

## ***CHECKING OUT A LOT OF NOTHIN'***

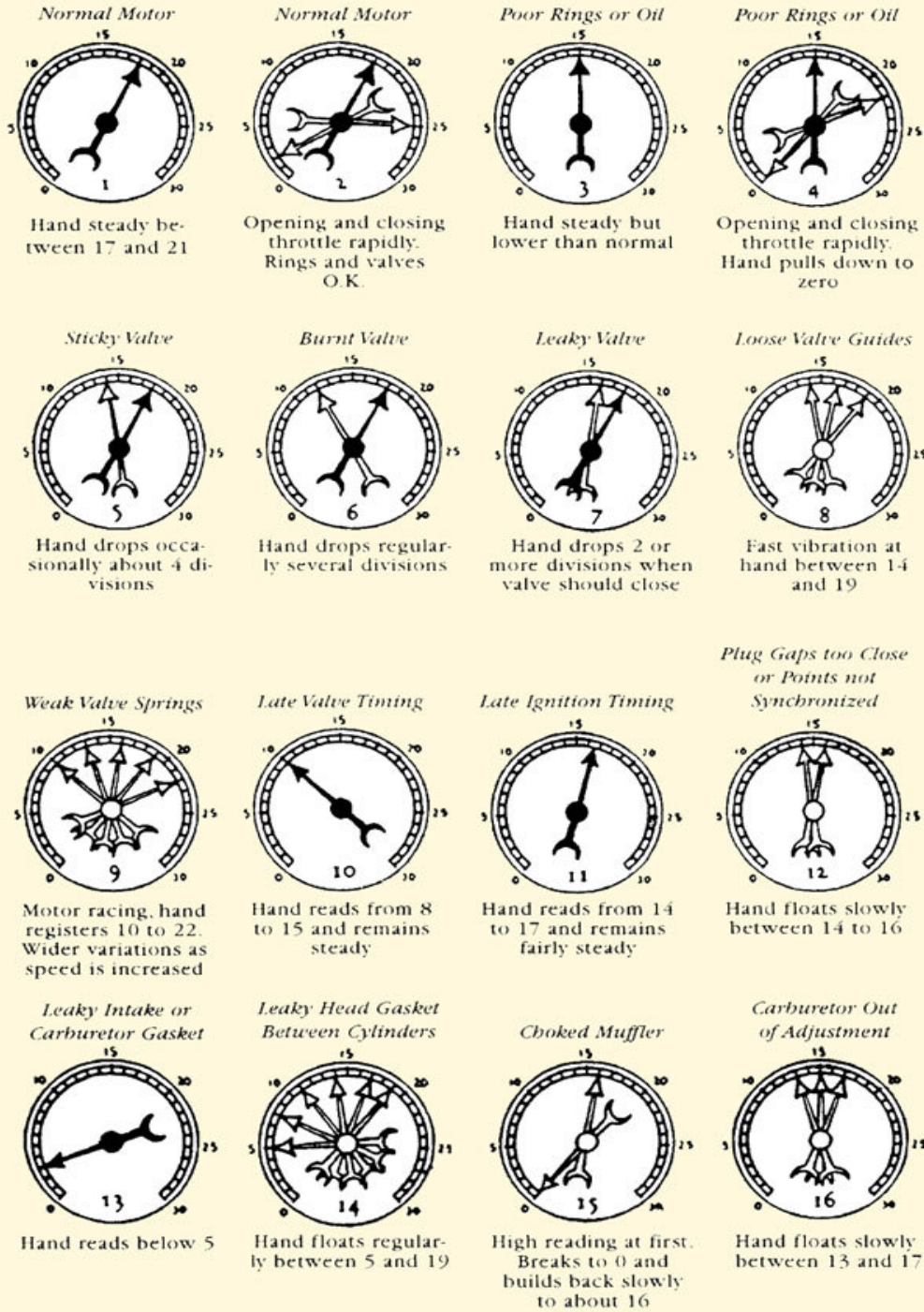
That's what a vacuum is...a lot of nothing. Your engine is a pump and what it does best is create a vacuum. If it didn't it couldn't run. It could not "draw" in a fuel charge to make the combustion chamber power against the pistons. A vacuum is absence of air, but it is not exact or 100 percent effective. It never is. When your engine is running it is constantly creating a vacuum by the downward motion of each piston. The vacuum is measured in inches. Inches? Yes. Many times the measurement is stated in pounds, but the term is incorrect. The original method of measuring vacuum consisted of a "U" shaped tube-containing mercury. (This is not your father's Mercury.) This lab vacuum tube was marked in inches to measure how far the column of mercury would rise. Fortunately we don't use the mercury column for our Mercurys (pun) in the shop. The dial indicator vacuum gauge with a hose is what we use. It translates the mercury tube reading to a pointer on a round scale. It is easy to say pounds instead of inches when looking at the pointer on the 0-30 inch dial. Technically, 30 inches cannot be attained, but maybe 28 or 29 can. Vacuum gauges used for engine tune-up or troubleshooting are not common today as they were years ago...like in the flathead V-8 era! I remember them in Auto Shop. They still can be used and the readings can be helpful when looking for engine problems. So, a normal running engine will have a vacuum reading on the gauge of about 17-21 inches. If an engine has poor piston rings (cannot create a good vacuum), then the gauge would read a few numbers lower. When the gauge reads extremely low, it could be an indication of an air leak at the intake manifold, carburetor base or anywhere. A rapid deflection of the pointer up and down in time would reveal a burnt or sticking valve. A slowly declining pointer towards zero may show a restricted exhaust. Being that the engine is a vacuum pump, the readings on the gauge reflect what the engine is doing. The gauge, though, doesn't tell all; further testing must be done. Additional tests include checking the cylinder compression; air leakage test that shows where compression is escaping, like piston rings, head gaskets or valves; ignition and camshaft timing should be checked. Tune-up specs must be correct for the best vacuum reading. What is a vacuum? Remember your science class? Well, it's a whole lot of nothin'! It is absence of air. When an engine piston moves down on the intake stroke it is displacing air, creating a vacuum. Air, being a big bully, rushes in to fill the void and the only place it can find to enter is at the carburetor. The air joins with the fuel and the air/fuel mix is pushed into the cylinder. Air is not sucked into the engine...and it is not drawn or pulled into it, either. It is pushed in! 14.7 pounds of atmospheric pressure at sea level makes the air rush in. Yes, pounds this time, to inches! How do pounds become inches? I don't know. Ask Albert. Now, next time you do a tune-up on your engine be sure to check nothing. Something can be a problem, but a lot of nothing is not. Your engine creates nothing; be sure it does so efficiently.

You can read Don Cunningham's Tech Tips in The V8 Times

# Vacuum Gauge Reading

## PERTAINING TO MOTOR TUNE-UP

DARK NEEDLE INDICATES A STEADY HAND  
 LIGHT NEEDLE INDICATES FLUCTUATING HAND



From the Early Ford V-8 Club Web Site