



VOL. 6, No. 3

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New Warranty

ON February First a new Warranty and a new Owner's Service Policy will become effective and applicable on cars delivered on and after that date. The exact wording of the Warranty and the Service Policy has been sent out attached to Trade Letter T-2556. Additional copies of the Warranty and Policy may be obtained by writing the Service Department.

Everyone in the Service Department should become thoroughly familiar with this new policy and those entrusted with the handling of the details should very carefully study the Trade Letters to which are attached detailed instructions for the handling of the new forms used in connection with the replacement of parts under the new policy.

The duty of stamping the delivery date and the seller's name on the number plate, which is fastened to the front face of the dash, is generally that of the Service Department. They should also assume responsibility for properly filling out the Owner's Service Card, making certain that it is delivered to him. It should be handed to the owner with a proper explanation of its use. The new Warranty and the Service to Packard Owners by Distributors and Dealers, along with the Owner's Responsibility concerning his new car, should be discussed with the owner at the time the Owner's Service Card is delivered to him.

A special meeting of the contact men should be held to make sure that everyone is familiar with the new policy and the method of handling the details in connection with it. Every service salesman should be familiar with the Owner's Service

Card. He should know exactly to what the owner is entitled when these cards are presented from owners of other territories. He should caution owners, who are starting out on trips, to make sure that their Owner's Service Card is in the glove compartment of their car and that it is properly made out and signed. He should call to their attention the privileges to which this card entitles them.

You will notice that the card is delivered with each new car and that it is inserted in a cellophane envelope. The envelope is perforated so that when it is removed from the choke, or throttle button, the protruding part of the envelope may be torn off and the card still retained in the balance of the envelope, thus keeping it clean.

Service Managers should obtain from the Service Department a few additional cards and envelopes so that they may make sure that a clean attractive card is presented upon delivery of the car. In making the cards out it is important that the delivery date on the card agrees with the delivery date stamped on the plate on the front face of the dash. Otherwise, the owner will have difficulty in obtaining the service to which he is entitled. It becomes all the more important, under this new policy, to make certain that all number plates are properly stamped.

Let's start off in the Service Department with everyone knowing exactly what they are to do under the new Warranty and Policy. Let's all become familiar with it and start operating under the new plan on February First. You will find views of the card on the next two pages.



Packard Owner's Service Card

Name _____

Address _____

City _____

Delivery Date _____ Motor No. _____ Serial No. _____

Seller's Name _____

Owner's Signature _____

(Important—Keep This Card With Car At All Times)

Owner's Responsibility

MUCH of the pleasure and satisfaction to be obtained from your car depends upon correct driving and regularity in lubrication and adjustments for normal wear.

The car should receive regular inspections and lubrication each thousand miles, or once a month. To insure the protection of your investment this work must be done at a Packard Service Station where trained men can be depended upon to use the proper lubricants at every point requiring attention. Motor oil should be changed at the end of the first five hundred miles and thereafter every two thousand miles in warm weather and every one thousand miles in cold weather, or approximately once a month. Oil should be added as required to keep it up to level between changes.

Tire air pressure should be checked each week. Forty pounds pressure should be maintained.

Distilled water should be added to the battery at least four times a year. Check the water in the cooling system regularly. During cold weather use a recommended anti-freeze solution. It is advisable to keep about a pint of emulsifying oil in the cooling system at all times to prevent corrosion.

Owners and drivers are urgently requested to read the Instruction Book which accompanies every car. The careful observation of a few simple rules is both wise and necessary.

Service to Packard Owners

BY DISTRIBUTERS AND DEALERS

THE Packard Motor Car Company intends that every owner of a Packard motor car shall receive fair and satisfactory treatment. Should any owner not receive it, the Company asks to be advised.

