



## STICKING VALVES



You can not promise any owner that you will fix his motor so that he will never again have valve trouble, but you *can* figure out why any case of sticking valves has developed, and you *can* explain the situation to the owner so that he will not blame you or the car if it occurs again.

And in most cases you can fix the motor so that it will stay put for a reasonable length of time. But you *can't* do these things unless you study the evidence intelligently and figure out what has happened.

Here are the reasons for sticking valves:

1. Oil carbon
2. Gasoline gum
3. Rust
4. Mechanical

We will talk about these one at a time.

1. Oil carbon deposits on the *upper end* of the exhaust valve stem and in the *top* of the guide. It is most apt to be found in motors whose oil consumption is high and which operate at high temperatures because of hot weather or hard driving. The more oil the motor burns and the hotter it gets, the more oil carbon will be formed.

A sticking condition caused by oil carbon usually develops at high mileage and handling the customer is not a problem. Sometimes, however, high oil consumption suddenly develops at low mileage. It almost always means plugged rings; and plugged rings in such motors are almost always caused by sludged oil.

2. Gasoline gum is caused by a combination of stale gasoline and heat. It looks like shellac and may deposit in the fuel pump, in the carburetor, or on the valve stems. It can be identified by the ease with which it can be dissolved by a solvent such as lacquer thinner.

The formation of gasoline gum has no connection with the age or condition of the motor. It may appear suddenly and without warning. It is most likely to occur in warm weather and may develop from any gasoline which has been stored for a considerable period. See the Service Letter of April 1, 1943.

3. Rust has been our biggest problem. It is caused by the condensation of moisture on the exhaust valve stems, and in the guides. It is apt to occur only in motors whose oil consumption is low. Even in such motors it will develop only in cold weather and in cars which make slow, short trips with frequent stops.

War time driving has caused a marked increase in rusty valves because the majority of cars are driven on slower, shorter trips than before. Every effort, therefore, should be made to protect the motor in cold weather in order to maintain an efficient operating temperature.

Cars with high mileage seldom develop rusty valves, even on short trips, because of their increased oil consumption. The additional oil provides a protective coating on the stems and in the guides which resists the moisture corrosion.



The easiest way to provide this protection for motors with low oil consumption is to add a light oil to the gasoline—about one pint to eight gallons of fuel. It is not necessary to do this in the summer, but with the coming of cold weather it will be the best insurance against rust.

We do not criticize "top oilers", but the addition of oil to the gasoline is simpler and cheaper. We believe that it is equally effective.

4. Some times a motor will develop symptoms of sticking valves shortly after a valve job has been performed, and yet an examination of the stems and guides will not show enough carbon, gum or rust to cause trouble.

This means that the valve job was not properly performed. It may be that the valve stems were not centered in the guides when the valves were ground. Also, bent stems some times develop when a stuck valve is removed, and unless this condition is found and corrected the result will be the same. In either case one side of the stem will be scored and will show a heavy bearing against the guide.

Another possible cause for a "comeback" is failure to properly clean the guides. We know of many cases where guides have been cleaned with old, worn reamers which did not remove the deposits, so that the stems did not have sufficient clearance. The stems and guides should be as smooth and clean as you can make them.

You must also bear in mind that the springs compress in service and that every time the valves are reseated the spring load is reduced. Refer to the Service Letter of May 1, 1943 regarding the use of an additional washer to increase the spring load.

When a car comes in with sticking valves you *must* study the evidence. Until you have done so you can not handle the job intelligently. If you find any cases in which you can not identify the cause we would like to have you give us the details.

## IMPRINTING CHARGES

July 10 the following imprinting prices are effective. This is a slight increase, but due to the quantities handled we feel sure are lower than can be obtained locally. However, if local

prices are lower promotional mailing pieces may be ordered from the Factory without imprinting.

