

SET-UP CARBURETOR *Experience*

OPTIMUM JETTING CALCULATION ACTING ON ALL THE CALIBRATION ELEMENTS

The software SET-UP Carburetor calculates the response of the carburetor taking into account all the elements of calibration. In fact, the carburetor, even if it fails to do what an injection electronics, over the years has always been evolved and presents many calibration elements that allow you to fine-tune the carburetion in many specific areas of functioning in such a way as to satisfy at the best the engine demands. Thanks to the software SET-UP Carburetor you can see how each element affects the carburation and act to obtain improvements right where it is necessary to obtain an optimal jetting in any condition.

For each model of carburetor has made a special study and has been realized a specific software that contains all the calibration elements that there are at catalog for the carburetor (slide, emulsion tubes, nozzle, needles, atomizers, floats, needle valves, etc.).

You must simply select and enter the elements of calibration that you have initially, or that you want to test.

The image refers to the Dellorto VHS30 which is one of carburetors with more calibration elements, but for carburetors with Power Jet (PHBH, VHSG, etc.) the software will also take account of this and so on to the specific characteristics of every single carburetor.

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OPTIMUM JETTING CALCULATION BASED ON REAL CONDITIONS OF ENGINE OPERATION

As is known carburetor reacts differently depending on the request of the engine, therefore, according to the actual conditions of operation is necessary a specific calibration to obtain the carburation most suitable in those conditions.

The software SET-UP Carburetor lets you take into account all this information and insert according to the characteristics of the track and of the driving style, the RPM range where is working on your engine, and the progress of the power curve in that range.

In this way the jetting that is calculated will be the solution optimal for those operating conditions.

OPTIMUM JETTING CALCULATION BASED ON THE FEATURES OF TRACK, VEHICLE and DRIVER

The acceleration phase, fundamental in all the points of the track to obtain the best performance is mainly due to transmission ratios, engine power and total vehicle weight, besides the driving style of the driver in the use of the throttle. All this influence in a manner significant the carburetion in the first opening and in the transition, in fact change significantly the conditions in which is to work the carburetor.

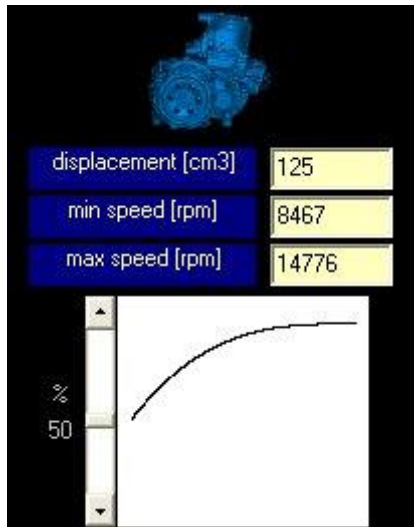
The software SET-UP Carburetor Experience calculates the calibration taking into account the behavior during acceleration and allows to find an optimum jetting not only for full load, but also for partial load and for the needs of the specific driver.

OPTIMUM JETTING CALCULATION CHANGING ENGINE SET-UP

Each engine is supplied by the manufacturer or tuner with some recommended settings for compression, timing, ignition advance, mixture, etc. Often, however, it can happen to intervene on these parameters, modifying them for specific needs or requirements, or simply happens to have two identical engines with two slightly different settings, and this inevitably changes the jetting which is more suitable for the different settings.

The software SET-UP Carburetor Experience allows you to take account of the changes that eventually do to your setting and quickly find the optimum jetting.

In Experience version there is also an option (overheating) that allows you to calculate a carburetion richer in the case your engine has overheating problems.



max speed [km/hr]	110
max power [HP]	48.2
total weight [kg]	165
throttle up [s]	0.1

oil mixture [%]	4
compr.ratio [cc]	<input type="text"/>
exhaust [deg]	<input type="text"/>
ignition [mm]	<input type="text"/>
overheating	<input type="checkbox"/>

OPTIMUM JETTING CALCULATION BASED ON TYPE FILTER

The characteristics of the filter change the pressure conditions in which works the carburetor and consequently the response that delivers according to the demands of the engine.



For this reason NT-Project has analyzed the characteristics of filters used in the different categories and with different engines (in the image there is one of the filters of the category KZ kart) and has inserted them directly into the software SET-UP Carburetor. In Experience version is also provided the option to take into account the possible presence of a filter cover in the event of rain, which then limits the efficiency and alters the carburetion.

Thanks to this you can quickly find the optimal jetting with the filter used and if you change it with another model, you can quickly see how change the calibration for the new filter.

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OPTIMUM JETTING CALCULATION IN ALL WEATHER CONDITIONS

In a 2-stroke engine the carburetion is essential to have fully potential and performance of the engine, in fact the achievement of optimum temperatures in the combustion chamber and in the exhaust system is what allows you to get maximum efficiency possible for the engine.

As is know to changing atmospheric conditions is necessary recalibrate the carburetor so that it continues to provide the optimum carburetion under the new conditions.

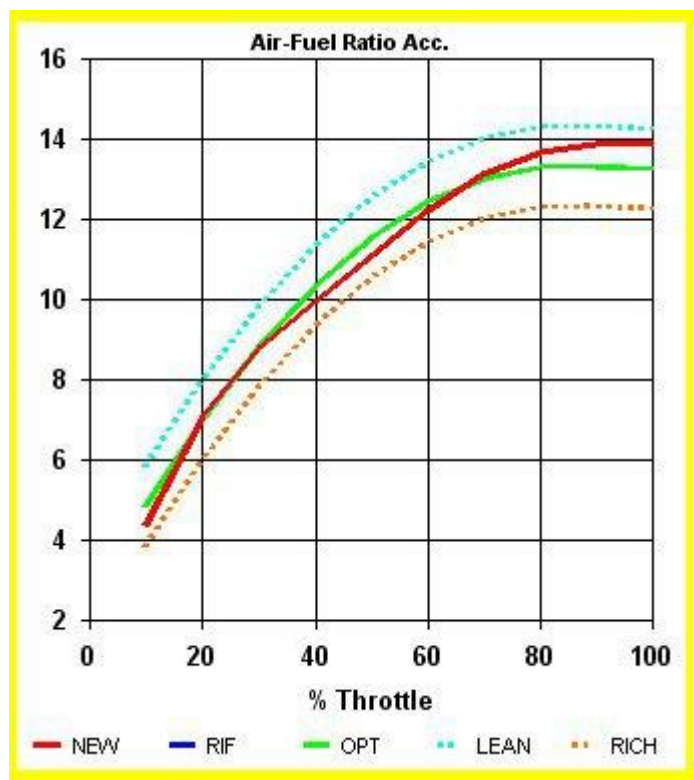
In the software SET-UP Carburetor this aspect has been very cared for and allows you to quickly find the new jetting to always have the best performance for your engine.

