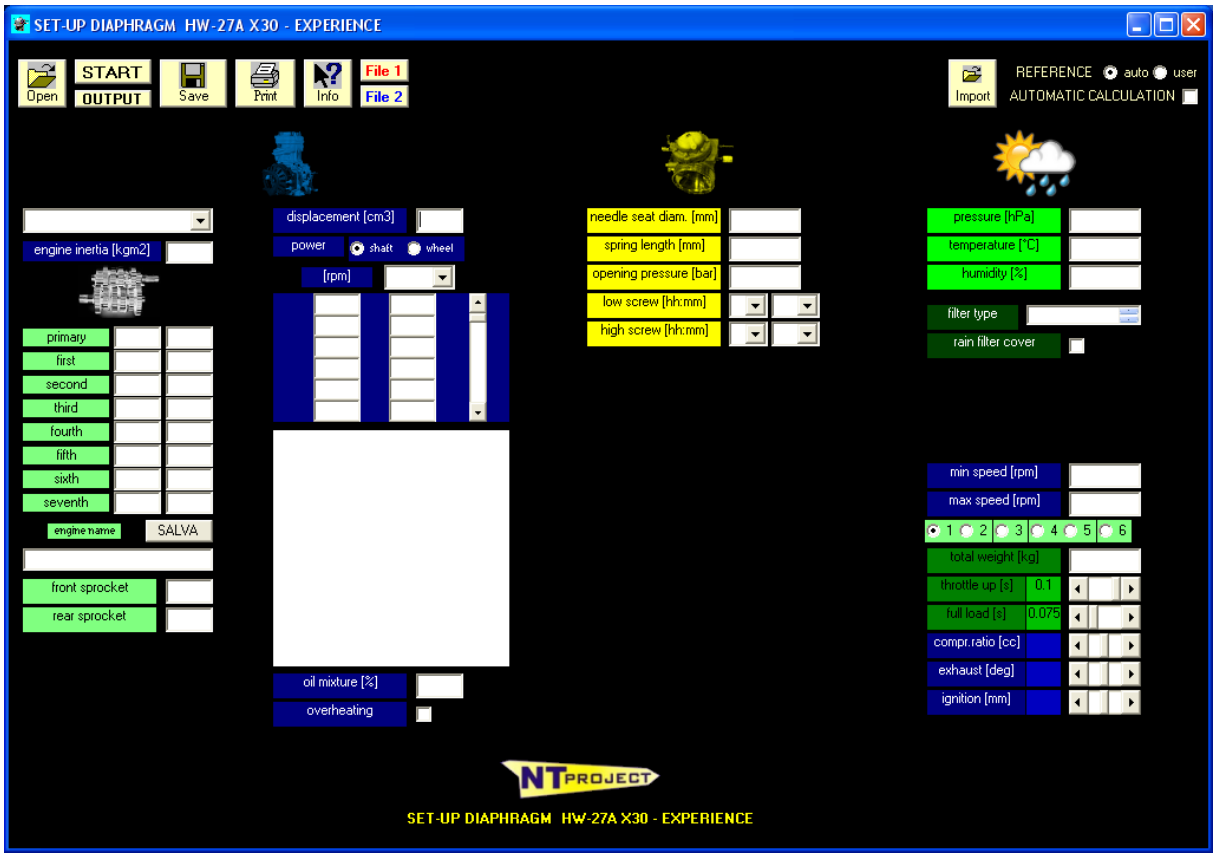
NT-Project Ing. Tabacchi Omar info@ntproject.com
http://www.ntproject.com

