN

Volume VII, Number 10 — October 1, 1933

Prepare Yourself to Solve the Winter Starting Problem

IMAGINE an owner's reactions if, in a hurry to reach his office on a cold morning, he found his engine frozen in a block of ice! That, in effect, is what happens to an owner whose car is not prepared for winter weather.

Owner Satisfaction

When the temperature drops below the freezing point, most summer lubricants become almost solid—like the proverbial molasses in January. If the owner doesn't know the few simple points to quick starting or if his battery is weak, the engine may not turn over. If the engine is in poor adjustment, the battery, even if it does turn the engine over, may be run down before the engine is started.

Regardless of the reason, if the owner finds his car hard to start he is likely to lose confidence in his car or in the service station. It is therefore to the best interests of every individual in the service station to do his part in getting every owner's car in condition for quick starting in cold weather. Quick starting means satisfied owners and their continued patronage of the service station.

The first step in assuring the owner quick starting in cold weather is knowing what makes starting difficult and how to prevent the trouble. There are only four steps in assuring dependable cold weather starting.

1. Correct lubrication
2. Adequate cranking power
3. Correct engine adjustments
4. Knowledge on the part of the owner as to how to start his car.

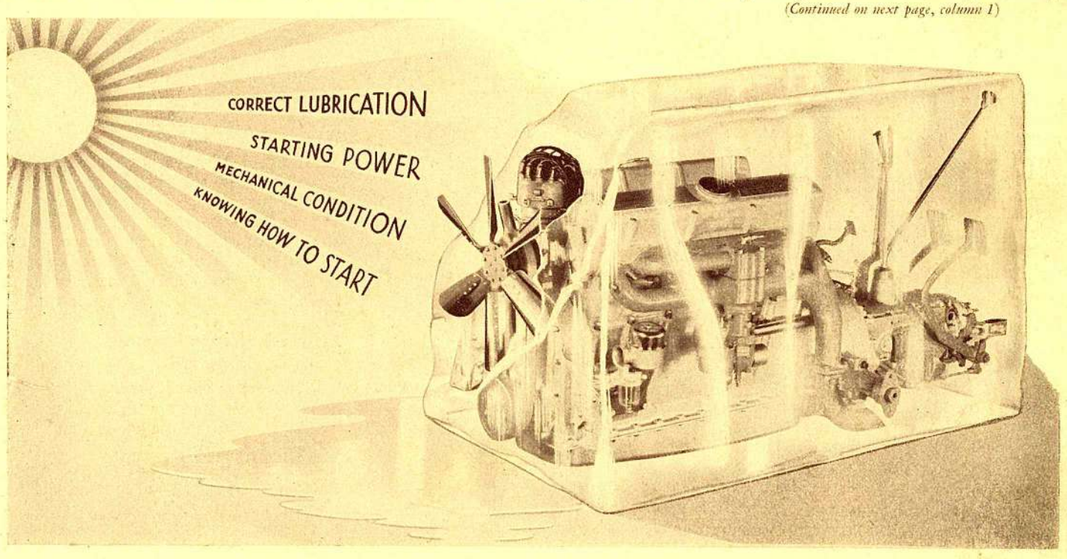
The first step, correct lubrication, is fully covered on page 46 of this issue of the SERVICE MAN. Every member of the organization should study this information, not only to know what lubricants are required, but to be able to explain the importance of proper lubrication to the owner.

Service Guide No. 24

The remaining steps toward dependable cold weather starting are fully covered in SERVICE GUIDE No. 24, "Quick Starting in Cold Weather." This film, released last winter, gives accurate and complete information of the greatest importance for this time of the year, laying emphasis on what the owner should know and how to get the information across to him.

The film should be reviewed at the next service meeting to refresh the memory of every member of the organization. Every member may contribute to owner satisfaction at the beginning of cold weather by knowing

(Continued on next page, column 1)



A WELL-TRAINED ORGANIZATION WILL THAW OUT YOUR WINTER STARTING PROBLEMS

The CADILLAC LA SALLE SERVICE MAN

OCTOBER 1, 1933 — VOLUME VII
DETROIT, MICH. — NUMBER 10

Published on the first of each month in the interest of Cadillac Service

Preparation for Quick Starting in Cold Weather

(Continued from page 43)

what to do and how to do it. Whether he contacts with the owner or not, he can be an "ambassador of quick starting" by passing the information along at every opportunity.

For the benefit of those who wish to give the subject more intensive study, the Service Manager should make the slidefilm library available to individuals or small groups for special study. If SERVICE GUIDE No. 24 is not in the library, copies may be obtained from the Factory Service Department at the regular price of $3.00 each.

The Right Start

Getting the right start on the cold weather problem is of the greatest importance. The program should be well under way by this time, but if it is not, start now! Every owner's car should be in proper condition before the first cold snap. The first is the worst because the owner is caught unawares.

Look up the earliest freezing dates in the past few years for your locality. Set a definite date a few weeks ahead of the anticipated freezing weather when your service station changes completely to a cold weather basis. Beginning on that date insist that every owner be informed of the coming cold weather and urged to prepare for it. If he insists on delaying preparations, have the service salesman make a note of it on the repair order. This will provide a check to see that every owner has been informed in ample time.

Cold Weather Specials

Use the cold weather specials announced in the September 15 issue of the "CADILLAC ACCELERATOR" to contact with every owner. Make use of the outstanding mail piece, and follow-up by telephone. Every effort should be made to let all owners know it is time for cold weather preparation. They expect as much from you!

While preparing for quick starting, don't forget anti-freeze. Check the cooling system of every owner's car to make sure it is amply protected, every time it comes in.

New Developments in Vacuum Pump May be Incorporated on Pumps in Service

SEVERAL recent developments in the design of the vacuum pump which have proved effective in preventing the loss of engine oil have been incorporated in the pumps used on LaSalle 345-C cars beginning with engine number 2002446 and on Cadillac 355-C cars beginning with engine number 3001589.

These improvements may be incorporated in vacuum pumps already in service and it is advisable to make the change on "B" and "C" cars previous to the above engine numbers whenever any service is performed requiring the removal of the pump, especially when there is reason to believe that the pump diaphragm is cracked or broken or that the pump is contributing to excessive oil consumption.

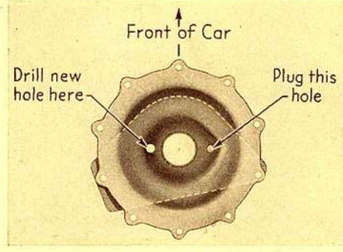
New Developments

The developments include an improved diaphragm, a lighter spring for use above the diaphragm and the relocation of the vent hole in the lower pump body. The necessary parts for making these changes may be obtained from the Parts Division under assembly number 1521501 which includes the new diaphragm, spring and a plug for the original vent hole. The use of a cork gasket, part number 877852, also may be required to correct oil leakage between the flange of the pump body and the crankcase.

Tests and reassembly of the vacuum pump can be made as described on page 28, June 1 SERVICE MAN and on page 12, March 1 SERVICE MAN. The new spring, which can be identified by the 15 lighter coils should be installed above the diaphragm in place of the spring with the 12 heavier coils originally used.

The vent hole in the lower pump body of vacuum pumps on V-8 cars should be plugged with the brass ball furnished in the assembly, peening the body over the ball to hold it in place.

A new ¼" vent hole should be drilled in the lower pump body on the left-hand side, directly opposite the original hole, as shown in the illustration. Care should be taken to drill this hole straight to avoid any possibility of it breaking out at the side of the casing.



The position of the vent hole should be changed only on V-8 cars.

Identification

In any case where these changes are made, a small center punch mark should be made in the center of the pump cover for identification.

The new diaphragm and spring should be installed on V-12 and V-16 "B" and "C" cars in any case of diaphragm breakage. The parts required for these cars may be obtained from the Parts Division under part number 856331 for the new diaphragm and part number 856358 for the spring. *Under no conditions, however, should an attempt be made to change the location of the vent hole on these cars.*

« »

Do Not Change Modification of Super-Safe Headlighting

SUPER-SAFE headlighting, used on 355, 370 and 452 "B" and "C" series cars is not fully approved in every state, and to meet the legal requirements of those states which have not given full approval, the factory modifies the system on all cars shipped within the boundaries of these states.

On cars for California, Oregon and Washington, the No. 9 terminal on the lighting switch is eliminated and on cars for the remaining states not approving the full system, the 32 c.p. beam in the right headlamp is made inoperative by the use of a special switch lever or by disconnecting the 32 c.p. lead at the lamp. Complete information on these modifications is given in the "B" and "C" series Shop Manual.

When service is being performed on any cars from states where full use of Super-Safe headlighting is not approved no attempt should be made to restore full use of the 32 c.p. beam. Restoration of full use of the head lamps would make operation of the car illegal in its home state. If there is any question as to the modification on a particular car, reference should be made to the Shop Manual before performing any service on the lighting system.

Special Vacuum Cylinder Oil for Use on "B" and "C" Cars

THE brake assister furnished on LaSalle 345-C and Cadillac 355-C cars employs several parts consisting of rubber and leather which come in contact with the light oil used for lubricating the cylinder. A few oils will not harm the rubber or leather, but others, because of their composition or because of impurities, may cause deterioration.

