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Getting the Most Out of Your Tractor

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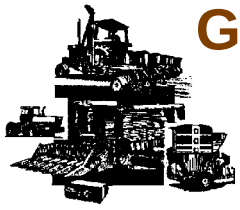

GETTING THE MOST OUT OF YOUR TRACTORS

Farm Machinery Fact Sheet FM-14

By *Dr. Von H. Jarrett*, Extension Agricultural Engineer

Now, more than ever, you need to operate your tractors efficiently. Any time you can accomplish more work with less time and less fuel, it is good business to do so.

Engine tune-up is probably the most important preventative maintenance that can be performed on a machine. However, most operators make the mistake of performing tune-up only when the engine is not running satisfactorily. This is often a costly error because, at this point, the engine may be worn or damaged until it requires major repair or overhaul. This can be very costly to the operator.

What is engine tune-up?

Tune-up is the process of making checks and minor adjustments to improve the operation of the machine.

When should an engine be tuned?

Regularly. The intervals for tune-up may vary from 500 to 1000 hours each spring and fall depending upon the operating conditions. But, regularity is the key to tuning the engine so that major problems are prevented.

A badly worn engine cannot be tuned up. This is why the engine should first be checked on a dynamometer to see if:

1. a tune-up will restore it, or
2. a major overhaul is needed.

A dynamometer test will give you:

1. engine speed according to manufacturer's recommendation
2. checking valves, spark plugs, and compression
3. checking ignition timing
4. adjusting the carburetor
5. check timing and pump settings on a diesel
6. check PTO clutch
7. checking clean air supply
8. check blowing from crankcase to determine condition of rings

9. reading the maximum horsepower on the dynamometer. (Do not expect engines to give the same results as the Nebraska test, for these are run under only the most ideal conditions.)
10. After performing a tune-up, run the tractor again to see the change in performance.

ENGINE TUNE-UP CHART

The following chart gives you the steps necessary to tune your engine. Check off each step that applies to your engine and make the necessary replacement of parts or adjustments as needed. Make sure you understand the function and purpose of this chart.

Step No. & Operation

1. Air Intake and Exhaust System
____ Clean out precleaner.
____ Remove and clean air cleaner.
____ Inspect exhaust system and muffler.
____ Check crankcase ventilating system for restrictions.
____ Check intake manifold for leaks.
____ Check air intake for leaks or restrictions.
____ Check air induction hoses and clamps for leaks and breaks.
____ Check radiator for air bubbles or oil indicating compression or oil leakage.
____ Check cylinder head gasket for external leaks.
____ Retighten cylinder head cap screws.
____ Adjust valve tappet clearance.
____ Check engine compression.

2. Ignition System (Spark-Ignition Engines)

____ Spark plugs - Clean and adjust gap.
____ Check spark plug wires.
____ Distributor - Check the following items:
____ Cap and rotor
____ Breaker points
____ Breaker point gap
____ Cam lubrication
____ Distributor timing

3. Fuel Systems

____ Check fuel lines for leaks or restrictions.
____ Clean fuel pump sediment bowl.
____ Clean fuel strainer or filter.
____ Check radiator for LP-Gas leaking from converter into cooling system.
____ Drain sediment from gasoline or diesel fuel tank.
____ Bleed diesel fuel system.

4. Lubricating System

____ Check operation of pressure gauge or light.

____ Drain and refill crankcase.
____ Replace oil filter.

5. Cooling System

____ Check water pump for leaks and excessive shaft endplay.
____ Inspect radiator hoses and clamps.
____ Clean and flush cooling system.
____ Test the thermostat operation.
____ Check radiator for leaks.
____ Check condition of fan belt.

6. Electrical System

____ Check battery.
____ Clean battery, cables and terminals.
____ Tighten battery cables and battery hold-down clamps.
____ Coat battery posts and cable clamps with petroleum jelly.
____ Check specific gravity of electrolyte & add water to proper level.
____ Check generator or alternator.
____ Check belt tension.

7. Clutch Pedal Free Travel

____ Check free travel at clutch pedal.

8. Check R.P.M.

9. Check color of exhaust smoke under light load.

10. Check color of exhaust smoke under heavy load.

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