The original purchaser of a new Packard car will be entitled to the following service at the service station of the Authorized Packard Dealer or Distributer from whom such car was purchased:

1. *Parts and Labor:* For 90 days after the original delivery of such motor car to the owner, provided the car has not been driven to exceed 4,000 miles, any parts, including all standard equipment except tires, that may be adjudged by Packard Motor Car Company to be defective under its warranty will be replaced or repaired by any Packard Dealer in the United States and Canada without charge to the owner for material or labor.
2. *Adjustment:* The owner is entitled to receive three inspections and adjustments of his new car during the first 90 days after delivery provided it is taken to the service station for that purpose and provided such adjustments are not made necessary by accident, neglect or misuse. These inspections and adjustments will be made without charge only by the dealer from whom the car was purchased. The owner will pay for this service when it is obtained from other than the dealer who sold the car.
3. *Inspections:* Throughout the life of the car the owner is entitled to have his car tested and inspected without charge every 30 days or 1,000 miles by an Authorized Packard Service Station, provided such inspection requires no removal or dismantling of parts or units.
4. *Owner's Service Card:* At the time of delivery the owner is provided with a Service Card which will introduce him to any Authorized Packard Service Station and entitle him to receive service in accordance with this policy. The owner should carry the card with him at all times so he can present it when necessary.
5. *Tourist Privileges:* When touring, the owner is entitled, upon presentation of his Service Card, to all of the benefits of this policy during the warranty period at any Authorized Packard Service Station in the United States and Canada, provided the date of delivery and name of the dealer from whom the car was purchased are stamped on the plate provided for that purpose on the front face of the dash.
6. *Change of Residence:* In case the owner changes his residence from one location to another before the warranty period has expired, the Packard Service Station serving the locality into which the owner moves will, upon presentation of the Owner's Service Card, render any no-charge service to which the owner may be entitled as outlined in paragraph one.
7. *Service Charges:* Every Authorized Packard Service Station is provided with a Manual containing the flat rate charges for service work. In order that maintenance costs may be kept as low as possible, these flat rates have been based on careful studies of the shortest times for doing the service operations consistent with proper workmanship. Genuine Packard parts are sold through Authorized Packard Service Stations, and can be secured anywhere in the United States and Canada at the published list.

Automatic Clutch Operation

The automatic operation of the clutch is accomplished through the medium of a vacuum cylinder connected to the clutch release lever. This cylinder contains a piston which is actuated by the vacuum from the intake manifold.

The action of the cylinder in the operation of the clutch is controlled through valves which are connected to the control lever on the steering wheel and to the accelerator pedal.

The design is such as to vary the speed of the clutch engagement according to the speed with which the accelerator pedal is depressed. The relative position on the clutch control parts is shown in *Figure 1*.

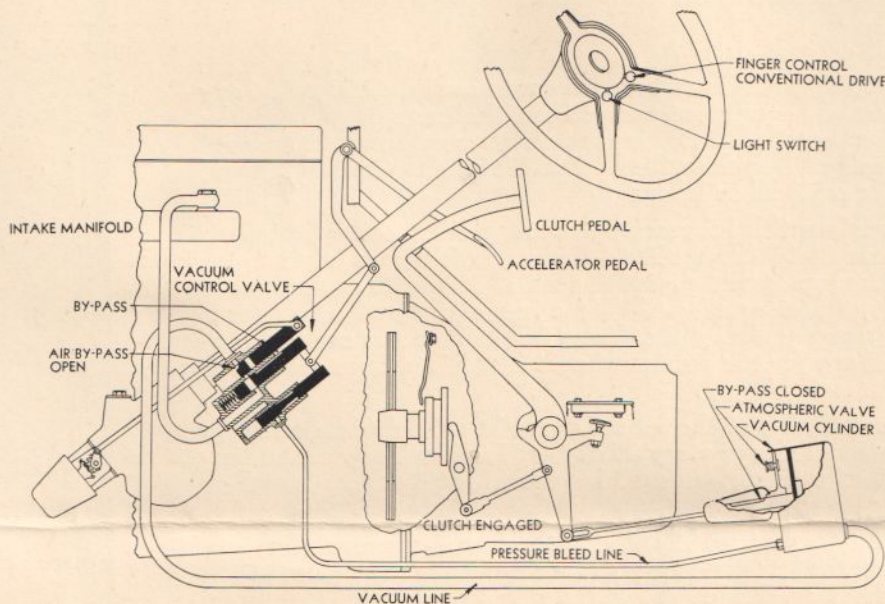


Fig. 1

The vacuum cylinder is attached to the forward battery bracket and the piston is connected to the clutch release mechanism. The release mechanism is so designed that the operation of the clutch by the vacuum cylinder does not affect the clutch pedal which can be operated in the usual way entirely independent of the automatic control.

