# CALCULATING HORSEPOWER

**SAE** (Society of Automotive Engineers), USA. Power is corrected to reference conditions of 29.23 InHg (99 kPa) of dry air and 77 F (25°C). This SAE standard requires a correction for friction torque. Friction torque can be determined by measurements on special motoring dynamometers (which is only practical in research environments) or can be estimated. When estimates must be used, the SAE standard uses a default Mechanical Efficiency (ME) value of 85%. This is approximately correct at peak torque but not at other engine operating speeds. Some dynamometer systems use the SAE correction factor for atmospheric conditions but do not take mechanical efficiency into consideration at all (i.e. they assume a ME of 100%).

- **STD** or **STP.** Another power correction standard determined by the SAE. This standard has been stable for a long time and is widely used in the performance industry. Power is corrected to reference conditions of 29.92 InHg (103.3 kPa) of dry air and 60 F (15.5°C). Because the reference conditions include higher pressure and cooler air than the SAE standard, these corrected power numbers will always be about 4 % higher than the SAE power numbers. Friction torque is handled in the same way as in the SAE standard.

- **ECE** (European Community), Europe. The ECE standard is based on the European Directives. Power is corrected to reference conditions of 99 kPa (29.23 InHg) of dry air and 25°C (77 F). Friction torque is not taken into consideration at all.

- **DIN** (Deutsche Industrie Norm), Germany .The DIN standard is determined by the German automotive industry. Power is corrected to reference conditions of 101.3 kPa (29.33 InHg) of dry air and 20°C (68 F). With the advent of European legislation and standards, national standards such as the DIN (formerly widely used) are now less significant.

**Actual** You may see this on some charts, especially from Ivan. What this means is this is the actual horsepower achived on the day tested and no correction factor has been applied. One can assume better or worse results with varying weather conditions.