



VOL. 2 No. 22

NOVEMBER 15, 1928

The Repair Order

"I am the repair order.

"I tell 'em what to do around the Service Department—sometimes right, sometimes wrong.

"I am supposed to be the voice of the automobile owner plus the result of a correct diagnosis but instead I am often the voice of a "balled-up" order-writer.

"It is through me that the mechanic is told to work on the carburetor when the trouble is in the ignition system—to adjust the differential gears for a singing noise caused by the tires.

"I often give vague instructions such as 'fix clutch,' 'eliminate knock in motor,' and other incomplete orders which make the mechanics dizzy and causes owners to cuss and swear.

"There are spaces at the top of me which are supposed to be filled in but which are often neglected. It tickles me when an owner, who owns more than one car, comes in kicking about the work done a month or so ago, and when they look at me they can't tell which car it was I

covered, because license number, model, type and motor number spaces were not filled in.

"Mileage recording is also very important but try and make some 'would-be' service salesmen believe it. It's great stuff for the owner when I don't show the mileage. Dates are important but don't forget it is easy for a car to travel 1,000 miles between May 20th and the 26th. Six days doesn't sound like much, but a thousand miles is a thousand miles.

"Often times, after I have been in the shop a couple of hours, they find additional work is necessary, so they try to get authority from the owner. However, they overlooked getting his telephone number and can't locate him. They take a chance and add a few items to me and go ahead with the work—and when they try and collect—well, that's another story.

"If the Service Salesman would only let the owner look me over immediately after I have been written up—especially on big jobs—a lot of trouble and argu-

PACKARD SERVICE
REPAIR ORDER AND INVOICE
SHOP COPY

Order No. 104
Billing Date 1-2-6
Customer's Order No. 192
Name Smith
Street 170 State Street
City Aurora, Illinois
State Ill.
Date 1-2-6
Phone 192
Delivered 192
Mileage 11-15-25
Model 674
Type 4
Motor No. 822266
VIN 11-15-25
1905

OPERATIONS—BE SPECIFIC

Exhaust
Eliminate knock in motor

APPROVED _____
TERMS Cash
Customer's Signature _____
Service Salesman _____

Form 902 4-27-25

PACKARD SERVICE
REPAIR ORDER AND INVOICE
SHOP COPY

Order No. 104
Billing Date 1-2-6
Customer's Order No. 192
Name J. A. Baker
Street 170 State Street
City Aurora, Illinois
State Ill.
Date 1-2-6
Phone 192
Delivered 192
Mileage 11-15-25
Model 674
Type 4
Motor No. 822266
VIN 11-15-25
1905

OPERATIONS—BE SPECIFIC

1. 24 21 min. carbon, dried valves and tune motor 12.00
2. 1 2 min. oil - drain and reset 2.76

APPROVED _____
TERMS Cash
Customer's Signature _____
Service Salesman J. A. Baker

Form 902 4-27-25

"Better Service Means More Car Sales"

ment would be prevented. This seems to be a thing some service men will never learn. The owner leaves with visions of a bill for about \$8.00 while the service salesman is thinking about \$80.00. When the bill is presented to the owner—then, as they say in dear old Hollywood—'comes the fireworks.'

"I am supposed to be a legal contract. Properly filled out I accomplish much good and safeguard the good name and interests of the house. Carelessly filled out I am a puzzle and cause much trouble and confusion. I am sick and tired of being in the same category as a page from 'Joe Miller's Joke Book.'

"Therefore, I hereby broadcast an appeal to all service men to help me become more reliable and useful."

Crankshaft Reconditioning

THEO. P. THOMAS—Service Department

Contrary to the general impression over oiling, as shown by excessive oil consumption, fouled plugs and a smoking motor, is not always due to worn pistons and rings. The cylinder walls in Packard motors are lubricated by the oil, which comes out between the sides of the connecting rod and crankshaft, being thrown up onto the cylinder walls. The oil which is fed to the bearings under pressure is forced out through this small opening in a fine mist or spray. The centrifugal force of the crankshaft turning at high speed throws the oil spray up into the cylinder bore.

The pistons are fitted with piston rings to wipe off excessive oil and return it to the crankcase.