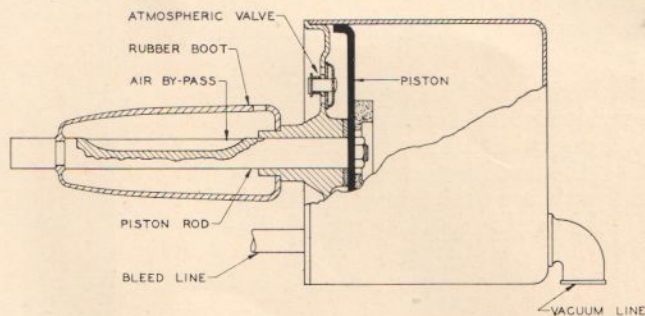


Fig. 2

The vacuum cylinder, *Figure 2*, contains a piston which divides the cylinder into two chambers. The front or air chamber is opened to the atmosphere as required through three passages,—(1) the air by-pass slot in the piston rod, (2) the atmospheric valve in the cylinder head, (3) the bleeder line leading to the bleeder valve in the control valve unit.

The rear or vacuum chamber is connected to the motor vacuum by a pipe which leads to the control valve and thence to the intake manifold.

The air by-pass in the piston rod is simply a long slot which is opened or closed by the travel of the piston. When the vacuum on the rear chamber is shut off this slot permits a quick discharge of air from the forward chamber, allowing the piston to move forward rapidly until the slot is closed, at which point the clutch should just start to engage. After this point is reached the only escape for the remaining air in the cylinder is through the bleeder valve which completes the clutch engagement.

The atmospheric valve in the cylinder head opens when the piston is pulled back by the vacuum in the rear chamber and permits air to rapidly fill the forward chamber. This valve is always closed when air is being expelled from the forward chamber.

Control Valve

The control valve, *Figure 3*, consists of three plungers,—(1) the cut-out plunger operated by the control lever on the steering wheel, (2) the bleeder plunger, whose movement uncovers a series of small bleed holes, thus effecting a final smooth clutch engagement, (3) the accelerator plunger whose movement opens and closes the vacuum line from the cylinder to the manifold, thus effecting release or engagement of the clutch.

The bleeder and accelerator plungers are connected together to the accelerator pedal. The operation of all plungers is positive in both directions, as they are actuated by the movement of the control lever and the accelerator pedal.

The clutch will automatically operate only when the control lever on the steering wheel is in the upward position. When this lever is pulled to the downward position the vacuum cylinder does not function and the clutch can be operated in the usual way by means of the clutch pedal.

The bleeder plunger regulates the flow of air out of the forward chamber of the vacuum cylinder after the air by-pass slot in the piston rod is closed, at which point the clutch just starts to engage. The amount of air bled out of the cylinder depends on the number of bleed holes uncovered by the bleeder plunger and the speed with which this plunger is operated by the accelerator pedal.

Therefore, a slow depression of the accelerator pedal will permit a slow escape of air from the vacuum cylinder and provide a correspondingly slow engagement of the clutch, while a quicker movement of the accelerator pedal will uncover the bleed holes faster, permitting a more rapid escape of air from the vacuum cylinder and consequently a quicker clutch engagement. Therefore, the rapidity with which the clutch is engaged is controlled by the movement of the accelerator pedal.

The accelerator plunger moves with the bleeder plunger and its function is to open and close the vacuum line from the intake manifold to the vacuum cylinder when the cut-out plunger is open. All three plungers are equipped with an air by-pass.

