Technical Notes

So what is this thing called Horsepower?

We all have used the term 'horse-power' referring to engine power. How is it determined? What is it?

Adapted from Chilton Service Handbook, not copyrighted, but printed in 1934 or 1935.

Horsepower and work are two mechanical terms that are often used incorrectly. When a weight is moved from one place to another work must be done upon it and the amount of work is found by multiplying the weight in pounds by the distance moved in feet.

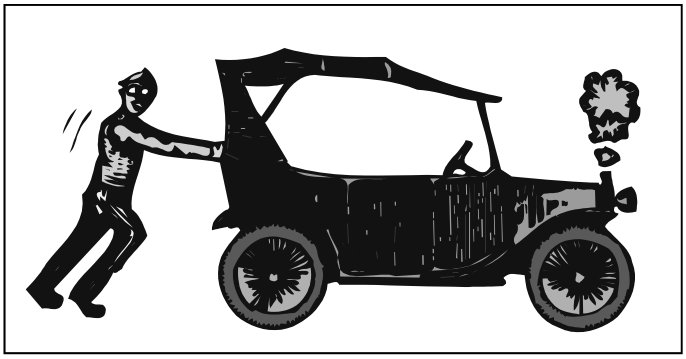
For instance, if a mass weighing 15 lbs. Is raised 5 feet, there will be 15 times 5 or 75 foot pounds of work done.

On the other hand, horsepower is the rate or speed at which work is done, or the number of units of work done in a certain specified time. The time is generally taken at one minute and when 33,000 foot pounds of work in done in one minute one horsepower has been used. It is interesting to note that a horse trotting with a loaded cart develops about 10 horsepower, while a man walking develops slightly in excess of 1 h.p.

There is no relation between the horsepower developed by an engine and the taxable or N.A.C.C. horsepower (sometimes incorrectly referred to as the S.A. E. Rating). The taxable horsepower is calculated value only and is obainted by the formula

$$\frac{D * D * N}{2.5}$$

where D is the bore in inches and N is the number of cylinders. The actual horsepower developed by an engine (generally called brake horsepower) is measured by connecting the engine to a dynamometer. The dynamometer is simply an electric generator and the load on the generator and consequently the engine to be tested, is increased to the maximum value that the engine is capable of developing. The power is then measured in volts and amperes as developed by the generator and then converted to horsepower.



A device known as a Prony brake can also be used to measure the brake horsepower. This device consists essentially of a large brake which is placed around the flywheel of the engine, with a beam from the brake resting on a weighing scale. The pressure of the brake on the flywheel is then increased and the pressure of the beam on the scale carefully measured.