In fact in the software is sufficient enter the pressure, the temperature and the humidity, and immediately you will see how it is your carburetion and how to change the jetting for each weather conditions.



CARBURETION CALCULATION and JETTING MODIFICATION

After entering into the software the calibration data that you've in your carburetor or that you want testing, together with the operating and the weather conditions, clicking the START button software SET-UP Carburetor calculates the carburetion that your carburetor determines.



This carburetion is compared with that which the carburetor should provide to allow the engine to have the maximum performance.

In fact, in a 2-stroke engine with carburetor admission the air / fuel ratio which allows to obtain the best performance varies depending on the operating conditions (throttle opening butterfly, engine speed) in that it must take into account, for example, of the incomplete vaporization of the mixture which there is a low load, or of the additional demand of fuel that is necessary at high speed, etc.

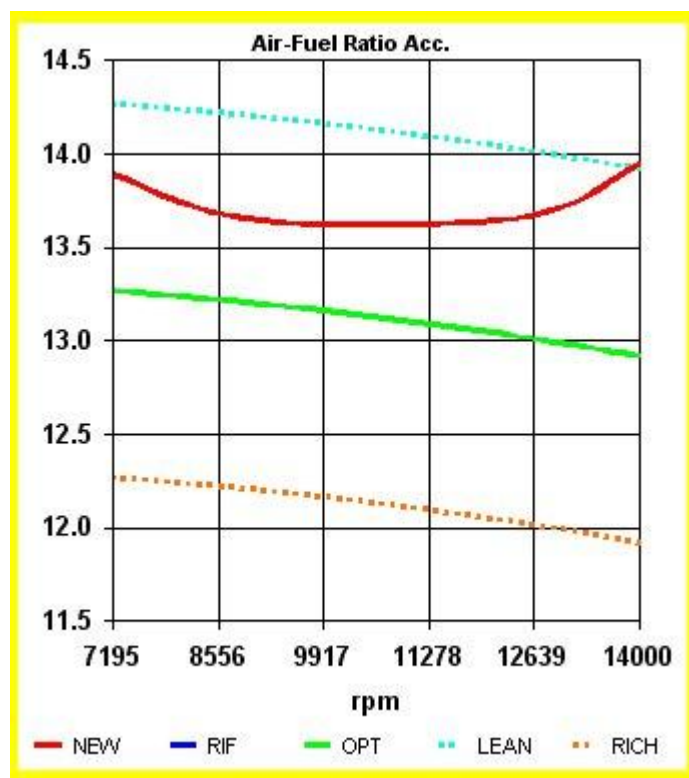
The comparison is done both at partial loads (in the different throttle openings), both at full load (in all speed of operation), thus it will be possible to optimize the jetting in all operating conditions and therefore have maximum performance at all points of the track and in all the driving conditions.

The green line is the optimum carburetion for the engine, while the red line is the carburetion that carburetor gives with the calibration that you've entered, so already just looking at the graphs understands immediately what are the points to be improved in order to obtain the carburetion better for the engine.

In the figure shown for example of the carburetion at the partial loads you see that you have a good carburetion in first opening, then the carburetion is a bit richer than it should be, until it becomes lean in the transition.

While in the figure relative to the carburetion at full load you can see that with the calibration inserted the carburation is lean in all the operation range.

In addition to the green and red lines the software also shows lines which indicate the limits of lean carburetion (light blue) and of rich carburetion (orange), beyond which it is not advisable in any case go to avoid reliability problems or malfunction.



In addition to graphics software SET-UP Carburetor immediately recommended interventions to be made to correct the jetting and close as possible to the optimum carburetion

LOAD 0-50% MIXTURE RICH -2.9% INCREASE THROTTLE CUTAWAY - DECREASE IDLE JET - TO UNSCREW AIR SCREW
LOAD 50-100% MIXTURE LEAN 2.3% INCREASE ATOMIZER - PUT UP NEEDLE
FULL LOAD MIXTURE LEAN 4.5% INCREASE MAIN JET

In fact, for every operating condition the software SET-UP Carburetor will indicate the situation (rich mixture, lean, or ok), the percentage of the deviation from the optimum value, and especially how to act to improve the situation in the different zones, indicating for first the calibration element most influential in that area and to follow the others that affect.

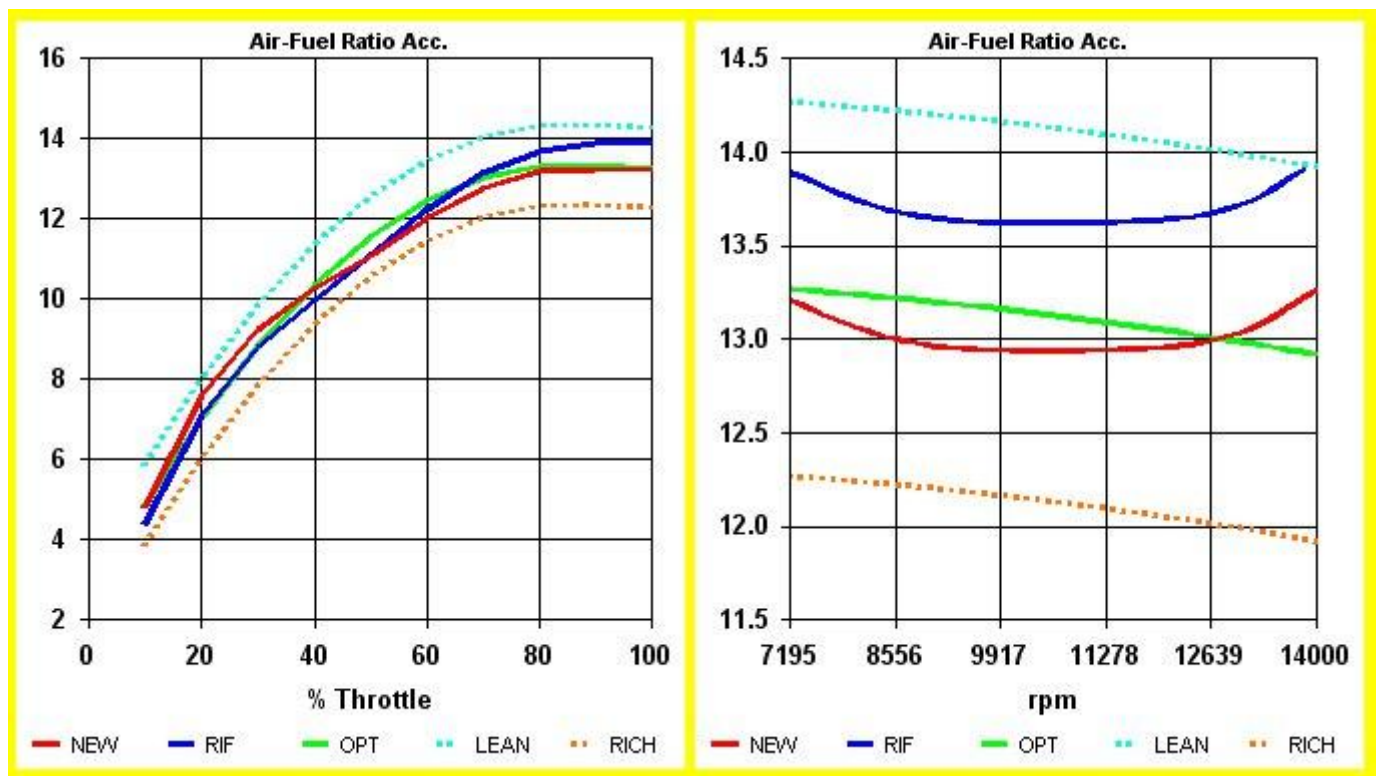
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CARBURETION CALCULATION and JETTING MODIFICATION

