THE HEART OF KART

SCREAMER 3 – KZ 125cc

USER MANUAL

MAN-077-3 - EN

FEEDING

Fuel mixture **98 RON** and **4,5%** oil (homologated CIK).

Our experience suggests the use of oil such as:

- WLADOIL K 2T;
- ELF HTX 976.

GEARBOX LUBRIFICATION

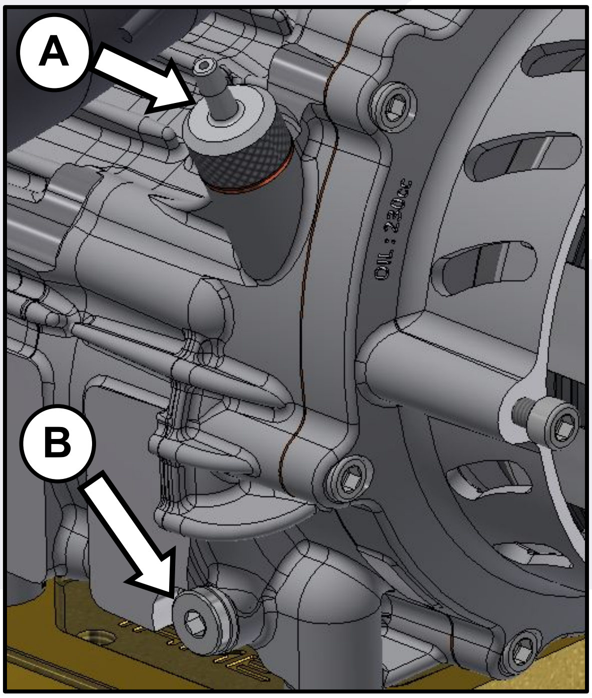
The engine is supplied without oil in the gearbox

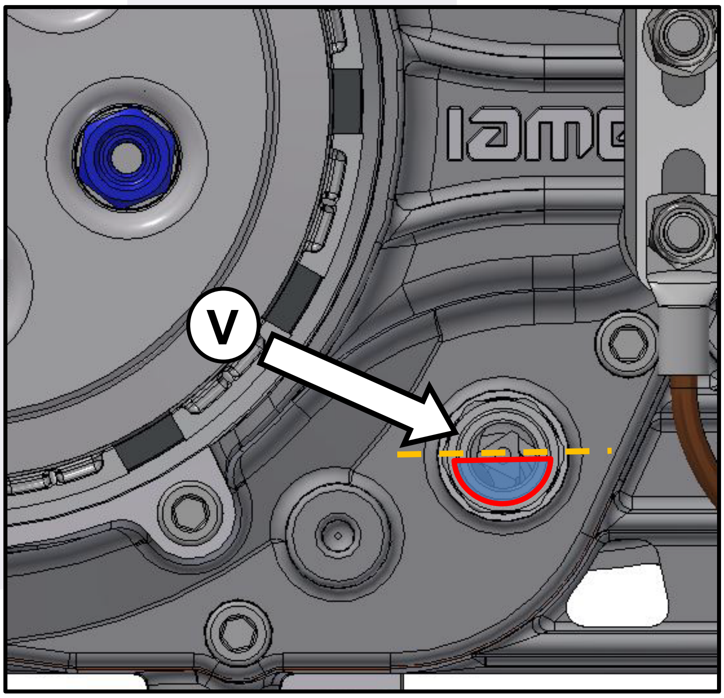
GEARBOX OIL CHARGING

Before using, fill through the fill in hole on the crankcase (A) around **230 ml** of oil with specification **SAE 75W (ELF HTX 740)** or **SAE 10W50**. To be sure that you have fill in with the right quantity of oil, check the level through the level screw on the crankcase (V), as shown in the picture. The level of oil need to be at the middle of the level screw with the engine perfectly flat on your work desk.
A complete oil change is recommended after **20 hours** of operation NO **competition use** and **8÷10 hours in competition use**.

