

AIR DENSITY GAUGE - CONTINUED -

CAUTION

All weather broadcasts and weather maps give barometer readings corrected to sea level (zero altitude), so that high and low pressure weather fronts across the country can be compared regardless of the altitude of the weather station. Example: Denver, Colorado reads 24.00" on their barometer, but they are 5,000 feet above sea level, which causes a 5.02" lower pressure, so they broadcast a 29.02" reading (24.00 + 5.02).

To do proper calculations you must use the actual reading of the location you are at. The best way to do this is to have your own air density gauge. If you don't have a gauge, you could obtain a barometer reading from a nearby airport (which will always be corrected to seal level), then correct it back to your altitude by subtracting 1.0" for each thousand feet

AIR DENSITY GAUGE READING PROCEDURE

- 1) The gauge must be pulled up out of the foam of the carrying case and placed in a shaded area. Do NOT hold the gauge in your hand, or place it inside the vehicle, or let sunlight fall directly on it, as all of these will artificially warm the gauge. Let the gauge sit for several minutes to stabilize before taking a reading.
- 2) Find the best jet for the day. Record the air density and jet size.
- 3) The next race day, observe the readings of the air density gauge. If it reads higher than before, go to a richer jet... this would be a smaller jet for a fuel injection unit, or a larger jet for a carburetor.
- 4) After just a few days of racing you will have established a chart for the jetting requirements versus the air density. Any time after that, merely observe the reading of the air density gauge, refer to the chart, and select the jet for the prevailing conditions. You should always try one richer and one leaner jet.



The vents on the sides of the gauge must be exposed for a proper reading. See 1) above.

NOTE : Humidity has a very small affect... it can be neglected on an average day. If the humidity is very high (80-90%) go about 2% leaner, if it is very low (10-20%) go about 2% richer.

ALTERNATE PROCEDURE

This procedure will give the same results as the one above, but will take only one racing day to determine a baseline for making future jet changes:

- 1) and 2) Same as above.
- 3) The next race, observe the air density. Calculate the percent change in the air density.

Example On the first day, air density was observed to be 94%
On the second day, air density was observed to be 86%

$$\begin{array}{l} \text{PERCENT:} \\ \text{CHANGE:} \end{array} \left[\frac{\text{NEW A.D.} - \text{OLD A.D.}}{\text{OLD A.D.}} \right] \times 100 = \text{percent (\%)} \\ \text{change} \quad \left[\frac{86 - 94}{94} \right] \times 100 = \left[\frac{-8}{94} \right] \times 100 = -.085 \times 100 = -8.5\%$$

Note that the sign is (-) because the air density has decreased; go to a leaner main jet. If the sign is (+) the air density has increased and go to a richer main jet. A high reading on the gauge means that there is an increase in density.

- 4) Go to the table on the next page and find your application. Go across in the table until coming to the percent change that is closest to what has been calculated. Change the main jet by the amount shown in the column heading.

Example - Running an unblown gas engine, 427 cubic inches, -1 fuel pump. Under the "Unblown Gas" heading, use the "402-520" line, -1 pump. Go across to the percentage that is closest to the one calculated above: 8.5%. The 9.0% figure is closest, so go .010" leaner (larger on fuel injection) on the main jet.

UNDERSTANDING PERCENTAGE

One whole item of anything is 100% of it. 9% of an apple is 9/100 or .09 of it. Rather than saying 9/100 or .09 of the apple, it is much easier to say 9%. To make any fraction into a %, move the decimal point two places to the right, thus .09 becomes 9%.

Example: 1/2 of something is .50 of it or 50% 1/8 of something is .125 or 12.5%

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