LOAD 0-50% MIXTURE RICH -2.9% INCREASE THROTTLE CUTAWAY - DECREASE IDLE JET - TO UNSCREW AIR SCREW
LOAD 50-100% MIXTURE LEAN 2.3% INCREASE ATOMIZER - PUT UP NEEDLE
FULL LOAD MIXTURE LEAN 4.5% INCREASE MAIN JET

Based on information provided by the software SET-UP Carburetor in within seconds you change the initial jetting and you get that that provides the optimum carburetion for the engine.



In the graphs you can see how was the carburetion with the jetting initially inserted (blue line) and that due to the jetting modified (red line), which must be as close as possible to that of the optimum carburetion.

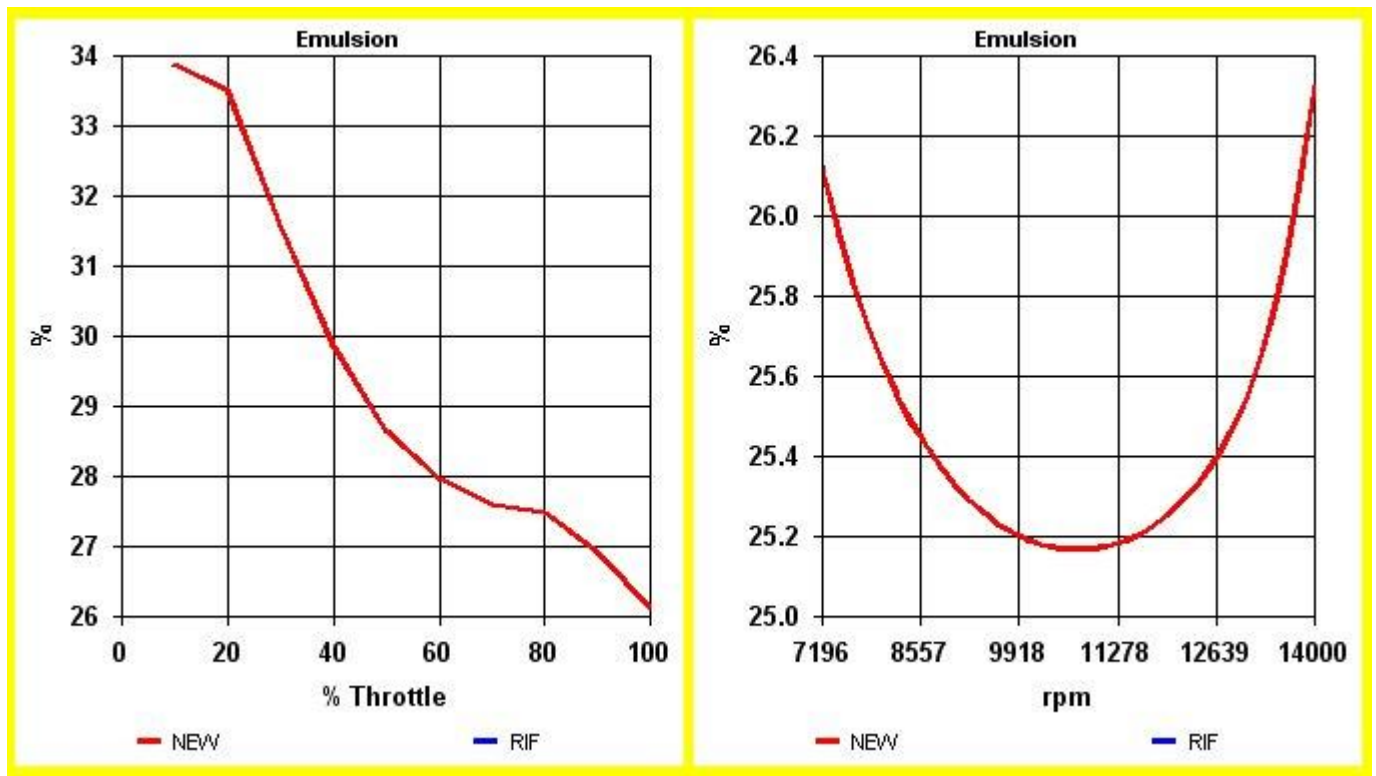
LOAD 0-50% MIXTURE OK -1.1%
LOAD 50-100% MIXTURE OK -1.3%
FULL LOAD MIXTURE OK -0.7%

Thanks to the changes suggested by the software you make corrections to the jetting in order to have the best combination of optimum carburetion both at partial loads, both in the transition, both at full load.

