

CR Smith



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PACKARD PRODUCT REPORT

Recently a supply of Product Report Forms was sent each Dealer and Distributer and additional pads of this form may be obtained by writing your Distributer or the Service Promotion Department at the factory.

The information you can give us on this form is particularly valuable to the factory as difficulties are encountered on new model cars. This form represents the Dealer's contribution to the improvement of Packard cars and Packard Service.

HOW FORM VT-1014 IS USED

Make Product Report in duplicate.

Send pink copy to Distributer the day trouble is encountered.

Distributer checks report for completeness and mails to factory Service Department.

HOW FORM IS FILLED OUT

Accuracy in diagnosing trouble and in reporting it is essential.

If more than one kind of trouble is found on one car use separate forms for each different kind of trouble.

If same trouble is found on more than one car, list all vehicle and engine numbers affected.

If trouble is with paint, give paint number.

If trouble is with trim, give trim number.

Give date, name, address of Dealer, model, vehicle, and motor number, delivery date, mileage and owner's name if car is delivered.

Describe trouble—be specific.

What was wrong—what happened—describe noises in as much detail as possible.

Describe what you did to fix trouble and what results you got after the repairs were made.

ADDITIONAL USES

Report trouble with design or use of Packard Special Tools or additional tools needed.

Report damage or improperly finished parts received from Distributer or factory, giving part order number and date of order.

If you repaired or refinished and used the part, report the condition and what you did to make the part usable.

Report suggested changes in Flat Rate Times.

Report any condition which you feel should be corrected, thus enabling the factory to improve its product or Packard Service. This in turn will help sell more Packard cars.

List only one kind of fault or criticism on each form as this makes it possible for us to immediately send it to the proper department for necessary action.

Form of 10-14
 Packard Motor Cars Division
 Packard Service

PACKARD PRODUCT REPORT
 (DEALER SEND PROMPTLY TO DISTRIBUTER)

DEALER _____ DATE _____ No. _____
 ADDRESS _____
 TOWN _____ STATE _____
 MODEL _____ VEHICLE No. _____ ENG. No. _____
 DELIVERY DATE _____ MILEAGE _____
 OWNER _____

DESCRIBE NATURE OF MECHANICAL TROUBLE

WHAT DID YOU DO TO CORRECT TROUBLE?

SIGNED _____

USE OTHER SIDE FOR SKETCHES AND ANY ADDITIONAL INFORMATION

HYDRO-ELECTRIC WINDOW REGULATORS

1906-7-8

The parts of the Hydro-Electric window regulators, and the function of each, are as follows:

1. Motor and pump unit consist of a 6 volt reversible motor, with built-in direct-connected gear pump, which circulates hydraulic brake fluid under pressure to the operating mechanism in each window opening, through metallic tubing and rubber hose connections.

2. A solenoid operated valve, normally closed, is fitted in the line to each window, these valves being controlled by the operating switch.

3. Within each door is a cylinder and piston assembly, the piston rod being connected to a conventional window regulator mechanism, to raise or lower the window. The down stroke, which is produced by the vacuum created in the cylinder by withdrawal of oil, is assisted by a tension spring.

4. A fluid reservoir is connected to one pump opening to hold the fluid withdrawn from the cylinders when the windows are in the lowered position.

5. One or more double acting control switches are provided for each opening, located at convenient points within the body. To raise any window the proper switch is moved to the "up" position which starts the motor and at the same time opens the solenoid valve in the line to the window to be raised thus allowing oil to flow under pressure to the operating cylinder. When in a raised position the window is held by the oil trapped in the cylinder by the normally closed solenoid valve. To lower, the control switch is moved to the "down" position, starting the motor in the reverse direction, again opening the solenoid valve, and thus withdrawing fluid from the cylinder to the reservoir.

SERVICE INSTRUCTIONS

Motor and Pump

The motor is a standard 4" Auto-Lite starter motor with four field coils but is specially wound with two coils for the pressure, or raising, rotation and the other two for opposite, or lowering, rotation. The coils are wound so as to give approximately the same speed in either direction.

Two solenoid operated switches are provided in the battery connection circuit, one for each pair