When the control lever is in the upward position and the accelerator pedal released, the vacuum ports of both

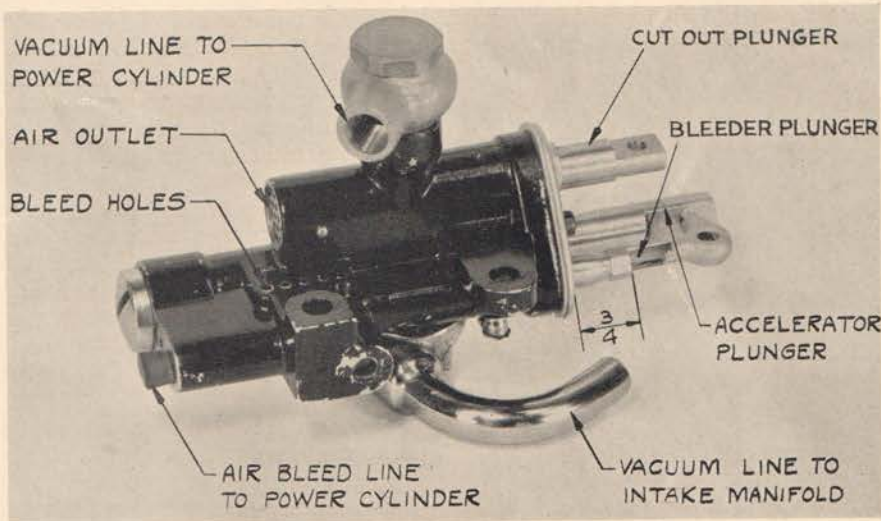


Fig. 3

the accelerator and cut-out plungers register with each other and create an open vacuum line between the intake manifold and the vacuum cylinder. The vacuum then pulls the piston in the cylinder back, which releases the clutch.

Pulling the control lever down likewise closes the vacuum line and opens the vacuum chamber of the cylinder to the atmosphere which engages the clutch.

Figure 1 shows the position of valves with the control lever down, the accelerator released and the clutch engaged. It will be seen that the bleeder line is closed by the bleeder plunger and the vacuum line by the cut-out plunger, while the vacuum chamber of the cylinder is open to the atmosphere through the by-pass in the cut-out plunger.

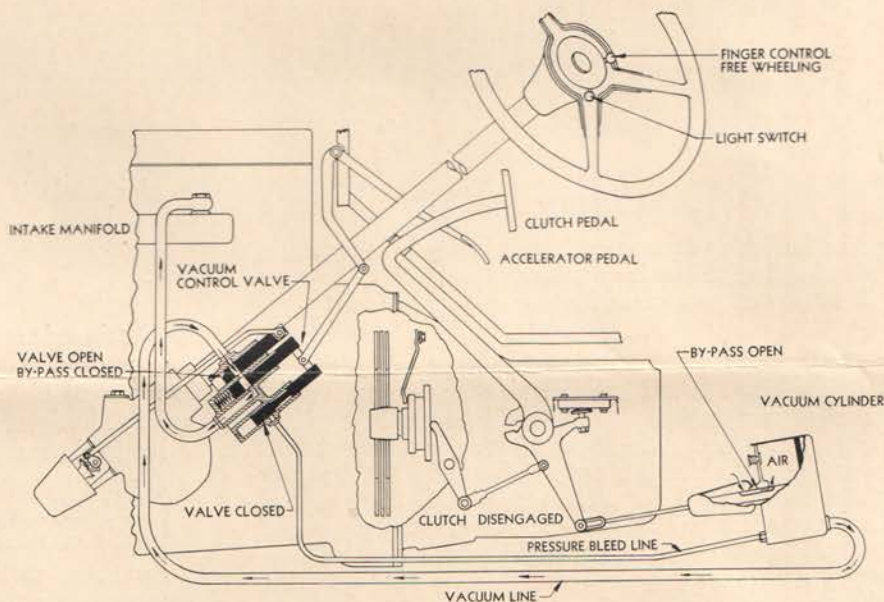


Fig. 4

vacuum line and its air by-pass is closed.