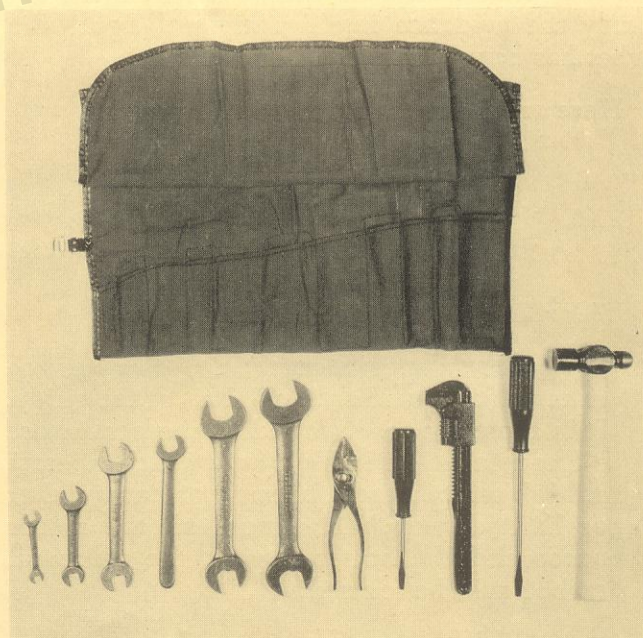
Minimum up to 100.....	\$ .85
101 to 200.....	.90
201 to 300.....	.95
301 to 400.....	1.10
401 to 500.....	1.15
501 to 600.....	1.25
601 to 700.....	1.35
701 to 800.....	1.45
801 to 900.....	1.55
901 to 1 M.....	1.65
Additional C's.....	.20

The above prices include a three line Dealers imprint. Extra composition over the three line Dealers imprint will be 15c per line.

Shipping direct to destination 15c per package up to 1M. Additional thousands, 15c per thousand.

## TOOL KITS AVAILABLE

Illustrated is a tool roll and a kit of tools that many customers will be anxious to buy.



These were obtained for export cars and we are making them available at a suggested list price of \$3.40. We doubt if a similar kit can be purchased anywhere on the market today at any price. Dealers should order from distributors, specifying part No. 317620 Tool Roll Equipment.



## DOOR LOCK MECHANISM LUBRICATION—CLIPPER

Failure to oil the door lock mechanism permits the working parts of the lock to become rusty.

The first indication is likely to be found in a sticking condition in the handle when an attempt is made to open the door. This occurs after the car has been driven. After the handle is forced to the open position the door opens and closes freely, and does not stick again until the car has been driven once more.

Many service stations attempt to correct the condition simply by lubricating the outer portion of the rotary bolt and the dovetail. This will not cure the trouble, because the sticking develops inside the lock mechanism.



The illustration shows the two oil holes in the face of the door pillar which admit oil to the mechanism.

The lock should be lubricated through these holes, and the operation should be included in the regular chassis lubrication. The contact surfaces on the dovetail and the exposed part of the rotary bolt would, of course, be lubricated at the same time.


If the lubrication of the lock mechanism is neglected for a long period it may become so rusty that the oiling operation will not take care of the sticking condition. In this case the lock must be removed. If it cannot be cleaned, or if the linkage is badly worn, the lock must be replaced.

## PARTS DEPARTMENT HELPS


A complete up to date set of Sell More Parts Bulletins is being mailed to each distributor and dealer. Study the items listed. They are fast moving, easily sold items. Order what you need and display them. Many of these items can be sold on the service floor and over the parts counter. Many require no labor for installation. Even with a busy shop, added profits may be had through parts sales.

A large number of these items are provided with display cards or boxes. They almost sell themselves if properly displayed. Additional parts sales will result from the sale of repair kits and gasket kits. But you have to have them on hand before you can sell them.

Other items such as fuse kits, pedal pads, floor mats, gas tank covers and windshield wiper blades are easily sold if they are out where customers can see them. Show them and suggest that customers buy. Put on a real selling drive on the items shown in these Bulletins, and your parts sales will go up. Many have quantity prices giving you increased profits.



### SELL MORE PARTS BULLETINS



PACKARD MOTOR CAR COMPANY

Check your sales on these items for the last 30 days then go after this business aggressively. You will be surprised at what a little extra effort on your part will do.



