



Refer to Operator's Manual for crankcase oil recommended.

Tractor Maintenance - II

Choose the Right Oil and Keep Hydraulic System Clean

Most hydraulic systems incorporate a filtering arrangement to keep foreign material from damaging the pump, plugging the orifices or scoring the spool valves. Filter screens should be cleaned and elements replaced every 250 hours or oftener, if required. When the hydraulic system is noisy or slow acting, the filters and fluid level should be checked before any other service is performed.

All connections and openings should be well sealed. The entire system must be tightly sealed at all times to prevent loss of fluid and entrance of air in the inlet side of the system. Air entering the system causes increased vibration and unsteady pressure. The presence of air is noted by a noise in the pump or when the pump labors while operating under high pressure.

After connecting cylinders and hoses and adding fluid, the operator should start the engine and run it at a moderate idle speed. Then he should set the stroke limit collar at the yoke end of the piston and operate the piston to its maximum stroke in both directions. This should be

done about ten times by moving the proper control handle back and forth. This fills the cylinder and hoses with fluid and removes the air from the system.

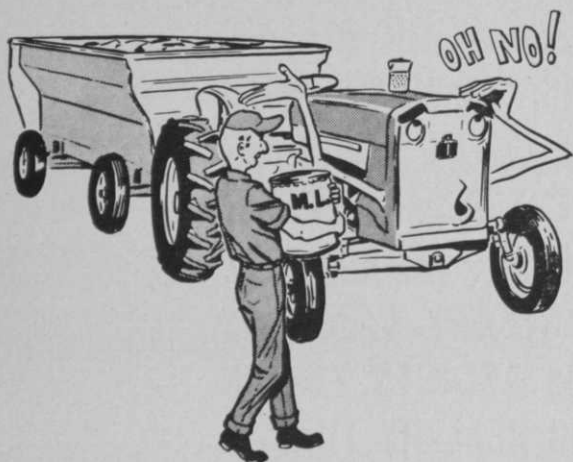
Handle with Care

Sand and grit should be kept out of the hydraulic system. When disconnecting or connecting the hose, care should be taken to prevent the end of the hose, or any of the connecting parts, from touching the ground or any object where dirt or sand is present. The oily surfaces will pick up foreign matter, resulting in the quick destruction of the working parts of the pump and control valves.

Hydraulic cylinders should be fully retracted when parking or storing implements so that the cylinder rod will be protected from moisture and damage. This also prevents accidental dropping of the machine due to movement of the valve, or fluid leakage past the spool in the valve.

Selecting A Crankcase Oil

Tractor mechanics and operators often like to compare experiences with different brands of oil and different oil qualities.



But they should keep in mind that any crankcase oil should do these things for an engine:

1. Reduce friction and wear between surfaces;
2. Remove heat caused by friction;
3. Provide a seal against escaping gases;
4. Act as a cleaner in carrying away solids such as carbon, grit and metallic particles, and hold carbon and sludge in suspension until the oil is drained;
5. Give protection against rust and acids or other corrosive agents.

Viscosity is defined as resistance to the flow of a liquid. Low viscosity oil flows easily and is often called a "light" oil. High viscosity oil has more body and is referred to as "heavy" oil.

Viscosity Measure

Since proper viscosity is important to satisfactory engine operation under different weather and temperature conditions, a viscosity measure has been established. It varies with different types, sizes, models and operating conditions of engines. This is due to such factors as design of the lubrication system, clearances of moving parts, loads, and operating temperatures.

If a too light oil is used, it may be forced out between the bearing surfaces.

This is the second of two articles on Tractor Maintenance. The first appeared in September GOLFDOM on page 34. The hydraulic system is covered in this section. Editor.

This may allow metal-to-metal contact, resulting in rapid wear and higher oil consumption.

If too heavy oil is used, needless power is required to circulate it and tight-fitting bearings may be poorly lubricated.

Besides selecting the proper oil viscosity it is important that the mechanic select the proper type of oil to fit conditions under which a tractor operates.

Terms Revised

Improvements in engines in the last 20 years have called for improved oils and even revised terms in describing them. Consequently, what the operator's manual says about the type of oil to be used depends on when a tractor was manufactured. It is important that the mechanic or operator keep this in mind.

It is debatable as to whether changing brands causes an increase in oil consumption. In carefully controlled laboratory tests, for instance, consumption varies without apparent reason. If consumption does increase it may be due to: (1) increased detergency of the new oil which eventually will correct itself; (2) using a lighter viscosity oil even if it is of the same SAE grade (viscosity specs are broad); (3) different loads or temperature conditions under which a tractor works; and (4) varying amounts of oil clinging to the higher parts of the engine when the oil level is checked when the engine is cold.

There is no advantage in mixing oil
(Continued on page 129)

of fine fescue to this runs costs up another \$3 to \$4 per 1,000 square feet but seems to improve putting quality.

Clover and knotweed received the most attention this past season in the field of weed control. Banvel-D and MCPD did excellent jobs in cleaning out these weeds in late spring and early summer without injuring sensitive poa-bent turf.