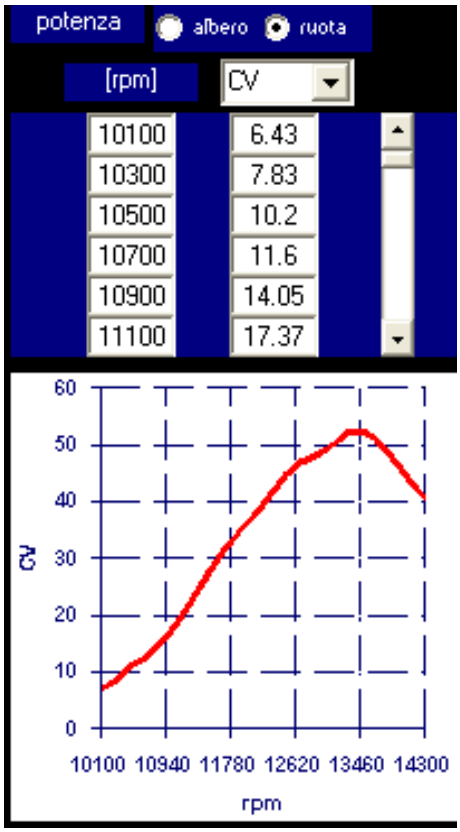
PRESENTATION SOFTWARE
SET-UP DIAPHRAGM EXPERIENCE

The diaphragm carburetor seems very simple to adjust, in reality small variations in calibration can make a big difference, for this reason being able to refine the calibration when change the atmospheric conditions is extremely important. In addition to this, the diaphragm carburetor responds differently based on the contrast spring that is used, and based on the size of the fuel inlet needle valve, therefore it is essential to be able to manage the calibration also in function of these aspects, so you can find the optimal response for your needs. The new Experience version allows you to fully satisfy these needs, to optimize the carburetion to the maximum, and have the best engine performance in all conditions.



In this new version we have therefore introduced the possibility of inserting the engine power curve. As is known, carburetor calibration is linked to the specific requirements of the engine. With the specific power curve data of the engine it is therefore possible to make a more precise evaluation of the carburetion, and refine the calibration even more in detail.

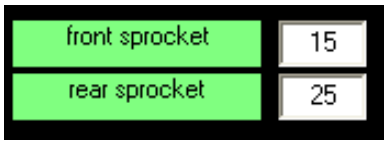
In fact, the software calculates the volumetric efficiency through the power curve, and with a sophisticated algorithm identifies the trapping ratio and the delivery ratio, which is what most influences the carburetor calibration.



If you have a dynotest of the engine, or are using our Engine Analysis software to calculate the engine power curve from acquisition data, you can enter these data into the software SET-UP Diaphragm.

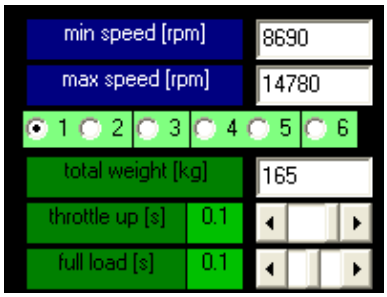
If you do not have the specific engine power curve available, the software contains indicative power curves of the main engines that use this carburetor.

The characteristics of the power curve, in addition to affect the carburetion through the delivery ratio, determine together with the final drive ratio, the acceleration phase.



Into the software is therefore possible to enter the final ratio used.

This allows to determine how the engine speed increases when you open the throttle, which is another aspect that influences carburetion.

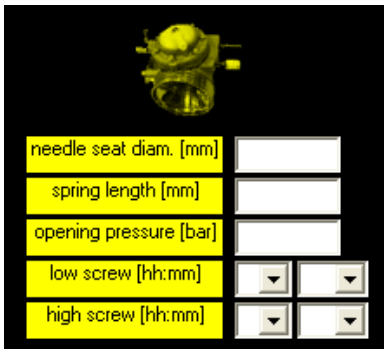


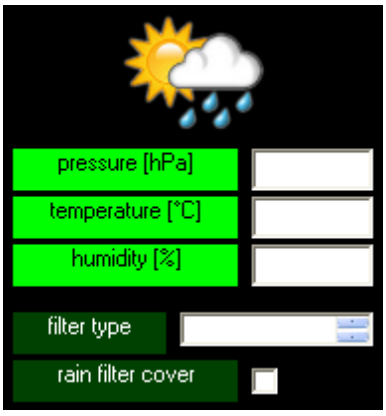
In the calculation of the carburettor calibration, in addition to defining the operating range of the engine where you want to optimize the carburetion, it is possible to evaluate how the carburetion changes in the acceleration phases with the different gears engaged, so will be possible to optimize the setting in the gear shift used in the main corners of each track.

