PACKARD
Service Counselor
PARTS ★ ACCESSORIES ★ PRODUCT ★ PROFITS
INSTITUTIONAL PROMOTIONAL
APPROVED Packard SERVICE
VOL. 22, NO. 13 NOVEMBER 1, 1948

ROTATE TIRES AROUND CAR

for better service, more mileage and smoother performance

One of the most important aids to greater tire mileage, and one too frequently neglected by car owners and tire dealers alike, is the regular rotation or changing of wheel positions of automobile tires. Too often, tires are run without switching until worn out. Too often, the only time the spare tire is put into use is when tire trouble is encountered. The result is loss of valuable tire mileage and reduced car performance.

In many cases where spotty and uneven front tire tread wear is experienced, and after alignment and other mechanical adjustments were found to be correct, the trouble was traced to the simple fact that wheel positions of tires had not been changed even once during their entire life.

It is also a fact that the tires on your car do not wear equally in the different wheel positions.

Rear tires wear faster because they are power driven. But rear tires wear more evenly than front because of the equalizing effects of braking, traction and power drive.

Front tires wear slower because they are free rolling —not power driven. But front tires wear less evenly than rear because the continuous steering and turning distorts them more. This can happen even when the front-end adjustment of the car is within specifications.

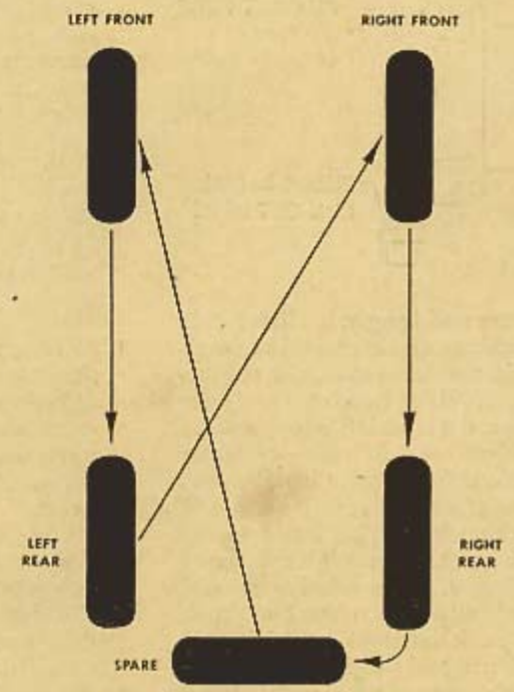
Besides that, rotating *all 5 tires* on your car substantially increases their total mileage. For example: If tires are rotated every 3000 miles, when the *car* has been driven 15,000 miles *each tire will have traveled only 12,000 miles.*

Switching tires regularly helps to maintain the original quiet, smooth ride and balance built into them by the manufacturer, because it minimizes uneven and spotty tread wear which generates tire noise, vibration and unbalance. . Assures SMOOTHER Car Performance.

Changing wheel positions of tires, including the spare, every 2000 to 3000 miles, or at very latest not over 4000 to 5000 miles, is essential to EQUALIZED TREAD WEAR — LONGER TIRE LIFE — A SMOOTHER RUNNING CAR — LESS TIRE EXPENSE — GREATER SAFETY.

Don't forget to use that spare tire! A tire needs exercise to keep it in good condition. And too, using and resting a tire periodically greatly lengthens its life.

The diagram shows a simple, inexpensive way to rotate wheels around car without demounting tires.



L.H.D arrangement

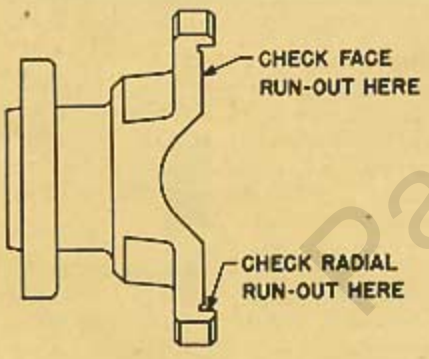
Diagnosis and Repair of High Speed Roughness

Complaints of high speed roughness are sometimes quite difficult to correct since any one of a number of conditions may be responsible. A careful diagnosis must be made to avoid unnecessary work.

Roughness at speeds of 60 miles per hour and over are generally attributed to one or more of the following:

1. Wheel unbalance is a very common cause of roughness and should be the first item to be checked when working on a complaint of this nature.

2. Universal joint flange runout either at the face or a radial runout at the universal joint bearing mounting flange should be checked. The permissible runout at the face is .004 inch and the radial runout at the inside of the bearing mounting flange is .004 inch. This runout should be checked with a dial indicator mounted in such a manner that the flanges may be turned to make the inspection.



3. In cases of long wheelbase cars which use an intermediate bearing in the drive shaft, the mounting of this bearing and the channel which supports the bearing should be carefully checked for proper installation. The intermediate bearing bracket should be loosened as well as the bracket support in the frame. The bearing should be allowed to neutralize itself and seek its own position and then properly tighten the bolts which were previously loosened. After the support is properly tightened in the frame, it should be possible to move this support by hand since there is no metal to metal contact with either the bearing or the frame.