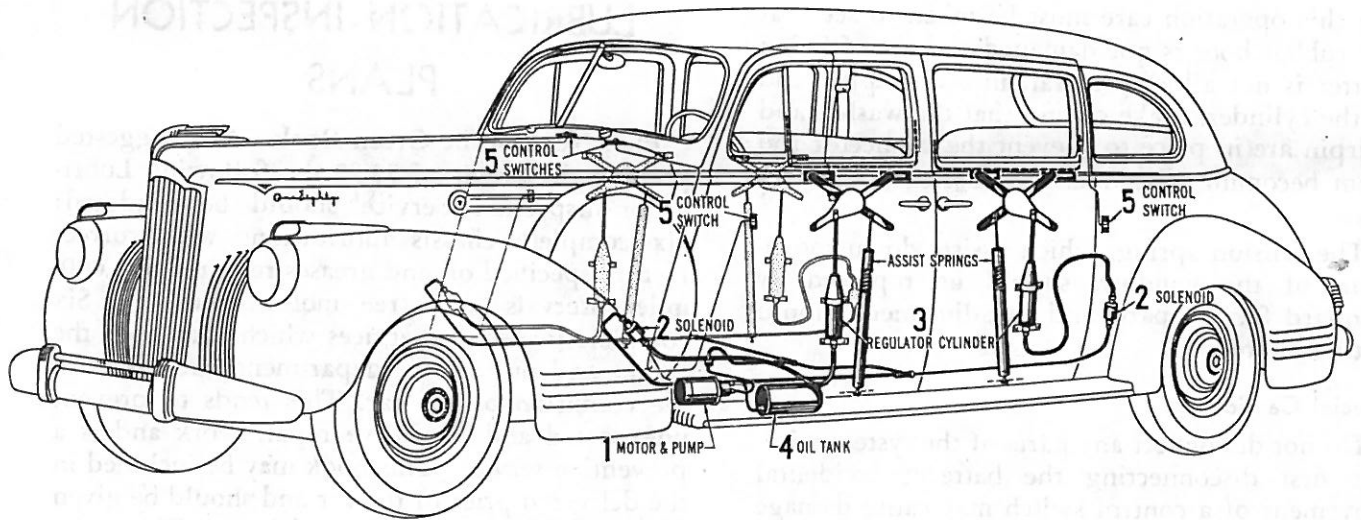
of field windings, and with a relay to prevent the closing of both switches at the same time. The relay so connected as to give control to the wiring which lowers the window, therefore if one operating switch is held in the "down" position and at the same time some other switch is moved to the "up" position both windows will open. Two or more windows may be operated simultaneously in the same direction, but not in opposite directions, and in all cases downward movement will dominate.

The motor requires no attention except lubrication of the armature bearing, at the brush end, with a few drops of light engine oil every 3,000 miles. The bearing at the pump end requires no attention being lubricated by fluid from the pump.

The fluid pump is a conventional gear pump mounted in a die cast housing, which also forms one end frame of the motor, the gears being spiral cut to eliminate noise. A non-adjustable, spring loaded, maximum pressure regulating valve is fitted in the pump cover, with dash pot to prevent chatter. This operates to by-pass the fluid when the window reaches its upper limit, or should it strike an obstruction. The regulating valve spring is set in assembly for the correct pressure and should under no circumstances be stretched or otherwise altered. The pump should deliver between 120 and 130 lbs. pressure with battery in reasonable state of charge, and in reverse direction will produce a vacuum of 15 to 18 inches of mercury. Pressure and vacuum may be checked with an Ashcroft No. 1004, or similar, combination gauge. Do not use a gauge showing pressure or vacuum only as serious damage to the gauge will result.

Hardened and ground end thrust plates are fitted on each end of the pump gears. As very close clearances are essential to produce the required pressure no attempt should be made to interchange these plates, or the gears, with other housings. Should it become necessary to dismantle the pump, the gasket surfaces must be scraped clean before reassembly and new gaskets *must* be supplied using only genuine parts.

THIS IS IMPORTANT—re-use of old gaskets will cause LEAKAGE AND GASKETS OF IMPROPER THICKNESS will affect pump clearance causing binding or loss of pressure.



Solenoid Control Valve

These valves are sealed units and in the event of trouble or failure must be replaced as a unit. The electrical circuit is completed to ground through the clamp which fastens the valve to its mounting and this connection must in all cases be clean and tight. In the event a hose or tubing connection is to be removed or replaced a wrench must be used to hold the solenoid at the end at which the connection is made; holding in the center, or with a wrench at the other end, may result in internal damage and make necessary a complete replacement of the unit.

When assembling the valve in the line be sure it is positioned so that pressure from the cylinder and piston will hold the valve on its seat.

Piston and Cylinder Assembly

The cylinder is drawn steel with polished walls and fitted with a threaded connection spud at the bottom. In making connection to this spud it should be held with a wrench to prevent any possibility of twisting which might cause leakage.

In order to compensate for expansion of fluid under heat, with windows closed, the piston is connected to the piston rod through a properly calibrated compression spring. Should replacement be necessary use parts from manufacturer as proper spring strength is important.

The piston sealing ring is special high grade rubber and should be replaced only with standard factory parts.

When the piston has been removed from the cylinder one ounce of brake fluid must be poured into the cylinder above the piston on reassembly to lubricate the upper portion of the piston. Special care must be taken not to damage the boot when disassembling.