Usually in karting the driver driving on-off, however there may be some drivers who tend to partialize slightly, therefore in the software it is possible to take into account this aspect by increasing the acceleration time.

As you have seen, in the new Experience version, has been given the possibility of inserting all the data that influence the carburetion, thus allowing to further refine the calibration for the specific characteristics of each engine, and for each operating condition.

The other features of the software maintain those of previous versions:



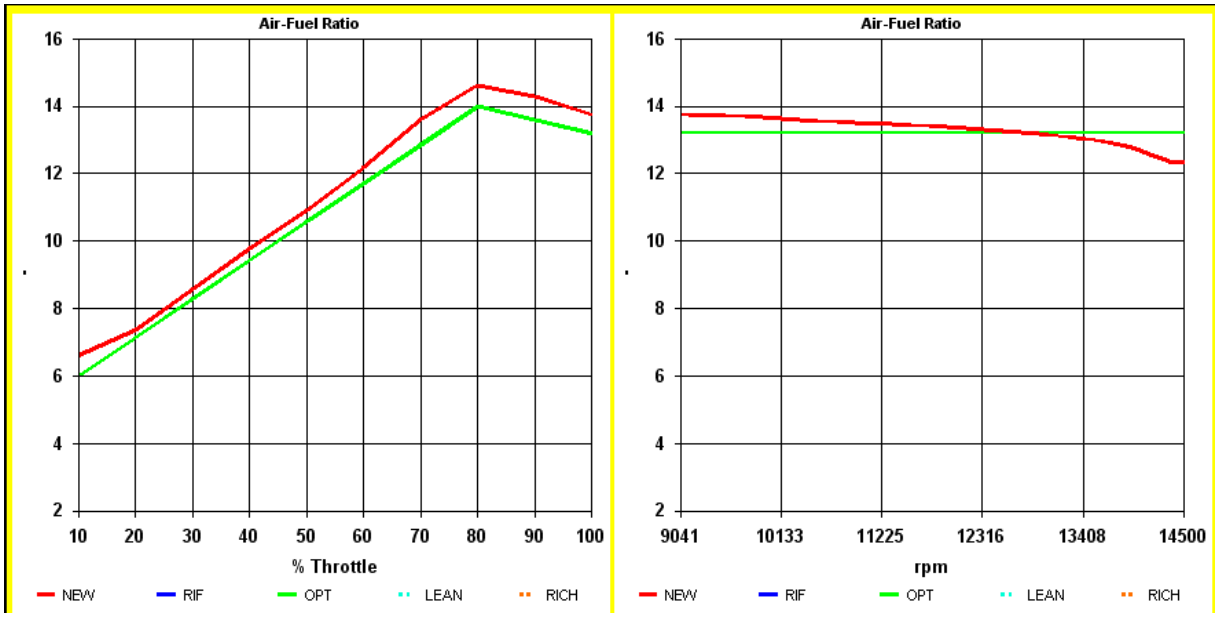


Then you will have to enter, the configuration of the carburetor (needle valve size, spring, and opening pressure), the current carburettor setting, the atmospheric conditions for which you want to optimize the carburetion, and the type of the filter used on the engine.

calculation calibration

simulation

When you have enter the data you can starting the simulation with the button START, at the end there is this screenshot:



results

The software shows two carburetion graphs. The one on the left shows how the carburetion changes at different throttle openings, while the one on the right shows how the carburetion changes as the different engine speed.

In this way you can have a complete picture of how the calibration that you have entered responds to the engine's requests in all operating conditions.

In the graph the red line shows the carburetion with the calibration and the atmospheric conditions that you have entered. In addition to this, the software shows a green reference line. This line is the one that tells you which should be the optimal carburetion, and is therefore the objective to be achieved by modifying the calibration. The ideal would be to work on the calibration until your red line coincides with this green line.