GEARBOX OIL DISCHARGING

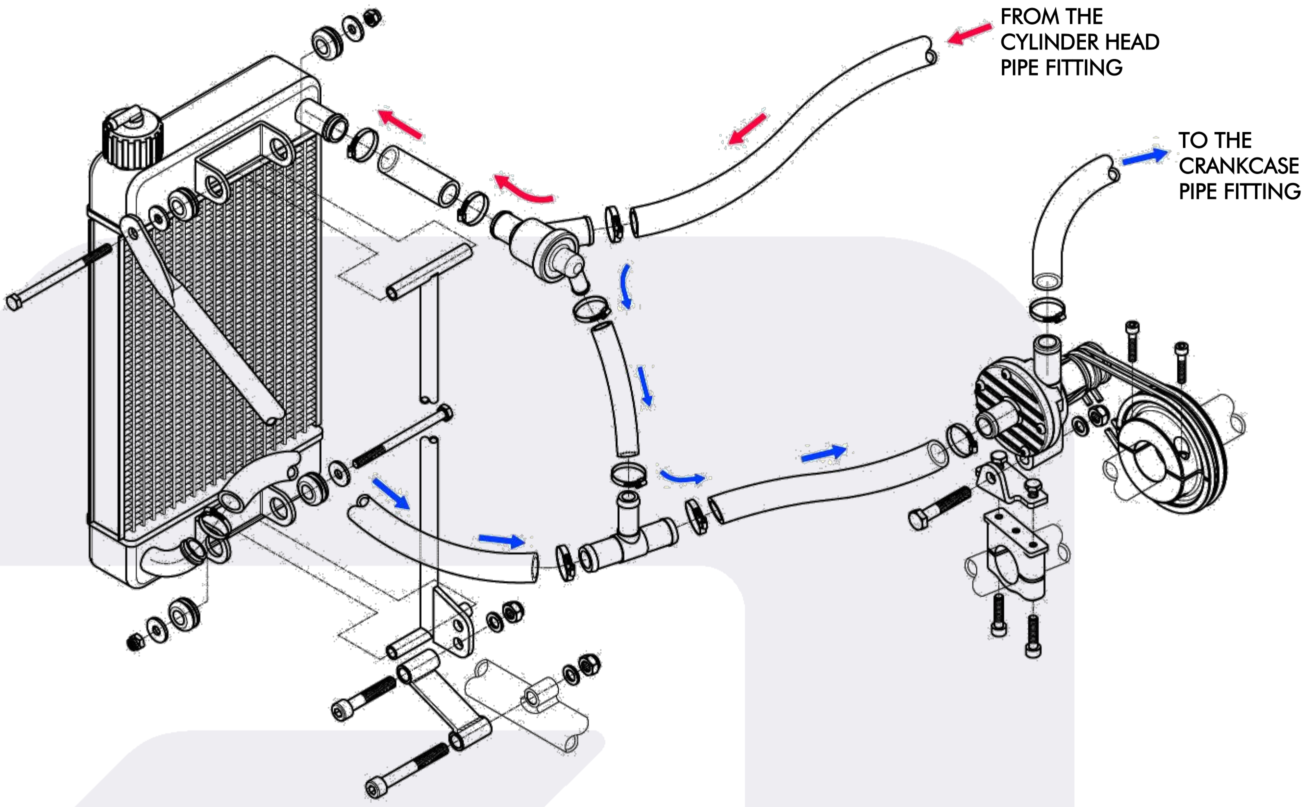
Remove the drain plug (B) to evacuate the oil and check the magnet inside the plug to be sure that there is no eventual presence of metallic particles.