In order to avoid any possibility of deterioration through the use of an unsuitable oil, it is recommended that distributors and dealers use only the special vacuum cylinder oil provided for this purpose which may be obtained from Bendix Products BK distributors at a price of 60 cents per quart list or $2.30 per gallon. This oil also minimizes the possibility of condensation which, during cold weather, might interfere with the operation of the piston in case the moisture freezes.

The recommendations for the lubrication of the vacuum cylinder used on the 345-C and 355-C brake assister and on the "B" series Controlled Free-Wheeling units, as given in the Shop Manual and in the Lubrication Charts, call for one ounce of light oil every 6000 miles. This should be changed to call for *two* ounces of *special vacuum cylinder oil* every 6000 miles.

« »

Spark Plugs May Be Cause of Poor Engine Performance

ENGINE missing at low speed and cutting out at high speed may generally be traced to the spark plugs. In such cases, it is important to investigate *first* the possibility of improper heat range plugs and improper gap setting to avoid unnecessary service. This has become increasingly important with the trend toward higher compression.

Spark plugs are available in a full heat range to take care of all possible driving conditions, as described on page 28, June 1 SERVICE MAN, and in the A. C. Spark Plug booklet included with each mailing of that issue to distributors and dealers.

In the majority of cases missing and cutting out will be found to result from improper spark plug gap. In practically every case investigated by the factory when ignition coils have been replaced, it has been found that the gap was beyond the limits of .025" to .028" specified, frequently by .010" or more. An error of .005" is sufficient to cause missing or cutting out.

Extreme care should be taken in the setting of the gap, especially on the new type plugs with the electrodes down in the base of the plug. It must be remembered, also, that with a cupped electrode, which may be found particularly on old spark plugs, the actual gap is the distance between electrodes at the bottom of the cup. A flat feeler gauge that rests across the ends of the cupping will not give an accurate measurement of the gap.

The new type feeler gauge of round stock, described on page 48 of this issue of the SERVICE MAN, will permit more accurate measurements and adjustments than the flat type gauge. The round gauge will reach down in the new type spark plugs and will give accurate measurements even if the electrode is cupped.

Proper gap is of the greatest importance. Accurate measuring and careful setting are essential in eliminating low-speed missing and high-speed cut-out.

« »

Use Hot Water to Soak Off New Car Windshield Stickers

THE gummed stickers on the windshields of new cars shipped from the factory can be removed easily by soaking with a wet sponge or rag using hot water. The gum used on the stickers is soluble in water and it takes only a few minutes for the water to soak through the paper.

The stickers should not be scraped off with a knife or razor blade under any circumstances because of the danger of chipping or marring the glass. In every case the stickers should be soaked off, using hot water to do the job more quickly.

C. J. Macauley

Mr. C. J. Macauley, Service Manager for the Merville Motor Car Company, Binghamton, New York, died Monday, September 11 after a tragic automobile accident.

Mr. Macauley was well liked by all who contacted with him because of his fine personality and his ability as a Service Manager. His death is a distinct loss to the Cadillac Service Organization.

The entire Cadillac Organization joins the Merville Motor Car Company in extending its sympathy to Mr. Macauley's family.

Parcel Post Shipments Must Follow Postal Regulations

IN spite of previous information given on postal regulations governing material mailable via parcel post, several distributors have continued to include packing slips or claim tags in packages shipped to the factory via parcel post. Within a ten-day period, the factory has had to pay additional postage at first-class mail rates for this reason on three shipments from distributors.

Postal Regulations

The postal regulations state that no information or message other than the name and address of the shipper and addressee, and description of the material can be included with a shipment at parcel post rates. If a message or any information other than that mentioned above is included in a package, the shipment is subject to first-class postage rates.

This means that even such things as the information given on claim tags attached to returned parts, or information on R.G.N. forms giving the disposition of the material returned, make a package of returned parts subject to first-class mail rates. Such statements as "Repair No-charge;" "Please Rush Return" make the shipment subject to first-class mail rates.

Written Information

Since it is necessary for the factory to charge back to the distributor the first-class mail postage paid at Detroit, distributors should see to it that no such information is included in a parcel post shipment. The R.G.N. packing slips and claim tags should be placed in an envelope securely attached to the outside of the package, and the regular first-class postage should be affixed to the envelope. The parcel post postage should be affixed to the wrapper of the package. Both the envelope and the wrapper should show the factory's address.

To avoid confusion at the factory, a *plain* tag should be attached to each part enclosed, showing only the part number and the item number corresponding to an item number shown on the claim tag. This is not contrary to postal regulations. The factory will attach the claim tag to the proper parts after the package is received.

Following these instructions exactly will prevent any possibility of the heavy charges for first class mail on shipments intended for parcel post. The charges many times amount to more than the cost of the parts being returned if care is not taken to see that instructions are followed.

Cold Weather Lubricants Should Meet Local Conditions

SUMMER lubricants in cold weather may become almost solid, retarding the movement of the pistons in the cylinders to such an extent that the starting motor will not turn over the engine; and if the engine is started, the condition of the lubricant in the transmission and rear axle may make it impossible to shift gears or to engage the clutch without stalling the engine.

If the owner is to be satisfied with the operation of his car during cold weather, it is important that the proper lubricants be used; and it is important that the proper lubricants are *in the car* when the first cold snap arrives. One morning of hard starting is enough to cause dissatisfaction; the owner may think the car is at fault rather than the lubricants.

Check the points indicated in the illustration of the chassis shown on this page and make sure that every owner's car is ready for the first cold snap.

Engine Oil

Winter lubrication is primarily a matter of selecting the right engine oil. The basis of this selection is contained in the official Cadillac recommendations on engine lubrication as contained in the Operator's Manual and as printed on the opposite page.

The first consideration, of course, is to avoid hard starting. A car that starts readily in any weather is fundamental to owner satisfaction.

If this were the only consideration, the matter would be simple. The oil, however, must have the proper viscosity to give the correct lubrication, and, if prolonged high speed driving is encountered, the factor of oil consumption must be considered.

In analyzing this problem, the Service Manager must take into consideration the conditions existing in his particular locality. The average prevailing temperature in the locality and the lowest temperature likely to be reached during a cold spell can be estimated from past experience over a period of several years and from the map of average minimum temperatures published in the September 1 issue of the SERVICE MAN.

There are a number of engine oils now available which permit easy starting at zero temperatures, yet have a viscosity of 60 to 70 seconds at 210 degrees. If the temperature rarely goes below zero, these heavy duty oils may be safely used without fear of unusual starting troubles.

Extreme Cold

There are, however, many parts of the United States in which winter temperatures of zero or below are common and in these sections it is not advisable to depend upon an approved heavy duty oil for general winter use. Service managers in these colder climates should arrange to supply for general use during the winter a lighter oil of the proper S.A.E. viscosity for the temperatures anticipated.

When these lighter oils are used, it must be remembered that they are not suitable for prolonged high speed driving and the owner who does such driving in winter must be cautioned to watch his oil level. He cannot expect the same oil consumption with lighter oils as with a heavy duty oil.

A car which is kept in a heated garage has the advantage, of course, and for owners of such cars, it is advisable to keep on hand a suitable heavy duty oil with as low a cold test as it is possible to procure.

Thinning heavy duty oils with kerosine has the disadvantage that a long drive evaporates the kerosine, leaving the oil as heavy as before it was thinned, with resulting hard starting. Light oil is preferable, providing the owner is cautioned regarding oil consumption on a long, high-speed drive.

The importance of getting the right start in the matter of winter engine lubrication cannot be emphasized too strongly. Now is the time to give this matter attention and arrange for a supply of lubricant which will insure against trouble. The engine oil used should be obtained from a reliable source.

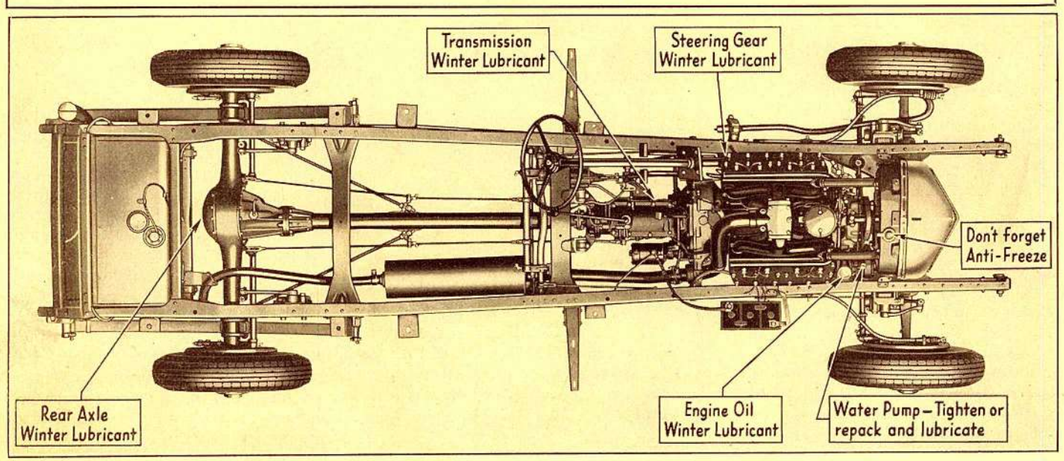
On V-12 and V-16 cars, in addition to draining the crankcase and replacing the summer oil with winter oil, it is advisable to remove the cylinder head covers, release the valve silencer plungers and inject oil of winter grade into them while the engine is running.