In addition to the graph, the software summarizes the situation at partial and full loads.

In fact, it tells you how the carburetion is from 0 to 50% throttle opening, from 50% to 100%, and at full load, indicating in percentage how your carburetion is lean or rich (positive values indicate that the carburetion is lean, while negative values indicate that it is rich), or if it is ok. Together with the picture of the situation, the software advises you on how to modify your calibration to get closer to the optimal carburetion, in fact for each area it indicates the calibration element that is most influential for correcting the carburetion.

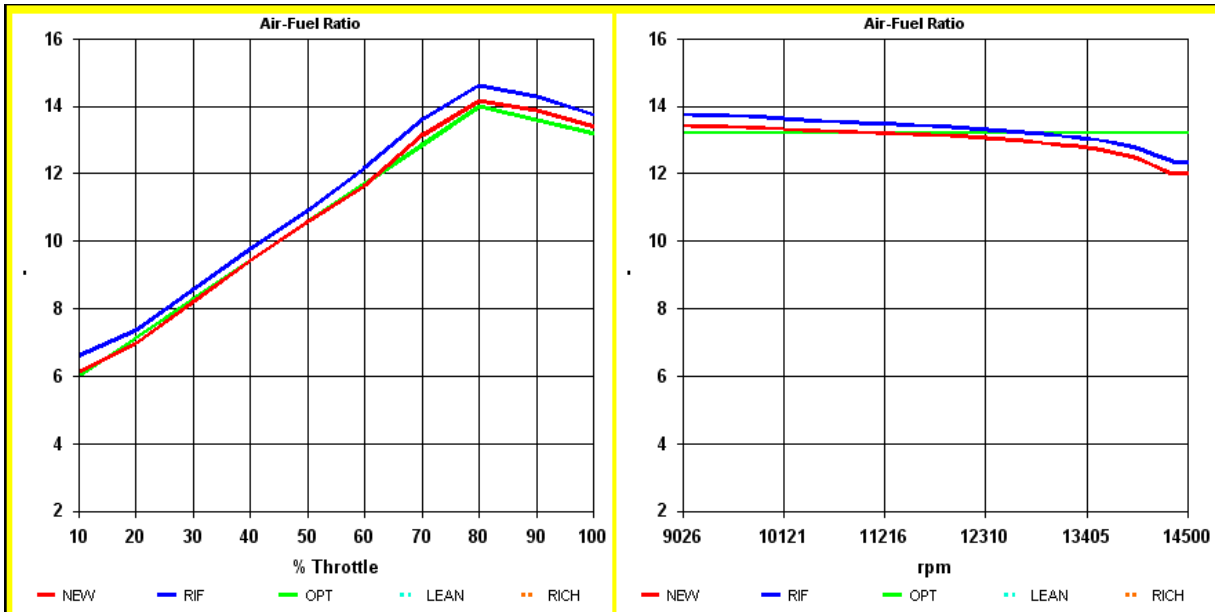
When the writing is azure-blue it means that the carburetion is lean compared to the optimal one, while when it is orange it means that the carburetion is richer than the optimal one. If it is green it means that it is within the optimal zone.

research optimal calibration

Pushing button INPUT you return to starting screenshot with the entered data, following the software indications you must modify the elements of calibration to move the red line on that green.
The recommended procedure to obtain rapidly the correct calibration is the following:

1. if the mixture is lean or rich at full load, you must fit before this aspect editing main jet until the mixture results ok at full load;
2. when you have fit the mixture at full load, you can modify the elements of calibration for partial load;
3. finally act again on the main jet to compensate the effects of modification at partial load.

In a few steps you will be able to correct your calibration to have optimal carburetion.



When you modify your starting calibration the red line moves, but the carburation that you had with your starting calibration still remains in the graph in the blue line, so you can see the difference due to your actions.

automatic calculation calibration

After entering the data, as well as the calculation of the calibration in the traditional way, you can determine the best settings automatically selecting AUTOMATIC CALCULATION.

When you do START in addition to what we saw before, the software will calculate the calibration.