The proper proportioning of all the oiling parts, size of oil hole in the crankshaft, the size and position of the oil groove in the bearing, the clearance and end play of the connecting rod on the crank pin and the clearance of the pistons and rings, so that all parts will get sufficient oil without excess, is known as oil balance.

The oil balance is worked out very accurately at the factory but if any one of the factors are changed in service, the oil balance is changed, and it may result in either over or under oiling.

The piston fit and number and type of rings has been very carefully worked out so that the rings will pass sufficient oil for efficient lubrication without passing enough to cause spark plug fouling, smoking or excessive oil consumption.

If the rings and pistons become worn, more than the

intended amount, oil will pass by the rings, causing all three of the troubles just mentioned.

Worn rings are indicated by fouled plugs, and a smoking motor, particularly at low speeds. These, of course, cause excessive oil consumption.

This, however, is not the only cause of excessive oil consumption. If the crankshaft and bearings become worn, out of round, or tapered, the clearance between the connecting rod and crank pin will be increased, allowing more than the usual amount of oil to flow out which, at the higher motor speeds, will be thrown up into the cylinders in such quantities that the rings cannot hold it down and over oiling will result.

When the customer complains of excessive oil consumption while touring, always test the bearings before putting in new pistons or rings.

To test the bearings, the crankcase lower half should be removed and the oil flow from the bearing tested with the Oil Test S. T. 109. (Figure 1.)

The Test Tank should be filled about one-half with used oil just taken from motor and then the tank should be filled with compressed air until the gauge shows 50 pounds. Disconnect the oil manifold from the pump and attach to the hose of the test tank. While turning the motor over with the hand crank, open the valve on the test tank, releasing oil to the bearings.

Oil should drip freely from all bearings, but not flow a steady stream.

Excessive flow from the main bearings should be corrected by adjusting and half metering them. This is done by soldering up the ends of the grooves.

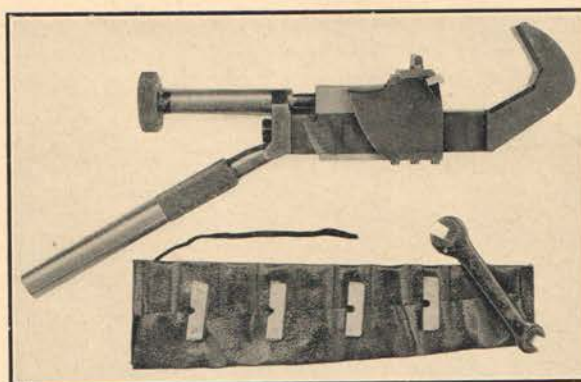


FIGURE 2—S.T. 707

Upon replacing the bearings they should be refit to .001" clearance.

After re-installing the main bearings, remove the connecting rods and measure the crank pins with micrometers to determine if the pins are out of round or tapered. To get a clear picture of the crank pin it should be measured at each end and the center, several readings at different points around the bearing should be taken at each position.

If the shaft is undersize but not more than .002" out of round or tapered, it may be taken up with satisfactory results. When the out of round or taper condition exceeds this amount, the crank pins must be returned and new undersize connecting rods fitted.

An undersize of .015" has been adopted as standard,

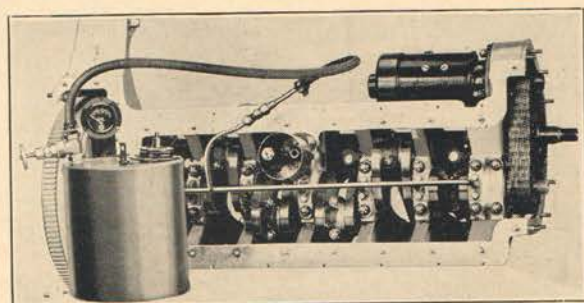


FIGURE 1—S.T. 109

and connecting rods of this size may be obtained from the Service Parts Department.

The crank pins should be returned with crank pin returning tool S. T. 707, (Figure 2) without removing the crankshaft from the crankcase.

Remove all the connecting rods and pistons.

From the roll of blades furnished with each kit, select the blade that fits the crank pin and place it in the tool. The hardwood block which comes with each tool should be inserted between the jaws and the tool tightened upon it to align the blade before locking it in place.