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FUEL EMULSION CALCULATION

As is known greater is the emulsion of fuel, better will be the combustion, therefore the carburetor in addition to ensuring the air - fuel ratio to have an optimal carburetion, must be able to emulsion the fuel as possible. According to the choices of the calibration elements is possible to have many optimal carburation but with different degree of emulsion. **The great feature of the software SET-UP Carburetor Experience is to calculate the degree of emulsion of the fuel in any operating condition, both to the different throttle openings, both at full load.**

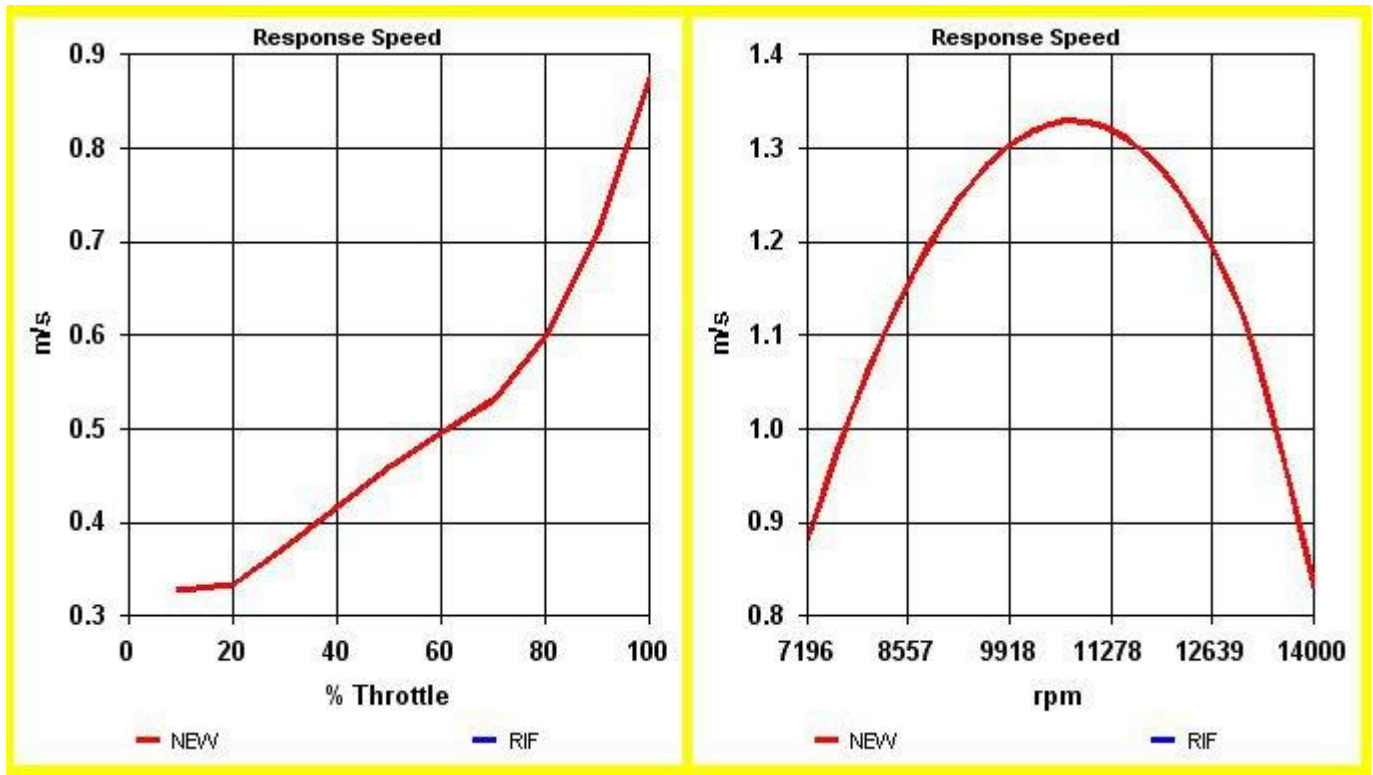


As we will see later this will allow you to compare two calibrations even deeper and to understand therefore between two calibrations both optimal, the one that can give more at the level of combustion efficiency and therefore of performance.

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CARBURETOR RESPONSE SPEED

The carburetor reacts to the request of the engine which in turn depends on the demands of the driver, so the speed with which the engine is able to respond to commands of the driver is also linked to what is ready the carburetor to provide the correct carburation. The response depends on the elements of the carburetor calibration that you choose, in fact according to the elements that you choose is may have different response speed in the different operating conditions. **The other big feature of the software SET-UP Carburetor Experience is to calculate the speed of response of the carburetor in any operating condition, both to the different throttle openings, both at full load.**



As we will see later this will allow you to compare two calibrations even deeper and understand therefore between two calibrations both optimal, one that can make more ready your engine thereby allows you to earn that time to each accelerated that in one lap can make the difference.

SET-UP CARBURETOR *Experience*

JETTING AUTOMATIC CALCULATION

In addition to the charts with the carburetion and the advice to change jetting both at partial loads, both at full load, the software the software **SET-UP Carburetor Experience performs an automatic calculation of the changes to make at the initial jetting to optimize the carburetion.**

For first **calculates how should be modified idle jet (or the idle atomizer if present) and the main jet**, keeping fixed all the other calibration elements that have been inserted (red rectangle in the image).

After that **change the other calibration elements in the right direction and calculates again the optimal idle jet and the optimal main jet** for each of these new calibrations.

These other calibrations calculated by the software are very important as if the initial jetting is very wrong to act only idle jet and main jet may not be sufficient, therefore, software change one by one the other initial elements of calibration (red circles in the figure) in order to find solutions which may be significantly better than the jetting initial.