Control Switch

In the event of failure of any control switch the complete unit should be replaced making certain that all connections are tight and secure. In mounting the switch make sure that the switch knob is properly centered in the escutcheon plate and that the switch returns to central position without tendency to stick or bind.

Fluid Reservoir

The fluid reservoir is provided with a vented, non-splash, filler cap and should be kept filled with genuine hydraulic brake fluid. Check and fill the reservoir only with all windows in fully lowered position as reservoir is normally partially emptied when windows are raised.

Special Caution

No mineral oil must under any circumstances be allowed to get into the system or on any of the internal parts. The slightest trace of such oil will result in rapid destruction of rubber parts. The hands should be washed with soap and water, not gasoline, before handling any internal parts. Parts must also be washed in alcohol, not gasoline.

Window Adjustment

When replacing a window the regulator arm mechanism should be attached to the lower glass channel, without connecting the piston rod, and the window moved up and down by hand. Assuming the glass itself to fit properly in the felt channels, any tendency to bind should be corrected by proper vertical adjustment of the regulator arm pivot stud in its slotted hole.

When in the fully lowered position the window is supported by the piston resting on the bottom of the cylinder. To obtain this condition the piston rod should be screwed in or out of the connector rod, until the correct adjustment is secured, and then locked by tightening the lock nut. Dur-

ing this operation care must be taken to see that the rubber boot is not damaged and that foreign matter is not allowed to fall into the upper end of the cylinder. Make certain that the washer and hairpin are in place to prevent the connector rod from becoming disconnected from the regulator arms.

The tension spring, which assists down movement of the window, should be replaced by standard factory parts and its adjustment should not be altered.

Special Caution

Do not disconnect any parts of the system without first disconnecting the battery; accidental movement of a control switch may cause damage to parts or result in fluid being forced out onto upholstery or body.

Use only genuine Hydraulic Brake Fluid.

General Comments

Should all windows fail to operate in either direction from any switch, check:

- a) Battery charge by cranking motor
- b) Motor wiring and ground strap
- c) Solenoid switches to motor
- d) Fluid reservoir for proper level
- e) Brushes and commutator

Should one window only fail to operate in either direction, check:

- a) Fluid level by lowering other windows
- b) Control switch, especially battery connection
- c) Solenoid control valve ground and wiring
- d) Cylinder and piston in door after replacing solenoid valve.

Should all windows operate in one direction: only, check:

- a) Solenoid switches operating motor
- b) Wiring and switch relay

Should window operate too slowly, check:

- a) Fit of glass in channel
- b) Adjustment of regulator parts within door
- c) Battery charge if all are slow
- d) Motor and pump for binding
- e) Fluid too heavy due to extreme cold (may be thinned out with 188 proof high grade alcohol).

SPECIAL CAUTION

Use only genuine high-grade hydraulic brake fluid.

Be sure to disconnect battery before making any adjustments.

LUBRICATION-INSPECTION PLANS

Plan No. 1—The Green Book—At a suggested price to the owner of \$3.90 the following Lubrication-Inspection Service should be rendered: Six complete chassis lubrications with correct factory specified oil and greases required at 1,000-mile intervals—one free motor check up. Six complete inspection services which keep both the owner and our service department familiar with the condition of the car. This tends to prevent unexpected and expensive repair work and is a preventive service. This book may be included in the delivered price of the car and should be given to the owner at the time of delivery. The green book should be accepted at full face value in exchange for Plan No. 3 or Plan No. 4.

Plan No. 2—The Blue Book—This Lubrication-Inspection Service is the same as Plan No. 1 except that ten lubrications and inspections are included, thus making the plan cover an average year's driving. The suggested price to the owner is \$6.50. This book also should be accepted at full face value for Plan 3 or 4.

Plan No. 3—The Buff Book—This Lubrication-Inspection Service includes all operations of Plan No. 2 and in addition includes the lubricants for motor oil changes at 2,000 miles for a 10,000-mile period. Lubricant is also supplied for front wheel bearing lubrication and for changes in the transmission, rear axle and steering at the proper season. The suggested prices on this Plan are Six \$16.50, Eight \$18.00 and Super Eight \$20.50.

Plan No. 4—The Red Book—This Lubrication-Inspection Service includes all the operations of Plan No. 3, and in addition includes extra motor oil changes so that the oil is changed each 1,000 miles. It is a service that is desirable for hard drivers and those preferring the 1,000-mile oil changes. The suggested prices on this Plan are Six \$23.25, Eight \$26.00 and Super Eight \$31.00.

The Blue Coupon Books are form VT-87D. The Buff Coupon Books are form VT-84E. The Red Coupon Books are VT-84F. These sell at \$4.50 a hundred and should be ordered from the Service Promotion Department.

The Green Plan No. 1 Books are handled by Reynolds & Reynolds—Dayton, Ohio, and sell for \$2.25 per 100 without imprint of dealer's name and with imprint \$3.75 per 100.