

## Expert Advice For the Automobile Owner

Queries and Replies Covering Matters of Importance to the Man Who Runs a Car

My car used to make about eighteen miles per gallon of gasoline. This year it is not making over eight. It misses until speed gets up to ten or twelve miles per hour. When the engine becomes heated the spark lever works very badly. What is the cause of this?

Since your car misses only at speeds below twelve miles per hour and then only when warmed up, it seems likely that the heat causes a slight leakage either by warping a valve or by expanding a valve stem. Test the compression when the motor is warm, and if any cylinder is weak see whether it is not due to lack of clearance between valves and push rods or to a warped valve. These defects would cause enough leakage to make the motor miss fire when the throttle is nearly closed, but yet not enough to make it miss at wider throttle openings.

Faulty carburetion may also be the cause of the misfiring. Reduce the richness of the mixture when running slowly and see if this makes any difference. It is possible that the reduction in charge weight caused by the heating of the air is sufficient to decrease the ratio of air to gasoline enough to prevent combustion, although when the motor is cold enough air is taken in so that the motor will run all right.

Another possibility is that there is a leak in the intake manifold due to its warping out of shape when heated. Tighten up bolts holding the manifold, and if necessary put in new gaskets. See that the brakes are not dragging and that the spark advance has not slipped so that you are running with it retarded.

Why are so many manufacturers doing away with radius rods?

The principal reason for discarding the radius rods is simplicity. It is obvious that when the drive is taken directly by the springs the manufacturer has saved on the cost of production and also reduced the number of wearing parts. Many manufacturers believe that the drive can be just as successfully transmitted through the springs as through radius rods, but as both constructions are widely used it is difficult to say which is better.

Is it easier to pump up a tire with the wheel jacked up when the weight of the car is resting on the wheel?

Theoretically it is slightly easier to pump up a tire when the weight is removed, but the difference is so small that it is doubtful whether any ordinary gauge would measure it. The extra work required represents the amount of work to lift the weight on that wheel through the distance that the inflated tire lifts the rim off the ground, this distance being approximately three inches. But this is divided up among so many pump strokes that the extra work is not felt, and it is probably just as economical of energy to do it this way as to jack the wheel up.

What are the specific advantages of six cylinder over four cylinder motors?

The advantage of greatest importance is that the six has a more even torque, or turning effort, than the four, because there are three explosions to each revolution against two per revolution in the four. The average six will throttle lower than a four of the same size.

Kindly inform me how to determine when the front wheels are out of alignment, and how can I straighten them?

The alignment of the front wheels can easily be determined by measurement. With the wheels pointing approximately straight, measure the distance between the two wheels, at the front and rear. They should be one-quarter inch nearer at the front, but not any more. The adjustment is made by shortening or lengthening the tie rod.

Please tell me how to place old shoes over new, and is it a practical thing to do?

To use the old tires do not cut the head off. You have to take the casing off the wheel and force it into the old casing and then apply both to the wheel at once. Many claim this gives a practically puncture proof tire and one that lasts longer than the single shoe. It is desirable to have good inner tubes on account of its being too much trouble in changing in case an old tube gives way. So far as heat and sand are concerned, many claim they do not seem to amount to anything, though others declare they render the idea impractical. The old casing is supposed to fit so tightly over the good one that there is no slippage, and it protects the good tire from road heat. Some drivers, however, cut slits in old casings around the whole tread from head to head. They say it makes them easier to apply as well as to allow ventilation. These slits are cut about every four inches and about one-half inch of the material taken out. Authorities disagree on the practicality of the scheme of using old shoes in this way, but individual cases seem to have been satisfactory or the reverse according to the conditions and the intelligence used in applying the old shoes.

Please tell me how to prevent water leaking out of the grease cups at either side of the water pump?

You are using too light a grease in these grease cups, with the result that when the motor gets warm the grease becomes very fluid and allows the water to leak. In hot weather you should use a heavy grease. Probably the hardest that you can buy will be the most satisfactory. However, as soon as cold weather sets in substitute a lighter grease.

On my car a universal joint is used between engine and transmission, this universal consisting of a cross floating in the yokes of clutch and shaft. The assembly, unless kept carefully adjusted, is noisy and does not retain oil for a length of time. Could I substitute a leather universal?

The joint between the engine and gear box is designed to take up any misalignment between the clutch and the gear shift, but it often happens that the gear box drops, throwing the shaft out of alignment to such an extent that the drive becomes noisy, and this is probably the cause of your trouble.

It is doubtful if the fitting of a leather universal would be wise, because, although it would silence the drive, it would take care of the misalignment, the noise which shows that there is a faulty alignment would be gone, and there would be no warning to enable you to know when to correct this. It occasionally happens that a sudden jolt will cause a drop in the level of the gear box due to a looseness in the bolts which hold it in position. This can be remedied by restoring the gear box to its proper alignment.

It is also very probable that the rear axle gears are badly out of adjustment and that the vibration produced as a result of this is transmitted to the joint between the engine and gear box and given off at that point. You should not only have the engine and gear set aligned, but also have the rear axle inspected and the gears readjusted, should it be necessary.

I change the oil in my crank case about every 500 or 600 miles. Would the oil I take out be all right to use in the transmission or would it wear the gears?

It is a good idea to use the oil from the crank case in the gear box. After use for considerable time in the motor the oil takes on a gummy consistency, which renders it unfit for good motor lubrication, but good for use in lubricating the gears in the gear box on account of its tendency to adhere to the gear teeth. It is better to strain it for use in the gear box.

My motor heats too much and the thermo-siphon system does not do its work properly or the heating is caused by another source. I believe my carburetor is adjusted properly, there is no slipping fan belt or loss of compression, but still the engine overheats. As the car has not been run over 3,000 miles the carbon cannot be the cause. Can you explain this?

It is most likely that your trouble is due to driving with the spark retarded too far, although it is impossible to say with certainty that this is so. Try driving your car with the spark advanced as far as possible at all times without the motor knocking.

There are many other things that might cause your motor to overheat, however—carbonized cylinders, poor water circulation, incorrect timing of motor, dragging brakes or possibly excessive friction. Just as you state, it is not likely that the trouble is caused by carbon, but in looking for the cause it is not wise to neglect this possibility, for the reason that motor troubles are often caused by the most unexpected circumstances. Note whether the water is circulating freely, and if not try to find where the trouble is, whether it is due to dirt, loose pieces of rubber obstructing the passages or what not. Remember that with a thermo-siphon system the water will not circulate at all as soon as the level drops below the discharge header in the top of the radiator. Circulation of water in the thermo-siphon system is dependent on the fact that the column of water, considered as such for simplicity, in the pipes and water jackets is lighter than the column in the radiator because it is warmer, and water expands and grows lighter as it is warmed. Therefore if the level of water drops below the outlet pipe circulation must stop. It is well to note whether you have not been running with the water below this point. Or it is possible that you have a slow leak and that in the course of an afternoon enough water leaks out to lower the level enough to stop the circulation, as described.

If there is dirt in the radiator flush it out thoroughly, and if there is any grease in the water wash it with a hot solution of sodium carbonate in water, one handful of carbonate to a pail of water. See that the rubber hose connections are in good condition.

As a last resort check up the valve timing by the marks on the flywheel, and if there are no marks you had better write to the maker for information on this point.

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