4. Unbalanced drive shafts are also a cause of roughness. Shafts which are currently being carried in Service Stock have been balanced to very close limits on precision balancers. In the case of overdrive equipped cars there have been cases in which the overdrive pinion and cage assembly, the ring gear, and the overdrive clutch sleeve have been unbalanced which causes a roughness similar to the drive shaft.

To properly diagnose the cause of roughness, the car must be ridden by the most competent man available. Simpy taking the customer's word should not be considered sufficient. The following is a suggested outline of steps to use when diagnosing this type of complaint.

1. Test the car and note the exact speed at which the roughness is noted. If the car is equipped with an overdrive, check the speed both in overdrive and in conventional gear. If the roughness is noted at different speeds during the above test, the roughness will be caused by either the transmission or the engine. If no change in speed is noted, the roughness may be then considered to be caused by unbalance either in the propeller shaft and universal joint assembly, the universal joint flanges, the overdrive, or the wheels.

2. If the roughness appears to be caused by the running gear, all wheels and tires should be carefully balanced with the brake drums and the car again tested on the road.

3. If roughness is still evident in the case of a long wheelbase car, examine the intermediate bearing and support assembly to determine whether or not it is properly installed and properly neutralized. If no correction is found necessary at this point, remove the propeller shaft and check the flanges for runout. The intermediate flange and the differential flange should be checked at this time.

4. If the runout at these two points is within limits, jack the car up and run the engine with the transmission in high gear position so that the speedometer shows the exact speed at which the roughness was noted during test.

5. If roughness is still present, the front propeller shaft should be removed and the transmission flange checked and replaced if necessary. The front drive shaft and intermediate bearing should then be installed and a recheck made at the same engine speed. If the roughness is still present it may be necessary to renew the front propeller shaft or the intermediate bearing.

6. If, after the above operations are performed, the roughness is still present, and the car is equipped with overdrive the overdrive should be disassembled and the parts referred to previously should be replaced.

7. If the roughness is not evident after the propeller shaft universal joint assembly has been removed and the differential flange has been checked for runout, it may be assumed that the original propeller shaft is unbalanced and should be replaced.

8. If, after the installation of a balanced propeller shaft, roughness is still evident, the car should again be jacked up and the rear wheels removed and the engine again run at the speed at which roughness is noted. If the roughness is not now evident, it is an indication that the rear wheel balancing is incorrect. If the roughness cannot be felt with the car on the jack but can be detected on the road, the front end should be jacked up and the front wheels spun at high speed with a wheel spinner.

By following a carefully planned method of diagnosis, complaints of this kind can usually be corrected without an excessive amount of work. Once the frequency of drive shaft roughness and wheel unbalance roughness are known by the man making the diagnosis, he will in most cases be able to determine which of these two causes should be investigated. The frequency of drive shaft roughness is approximately four times faster than wheel roughness due to the rear axle ratio.

Rear Axle Shaft Oil Seal Leaks

22nd Series

Numerous Product Reports have been received from the field on (1) oil or grease on rear brake linings causing brakes to grab and (2) differential oil leaking past rear axle shaft oil seals. In most cases, under "What Was Done To Correct Trouble" the Product Reports state "New oil seals installed."

Replacing the axle shaft oil seals will not always correct these conditions since they may recur if other non-standard conditions exist and are not corrected.

Oil or grease on the rear brake linings usually is caused by the brake support plate drain holes being plugged, plus either a leaking inner oil seal or an excessive amount of grease in the axle shaft bearings. Oil leaking past the inner seal or the excessive bearing grease, in time will be forced out past the outer oil seal and into the outer oil seal guard. However, if the support plate drain hole is plugged with road dirt, undercoating material, or grease, this leaking oil or excessive grease cannot escape but accumulates in the oil seal guard and eventually is thrown into the brake drum and onto the linings. It is important that these drain holes be kept open at all times.

Differential oil leaking past the inner seal is not always caused by a faulty or defective seal. A number of other conditions may exist and cause a leak at this point.

The first step in determining the reason for a leaking inner seal should be to check the rear axle oil level. Many leaks are caused by an excessive amount of oil in the axle housing. The oil level always should be maintained at the bottom of the filler plug opening.

The axle housing vent or breather should be checked by probing with a piece of wire as shown in figure 1. On cars which have been undercoated, the inside of the breather cap also should be inspected and, if necessary, cleaned to remove any undercoating material which may have lodged in the cap. If the breather vent is plugged or restricted, the normal rear axle heat will create a pressure build-up and may force the oil past the seals.