Now put the tool on the crank pin as in (Figure 3) facing it so that it will be turned in the direction of the arrows on the handle.

One man turns the crankshaft by means of the starting crank while the other operates the tool. The tool should be fed, while cutting, with Packard Special Cutting Oil. This oil is a cutting oil developed especially for this use. Using this oil, the tool takes a very smooth cut without any tendency to chatter. The oil may be fed with an oil can, although a small brush used to paint the journal is the best and most economical method.

Packard Special Cutting Oil is furnished in pints S. T. 705 and quarts S. T. 706 by the Parts Department.

The first cut of the tool will remove the high spots, and as soon as these have been all taken down and the blade is taking a smooth cut, measure the shaft again and continue cutting until the desired undersize is reached. Remove the tool and polish the shaft with a worn piece of crocus cloth and oil.

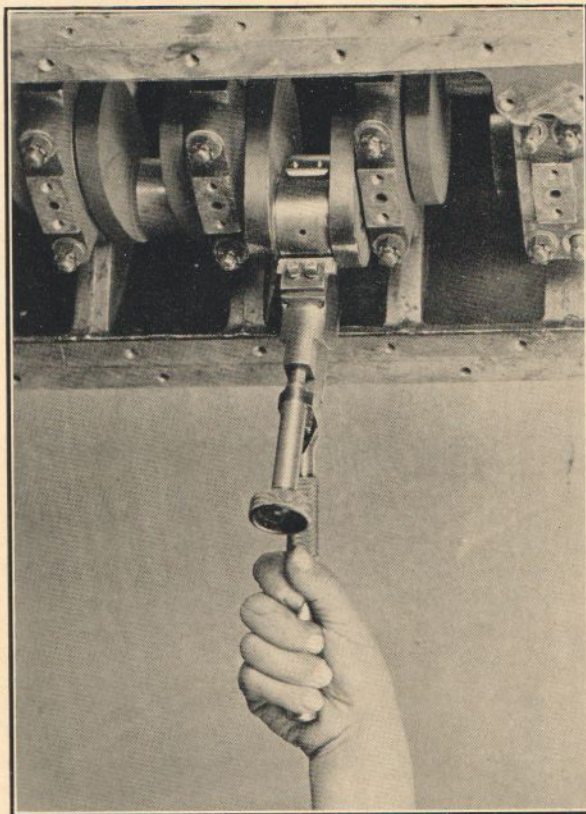


FIGURE 3

The secret of a good job is in turning the shaft slowly at a uniform speed and keeping the bearing well flushed with oil. The tool must be kept tight so that it takes a good full cut, especially on the first few turns while truing up the shaft. Otherwise the scale will quickly dull the blade.

The Special Tool Department is now furnishing .015" undersize sleeves for the bearing reamers S. T. 618 and 619, so that they may be used to fit the connecting rods to the crank pin bearing.

Up the Ladder

"Remember, a man who successfully manages a service department today does not need to worry about a good position and the future will be still more rosy for him."



MR. N. C. ROGERS

"'He profits most who serves best.' It's the truth and you fellows will find yourselves successful in proportion to the extent that you follow this principle."

Such statements in previous issues of the Service Letter give you "Bob" Rogers' convictions of his faith in the value of service work as the best possible training for advancement; and he was so sincere in this belief that his last promotion really didn't come as much of a surprise.

You fellows who think there are no opportunities in the service department—glance over this record:

Factory Parts Department

Manager of Factory Parts Department

Special Service Representative

Detroit Branch Service Manager

Service Supervisor

Traveling Service Instructor

Editor Service Letter

And now promoted to District Manager's Office.

We know that you join us in sending "Bob" Rogers on to his new work with the very best wishes for his success and happiness.

Oil Filter Replacement Units

Some confusion has arisen in the Service Field in regard to the replacement units furnished for the 526-533 and 443 model oil filters.

In the original filter for these models the oil entered the center of the filter, passed through the filtering cloth, to the outer edge and came out at the outlet hole in the filter head with an inspection plug opening to show whether or not the filter unit was operating correctly.