Gear Lubricant for Winter

Preparation for winter lubrication must also include the transmission, rear axle and steering gear.

(*Continued on next page, Column 1*)

Points to Check When Lubricating Car for Cold Weather



ENGINE OIL RECOMMENDATIONS

TYPE OF SERVICE	SUMMER	WINTER	
	All Temperatures Above 32° F.	Between 32° and 15° Above	Below 15° Above Zero
AVERAGE DRIVING (No prolonged high speed driving)	S. A. E. visc. 40 or 50	S. A. E. visc. 20	S. A. E. visc. 10
		These oils are not suitable for prolonged high speed driving and if used under such conditions the oil level must be closely watched, as the rate of consumption will be higher than with heavier oils.	
PROLONGED HIGH SPEED DRIVING	CADILLAC APPROVED "HEAVY DUTY" OILS—SUMMER AND WINTER These oils have an S. A. E. viscosity of 40-50-60, and are required to meet certain specifications in order to demonstrate their fitness for prolonged high speed driving. To make certain of using an oil approved for this service, consult your Cadillac distributor or dealer. ***NOTE:*** **Approved heavy duty oils vary in their suitability for winter use. If an approved heavy duty oil with sufficiently low cold viscosity is not available and if the car is not kept in a heated garage, the lighter oils specified above for average driving must be used to avoid hard starting. In this case, be sure to watch the oil level closely as cautioned above.**		

There are a number of lubricants on the market which meet Cadillac specifications for transmission and rear axle lubricants and which have the proper cold properties for use in cold weather. If this type of lubricant is used, the same type should be added to maintain the level at the regular intervals. The principal advantage of a year-round lubricant over an ordinary winter lubricant is that it does not have to be drained and replaced on the return of warm weather.

If the lubricant in the transmission and rear axle does not have the proper cold properties for the anticipated winter temperatures, it should be replaced with a suitable cold weather lubricant as soon as the weather is cold enough so that the transmission gears are hard to shift.

Steering Gear

The lubricant used in the steering gear should be of the all-year type. All cars when shipped from the factory contain an all-year lubricant in the steering gear and if this type has been used for replacement it should not be necessary to drain and replace at this time.

Steering gear lubricant should not be thinned with kerosine in any case. The pressure between the worm and sector is so great that a thinned lubricant would be forced out, resulting in excessive wear.

The lubricant used in the water pump should receive special consideration during cold weather. Increased leakage resulting from the use of ordinary lubricants at this point may be expensive during cold weather through the loss of the anti-freeze solution.

The G-13 water pump lubricant described on page 42, June 1, 1932 Service Man, has been found to last many times as long as ordinary lubricants, and its use will help to avoid the necessity of frequent repacking as well as preventing the scoring of pump shafts. Grease cups which show evidences of leaking at the check valve should be replaced.

« »

Break-In New Rear Axle Gears Under Light Load

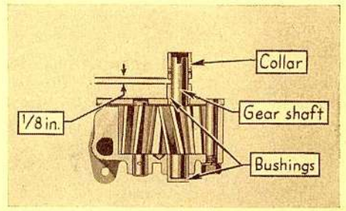
Whenever the rear axle ring gear and pinion are replaced on a Cadillac or LaSalle car, particular care should be taken to break-in the gears before running the car under heavy load. Subjecting the rear axle to a heavy load immediately after installing the ring gear and pinion may result in scoring of the teeth.

The car should be run under light load for about 50 miles, after the new gears are installed, before subjecting the axle to a heavy load.

Check Gear Shaft Length When Installing Oil Pump

When installing the oil pump on Cadillac V-8 and LaSalle cars, if removed for any reason, care must be taken to see that the gear shaft extends the proper distance above the upper bushing of the pump so that it will join properly with the drive shaft.

The gear shaft is a press-fit in the pump gear and should extend through the gear and into the lower bushing. If it is pressed too far into the gear it may not join properly with the drive shaft, resulting in excessive wear on the joint and, in time, rendering the pump inoperative. In some cases the bushing might be pushed out of the oil pump housing. If the shaft is not fitted deep enough it may bind.



The distance between the top of the upper bushing and the lower edge of the gear shaft collar should be approximately 1/8 in.

In order to make sure that the shaft is fitted properly it should be measured. The distance between the top of the upper bushing and the lower edge of the gear shaft collar, as shown in the illustration, should be approximately 1/8 in. This applies to all V-8 models from 303-341 up to the present.

If the vertical shaft with the drive gear is removed for any reason, particular care should be taken when reinstalling to make sure that the tongue on the lower end lines up with the slot in the pump gear shaft before any attempt is made to force it in place. If the tongue and slot do not line up, pressure will simply force the pump shaft down and may push out the lower bushing.

« »

Operation and Service to Clocks Explained in Folder

Included with each mailing of this issue of the Service Man to distributors and dealers are copies of a folder issued by the Jaeger Watch Company on the operation and maintenance of the clocks used on current model cars.

Additional copies of the folder in reasonable quantities may be obtained from the Service Department on request.

Three New Tools Will Save Time and Help Do the Service Job Right

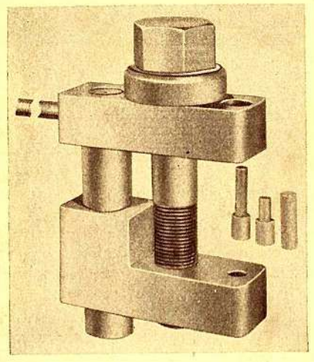
The Hinckley-Myers Company, Cadillac's official tool suppliers, announces three new tools that will aid Cadillac service stations considerably in performing difficult operations with a minimum amount of time and effort. The new tools are as follows:

Part No.	*Name*	*Price*
B-170	Hinge pin removing tool	$5.75
J-594	Hub and brake drum puller	4.25
J-598	Spark plug gauge	.45 (see below)

In addition, the price on the wrenches for tightening cylinder head nuts, Part Nos. 109245-6-7, listed on page 30 of the Hinckley-Myers tool catalog, has been changed to $2.50 net.

Hinge Pin Removing Tool

The hinge pin removing tool includes three adaptor plugs, a short plug for breaking the pin loose and two others for forcing the pin the rest of the way out. It is an entirely new type of heavy duty tool designed to remove the most stubborn frozen hinge pins. Actuated by a large forcing screw with a heavy ball thrust bearing to absorb the strain and ease the load, considerable force can be applied. The jaws are kept moving parallel by a heavy guide rod well anchored at one end and with a long bearing at the lower end.



The solid, substantial construction of the hinge pin removing tool makes it possible to apply sufficient force to break loose the most stubborn pin.

The design of the tool is such that pressure sufficient to break out the most stubborn hinge pin can be applied easily and without danger of scratching or marring the car finish. The tool can be used on both past and present model cars.

Hub and Brake Drum Puller

Removing a tight hub or brake drum takes considerable time and this new puller may pay for itself on one such occasion if it is available in the service station.

The puller, shown in the illustration, may be applied easily, tightening the stud adaptors on the brake drum studs and, with the pad resting against the end of the axle housing tube, a few turns of the screw with a wrench will bring the hub or brake drum off.

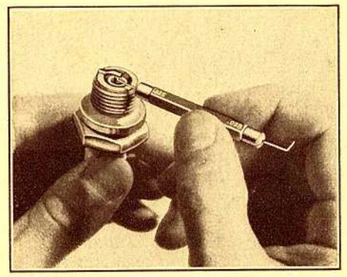
The time to be saved on even one tight job is well worth the price of the tool. Different size threads on the two ends of the stud adaptors make this tool adaptable to all cars with the present type axle, from 303 and 353 to the present.

Spark Plug Gauge

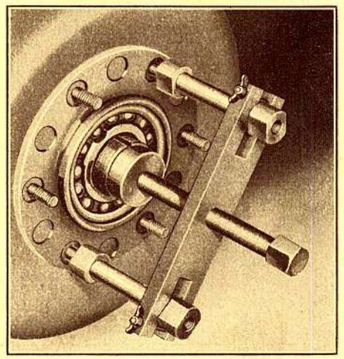
The new type of spark plugs with the electrodes well down in the plug make it difficult to check the gap with the usual type of feeler gauge, even though a very narrow one is used. This new type gauge, however, will reach into the plug easily and will save time on the job. In addition the round feelers make it possible to measure accurately even when the electrodes are cupped.

The gauge is of round rather than flat stock and consists of two feelers, one .025" thick and the other .028" thick. These are the upper and lower limits for recent model cars and the gauge can be used on the "go and no-go" system; that is, if the .025" end goes through and the .028" end does not, the gap is within the proper limits. Two extra feelers are furnished with each gauge for use in case of breakage.

This gauge will eliminate inaccuracies in the setting of the spark plug gap which frequently occur when the usual flat type gauge is used as explained on page 45 of this issue of the Service Man.



The new spark plug gap gauge is essential to accurate checking of the gap on the new type spark plugs with the electodes in the base of the plug.



The hub and brake drum puller is adaptable to all cars with the present type axle, from 303 and 353 to the present.