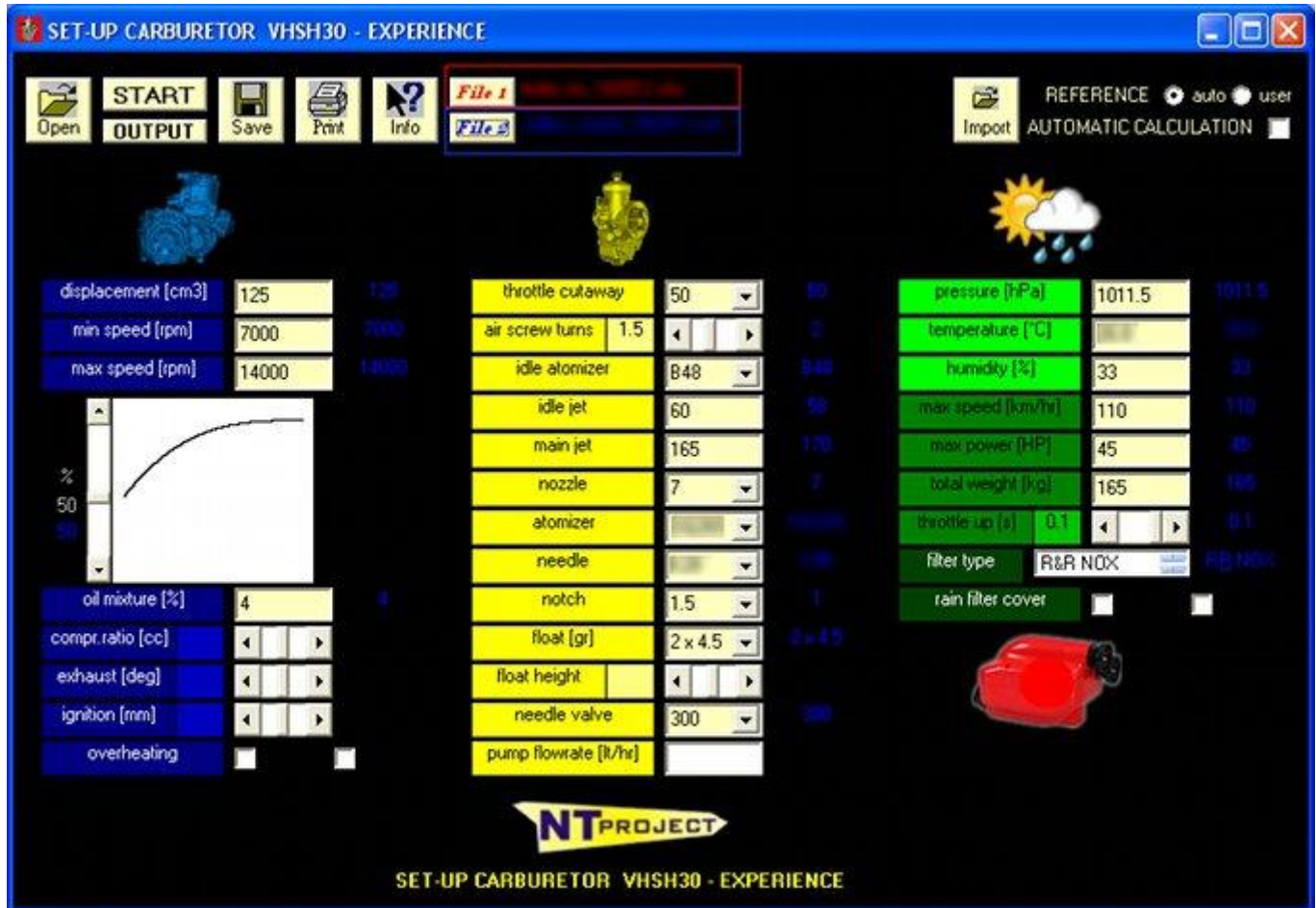
CALIBRATIONS CALCULATED							
throttle cutaway	50	55	50	50	50	50	50
air screw turns	2	2	2.5	2	2	2	2
idle atomizer	38	46	39	42	43	35	38
idle jet	60	60	60	60	60	60	60
main jet	161	159	161	161	161	160	160
nozzle	7	7	7	6	7	7	7
atomizer	DP269	DP269	DP269	DP269	DP267	DP269	DP269
needle							
notch	2	2	2	2	2	3	2
float [gr]	2 x 4	2 x 4	2 x 4	2 x 4	2 x 4	2 x 4	2 x 4.5
float height							
needle valve	300	300	300	300	300	300	300
pump flowrate [lt/hr]							

This great feature of the software SET-UP Carburetor Experience not only allows you to optimize your jetting very quickly, but you can find solutions that can further refine it allowing you to maximize engine performance in all operating conditions.

SET-UP CARBURETOR *Experience*

JETTING COMPARISON

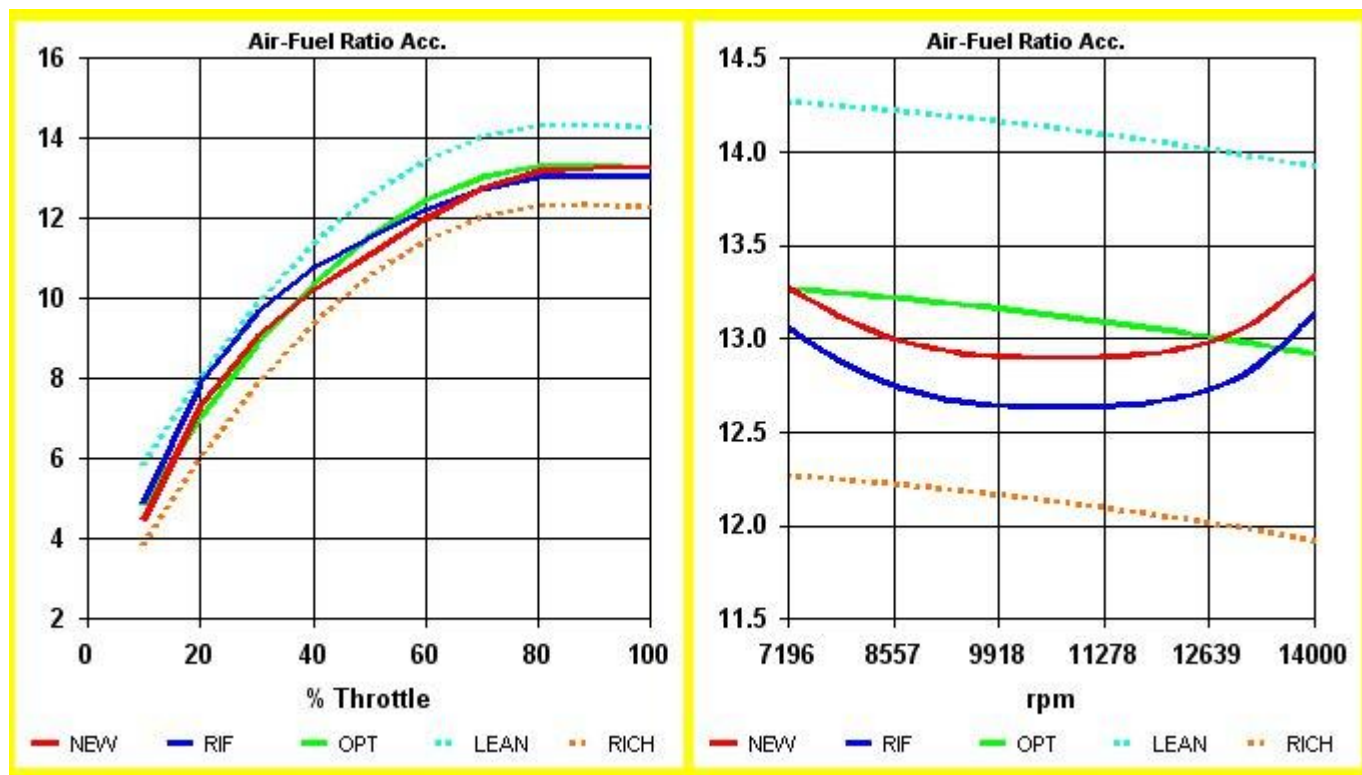
The software SET-UP Carburetor Experience gives you the opportunity to directly compare two calibrations. In fact, you can select two files that you saved and compare them, this will allow you to see point by point the different carburetion that give the two calibrations selected.