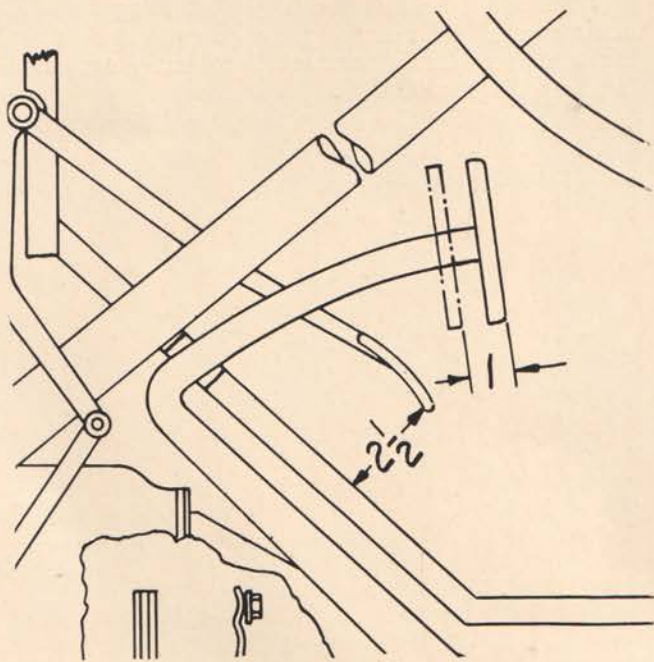
The vacuum line is, therefore, open through both the cut-out plunger and the accelerator plunger and the piston in the cylinder has been drawn back by the vacuum, thus releasing the clutch while the forward end of the cylinder has been filled with air which entered through the atmospheric valve in the cylinder head.

It will be noted that the lever to which the piston rod is attached has moved away from the clutch pedal so that the clutch has been released without moving the clutch pedal.

Figure 5 shows the position of the valves with the control lever still in the up position and the accelerator depressed.

The accelerator plunger has closed the vacuum line and has opened the vacuum chamber to the atmosphere through the air by-pass in this plunger.

The piston in the vacuum cylinder has moved forward expelling the air through the slot in the piston rod and finally through the bleed valve which has engaged the clutch.



Both chambers of the vacuum cylinder are now open to the atmosphere and the piston is held forward by the pressure of the clutch springs.

move forward rapidly until it just starts to engage, the final engagement being controlled by the bleeder valve.

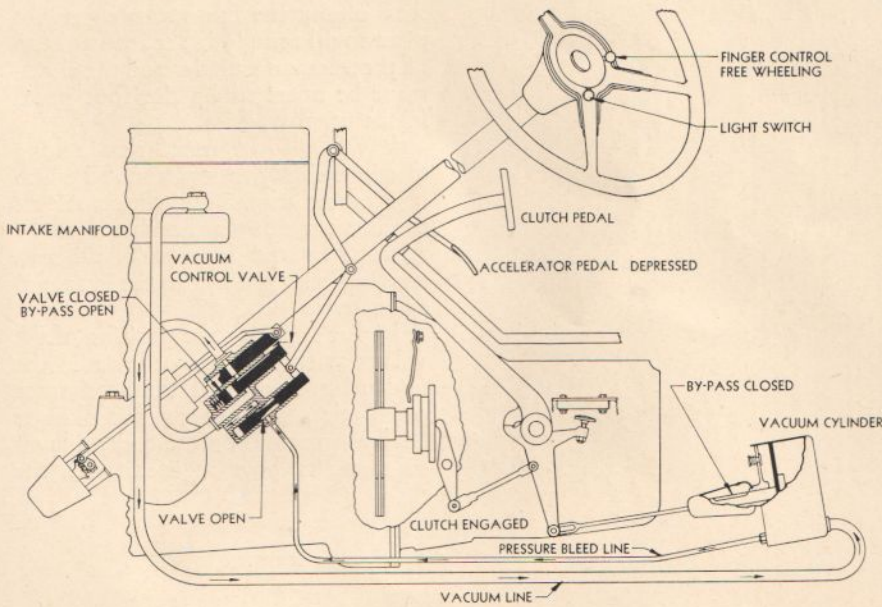


Fig. 5

Adjustments

The following adjustments must be made in sequence, and according to the instructions given, otherwise time will be wasted and unsatisfactory results obtained:

1. Pedal Adjustment.

A maximum of one inch free play for the clutch pedal is desired and an adjustment should be made when the free play has been reduced to $\frac{1}{2}$ -inch or whenever the operation of the clutch is not satisfactory. The free play of the clutch pedal for clearance beneath the toeboard should be checked in the usual manner with the clutch control lever on the steering wheel in the downward position and all vacuum exhausted from the operating cylinder.