These gauges are available at three prices, according to the number ordered. In quantities of 1 to 5, the price is 45 cents each; in quantities of 6 to 11, the price is 37½ cents each; and in quantities of 12 or more, the price is 35 cents each. The slight difference in the cost of mailing one or several makes it possible to offer lower prices on quantity orders. Every mechanic should have one of these gauges and most organizations will, therefore, find it possible to take advantage of the lower prices.

Order Direct

These new tools can save time for the individual and for the service station. They are essential to quick and efficient service. Send your order direct to the Hinckley-Myers Company, Jackson, Michigan.

« »

Proper Adjustment of Fan Belt is Important

Proper adjustment of the fan belt on V-8 cars is important to avoid the possibility of binding, slipping or noise. The adjustment should be tight enough to eliminate the possibility of noise or slipping at high speeds. While adjusting for sufficient tightness to avoid these possibilities, however, it is extremely important that the adjustment not be made too tight. Too tight an adjustment may cause binding which will result in excessive wear on the bearings.

About one-inch slack should be allowed in the belt when making the adjustment, as shown on page 36 of the "B" and "C" series Shop Manual.

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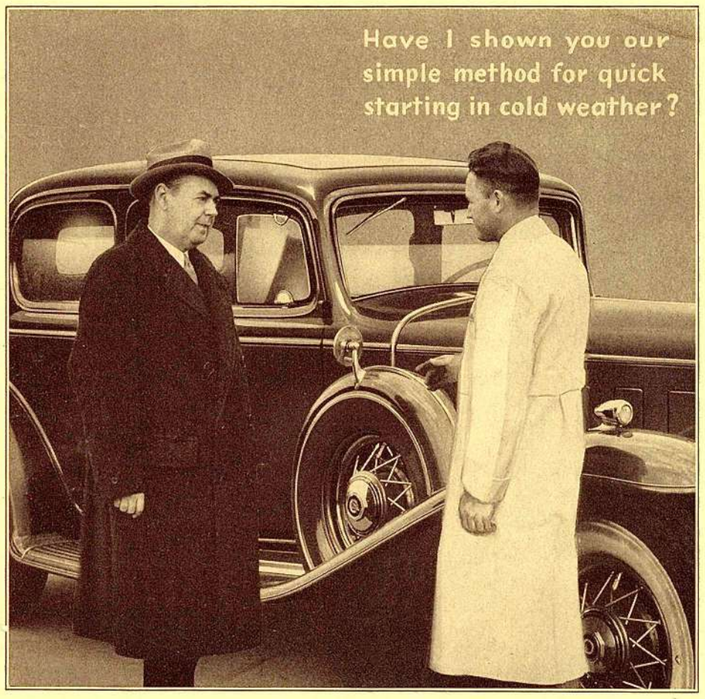
The CADILLAC LA SALLE
SERVICE·MAN

Volume VII. Number 11 — November 1, 1933



The starting procedure should be tactfully explained to every owner.

STARTING HINTS

Every mechanic and tester well knows the proper procedure for starting a car and a few short-cuts to make starting easier in cold weather. He is so thoroughly familiar with it, however, that he is apt to assume that every car owner knows these starting helps and may therefore pass up an opportunity to instruct the owner when the mere suggestion might save the owner considerable inconvenience and delay some cold morning.

Watch car owners on the street who have trouble starting their cars, particularly in cold weather but also even in warm weather. In almost every case, the difficulty in starting is a result of failure to employ some one simple operation. Suggestions diplomatically given by the service man when the owner is in the service station may prevent such an occurrence with Cadillac and La Salle owners. In warm weather wasted time and effort in starting may not mean much, but in cold weather the battery will be run down, making starting impossible, and the service station is certain to hear from the owner. A few suggestions when the owner is in the service station will eliminate the largest part of cold weather starting complaints.

Proper explanation of the starting procedure to the owner is as much a part of the service man's duty as inspecting, adjusting, or repairing the car. No opportunity should be overlooked to tactfully suggest a few starting hints and whenever it seems necessary the entire procedure should be explained. Following is the full procedure.

In cold weather when the engine is cold:

Check the throttle opening. The hand throttle should be partly open on all cars except "B" and "C" series V-12 and V-16 cars. On these cars the throttle must be in the fully closed position.

If the weather is extremely cold, prime the carburetor by pushing down the accelerator pedal suddenly two or three times.

(Continued on next page, column 1)

The CADILLAC LA SALLE SERVICE·MAN

November 1, 1933 — Volume VII
Detroit, Mich. — Number 11

Published on the first of each month in the interest of Cadillac Service

Starting Hints

(Continued from page 49)

Pull the choke button all the way out and keep it in this position during the cranking operation.

Disengage the clutch to relieve the engine of the strain of turning the transmission gears in the heavy lubricant.

Turn on the ignition and step on the starter pedal.

When the engine starts push the choke button in as far as possible without causing the engine to pop. Let the engine warm up until it idles smoothly with the choke button all the way in.

Do not race the engine or depress the accelerator pedal suddenly while the engine is warming up. This will not warm up the engine any sooner and may result in "killing" the engine with too much gasoline.

When the engine is warm from previous running or when the weather is mild, do not prime the carburetor or use the choke excessively.

Two Suggestions

Here are two suggestions that may make starting easier and prevent excessive drains on the battery.

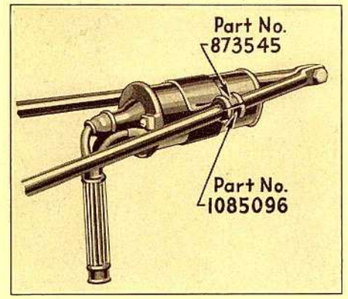
If the carburetor is flooded from priming or unnecessary use of the choke, push the choke button all the way in, move the hand throttle to the wide open position, and hold the starter pedal down until the engine starts. The hand throttle should not be moved from the fully open position until the engine has started and begun to run smoothly. The foot accelerator should not be used during this operation.

In extremely cold weather when the car is to stand idle **long enough to thoroughly chill** the engine, "kill" the engine by letting it idle and pulling the choke button all the way out. This will assure a supply of gasoline in the cylinders and carburetor when the car is to be started.

This procedure and the starting hints, if followed by the owner, will eliminate the majority of complaints on hard starting. The owner, however, must know the correct procedure if he is to follow it, and it is up to every individual in the service station to offer these suggestions at every opportunity.

Coil May Be Mounted On Radiator Tie-Rods

Whenever it is necessary to replace the high tension lead between the coil and the timer-distributor on "B" and "C" series cars it may be advisable to move the coil from its position on the dash to the radiator tie-rods just above the distributor. This location was used on previous model V-8 cars and on "B" and "C" series cars when the coil on the dash interferes with the installation of the radio.



The coil may be mounted between the radiator tie rods using the bracket furnished for "A" series V-8 cars

The brackets furnished for mounting the coil between the radiator tie-rods on "A" series cars may be used for this installation on "B" and "C" series cars. These may be obtained from the Parts Division under part number 873545 for the upper bracket and part number 1085096 for the lower bracket, including the necessary screws. These brackets clamp the coil and attach to the radiator tie-rods as shown in the illustration.

When the coil is moved from the dash, a small machine screw and washers should be used to connect the ends of the primary wires securely at the present coil location. In most cases, it will be found that the primary wires are long enough that no additional wire will be needed. If any is needed for the primary lead from the coil to the distributor, however, it is important that No. 14 size wire be used.

With the coil on the radiator tie-rods, the length of the secondary wire will be shortened, avoiding the voltage drop that may affect engine performance to some degree.

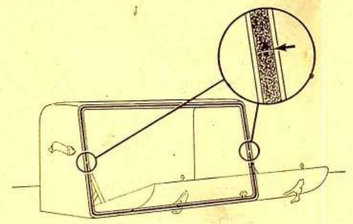
Inspect Rubber Stripping On Metal Trunks in Stock

A few auxiliary equipment metal trunks were shipped from the factory with the rubber stripping installed in such a way that the cemented joints were at the top and bottom of the trunk. In this position there is a possibility of the joint pulling slightly and resulting in a leak.

It is suggested that every distributor and dealer inspect his stock of these trunks to make sure that the joints come at the sides of the trunk and not at the top and bottom. The joint can be recognized as a thin line where the ends of the rubber are cemented together.

In any cases where the joints are found at the top and bottom, the rubber stripping should be pulled out, rotated 90 degrees so that the joints come at the sides of the trunk, as shown in the illustration, and pushed into place. This can be done in a few minutes time.

When the ends meet at the top and bottom there is a possibility of water standing and, if the joint is pulled, gradually seeping inside the trunk. If the joints are at the side, however, any water will drain off outside the trunk without having an opportunity to seep through the joint.



The joinings may be recognized as a thin line of cement in the stripping which should be located at the sides of the trunk

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Parts Managers Notice

The factory will accept the following parts from distributors' stocks at full credit:

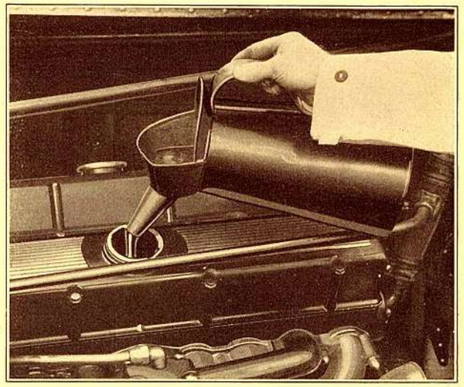
Part No.	*Name*
884689	Brake shoe cam shaft
873077	Brake shoe cam shaft

Parts Managers are requested to check their stocks and return any surplus of these parts to the Parts Division. No additional authorization will be necessary for the return of these parts.

