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Tractor service hints - Preventive maintenance

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THE meaning of the term “Preventive Maintenance” is easily understood. It refers to those items that can be carried out by the owner-operator and which, when correctly performed, should normally ensure trouble-free operation, and prevent mechanical failures, thus saving costly repair bills and even more costly loss of time.

Preventive maintenance is that duty which is necessary on the tractor when it is doing its job efficiently, and it has as its primary object, the continuance of this efficiency. Failure to have these most important duties attended to at the proper time is usually the result of simple procrastination on the part of the operator, or may be due to the fact that the log book has not shown that such services are due.

The first item of preventive maintenance is the daily check and here I would like to stress that the proper time to carry out the daily check is at the conclusion of the day’s operations and not at the beginning. A tractor should always be left in such a condition, that it is ready at a minute’s notice to be put to work. Some owners may not agree with this, but how many farmers can actually forecast at the end of the day’s work, how long the tractor will be idle before it is again started up?

**THE DAILY CHECK**

The daily check then comprises these items: checking the water in the radiator and the oil levels in the engine, transmission and rear axle. Where these are low they should be topped up. Next comes the filling of the fuel tank and, if it is a diesel tractor, be sure that adequate precautions have been taken to ensure that clean well-filtered fuel is used. Make sure that you clean thoroughly around the tank filler cap before removing it. The primary air cleaner should receive attention daily and, under extra dusty conditions, it may be necessary to attend to it more than once daily. Check tyre pressures, an important item if you want maximum performance from the tractor. Finally, if the tractor is left in the field, make sure it is covered, and always cover the exhaust pipe outlet to prevent water from entering at this point. When the operator has put the tractor away after a day’s work it is good to know that it has been serviced and is all ready to be put to work.

**ENGINE OIL FILTERS**

Now just a few words about oil filters which are even more important, of course, on diesel than kerosene engines. The oil filter cartridge should be changed under normal conditions after approximately 200 hours of operation, but the time to change will be known to the operator, by the colour and condition of the engine oil. This in turn will be affected by the frequency of the intervals of oil change, and the conditions under which the tractor operates. Heavy load conditions will require engine oil changes at more frequent intervals and thus the replacement of the filter cartridge may also be required more frequently. To use an oil filter cartridge for a longer period than its useful life is false economy, as when the cartridge has reached the saturation point, engine oil will by-pass the filter and will thereafter be fed to the bearings in an unfiltered condition.

It is opportune, while discussing oil filters, to mention the oil bath air cleaner. This cleaner has to take care of any dust that gets past the dry primary cleaner and should have the sludge removed sometimes as often as twice daily. Here again it will depend on whether the tractor is
operating under dusty conditions, and the degree of attention that the primary cleaner receives.

**FUEL FILTERS**

Fuel filters again, have a more important duty to perform on the diesel engine and we find that the design of these filters is such that fuel line connections to the fuel pump and filter need not be taken apart when servicing these items. Filters are designed to protect the fuel pump from harmful abrasive matter that would cause wear in the pump elements and possibly blockage of the injector nozzles. It can truly be said, that if only clean fuel is fed to the pump, the life of this expensive component will be indefinitely prolonged without any necessity for major overhaul.

There may be one, two or three filters in the fuel system of your tractor but it is foolish to rely on the filters to keep all foreign matter from getting through. Certain precautions are necessary when handling fuel so let us go briefly through the simple procedure of filling the fuel tank. Firstly, remember the advice already offered, that this should be done at the end of the day's operations, because water droplets form in an empty or partially empty tank due to condensation of the moisture from the air. Even though precautions are taken to fit a glass sediment bowl in order to trap such moisture it is much safer to prevent the formation of water in the tank by filling with fuel and thus forcing all air from the interior.

Fuel is drawn from either a bowser or drum and usually 44-gallon drums are the source of supply on the farm. These should be stored in such a way that water cannot remain in a pool around the filler plug. Stand the drum on end, slightly tilted so that the filler plug is at the highest point. The drum selected for filling should be left undisturbed for several hours in order that any water or sediment will have time to settle in the bottom, and the pump should always be placed in the drum so that it does not extend to the bottom.

Remove the filler plug after having cleaned thoroughly around it so that dirt does not fall in when the plug is removed. The pump that is used for drawing fuel from the drum must be equipped with an efficient filter, and remember also, that the hose leading from the pump to the fuel tank on the tractor must be scrupulously clean, both inside and at the end of the hose, before this is inserted into the fuel tank.