Adjustment is accomplished by lengthening the rod which connects the pedal with the clutch release lever.

2. Adjustment of Clutch Release or Throwout.

The total movement of the clutch when being disengaged has always been limited by the pedal travel, but when the clutch is released by the vacuum cylinder a separate lever is utilized and the clutch pedal does not move. It is, therefore, necessary to limit the total movement of the clutch by a stop attached to this lever, which contacts with a rubber pad attached to the frame as shown in Fig. 1. The control lever should be in the downward position when making this adjustment. The clutch pedal pad should then be pushed down against the toeboard and held in this position while the stop is adjusted until it is contacting firmly with the rubber pad.

3. Cushion or Engagement Adjustment.

When the accelerator pedal is depressed the vacuum line to the operating cylinder is closed and the air in the forward end of the cylinder is rapidly expelled through a slot in the piston rod until the piston has moved forward sufficiently to close this slot. This permits the clutch to

move forward rapidly until it just starts to engage, the final engagement being controlled by the bleeder valve. The cushion adjustment should, therefore, be set to allow the clutch to move forward rapidly to exactly the right point of engagement before the bleeder valve starts to function and this can be accomplished in the following manner: With the motor warmed up and idling properly, move the control lever to the upward position, which will release the clutch. Put the gear shift lever into low speed, now pull the control lever into the downward position.

The car should start to move almost at once with a smooth clutch engagement. If the start is delayed the vacuum cylinder pull rod shown in Fig. 1 should be lengthened. If the clutch grabs, make sure the connections of the air bleed line are tight and then shorten the pull rod. As a general rule, the rod adjustment should not be changed more than one-half turn at a time.

Do not use the accelerator pedal in making this test and make sure the hand throttle is closed. The test should be conducted on a level floor or pavement with the brakes fully released.

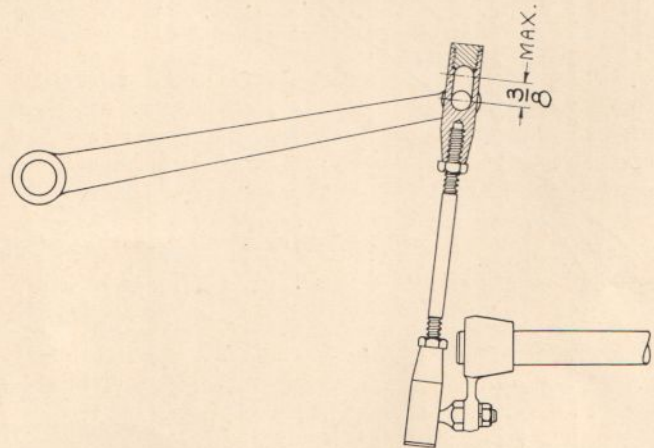
4. Throttle Adjustment.

The throttle rod shown in the illustration is constructed so as to provide a limited free movement of the ball joint in the upper end of the rod, which allows the accelerator pedal to be depressed a certain amount before the throttle valve in the carburetor actually starts to open.

A total free movement of $\frac{3}{8}$ -inch has been provided for the ball joint in the upper end of this rod, but this is normally restricted to approximately $\frac{1}{4}$ -inch.

Increasing or decreasing this movement governs the maximum speed at which the car can be driven in high gear without the clutch releasing when using the automatic control. The rod is provided with a right and left hand thread for adjustment by lengthening or shortening the rod as required.

Before checking this adjustment, the idling speed of the motor should be properly set, otherwise the desired result cannot be obtained.