A NEW CLASSIFICATION OF

ENGINE OILS

Suitability at starting temperatures considered in new system of numbering

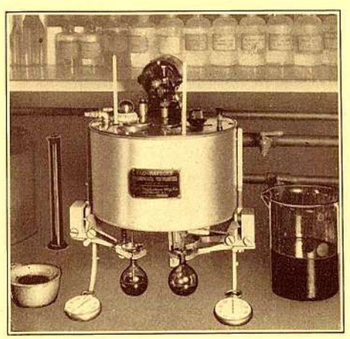


THE adoption by producers of a more exact classification of engine oils now makes it possible for distributors and dealers to select lubricants for winter conditions with an understanding of their suitability at starting temperatures as well as at operating temperatures, and the recommendations given in the October 1 SERVICE MAN should be modified to include this classification. Under the new classification, engine oils designated 20-W will be recommended in place of the oils designated S. A. E. 20 previously recommended and 10-W will be recommended in place of S. A. E. 10.

The new classifications, 20-W and 10-W, simply distinguish those oils meeting certain requirements as to their viscosity at low temperatures as well as at high temperatures, and in the majority of cases, distributors and dealers will find that the winter oils they have been using in the past meet the new requirements. The new classification, however, will be generally used throughout the industry within a short time and it will be possible to distinguish the oils meeting these important requirements.

As most Cadillac service men know, a satisfactory engine oil for winter use must do two things: it must permit easy starting when the engine is cold, and it must provide satisfactory lubrication with minimum oil consumption at normal driving temperatures.

Easy starting of an engine depends very largely upon the cranking speed, and the cranking speed—other conditions being equal—depends upon the viscosity or fluidity of the engine oil at the starting temperature. Oil consumption, on the other hand, depends upon the viscosity at operating temperatures. And, as the viscosity of an oil increases at low temperatures and decreases at high temperatures, it is obvious that selection of an oil for winter use becomes a compromise between easy starting and oil consumption under abnormal driving conditions.



The viscosimeter used in laboratories to determine the viscosity of oils at all temperatures

Viscosity

The S. A. E. 20 and S. A. E. 10 oils heretofore recommended are classified in terms of their viscosity or fluidity at 130° F. This means that commercial oils sold under this designation have uniform viscosity at this one temperature, but they vary widely in viscosity at starting temperatures; so much so that some S. A. E. 20 oils will permit starting at 15° below zero, whereas others will not permit starting at temperatures lower than 20° *above* zero. In order to avoid these differences, the new 20-W and 10-W oils are classified in accordance with their viscosity at *zero* degrees Fahrenheit, or in other words they are classified in accordance with their ability to permit starting within the temperature range for which they are recommended.

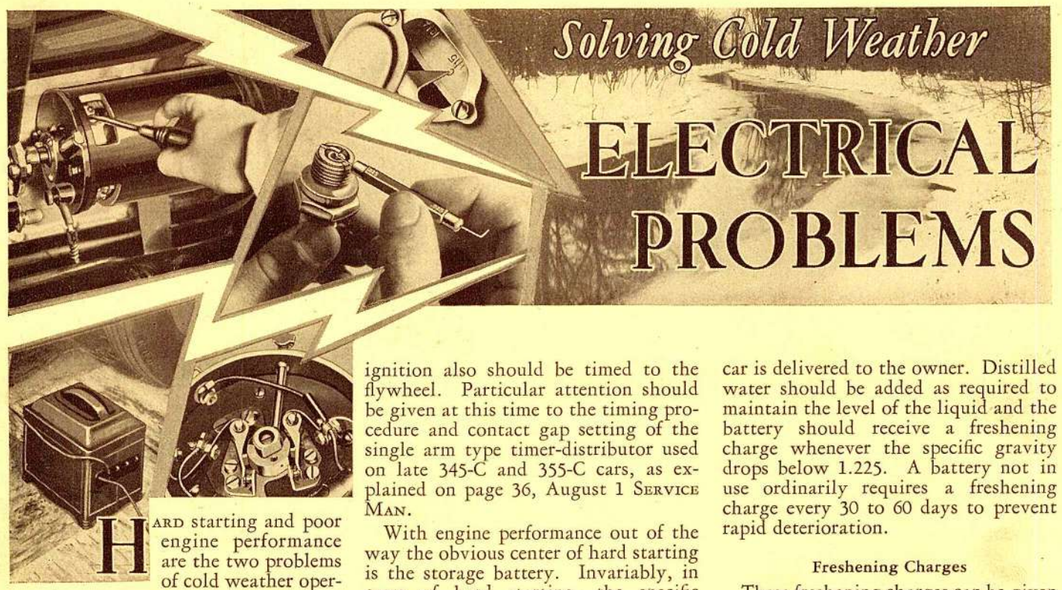
The oils of higher S. A. E. numbers are recommended as heretofore for use during the summer months and in territories where the minimum temperature does not fall below 32° F. The new 20-W oil is recommended for use where the minimum temperature at which the engine is to be started does not fall below 0° F., while the 10-W is recommended for use where the minimum temperature does not fall below 15° below zero. For temperatures lower than 15° below zero, 10-W diluted with 10% kerosine should be used.

Pour Point

Pour point does not affect the starting characteristics of the oil, but it does determine whether the oil in the crankcase can be circulated by the oil distributing system and be delivered to the bearing surfaces. On this account it is recommended that 20-W oils be selected with a zero pour point and 10-W oils with a sub-zero pour point. These new oils, when used during the winter months under the climatic conditions outlined, will greatly reduce starting difficulties and will lubricate the engine satisfactorily under all driving conditions. Under prolonged high speed driving, however, the oil consumption will be higher than with the heavy duty oils recommended during the summer, and on this account, owners should be cautioned to watch the oil level carefully on long runs.

In exceptional cases where a car is driven at extremely high speeds for prolonged periods and where oil consumption is the most important consideration, it may be desirable to select 20-W or 10-W oils which show the lowest viscosity at the starting temperature combined with the highest viscosity at the operating temperature, or even to use oils of higher viscosity at

(*Continued on page 54, column 3*)



Solving Cold Weather

ELECTRICAL PROBLEMS

HARD starting and poor engine performance are the two problems of cold weather operation that confront the service station at this time of the year and, if the proper winter lubricants are in the car, these difficulties can be traced almost invariably to the electrical system.

Hard starting is the principal complaint because an owner seldom has poor engine performance without experiencing difficulties in starting. On the other hand, starting troubles may occur without poor engine performance and therefore present the greatest problem.

Poor engine performance, however, is inexcusable. It simply indicates that the engine is not in proper adjustment to give satisfactory performance in any weather. There is no attention required during cold weather that is not equally essential to engine performance at every season of the year. The difficulties arising from poor engine performance, however, are more obvious during cold weather and it is important to discover and eliminate the cause by means of the usual inspection and adjustments.

Spark Plugs

In case of poor engine performance, be sure to check the spark plugs *accurately* as explained on page 45, October 1 SERVICE MAN, and set the gap to the .025" to .028" limits specified. Improper spark plug gap setting is the most common source of performance difficulties.

Check the contact gap setting and adjust it to the proper limits. The ignition also should be timed to the flywheel. Particular attention should be given at this time to the timing procedure and contact gap setting of the single arm type timer-distributor used on late 345-C and 355-C cars, as explained on page 36, August 1 SERVICE MAN.

With engine performance out of the way the obvious center of hard starting is the storage battery. Invariably, in cases of hard starting, the specific gravity of the battery cells will be low and the natural assumption is that the generator charging rate is too low.

Setting up the generator charging rate, however, is not a cure-all for electrical troubles indicated by a low battery, and careless setting of the charging rate may result in generator troubles more serious than the original battery troubles. It is important first to find out why the battery is low before arbitrarily setting up the charging rate.

Knowing How to Start

It is possible that the owner does not understand how to start his car in cold weather and uses up the battery current unnecessarily every time he attempts to start the engine. In this case the owner should be instructed in the proper starting procedure as explained on page 49 of this issue of the SERVICE MAN.

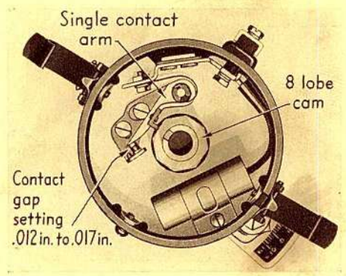
The trouble may be the result of lack of care while the car was in storage or on display before delivery to the owner or after the car was in the hands of the owner. This is a difficulty that can be overcome only by constant care and watchfulness beginning when the car is received from the factory and continuing in the regular monthly inspections of the car after it is in the hands of the owner.

The specific gravity of the battery cells should be checked as soon as the car is received, and should be checked every two weeks thereafter until the car is delivered to the owner. Distilled water should be added as required to maintain the level of the liquid and the battery should receive a freshening charge whenever the specific gravity drops below 1.225. A battery not in use ordinarily requires a freshening charge every 30 to 60 days to prevent rapid deterioration.

