MIXTURE OPTIMISATION PRIOR TO INCREASING POWER

All initial mixture testing should start with nitrous jet sizes no larger than shown in the following list, and used with the appropriate fuel jet size as shown in the previous charts;

Up to 1,000 cc	25
Up to 3,000 cc	50
Up to 5,000 cc	100
Above	150

With the appropriate jets fitted a static test (see separate instructions), should be carried out to determine if the mixture is 'approximately' correct. On most vehicles using the static test to optimise the mixture can be extremely accurate but unfortunately that doesn't apply to all vehicles, so if your vehicle doesn't respond as described in the following tests you should contact WON for advice.

The ideal response to the static test (indicating the best starting point mixture ratio), is the engine RPM rising quite rapidly to just below the red line in much the same way as if you opened the throttle quickly.

If the engine picks up briefly and then falters and coughs out black smoke, then the mixture is too rich and with experience its possible to estimate how rich by how high the engine RPM rises or fails to do so.

If you experience such a response you should reduce the fuel jet size by one size.

DO NOT INCREASE THE NITROUS JET SIZE

DO NOT REDUCE THE FUEL JET SIZE BY MORE THAN ONE SIZE

Repeat the static test and you should notice an improvement. If the improvement is such that the engine RPM now rises to just short of the red line, you've achieved your goal.

If the engine response is better but still does not rise high enough or it's exactly the same as the first test, replace the fuel jet with the next smaller size and repeat the static test.

If the result is an improvement and if it is such that the engine RPM now rises to just short of the red line, you've achieved your goal.

If the results are no better than the first test, cease testing and contact WON.

If the engine response is better but still does not rise high enough, replace the fuel jet with the next smaller size and repeat the static test. While ever the result falls short of the desired level but reducing the jet sizes produces an improvement, it should be OK just to repeat this process until the desired response is achieved. However if you need to do more than 2 or 3 adjustments, it is possible that something outside of the nitrous system is wrong (carb settings, ignition strength, etc. etc.), unless you started with totally incorrect jet sizes in the first place.

When you are happy with the static test results, you 'should' then progress to testing in a real world application (Drag strip, road or dyno), by doing short runs (no more than 3 seconds use), followed by inspecting the spark plugs immediately after the run. If you're unable to access the spark plugs, an alternative acceptable means of checking the mixture is to use a wideband O2 sensor, although this can't always be relied on as much as spark plug reading can.

When you have either confirmed the mixture is correct or you've made the appropriate adjustments, you now have the baseline to work from when stepping up the power ladder. At this stage the jet numbers should be logged and the ratio between them calculated.

STEPPING UP THE POWER LADDER

All subsequent jet changes should be based on the initial results, which means that stepping up from 25 HP to 50 HP and even 50 to 75 can be a simple matter of doubling or tripling the initial jet sizes. However, as you step further up the power ladder, the initial mixture ratio will either need to be reassessed at the elevated power level or a safety margin added by way of increasing the fuel jet size, by at least 1 or 2 sizes and appropriate tests carried out to determine the optimum setting at that level.

The higher you climb up the power ladder the more important it is to be cautious with regard to the mixture ratio and for extreme power increases, it is **essential** to carry out the following test procedures;

1) Remove the jets from the system and measure the fuel flow for 10 secs. – each cc equals a single HP, therefore 100 cc flowed in 10 secs would be capable of making 100 HP. Whatever that amount is, that is the maximum limit that the system is capable of delivering/making.

2) If the amount is less than desired, it 'may' be possible to increase it by raising the fuel pressure.

3) Less important (as it wont lead to engine failure) but still of interest, is to determine the maximum flow capability of the nitrous itself. With the metering jets removed and the nitrous bottle sitting on a set of accurate scales (log start weight), energise the system for 5 secs and log the end weight.

4) Deduct the end weight from the start weight to determine the amount of nitrous used.

5) For a reasonably accurate guide, each gram of nitrous flowed in 5 seconds is equal to 0.5 HP, so 10 grams would equate to 5 HP. This formula is suitable for low power levels but at elevated flow rates the formula of 5lbs/100HP/min should be used.

IMPORTANT: WHENEVER YOU MODIFY 'ANY' PART OF THE FUEL OR NITROUS SYSTEM, THAT RESULTS IN A POTENTIAL CHANGE IN THE TOTAL AMOUNT OF FUEL AND/OR AIR/NITROUS (OXYGEN), THAT WILL REACH THE ENGINE, YOU SHOULD REPEAT THE ABOVE PROCESS STARTING FROM SAFE JET SIZES.