After filling the tank, the pump hose should have the end covered immediately, so that it is ready for a similar filling job when next required.

Before replacing the filler cap on the fuel tank, examine this carefully to see that the small breather hole is clear, and thus prevent the possibility of fuel starvation, which often occurs when this precaution is overlooked.

If a drum of fuel is to be taken out to the field it should be placed in a position where it can be left undisturbed, as previously explained, for several hours, before drawing fuel for the tractor. Remember—take the tractor to the fuel supply, and not the drum to the tractor. These simple precautions will pay handsome dividends and there is no extra effort required to do the job the right way.

**BREATHERS**

Now let us turn our attention to the most important, but not so well understood, function of breathers.

A breather is a device that enables atmospheric pressure to be maintained in such places as the engine crank-case, the gear-box and the differential. We made mention just now of the small breather hole in the filler cap of the fuel tank, which allows the air to enter as the fuel is displaced. There is also a breather in the diesel engine fuel pump, and in this instance we find that a filter is also installed to prevent any possibility of dust entering the governor compartment, or the fuel pump itself.

Wherever a breather is located it must be kept clear, and this particularly applies to the housing of the gear-box and differential where very small holes are usually provided. A blocked breather will cause pressure to be built up within the housing, and the failure of an oil seal on an axle or transmission shaft, can often be traced to internal pressure having forced the lubricant past the seal.
When oil is found to be forcing its way past a seal, it does not necessarily follow that replacing the seal will cure the oil leak and if a blocked breather hole has been the original cause, a recurrence of this complaint can be expected if the breather is not cleared.

If you are not sure where these breathers are located it is quite a simple matter to enquire from the dealer in your territory who will be only too pleased to make this information available.

**FRONT WHEEL BEARINGS**

And now let us turn our attention to something entirely different—the lubrication and adjustment of front wheel bearings. As a general rule we find that tapered roller bearings are used on the front wheels of the wheel type tractor. These vary very little, except for size, from those used on the normal passenger vehicle and on all types of trucks.

Failure of front wheel bearings is not uncommon, and the cause of failure is often thought to be either poor quality bearings or sub-standard lubricant. While both these are possibilities, it is very seldom that they are the real cause of the trouble. Neglect of simple preventive maintenance is a far more frequent cause.

Here then is the correct method of lubricating and adjusting the bearings on the front wheels of your tractor.

Remove the locking device, the adjusting nut, and the wheels and the bearings from the spindle of the front axle. Clean out the old grease and wash the bearings thoroughly, but do not use kerosene or dieselene for this operation. Use a cleaning fluid, such as petrol, that will evaporate and leave the surface of the rollers and cups perfectly dry. When grease is applied to the thoroughly dry surface of the metal, it will stay there, but if applied to a metal surface that has been washed in kerosene, the greasy nature of the fluid will not allow the lubricant to adhere to the surface of the metal. This is most important as it is almost certain that failure will result if this cleaning process is not done correctly.

What type of grease should be used? Any reputable oil company will supply a suitable lubricant classed as "Wheel bearing grease."

Use only sufficient to fill the bearing itself. The grease should be worked in by hand, right into the rollers and each bearing. Both the inner and the outer bearings should be packed in this manner with the correct type of grease.

What about that big space in the hub between the two bearings? This should not be filled with grease as the bearing can use only the grease worked into the bearing itself and cannot draw on any supply of grease that is placed in a cavity alongside. If this space is over-filled, normal heat that is generated by the stresses on the front wheel bearings may build up a pressure within this compartment. As we mentioned previously when talking about breathers, when internal pressure is built up it endeavours to find an outlet. In this case the grease will be forced past the dust seal, which is adjacent to the inner large bearings, and it is logical that if grease can get out, then dust will get in.

So we see that an over-supply of grease in this compartment between the two bearings is not only a waste of good lubricant but could cause the failure of bearings by allowing dust to get inside. Pressure thus set up could ruin the dust seal.

**CARE PAYS DIVIDENDS**

From the foregoing hints, it will be seen that preventive maintenance is not an additional task, but merely the habit of applying tried and tested methods to your normal maintenance duties.

Apart from the savings in repair bills, and the lack of lost time through mechanical failures, the man who carries out his maintenance work conscientiously will have a tractor that gives him trouble-free service at all times.

Furthermore, his tractor will have established a reputation for reliability and consistent performance so that it will have a high re-sale value if the time comes when he wishes to purchase a new machine.
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