If the adjustment is correct it should be possible to maintain a speed of ten M. P. H. in high gear on a level pavement without the clutch releasing.

Increasing the free movement of the ball joint in the throttle rod by lengthening the rod will lower the car speed at which the clutch releases, but it is not desirable to try and attain a speed much below ten miles per hour.

5. Bleeder Adjustment.

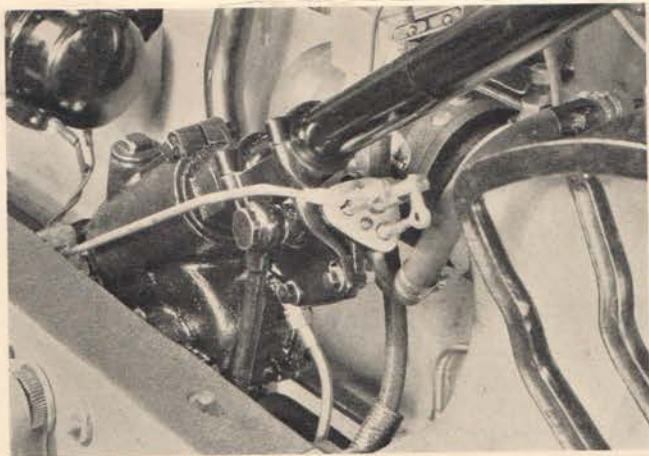
After the cushion adjustment has been properly set the smoothness with which the clutch engages is then dependent on the correct adjustment of the bleed valve shown in Fig. 3.

Before attempting to make an adjustment of the bleed valve it is wise to make sure that it has not been moved too far from its approximately correct location. This can be determined by measuring the distance from the outer end of the hex on the bleed valve to the plate through which it projects. This distance should measure approximately $\frac{3}{4}$ of an inch, as shown in Fig. 3.

If the clutch is engaging too quickly with a jerking start the bleed valve should be turned by the hex in an anti-clockwise direction when looking at the end of the valve, and if the engagement is too slow it should be turned in a clockwise direction.

This is a fine adjustment and if it is necessary to go very far outside the $\frac{3}{4}$ -inch measurement look for other trouble. The rotation of the valve is locked at every one-half turn by a spring lock and the valve should not be adjusted more than one-half turn at one time.

Location of Control Valve on Steering Column.



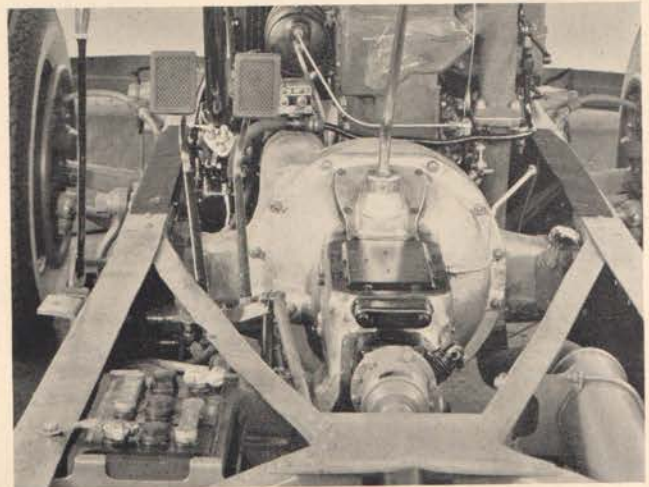
Showing Location of Control Valve

The location of the control valve on the steering column is important and if the steering gear has been moved from its original location or the column tube has been turned for the purpose of adjustment it will be necessary to relocate the valve in its correct position.

This is accomplished in the following manner:

1. Loosen screws which clamp control valve to steering column.
2. Remove carpet from toeboard and insert a block measuring $2\frac{1}{2}$ inches high under the end of the accelerator pedal. (Note this block must rest on the Celotex of the toeboard.)

3. With the accelerator plunger connected to the throttle shaft on dash, move the control valve down on the steering column as far as it will go



Showing Line to Manifold

and clamp in position, making sure that it is properly aligned so that all connections are free. (Note the control valve must always be moved down on the steering column far enough to insure the accelerator and bleeder plunger being as far out of the valve body as they will go.)