Fig. 1

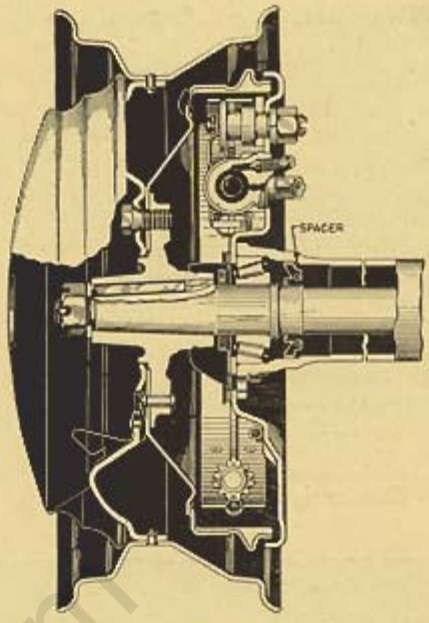


Fig. 2

Lubricant emerging from the brake support plate drain holes usually indicates a leak at the inner oil seal. However, in some instances, the axle shaft bearing grease will work out of the drain hole and run down the support plate. This occurs when the axle shaft bearing has been overpacked. If close examination reveals that the drained material is bearing grease, corrective measures usually are not necessary since this condition generally clears up after the excessive grease has been drained off. However, if differential oil is found mixed with the bearing grease, the axle shaft should be removed and the leak at the inner seal corrected.

After removing the axle shaft, closely inspect the seal running surface on the shaft for machine marks, grooves, or roughness and replace the shaft if necessary. If no defects are found, inspect the contact area of the seal where it contacts the shaft running surface. It may be found that the inner edge of the seal is not contacting the running surface but is extending beyond it. If this is the case, the part which contacts the running surface will have a polished or burnished appearance while the inner end will show no signs of contact. When this condition exists, it may be corrected by cutting a single coil from a horn ring spring and using it as a spacer behind the oil seal as shown in figure 2. This will move the seal outward and permit the seal to

fully contact the running surface on the shaft.

Another condition which may be encountered is that of oil leaking past the outside of the inner oil seal or, in other words, leaking between the seal and the bore in the axle housing. To overcome the possibility of a leak of this kind, a light coat or film of gasket paste should be applied around the inside of the bore in the housing before installing the seals. Apply the gasket paste only around the area which is in contact with the outside of the seal retainer and apply only enough to form a positive seal.

Carelessly installing an axle shaft also may cause a leak at the inner oil seal. When installing the shaft, it should be supported as shown in figure 3. If the shaft is just started into the seal and then pushed into the housing while the weight of the shaft is resting on the seal, the seal may become scuffed or the seal retainer may be distorted.

In conclusion, maintaining proper axle shaft end play should not be overlooked. In many cases, axle shaft seals become worn and develop leaks if the shaft end play is allowed to remain excessive. End play should be maintained within the specified limits of .004 inch to .007 inch.

Fig. 3

Lubrication Changes

All Clipper and 22nd Series Models

Occasionally you may encounter cases where an overdrive or transmission unit has a slight hum or vibration period which develops only after the oil becomes hot and thins out. In such cases, it may be advisable to use S.A.E. 140 oil in the summer since this heavier oil will deaden the hum or vibration considerably.

The new specification for front wheel bearing lubrication now calls for each wheel to be packed with two ounces of fiber grease instead of four ounces as previously specified. Two ounces of grease in each wheel provides adequate lubrication of the wheel bearings and reduces the possibility of brakes seizing due to grease getting on the brake linings if the wheels are accidentally packed over the specified recommendation.

The Factory recently revised the lubrication specifications for the transmission, overdrive, steering gear, and front wheel assemblies. These changes are applicable to all Clipper and 22nd Series models.

Prior to these recent changes, S.A.E. 140 straight mineral oil was specified for summer use in the transmission, overdrive, and steering gear assemblies. S.A.E. 90 oil was specified for winter use in these units.

This seasonal change no longer is considered necessary and S.A.E. 90 straight mineral oil may be used for both winter and summer. If gear shifting and overdrive engagement difficulties are experienced during extremely cold weather, S.A.E. 80 oil should be used.

IMPORTANT

The Factory Parts and Accessory Warehouse will be closed for annual inventory November 22, 1948 through December 3, 1948.

Additional Parts for Repairing Electromatic Control Valve

Service Counselor Volume 22, No. 12, of October 1, 1948, announced the Electromatic Control Valve Repair Kit. In addition to the detail parts listed under the heading "Order as Required", it is now possible to obtain the Spring under part No. 410504, the Seat No. 410505, and the Valve No. 410406, which are parts of the control valve assembly. When the valve does not require replacement but can be reconditioned, these detail parts may be obtained.

The part number of the valve operating lever was given in the original list as No. 398898. This should read No. 389898.

New Type Anti-freeze Tester

A new Prestone anti-freeze has been on the market since early 1948. This anti-freeze has the same ethylene glycol base, but new heavy-duty corrosion and foam inhibitors have been added.

The freezing protection is the same as their previous formula and there is no change in the official protection chart. However, the specific gravity has been changed in the anti-freeze and, as a result, the anti-freeze testers manufactured before 1948 will not correctly read the freezing protection.

To compensate for this change, a new tester known as Eveready No. 59 has been manufactured by the National Carbon Company. This new tester should now be used to check Prestone anti-freeze. It is also suitable for checking "Trek" methanol, ethyl alcohol, and other solutions that have the same specific gravity or freezing point relationship as Prestone.

PRINTED IN U. S. A.