COOLING SYSTEM CONNECTIONS

CONNECT THE SYSTEM AS SHOWN IN THE PICTURE



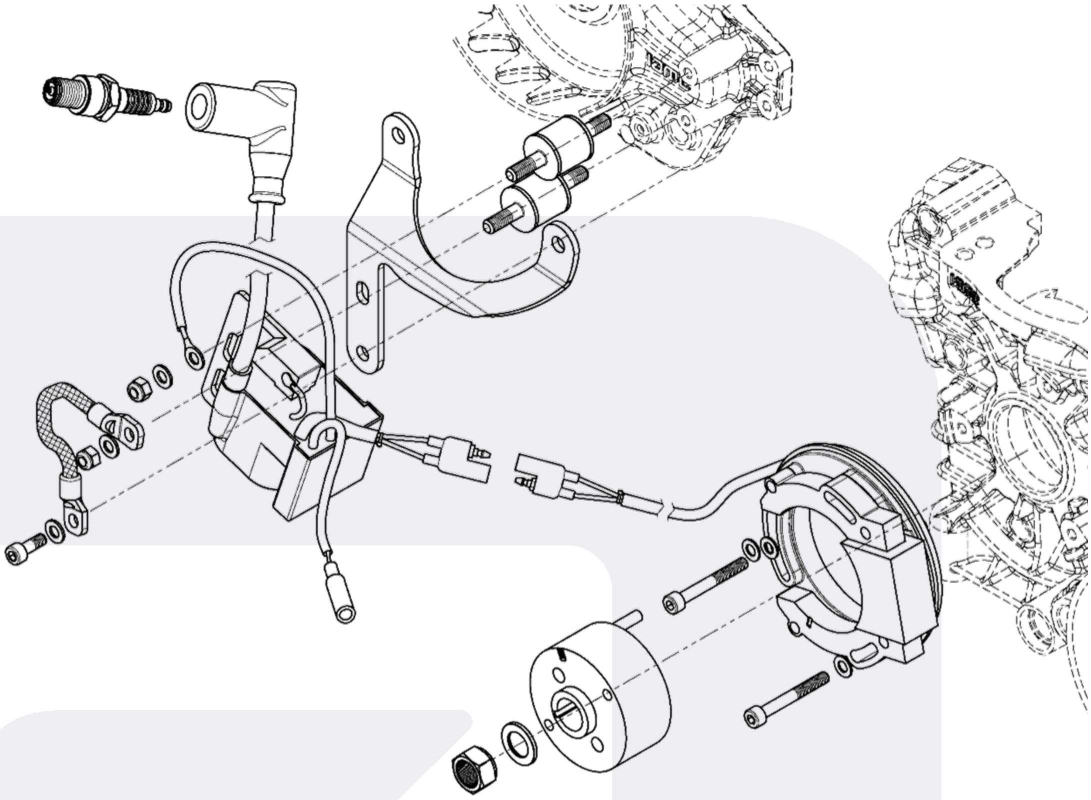
Once the system is filled (with pure water), provide to the good air venting by unscrewing the screw of venting on the cylinder head.
We recommend the use of a 3 way-thermostat (opening temperature 48°C±2°C), as shown on the drawing, especially during the wintertime.
However, it is possible to make a direct connection by removing the thermostat, the T-pipe and the by-pass tube between them.
The presence of the thermostat doesn't eliminate the necessity of having enough cover on the surface of the radiator and the presence of a protective cover on the front part of the cylinder during the cold season (temperature ≤5°C).

Water cooling operation temperature limits:
MIN. 48°C / MAX. 54°C

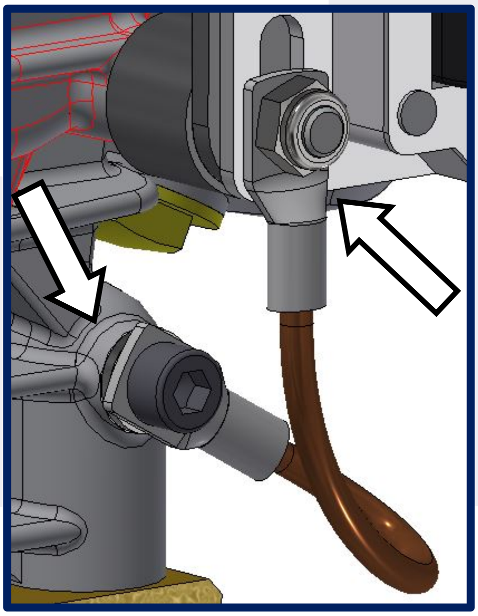
ELECTRIC SYSTEM

ELECTRIC CONNECTIONS

The engine is provided with an analogic ignition with the advance timing normally setting on **1.60mm** before the T.D.C.
The spark moment is when the marks of the rotor and stator are aligned.