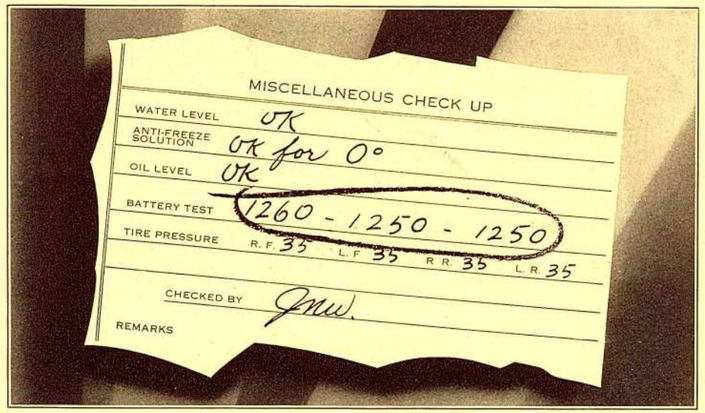
Freshening Charges

These freshening charges can be given without removing the battery from the car if a small portable charger is used. There are several portable chargers on the market which are suitable for this purpose. On cars with the cut-out relay in the apparatus box ("B" and "C" models) the negative terminal of the charger should be connected to either ammeter terminal and the positive terminal grounded to the frame. On previous models the negative lead can be connected at the generator on the battery side of the cut-out relay.

A battery in a new car should be put in service within six months to prevent serious deterioration. Many distributors and dealers guard against this possibility by switching batteries in new cars to make sure that the oldest batteries are put in service first. In this way a battery is seldom more than two or three months old when placed in



The single arm type of distributor requires a different setting than the double arm type



Note the specific gravity of the battery cells on the back of every repair order

service and the danger of severe deterioration from disuse is avoided. It is recommended that all distributors and dealers follow this procedure to avoid any possibility of a battery remaining unused for over six months.

As soon as a car is put in service, the service department should file the record of the battery under the owner's name and note the specific gravity on the record every time the owner brings his car into the service station. In this way the service station can set the generator charging rate to meet the requirements of the battery during the first 90-day inspection and adjustment period and avoid the possibility of a weak battery.

Charging Rate

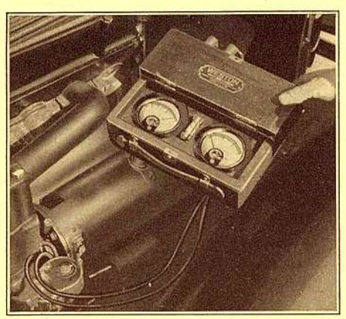
If the battery has received this care, no unusual preparations need be made for an adequate supply of electrical energy during cold weather. In many cases it will not be necessary to advance the charging rate at all and in any case it should not be advanced without knowing the extent of the change in the driver's habits and how severe the added strains on the battery are likely to be. The generator charging rate can then be set to compensate for the added strains, keeping in mind, however, the fact that there is a maximum to which the charging rate can be set without danger of damaging the generator. If the maximum is not sufficient to keep the battery charged under the new conditions, the owner should be informed and advised to have the battery charged from an outside source at the necessary intervals.

When it becomes necessary to set the charging rate near the maximum, extreme accuracy is required and special precautions must be taken to prevent errors which may result in burning out the generator. The precautions necessary are fully explained on page 24, May 1 Service Man. Briefly, the following steps should be taken.

See that the battery in the car is fully charged. No attempt should be made to set the charging rate with a battery only partially charged because the charging rate will increase as the battery becomes charged and may exceed the safe limit.

Inspect the battery terminals to make sure they are clean and tight, and, where overheating has occurred, inspect the armature commutator to make sure the solder has not melted and been thrown out.

Use a precision ammeter connected at the generator when setting the charging rate. The car ammeter is not a precision instrument and is not intended to show the actual generator charging rate. If the car ammeter is used, allowances of 4½ amperes on V-8 cars and from 6 to 7 amperes on V-12 and V-16 cars must be allowed for possible errors.



When setting the generator charging rate near the maximum, use a precision ammeter connected at the generator

Make no attempt to set the charging rate above the maximum specified for the generator. On "B" and "C" cars the maximum is 22-24 amperes cold, measured with a precision ammeter connected at the generator.

Outside Charge

If the maximum charging rate is insufficient, the owner should be advised to have his battery inspected regularly and charged from an outside source as often as necessary. This is more economical than running the risk of a burnt-out generator.

This procedure will solve the cold weather electrical problems and eliminate hard starting and owner dissatisfaction. These problems are almost always the result of a lack of regular inspection and adjustment. Regular routine service, intelligently applied, will not only solve but will eliminate cold weather electrical problems.

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Circular Saw Is Available For New Hot Air Register

The new type of registers furnished with the "C" model Hot Air Heaters now being shipped from the Parts Division are of a different assembly than that previously furnished and require a smaller opening in the floor board. The new opening is 2½" in diameter which cannot be cut with the previous type of circular saw.

A new circular saw is now available, under part number A-1044 which will cut the 2½" opening for the new type register in a single operation. The saw should be ordered from the Parts Division.

The circular saw greatly simplifies the cutting of the opening for the Hot Air Heater. It saves time on every installation and does a neater job than is possible by any other means. With the heater season approaching its height, this saw should be available in the service station as soon as possible.

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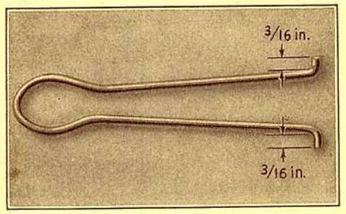
Watch for This Car

Cadillac 355-A Town Sedan, Engine No. 800181, originally painted black with green trimmings, sold to Charles H. Bortell, Jr., West Haven, Connecticut. Last definitely heard of in Yakima, Washington. May have been in Salt Lake City, Utah about October 1. Notify Cadillac Automobile Company of Boston, Boston, Massachusetts.

Fabric Ring-Type of Water Pump Packing Now Available For Past Model V-12 and V-16 Cars

A new type of water pump packing for "A" and "B" series V-12 and V-16 cars and "C" series V-12 cars previous to engine unit number 40-301 is now being furnished for service replacement by the Parts Division. The new packing, part number 883885, is of the fabric ring-type, the same material as that furnished for all 452-C cars and for 370-C cars after engine unit 40-301 under part number 885229.

The new type packing gives longer life with less frequent tightening, and it is therefore recommended that only this type be used for replacement on all V-12 and V-16 water pumps.



The tool can be made of spring steel wire bent as shown

When tightening this packing, the gland nut should be drawn up very tight, backed off, and again drawn up to a point where it just touches the packing. If this procedure is followed, the packing will be forced into a watertight position without too much friction on the shaft. On the 452-C and late type 370-C pumps, particularly, the shaft is ⅛" smaller than on previous types and sufficient tightness can be obtained with much less shaft friction.

New Type Water Pump

In this connection, it must be remembered that the water packing is in a different location on 452-C and second type 370-C pumps than on the previous type pumps. The packing nearest the gland nut on the late type pump is a grease packing. The water packing is further along the impeller shaft near the impeller as shown in the illustration.

When replacing the water packing on these pumps more is required than simply removing the gland nut. The pump body, however, should not be removed from the crankcase since it would be necessary, when reinstalling, to line up the body with extreme accuracy to make sure the pump shaft would be properly aligned and to avoid binding.

The pump body is carefully aligned at the factory when the pump is installed, and if the pump body is not disturbed there should be no occasion for the shaft to bind. The water packing can be replaced by removing the cover only. It is not necessary to loosen or remove the body.

Simple Tool

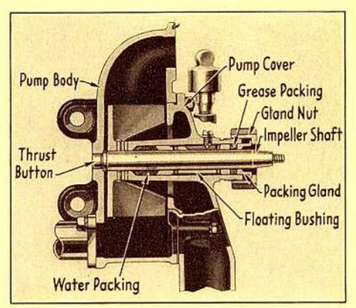
A simple tool which can be made up easily in any service station will be of considerable aid in reaching the packing. This tool, shown in the illustration, can be made up of a piece of spring steel wire 10" or 12" long, bent as shown. The ends should be turned sharply at a 90° angle to extend out approximately $\frac{3}{16}$".

Before removing the cover, the end play of the shaft should be measured, and, if it is in excess of $\frac{3}{64}$" a new thrust button should be installed in pump body after the cover is off.

To Reach Packing

To reach the packing, remove the screws holding the cover to the pump body and remove the cover along with the entire impeller assembly. Next, remove the gland nut and the packing gland, and pull out the shaft from the impeller side of the cover. Loosen the set screw holding the floating bushing. The floating bushing may then be pulled out with the spring puller and the water packing will be accessible. The cover may be assembled in the reverse of these instructions.

In case of a water leak which is not corrected when the water packing is in good condition and properly tightened, the radiator overflow pipe should be inspected to make sure it has not become clogged. A clogged overflow pipe may result in pressure being built up in the cooling system sufficient to force water through the packing.



The water packing on the new type water pump may be reached by removing the pump cover

Lubrication

If a water pump lubricant is used meeting the G-13 specifications, announced on page 42, June 1, 1932 Service Man, it should not be necessary to use as much lubricant as previously recommended. This lubricant has a high melting point and the close proximity of the exhaust manifolds to the water pump on V-12 and V-16 cars should not melt it.