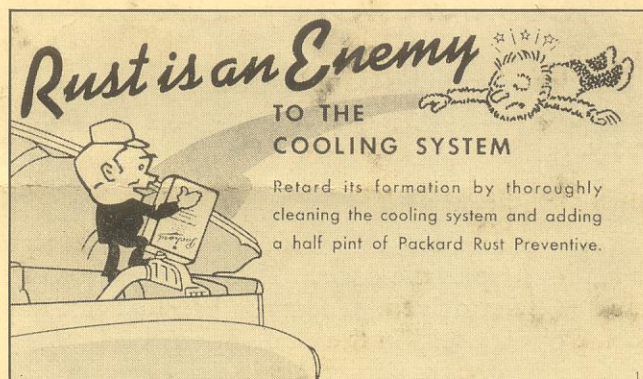
## HOW TO USE THE PACKARD PARTS BOOK IF YOU **KNOW** THE NAME OF THE PART

1. Decide whether the part is a chassis or body part.
2. Turn to the chassis or body index.
3. Decide what group the part is in.
4. Locate the group in the index.
5. Locate the unit in which the part is used or to which it is attached.
6. Use the index number as a page number and an item number.
7. Turn to the page on which the index number is shown in the upper outside corner.
8. Follow down the index number column until you locate the correct number.
9. Check the part name and locate the correct model or body type for which the part is needed.
10. In the part number column opposite the model number or body type number will be the part number desired.

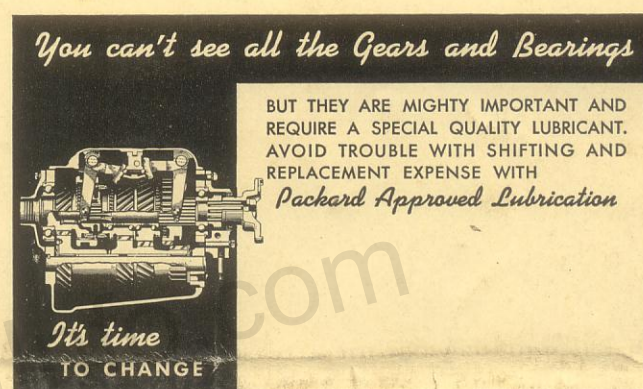
## IF YOU **DO NOT KNOW** THE NAME OF THE PART

1. Decide whether the part is a chassis or body part.
2. Turn to the illustration index on inside of front cover. Locate illustration part should be in.
3. Turn to the page number shown and locate part and index number.
4. Turn to the page on which the index number is shown in the upper outside corner.
5. Follow down the index number column until you locate the correct number.
6. Check the part name and locate the correct model or body type for which the part is needed.
7. In the part number column opposite the model number or body type number will be the part number desired.

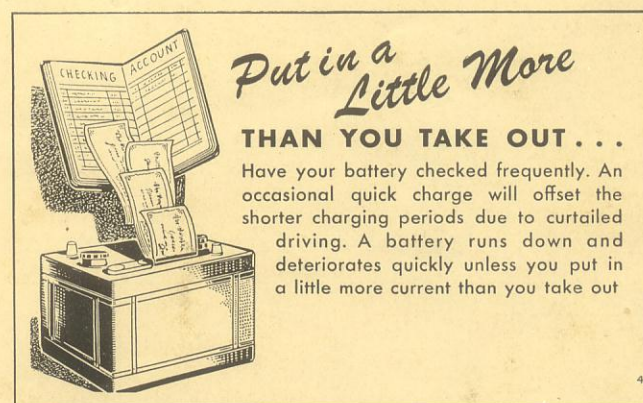
## TIMELY POSTAL CARDS



Card No. 1



Card No. 10



Card No. 42

Urge your customers to come to you. These cards are supplied by the factory no charge. They are printed on government one cent post card stock and a charge is made for the stamps. Imprinting your firm name is charged at the following rates. 100 cards cost \$1.00 for stamps and \$ .85 for imprinting firm name—200 cost \$2.00 per 200 for stamps and \$ .90 for imprinting.