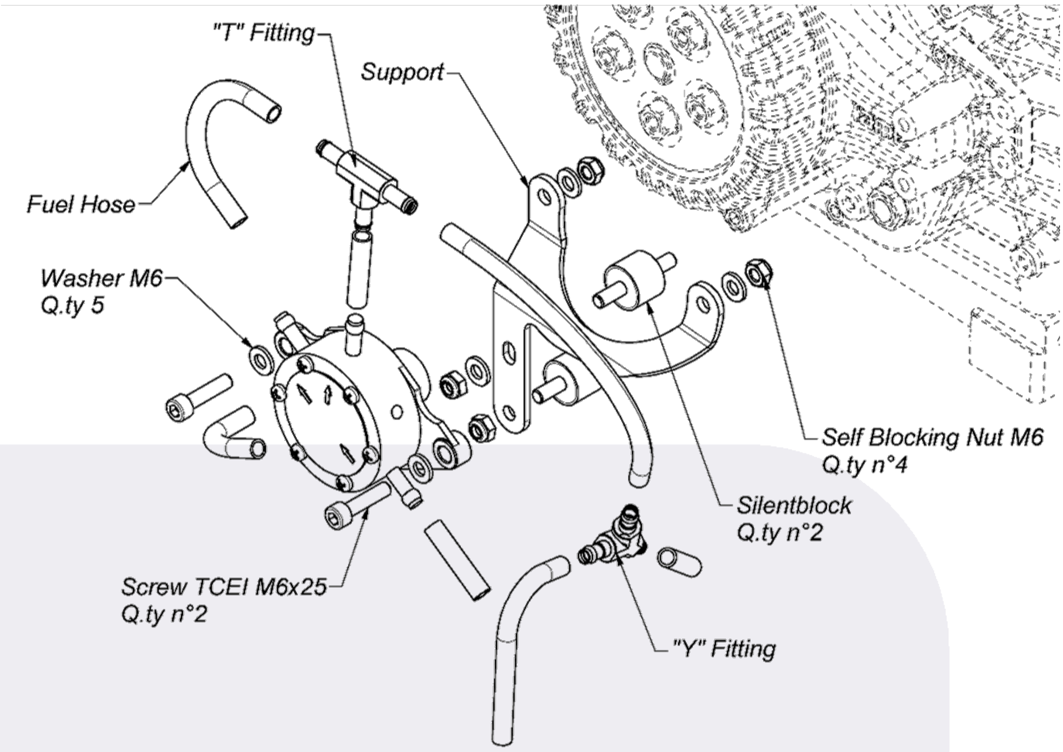


It is very important to connect the crankcase and the coil with a copper wire to be sure that the coil is the grounded.