After the control valve has been properly located and the carpet replaced on the toeboard, the accelerator pedal should be depressed and the carburetor throttle valve checked to make sure it is fully open.

If the control valve has been removed from the steering column for any reason or its location changed, the movement of the cut-out plunger by the control lever on the steering wheel should be checked.

This plunger is connected to a gear segment on the bottom of the steering gear by a rod which is provided with an adjustment.

The gear segment, which is operated by the control lever, is provided with two steps which should limit the travel of the plunger, and adjustment should be made in the following manner:

Remove the clevis pin from the cut-out plunger connecting rod, next pull the control lever down, which should bring the gear segment against its step. Now pull the cut-out plunger out of the control valve the limit of its travel and adjust the connecting rod until the clevis pin will just nicely slide into its hole to make the connection.

The purpose of this adjustment is to insure the cut-out plunger having all the travel possible, but still stop in both directions on the gear segment steps instead of in the control valve.

NOTICE

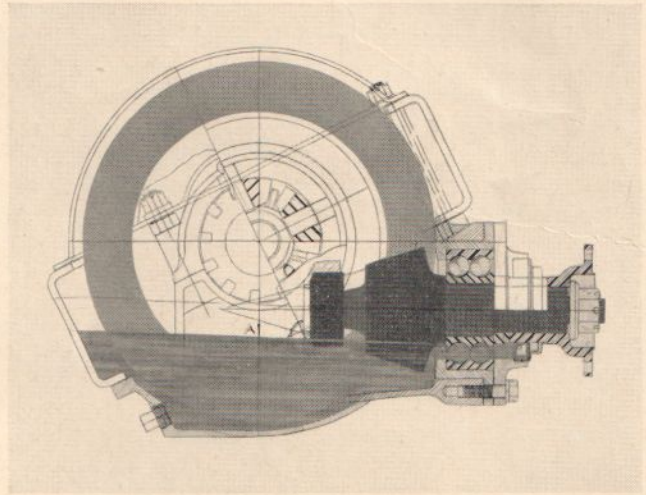
THE SERVICE LETTERS ARE TO HELP YOU DEVELOP EVEN BETTER PACKARD SERVICE IN YOUR LOCALITY. IT IS VALUABLE ONLY TO THE EXTENT THAT EVERY SERVICE MAN USES IT. IF YOU ARE NOT RECEIVING ENOUGH COPIES WRITE THE EDITOR, SERVICE LETTER.

Rear Axle

The rear axle is of the semi-floating type and is a new design in which the steel housing has been inclined at an angle which greatly reduces the riding height required at the rear end. This permits the overall height of the car to be reduced without sacrificing any of the necessary clearance between axle and body or reducing the road clearance.

The hypoid form of gearing which was pioneered by Packard lends itself particularly well to the new axle design because the driving pinion is mounted below the center of the ring gear. This construction very materially increases the length and strength of the spiral gear teeth. It also increases the number and the area of the teeth in contact with each other, all of which produces a silence of operation superior to any other known type of gear drive.

The driving pinion is supported at each end on double row ball bearings and the differential and ring gear are mounted on taper roller bearings. This design provides a rigid construction and allows the pinion to run in oil.



The rear axle shafts have ten driving splines and are mounted on taper roller bearings. The standard gear ratio is 4.36 to 1, but special ratios of 4.07 and 4.69 to 1 are furnished as special equipment.

Transmission

The Packard synchromesh transmission has three selective speeds forward and one reverse with positive interlocking control. Both the mainshaft and the countershaft are of rigid construction and are mounted on angular ball bearings.

All forward speed gears have spiral teeth and are quiet in operation. The shift into forward speeds is accomplished through sliding members which, in conjunction with the synchronizing mechanism, provides a sure quiet shift that requires no skill on the part of the operator to avoid clashing.

Transmission Gear Ratios

First..... 10.71 to 1 Second..... 6.95 to 1 Third..... 4.36 to 1 Reverse..... 12.56 to 1