Thanks to charts you will see immediately the carburation that give the two calibrations that you're comparing and to evaluate the behavior both to the different throttle openings, both at full load.

The software will then indicate specifically how is the carburetion with a calibration in comparison to the other in the different operating zones. In the graphs above, for example the jetting red determines a carburetion richer in the first opening, similar in the transition and more lean at full load.

LOAD 0-50% MIXTURE RICH -5.7% INCREASE THROTTLE CUTAWAY - DECREASE IDLE JET - TO UNSCREW AIR SCREW
LOAD 50-100% MIXTURE OK 0.7%
FULL LOAD MIXTURE LEAN 2.0% INCREASE MAIN JET

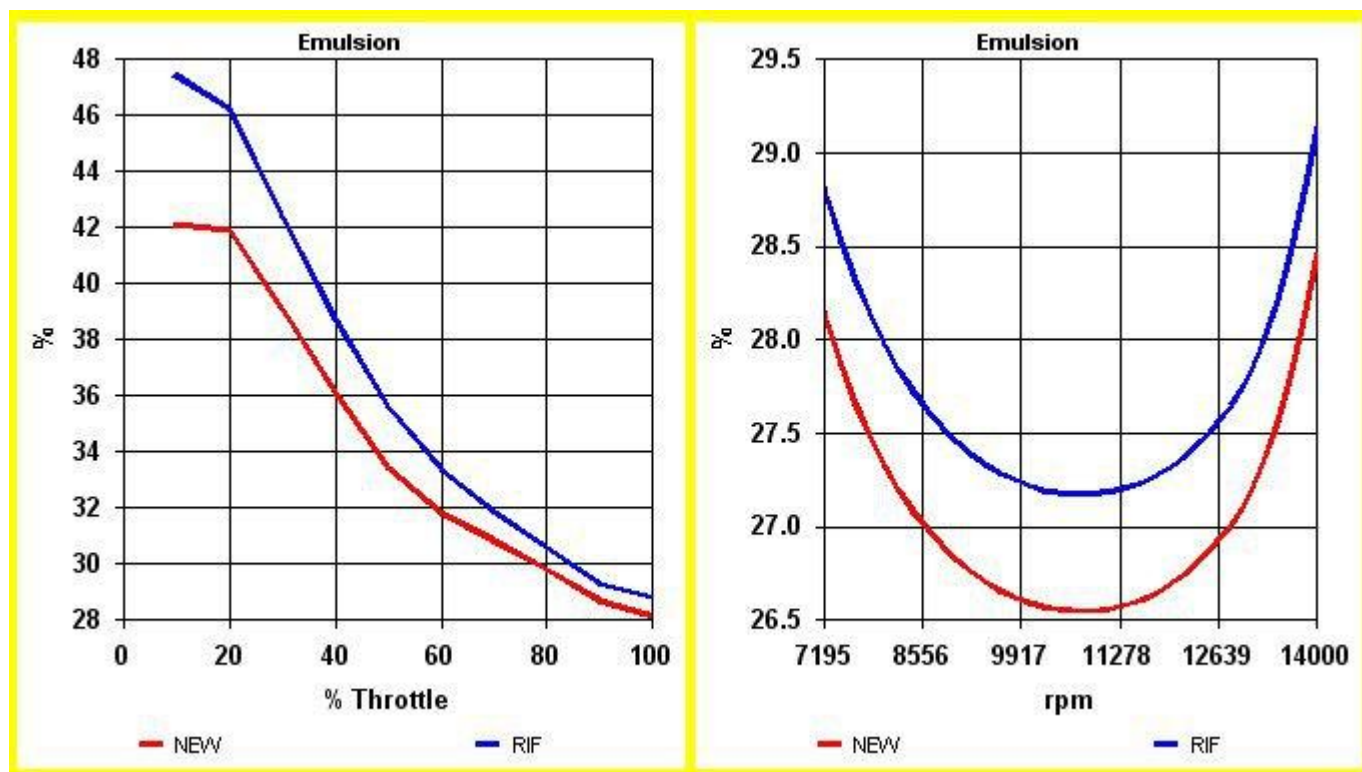


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COMPARISON FUEL EMULSION

In addition to the comparison of the carburetion the software SET-UP Carburetor Experience allows you to compare the degree of emulsion that the different calibrations give. This is very important to understand which between two calibrations both optimal as carburetion, can give even better performance. In fact the fuel emulsion is very important for two aspects, the combustion efficiency and the temperatures in the combustion chamber. On the one hand a better emulsion of the fuel, allows to have a better combustion and therefore to improve the performance, while on the other hand a poor emulsion gives temperatures lowers in combustion chamber.