On early type 370-C and all previous V-12 and V-16 pumps and all V-8 cars it is recommended that the grease cup be turned down, refilled, turned down and again refilled and turned down just enough to hold it. On the late 370-C and 452-C pumps, the grease packing will limit the amount of lubricant that can be forced in. On these cars the grease cup should be turned down as far as it will go and refilled.

New Classification For Cold Weather Engine Oil

(Continued from page 51)

the operating temperature, provided the viscosity at the cranking temperature is low enough to permit easy starting.

In selecting oils for general winter use, it is recommended that only those oils be chosen that are guaranteed by the marketer or refiner to meet the requirements of the new 20-W and 10-W classifications and to have the pour points recommended above. The refiners or marketers of an oil are responsible for its specifications, and the refiner's reputation is the car owner's best indication of quality.

It will not be necessary in the majority of cases for distributors and dealers to change their source of supply to obtain oils meeting the new requirements. Many S. A. E. 20 and S. A. E. 10 oils already meet these requirements, but in any case an understanding should be had with the source of supply that the oil they furnish will meet the new specifications as to viscosity.

Oils coming under the new classification are important to easy starting in cold weather which means owner satisfaction. Arrangements should be made at once to have these oils available and service men should understand their use.

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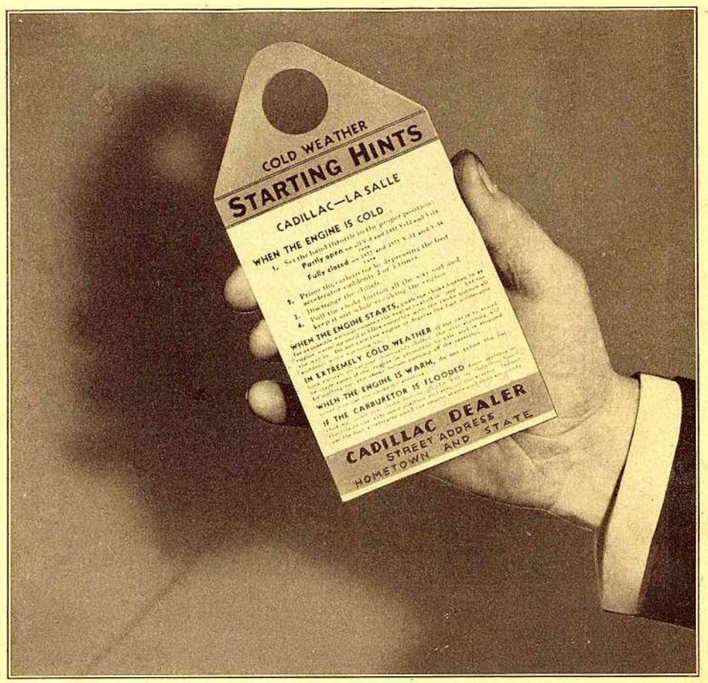
Volume VII, Number 12 — December 1, 1933

A NEW AID



As an aid to Cadillac distributors and dealers in impressing upon owners the importance of following the proper cold weather starting procedure, Cadillac has prepared a "Starting Hint" tag which will be furnished in reasonable quantities at no charge. Copies of the tag have already been sent to distributors and dealers in the colder localities. Those who have not received copies or who need additional copies may obtain them upon application to the Service Department.

Vital Information

The tag contains vital information on cold weather starting for the use of the owner. It is presented in simple and compact form for careful study or quick reference. It is not an advertising piece in the sense of a direct effort to sell the owner service or accessories. It will, however, impress the owner with the service station's willingness to help him toward greater satisfaction with his car.

Attractive Arrangement

Even though the tag is not a direct selling piece, it is made up attractively in two colors with space at the bottom for imprinting or stamping of the distributor's or dealer's name. It is intended that the tag be presented to the owner by the tester, but the tag is die-cut to be hung on the choke button in case the tester does not deliver the car.

Because of the vital and helpful information contained on the tag, an effort should be made to present one to every owner that comes into the service station. This can best be done by making it a point to present one to the owner or to hang one on the choke button of every car that comes into the service station during a period of one month.

Program

After this program has been carried out for one month, most regular customers will have received one and there should be very little duplication. After

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A NEW AID— *Starting Hint Tags*

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the month is up, however, a few additional tags should be kept on hand for presentation to owners who may experience hard starting thereafter. The proper use of these tags by the service station should forestall numerous cold weather complaints.

The Tester's Job

It is recommended that, in every case possible, the tag be presented to the owner by the tester, who can explain the importance of following the recommendations listed on the tag and who can assist the owner in any problems concerning his particular case. In this way the owner will be sure to read the suggestions thoroughly and to keep the tag for future reference.

The front of the tag lists the normal procedure for starting the car in cold weather, and, in addition, offers suggestions for unusual conditions. On the reverse side of the tag a few recommendations on care of the car in cold weather are given. These include recommendations on engine oil, anti-freeze, and the storage battery.

Effective Advertising

All of the information given is of importance to the owner. It tells him how to start quickly with minimum effort, and it tells him how to keep his car in satisfactory condition for cold weather with the least inconvenience to him. It is information he will be glad to have for himself and proud to pass along to his friends. It will mean increased owner good will and the most effective type of advertising—word of mouth approval and recommendation of the distributor or dealer.

Start this program at once with the tags already received, and if more are required, order them in time to continue the program for the full month. The tags are available at no charge in quantities sufficient for distributors' and dealers' needs.

New Type Vacuum Pump Available for Service

The improvements in the vacuum pump, announced on page 44, October 1 Service Man, have been incorporated in an entirely new pump which has several additional improvements. These new pumps can now be ordered from the Parts Division under Part No. 1521541 for V-8 cars and Part No. 1521542 for V-12 and V-16 cars.

Replacements of the complete pump with the new type has several advantages over the previously recommended method of incorporating later improvements in the original pumps. The new type pump, in addition to reducing the possibility of excessive oil consumption, has a redesigned diaphragm that will give longer life and quieter operation, and a reinforced base that provides an even more effective oil seal. Furthermore, installing the new type greatly reduces the amount of labor involved in changing over the old type pump.

Return Previous Type

In view of these advantages, it has been decided to discontinue the parts available heretofore for changing over the early type pump, and hereafter to furnish only the new type pump complete for service replacement on "B" and "C" series cars. Distributors and dealers should return all previous type diaphragms in stock for credit.

In order to facilitate the installation of the new type pump in cases of cracked or broken diaphragms, or of excessive oil consumption, a special exchange price has been arranged temporarily which will permit the owner to obtain the new improvements at a price of $2.50 plus labor. On cars within the warranty period, of course, the entire amount will be credited in accordance with the usual policy.

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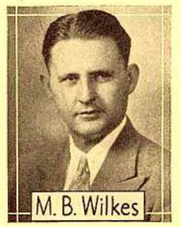
Radio Condenser May Affect Performance

When installing the by-pass condenser on the coil to eliminate car noise in the radio, it is important that the connection be made at the switch terminal and not at the distributor terminal. A condenser between the distributor terminal and the ground will increase the capacity between the breaker points and may cause excessive pitting of the contact points or interfering with car performance.



Mr. M. B. Wilkes, Service Manager of the Detroit Branch, died Tuesday, November 21, of injuries suffered in an automobile accident the night before. Burial was in Atlanta, Georgia, his home.

Mr. Wilkes had spent all of his life since school with Cadillac. Starting in the shop of the Martin Cadillac Company, Atlanta, Georgia, he climbed rapidly to the position of Service Manager, receiving the appointment in 1925. Except for a year on the sales force (1929-30), he held this position until called to the Detroit Branch as Assistant Service Manager in October, 1932. In April of this year he was appointed Service Manager.

Although only 29 years old at the time of his death, Mr. Wilkes had earned the confidence and respect of his friends and associates. The entire Cadillac organization joins in extending its sympathy to his family.

Adjustment Instructions for Steering Stop Screw

To avoid the possibility of the front tires striking the grease connection at the end of the steering cross rod, the steering stop screws should be adjusted so that there will be 3/8" clearance between the grease connection and the side wall of the tire when the wheels are turned to the extreme position. This applies to both right-hand and left-hand stop screws.

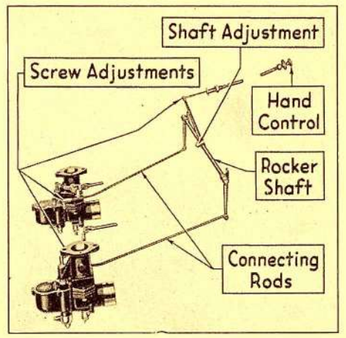
Shop Manual

This recommendation supersedes that given in the Shop Manual. Variations in the distance the grease connection may extend out makes it advisable to use this as a point to measure from rather than the frame and steering connecting rod as recommended in the Shop Manual.

V-12 and V-16 Carburetor Choke Controls Should be Synchronized to Operate Equally

THE choke rod adjustment on 370 and 452 "B" and "C" series cars should be such that the choke can be controlled through its entire range by means of the control on the instrument panel. Failure in this respect may cause hard starting by preventing full choking, or it may cause unsatisfactory operation from too rich a mixture when the engine is warm.

A stop screw is provided in these carburetors and the control lever is set to permit full range operation between the two extremes. Adjustments on the control rod assembly are therefore necessary only to permit the full choking range and to synchronize the action on the two carburetors.



