

**Engine Temperature Affects Efficiency And Economy**

Heat is a by-product of energy. In converting fuel to energy, internal combustion engines generate a lot of heat,

most of which must be dissipated or the engine would end up a molten mass of iron!

Engines can't run ice cold, however! A certain amount of heat must be retained for the efficient production of energy, advise service engineers of

Champion Spark Plug Company. Maintaining coolant temperatures around 160-180 degrees F for liquid-cooled car, truck and tractor engines seems to be ideal for good fuel atomization and complete combustion. Water jacket temperatures

that run too far below or above create problems.

When engines operate on the low side, they run inefficiently from a fuel consumption standpoint and uneconomically as

far as internal parts wear is concerned. Unfortunately, particularly in cold weather months, far too many engines never operate higher than 120 degrees.

In that situation, partial combustion is common. Raw, unburned fuel works past the pistons and not only dilutes crankcase oil, but wipes essential lubrication from the cylinder walls as well. This hastens cylinder, ring and piston wear. What's worse is condensation in the crankcase that never boils off because of the prevailing low engine temperatures. Diluted and contaminated oil shortens bearing life drastically if allowed to continue.

The number one cause for low engine temperatures is short trip driving where the engine never has a chance to warm up before it is switched off. In the case of farm tractors, it results from using the tractor on light loads where the engine, because of its very large cooling system capacity, never works hard enough to build up proper temperatures.

Other causes could be faulty thermostats that are stuck in a partially open position. Naturally, coolant can't be held in the block long enough and therefore extends warm-up time.

Since most vehicles today use warning lights, a low temperature won't show, normally. However, symptoms to look for include consistent, poor fuel economy, and spark plugs whose firing tips will have a black or sooted appearance. Plugs like these could, depending upon mileage, be cleaned, regapped and reinstalled. However, it's possible that in some cases the next hotter spark plug would work satisfactorily to avoid carbon fouling from too cold an engine.

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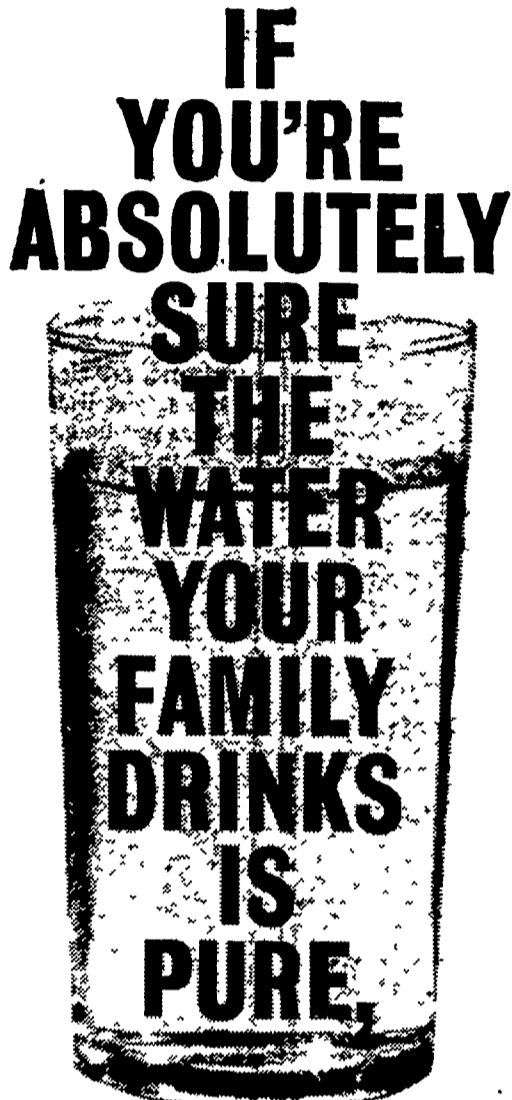
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