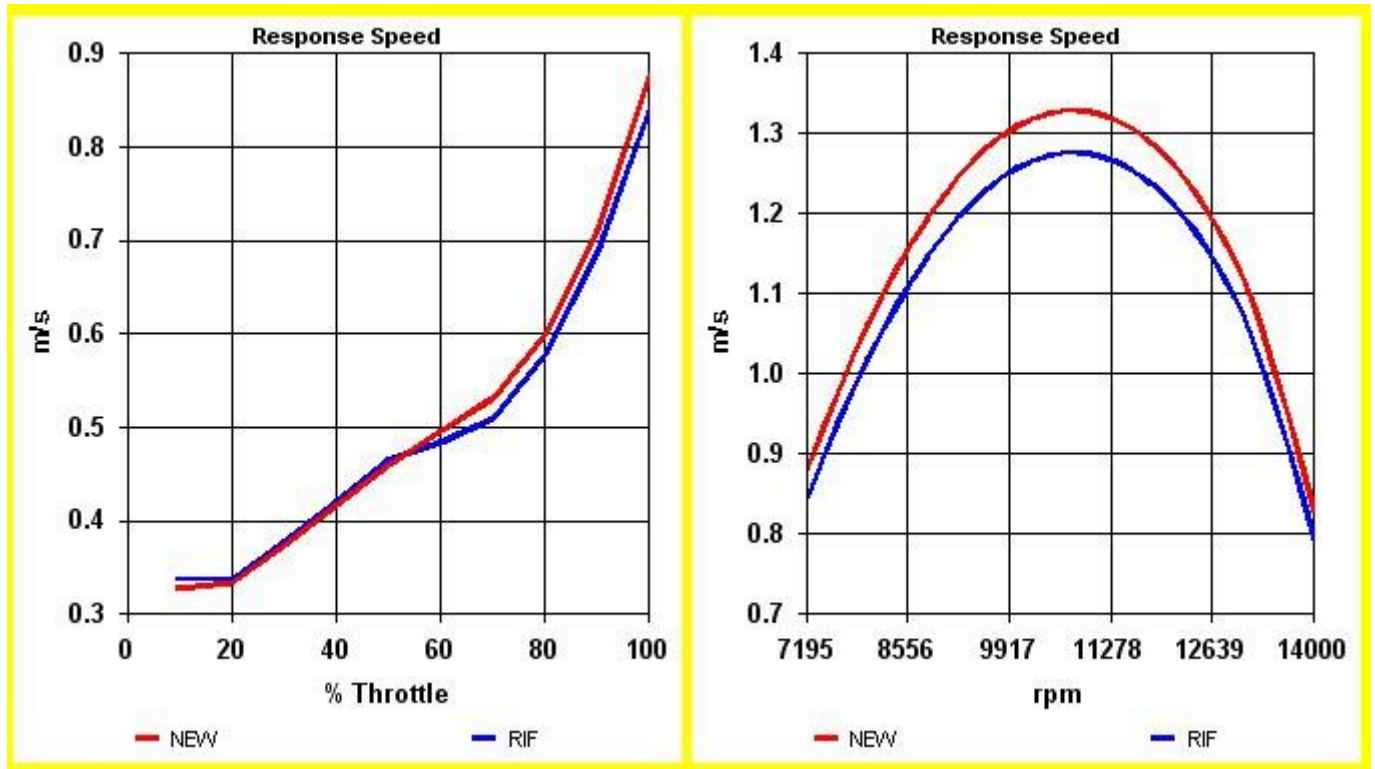
In the graphs shown for example you can see that the blue calibration emulsion better the fuel in the whole operation than the red, therefore thanks to the software SET-UP Carburetor Experience will be easy to choose which of two calibrations both optimal, can allow you to have even better performance, or to have a superior cooling, if you have problems of overheating or of detonation.

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COMPARISON CARBURETOR RESPONSE SPEED

In addition to the comparison of the air - fuel ratio and of the degree of emulsion software SET-UP Carburetor Experience allows you to compare the speed of response that different calibrations give. So between two settings that give an optimal carburetion, as well as assess the emulsion, you can choose the jetting that allows you to have a better response to the benefit of performance at each acceleration.



In the graphs shown for example you can see how the calibration blue gives a slightly better response in the first opening, while in the transition and at full load the red is preferable, therefore, thanks to the software SET-UP Carburetor Experience you can easily choose the best performing jetting taking into account the characteristics of the track or the driving style of the driver.

SET-UP CARBURETOR *Experience*

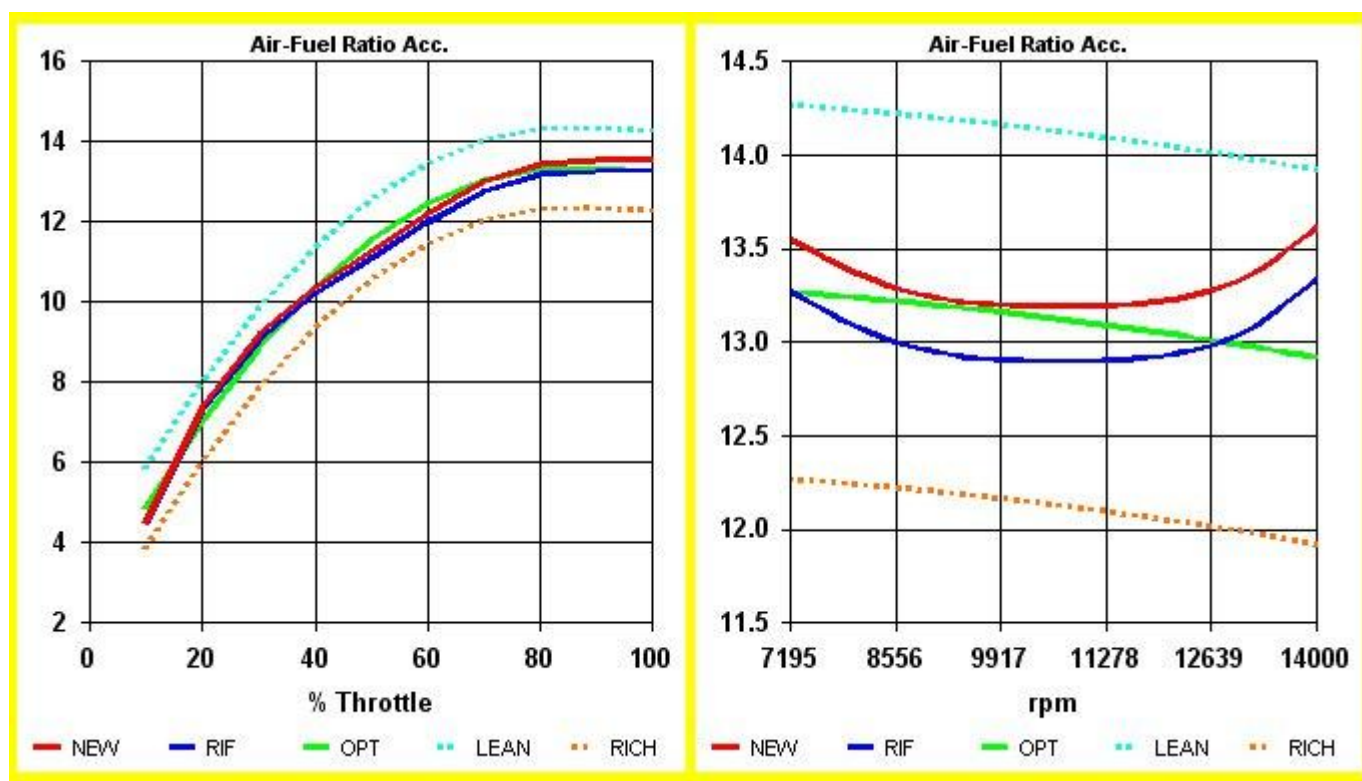
REFERENCE JETTING

If you have found a jetting that provides a carburetion found to be particularly suitable for an engine or for the style driving of a driver, or on a particular track, the software SET-UP Carburetor gives you the opportunity to take this carburetion how reference and use it to get all the indications of modification. You'll just have to open the file with the your setting, select the "user" before making the calculation and then for example update the data of weather or other data.