In February of this year we installed an improved unit in which the oil flow was reversed, entering at the outlet hole and filtering from the outside through to the center of the cartridge thence out through what was formerly the inlet hole in the end casting. We furnish only the latest type unit as we have found the inspection feature to be of little value, in fact, it has been discontinued entirely for this year's models, and better results are obtainable from the improved unit.

The replacement unit for the 526-533 is carried in stock under Pc. No. PA-1483, the 443 unit under Pc. No. PA-1488, the 626-633 unit under Pc. No. PA-1481 and the 640-645 unit under Pc. No. PA-1482.

Current Motor Numbers

526 motor numbers started at 125013 and stopped at 166773. 443 motor numbers started at 225013 and stopped at 232813.

If the 526 series became the 626, and the 443 became the 640, it is apparent that the 626 would soon be crossing the 640 numbers.

To prevent this a switch was made and the 626 numbers started with 233013 while the 640 numbers started with 167013. In other words, the Six motor number series became the 640 numbers, and the old Eight series became the 626 numbers.

Because of this switch of series it will be advisable on repair orders to show the model designation as well as the motor number for the easy identification of cars.

It Doesn't Mean a Thing

The word *defective* on a D-14 claim tag is about the most useless thing imaginable. An inspector in the returned goods department presumes that you are sending the old broken part in because it is defective. He isn't expecting a Christmas present from you and he doesn't suppose that you are sending it in for use on his Ford—he knows that you consider it defective—it isn't necessary to tell him so. But for the love of Pete, he is interested in knowing the motor number, the delivery date, the mileage and the mail order number. He must know the reason for removing the part and the claim with the clear-

est description of why the part was removed from the car is the claim that is handled fastest. Help him give you what you want—speed in getting credits back to you.

Lubricator Valve to Manifold Connections

We have recently made a change in the type of fitting used to connect the motor piston lubricator control valve tube to the manifold tube on the cylinder block. This connection, which was formerly made by means of a two-bolt flange and gasket, is now taken care of by a threaded union.

Reground cylinders will be shipped with either type fitting, depending upon what we have in stock and in order to connect the lubricator valve to the cylinder block, it will be necessary to install the motor piston lubricator control valve to motor cylinder manifold tube assembly having the corresponding fitting.

Pc. No. 167192 for models 626-633

Pc. No. 167758 for model 640

Pc. No. 167191 for model 645

cover tube assemblies with two-bolt flange connections at the cylinder end.

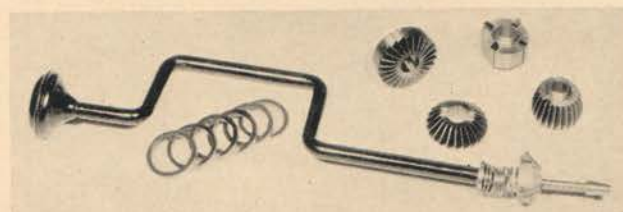
Pc. No. 169024 for models 626-633

Pc. No. 167996 for models 640-645

cover tube assemblies with threaded union nut on both ends. Your Parts Department should have both types on hand.

626 Valve-Seating Tools

The 626 valves are smaller in size and you will need the following parts added to ST-669 to complete your equipment:



Equipment No. ST-728

Part No.	Name	No. Req.	Net
ST-1236	1— $\frac{7}{8}$ " 45° Finish Cutter	1	\$3.25
ST-1356	1— $\frac{9}{16}$ " 75° Throat Cutter	1	3.25
ST-1237	2" 10° Top Face Cutter	1	3.25
ST-1357	1— $\frac{9}{16}$ " Replacement Seat Cutter	1	4.00
ST-1241	Cutter Bushings	2	.50 ea.
ST-1354	Glaze Breaker	1	5.00
ST-1353	1— $\frac{9}{16}$ " Replacement seats	6	.25 ea.
ST-1242	Equipment Box—New and Old Tools	1	5.75
ST-728	Covers Equipment shown in Cut		24.00

Piece No. 1354 is a valve seating glaze breaker which can be used on all models. This tool holds three round files held at the proper valve angle and is used to break the glaze on the seats. These files can be rotated in their seats and can be replaced at 25¢ for the set of three.

We Welcome Suggestions and Inquiries from Packard Service Men
Address All Communications Care Editor, Packard Service Letter