The arrangement of the choke control on V-12 and V-16 cars

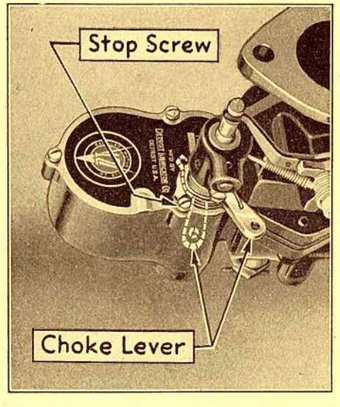
Find Cause

In any cases where the choke cannot be operated throughout its full range on both sides by means of the choke button on the dash, the control assembly should be inspected to discover the reason. It may be the result of one of several causes:

There may be binding somewhere along the assembly. This can be corrected by freeing up the rods wherever the binding occurs.

The control rod adjustments may not be the same on both carburetors, preventing full closing on one carburetor and full opening on the other. This can be remedied by equalizing the adjustments of the control rods so that both will be in the same extreme positions at the same time.

Full movement may be prevented by the rocker shaft levers striking the dash. This ordinarily can be corrected by lengthening or shortening the adjustment between the instrument panel control rod and the rocker shaft lever. In rare cases, the angle between the rocker shaft levers may be too great, causing interference with the dash whether the control button is in or out. In such cases the center lever may be moved on the shaft to increase the possible movement of the levers.



The choke lever should strike the stop screw in both open and closed positions

It has been found that in several instances where synchronizing of the carburetors has been required at frequent intervals, the difficulty was caused by failure to tighten and lock the throttle stop screws properly. This permits the stop screws to work in or out, changing the throttle adjustment.

Particular care should be taken after adjusting and synchronizing the carburetors to see that the stop screws are securely tightened and locked and that the lock nuts on all clevises are tight.

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Price Revisions Announced By Hinckley-Myers Company

THE Hinckley-Myers Company, Cadillac's official tool and equipment suppliers, announce the following price revisions on service covers.

J-113-1A	Fender Cover—Fenderwell Pr.	6.20
J-113-1	Fender Cover	5.80
J-113-2	Door Covers—36"	3.30
J-113-3	Cowl Covers	1.50
J-113-4	Front Seat Covers	2.55
J-113-5	Steering Wheel Cover	.55
J-113-6	Gear Shift Lever Cover	.15
J-113-7	Head Lamp Covers—Pr.	1.30
J-113-8	Radiator Shell Cover	1.50
J-113-9	Door Covers—38"—Discontinued	1.50

These prices supersede those given in the catalog and in the September 1 SERVICE MAN.

Incorrect Hub Nut Lock May Prevent Wheel Removal

The hub nuts used on the rear wheels of type 340, 353, and "A" series cars are locked in place by means of a special hub nut lock, part number 873553, which is merely a small flat plate with a nib that is bent over against the flat of the nut.

In a few recent instances, service stations that have not had the hub nut locks readily available have reassembled these hubs with ordinary lock washers under the nuts. Lock washers are *not* satisfactory as they extend over the hub flange and interfere with the installation and especially with the removal of the wire wheel. Serious inconvenience would inevitably result if an owner on tour had to change wheels that were so assembled.

Distributors and dealers should therefore keep an adequate stock of these locks, part number 873553, on hand so that it will never be necessary to use a makeshift.

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Balancing Stand Essential for Accurate Wheel Alignment

THE high speeds at which cars are driven in the present day have brought wheel balance to a position of greatest importance and service stations should have the equipment necessary for accurate balancing. The importance of this phase of service is great enough to warrant the average service station's investing in a balancing stand, several of which are on the market at reasonable prices.

It is possible to use the axle when balancing front wheels although this requires extreme care in cleaning away all grease and dirt. The rear wheels, however, also require balancing at times, particularly in some cases of tramp, and an auxiliary stand is necessary to do the job right. Rear wheels cannot be balanced accurately on the axle.

In addition to making it possible to balance rear wheels and to do more accurate work on all wheels, a balancing stand will save time on each job and has a definite merchandising value. Owners are interested in having their cars serviced accurately, and the presence of accurate equipment will convince them that the service station is prepared to do the work as well as to some extent reminding them that they need this service.

Adequate balancing equipment is essential to good axle and steering gear service.

Improper Operation of Automatic Valve Silencers Generally Results from Dirt

THE various parts of the automatic valve silencers used on all model V-12 and V-16 cars are held to extremely close limits to provide the accuracy necessary to insure quiet operation of the valves. So close are these limits, however, that any trace of dirt or foreign matter may interfere with their operation and result in noisy action. Every precaution must therefore be taken to keep the silencer mechanism clean.

Possible Causes

In most cases of noisy action it is not necessary to replace the silencer assembly or any part. The cause should always be investigated and corrected, replacing parts only when necessary. Following are the possible causes of noisy action:

1. Stoppage of oil filter
2. Improper lubricant
3. Dirt or corrosion, or improper clearance between plunger and cylinder wall
4. Leakage or sticking of check valve
5. Damage from improper or careless installation

Oil Filter

Stoppage of the oil filter is more common on "A" series cars which have the cartridge type. If the filter is inspected at the regular 2000 mile interval on the lubrication schedule, and the cartridge is changed when necessary, clogging should not result. The oil filter should be inspected in any case of noisy action, however, to make sure it is not stopping the supply of oil to the silencer mechanism. The Cuno type oil filter, used on "B" and "C" series cars should be drained every 6000 miles to prevent clogging.

Engine Oil

At this time of the year particularly, the type of engine oil used may cause noisy operation. If a heavy oil is used, extreme cold may stiffen the oil to a point where it causes sticking or slow action of the silencer mechanism. As soon as the engine warms up, however, the silencers should operate satisfactorily. When changing from summer to winter engine oils, as stated on page 46, October 1 SERVICE MAN, it is advisable to remove the valve rocker arm covers, release the valve silencer plungers, and inject oil of winter grade into them while the engine is running.

The presence of dirt or corrosion on the mechanism is the most frequent cause of improper operation. Because of the limited movement of the plunger and the check valve, a slight coat of gum or sulphur from the oil, a slight amount of corrosion, or minute particles of dust and dirt may cause sticking or leaking. It is therefore advisable to thoroughly clean the parts of the silencer mechanism before reinstalling, whenever they are removed.

Cleaning Parts

Benzine should be used to clean the parts, and they should be dried with air. A cloth is likely to deposit lint. The parts also should be polished with a good grade of crocus cloth—*not emery cloth*—to remove any trace of gum or corrosion. When reassembling, the check valve should be revolved on its seat by hand to make sure it is properly seated.

Improper clearance between the plunger and the cylinder wall may result from interchanging plungers. Plungers and dashpots are carefully matched at the factory to obtain the close limits necessary, and interchanging is likely to result in too much clearance in some silencers and too little in others. Both plungers and dashpots, are marked for identification and care should be taken in assembling to make sure the number of marks etched on the plunger correspond to the number appearing on the dash-pot casting.

Damage

Damage by burring or marring, or by bending or springing the check valve may be the cause of improper operation. It is therefore important to use care in handling and assembling the parts to avoid this possibility. If the check valve is only slightly sprung, it may be possible to true it up; otherwise, it will be necessary to replace it. Damage by burring or marring can be corrected only by replacing the damaged parts.

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Revised Recommendations On V-8 Valve Adjustment

THE recommended limits for exhaust valve adjustment on V-8 cars have been changed to lessen the possibility of valve riding for a longer period. The new clearances between the stem and camslides are .010" for exhaust and .006" for inlet. The clearances recommended heretofore have been .008" for exhaust and .006" for inlet.

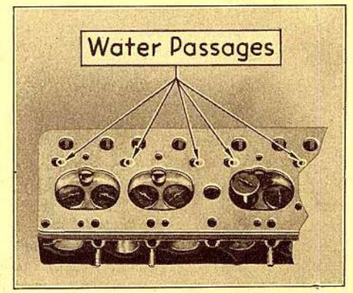
The new clearances apply to all "C" series V-8 cars and all "B" series V-8 cars with the second type camshaft. As announced on page 8, January 15, 1932 SERVICE MAN, the second type camshaft went into effect at engine unit number 11-1148 for 345-B cars and 12-1126 for 355-B cars, and has been furnished in place of the first type for service replacement. It is therefore necessary to determine which type is in cars previous to these numbers before adjusting the valve tappets.

Identification

On "B" series cars the second type camshaft may be identified by the letter "Z" in a circle, stamped on the hub of the front bearing. This mark can be seen through the opening in the crankcase after removing the distributor mounting support.

Cylinder Head Gaskets Must Be Installed Right Side Up

A FEW cases of overheating on V-12 and V-16 cars had been found to be the result of improper installation of the cylinder head gaskets. The gaskets furnished for these cars are interchangeable as rights and lefts, but if they are inverted the water passage holes will not line up with the corresponding holes in the cylinder block. The stud holes will line up regardless of which way the gasket is installed, and it is therefore important to check the water passage holes.



The water passages in the gasket should be inspected to make sure they line-up with the water passages in the cylinder head

This precaution should be taken when installing cylinder head gaskets on any model Cadillac or LaSalle car. The lining-up applies to some model V-8 cars as well as to V-12 and V-16 cars.

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