When doing the calculation the software SET-UP Carburetor will show you the graphs putting your carburetion of reference (blue line) and the new (red line) due to changes you have made (for example, new weather conditions)

Moreover, the software SET-UP Carburetor will give the indications on how to change the jetting to return to your carburetion you have taken as a reference.

LOAD 0-50%	MIXTURE OK 1.7%	
LOAD 50-100%	MIXTURE LEAN 2.0%	INCREASE ATOMIZER - PUT UP NEEDLE
FULL LOAD	MIXTURE LEAN 2.2%	INCREASE MAIN JET

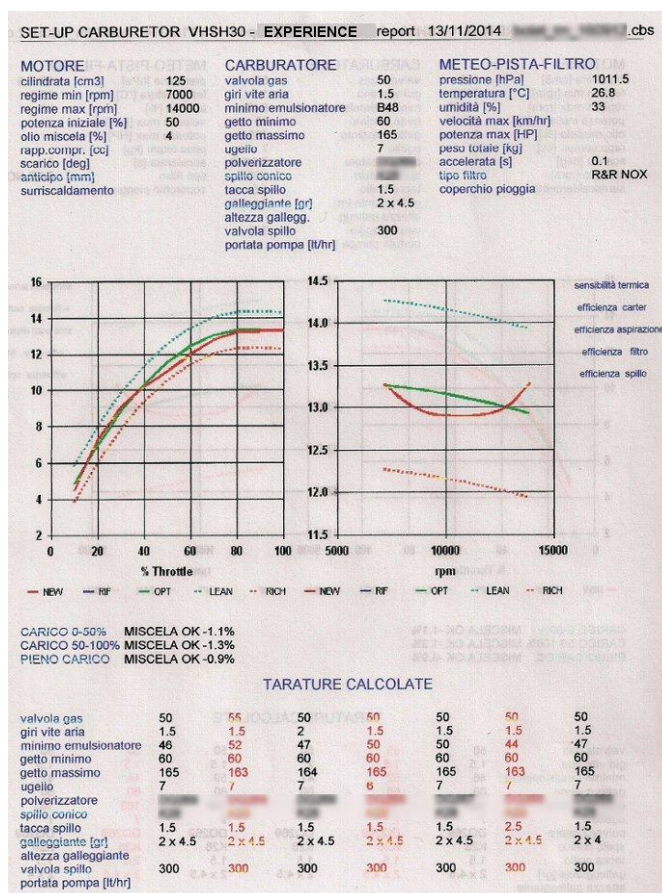


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PRINT DATA and RESULTS

The software SET-UP Carburetor Experience gives you the opportunity then to print the data entered and the carburetion results obtained, with the relative jetting calculated, in a convenient report. this can be very useful if you want to prepare in advance the jetting and if you don't want to bring your computer on track.



SET-UP CARBURETOR *Experience*

ENGINE - CARBURETOR - FILTER SETTINGS

Each engine has specific characteristics that influence in significantly the response of the carburetor. NT-Project thanks to his experience of analysis and simulation fluid dynamics analyzes the different types of engines, based on the characteristics, the levels of tuning, etc. and sets in software the corresponding parameters in such a way that the customer can immediately obtain the optimum jetting for the characteristics of its engine.

In the racing often happens, however, to make continuous developments at the engine, or to change the model of the engine, etc. for this reason in the software SET-UP Carburetor there are some parameters that can be manage and that allow you to continue to use the software without any difficulty and to get always the optimum jetting even when making changes.



Besides the changes to the engine, or the change of engine model, it can happen that are made different heat treatments at cylinder that alter the heat transfer and therefore make the engine more or less sensitive to atmospheric conditions, in the software SET-UP Carburetor you can handle this too, allowing you to always have the software configured for your situation.

Same can be said for filters, NT-Project analyzes in advance filter types and their average efficiency, pre-setting these values in the software, however, it may happen that due to wear, position, etc. the performance of the filter changes, for this reason in the software SET-UP Carburetor you can also take into account of this situation and manage it easily.

Finally, it may happen that for processing defects or wear some needles and atomizers do not work more optimally, and if you don't have immediately the ability to replace it, is important to take this into account to correct the jetting accordingly, in the software SET-UP Carburetor this aspect has been taken into account and can be taken into account safely.

As you can see every aspect is studied in detail for allow you to have at your side a professional instrument to manage over time the jetting and have in each provided the optimum carburetion for your engine and your filter.

SET-UP CARBURETOR *Experience*

SUMMARY FEATURES SOFTWARE SET-UP CARBURETOR EXPERIENCE

Finally we summarize the features of the software SET-UP Carburetor Experience compared with those of other software versions.

	BASIC	PROFESSIONAL	EXPERIENCE
OPTIMUM JETTING CALCULATION ACTING ON ALL THE CALIBRATION ELEMENTS	X	X	X
OPTIMUM JETTING CALCULATION BASED ON REAL CONDITIONS OF ENGINE OPERATION	X	X	X
OPTIMUM JETTING CALCULATION BASED ON THE FEATURES OF TRACK, VEHICLE and DRIVER		X	X
OPTIMUM JETTING CALCULATION CHANGING ENGINE SET-UP		X	X
OPTIMUM JETTING CALCULATION BASED ON TYPE FILTER	X	X	X
OPTIMUM JETTING CALCULATION IN ALL WEATHER CONDITIONS	X	X	X
CARBURETION CALCULATION and ADVICES JETTING MODIFICATION	X	X	X
JETTING AUTOMATIC CALCULATION		X	X
JETTING COMPARISON		X	X
REFERENCE JETTING	X	X	X
PRINT DATA and RESULTS		X	X
ENGINE - CARBURETOR - FILTER SETTINGS	X	X	X
FUEL EMULSION CALCULATION			X
CARBURETOR RESPONSE SPEED CALCULATION			X