Banvel-D was a bit more positive on Jack Kolb's trials at Minikahda in Minneapolis. Bob Musbach, supt. of North Shore in Appleton, Wis., found the addition of "wetter water" made one pint of Banvel-D do as good a job as 3 pints per acre without this additive. Both of these newer herbicides are safer to use on bents and, it would seem, more positive in controlling these weeds than the older 2,4-D or 2,4,5-T mixture. We are still old fashioned enough to prefer sodium arsenite as a contact spray for fall treatments on bent fairways. Most reports of 2,4-D materials injuring bent come from fall treatments. Adequate fertility still plays the biggest part in weed control even with the newer herbicides.

It is undoubtedly fortunate that where troubles occurred they were widespread. When only one supt. in an area runs into grief from turf loss, he is liable to lose his job. When others are in the same boat, the members usually offer some much needed sympathy.

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brands; nor any serious disadvantage. Before marketing a new additive oil for general use, oil companies thoroughly check it for compatibility with other additive oils; that is, they make certain it will cause no harmful effects. It is fully realized that some new additive oils may do a good job, but may not mix with additives contained in other brands.

Yet, as a general practice it isn't wise to mix oil brands. For one thing, most oil companies won't guarantee the performance of their oils when mixed with other brands. Secondly, it is known that when some brands are mixed with another brand the two don't perform quite as well together as when used separately.

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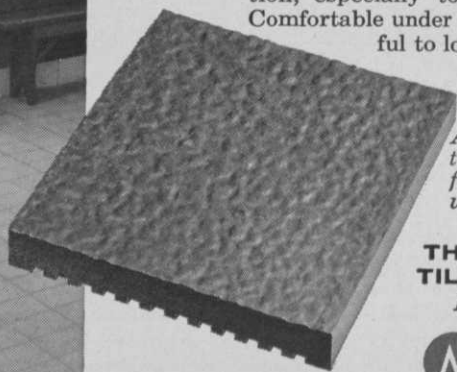


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Change in Classification

American Petroleum Institute has classified engine oils in two sections: from 1947 to 1952 and from 1952 to 1962. Under the earlier classification (1947-52) oils were listed as Regular, Premium and Heavy-Duty. Then, in 1952, it was decided that these classifications weren't satisfactory because (1) there was no way of determining which type of oil best fitted the particular work a tractor was doing; (2) there was no way of knowing which type of oil to match with each fuel — gas, Diesel oil, L-P Gas, etc.; and (3) many people thought of "premium" oil as being a higher classification than "heavy-duty" when the opposite generally was true.

Now, Motor Light-Duty, Motor Moderate Duty and Motor Severe Duty oils for carbureted engines have been substituted for the 1947-52 designations in the classification list. (API Oil Classifications are shown on pages 31, 32 and 33 of the International Harvester Tractor Maintenance & Tune-up manual).

Gear oils, like crankcase oils, contain

certain kinds of additives, depending on the service classification of the oil. The additives include anti-oxidants, rust preventatives and foam inhibitors. Another important one is the extreme pressure (EP) additive which, when added to a straight mineral oil, enables the oil to carry a much heavier load. It is believed that EP works like this:

As the high points on gear teeth meet under extreme pressure, a very high temperature results. It is high enough to cause welding at the miniature high points of the gear surfaces if straight mineral oil is used. If EP is contained in the oil, a coating forms to protect the metal surfaces from welding and destructive wear.

Hydraulic Fluid

Hydraulic fluids must be matched with the hydraulic system design. One reason is that a hydraulic pump selected by a manufacturer is related to the viscosity of the oil that is used. A heavier oil may cause excessive heating, which, in turn, causes rapid oxidation (oil thickening) which further increases viscosity. This causes gummy deposits to accumulate on the pump

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and valves and a heavy sludge to form in low points of the hydraulic system. Acids will form and corrode metal parts.

If the oil is too light, temperatures may rise due to loss of pump efficiency. Losses from leakage are likely to occur.

With any oil, a machine designer takes into account the effect oil will have on rubber seals or other rubber parts in the hydraulic system. Improper oil will cause them to shrink or swell excessively, resulting in a malfunction of the system.

Swinging Around Golf

(Continued from page 115)

ton Smith becomes a member of Missouri's Sports Hall of Fame . . . Ren Smith, Horton's brother, was invited to receive the memorial plaque . . . Illinois PGA has booked its spring show of golf merchandise for McCormick Place, Chicago, April 16-18, 1965 . . . It held a preview at the section's fall meeting on Sept. 28 at which Harry Pezzullo was elected president for the tenth term.

Alex McKay, 71, died of a heart at-

tack, Sept. 19, in Nashville, Tenn., at the home of a granddaughter, Mrs. Roger Grimsley . . . Alex was born in Aberdeen and came from the Cruden Bay course to Louisville in 1923, then was pro-supt. and course designer and builder in West Virginia and New York before becoming pro-supt. at Holston Hills CC, Knoxville, from which club he went to Cherokee CC at Knoxville . . . He pioneered the successful introduction of bent for southern greens . . . Alex designed and built many courses in Kentucky, Tennessee and nearby states . . . He was first president of the Southern Turf Assn. . . . He is survived by his wife, Mrs. Martha Strechi McKay, two daughters and four sisters who live in Scotland.

Dan Taggart, who took Arlington CC in northwest suburban Chicago and worked it for a little golf and a lot of farming in bringing it through World War II, is in bad shape at Holy Family hospital in Des Plaines, Ill. . . . He has done plenty for the Illinois PGA, which sent him an award of gratitude via Dan, Jr., from the section's fall meeting.