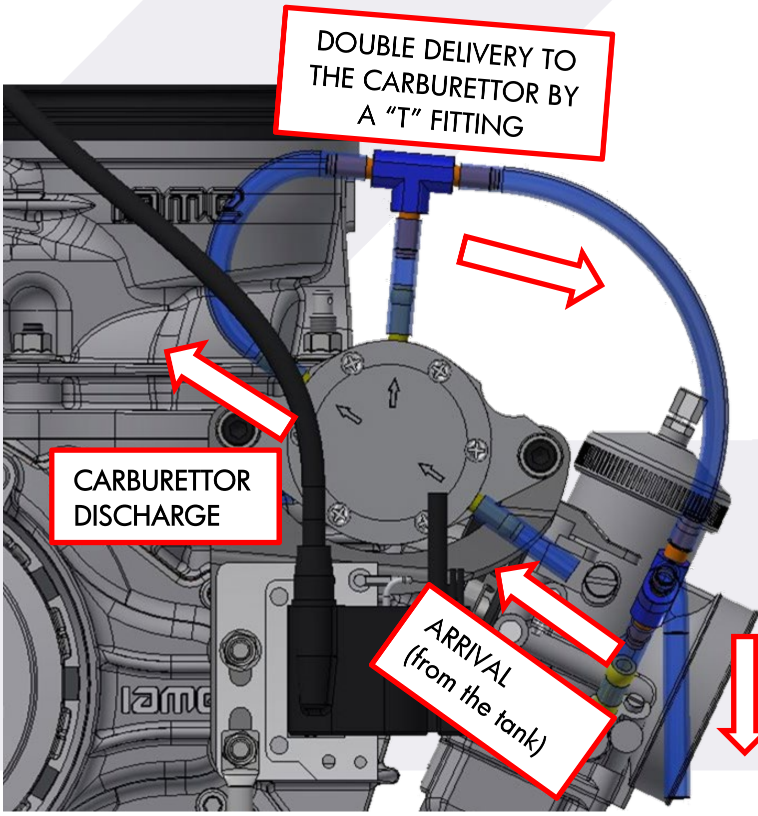
FUEL PUMP

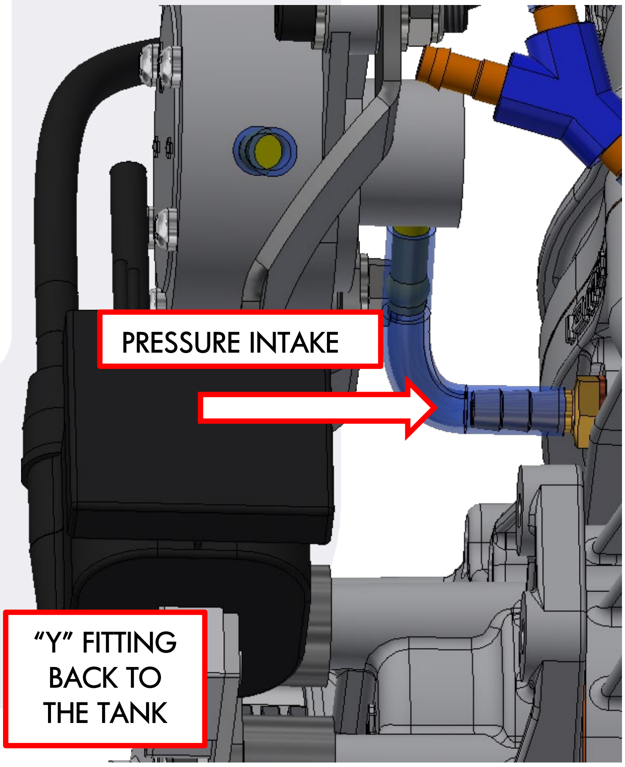
SUPPORT PUMP MOUNTING SCHEME



Remember to connect the copper wire and the other connections as shown in the picture of the previous page

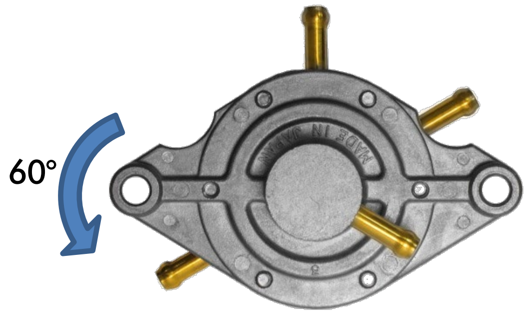
CORRECT CONNECTIONS OF THE FUEL PIPES





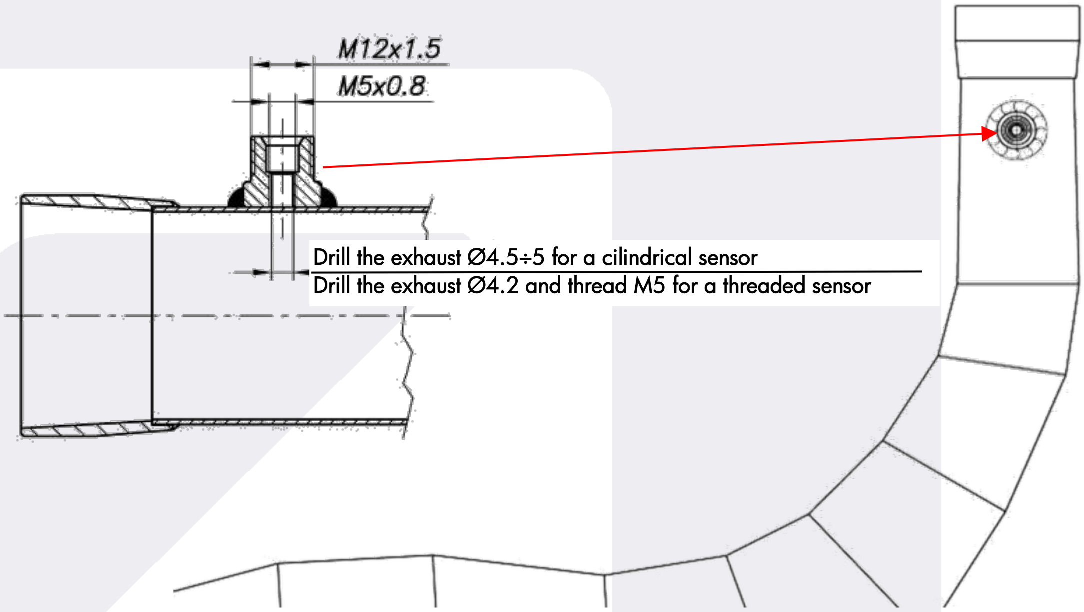
FUEL PUMP ADVICE

IT IS RECOMMENDED TO TURN THE CONNECTIONS OF THE FUEL PUMP SECOND FIGURE FOR A MORE ARRANGEMENT OF CORRECT CONNECTIONS.



EXHAUST GAS TEMPERATURE PROBE

The muffler supplied with the engine is provided with a temperature probe fitting which is not drilled.
Whenever you wish to employ the probe, please proceed as shown in the figure below.



STEERING-WHEEL CLUTCH LEVER SETTING

Since the IAME clutch is equipped with a system that make the friction more gradual, he needs a more longer clutch handle stroke to disengage completely.
When setting the stroke, we recommend to tight the clutch handle at the maximum and to check that the clutch is well disengaged (free rotation of the clutch plate with the hand).

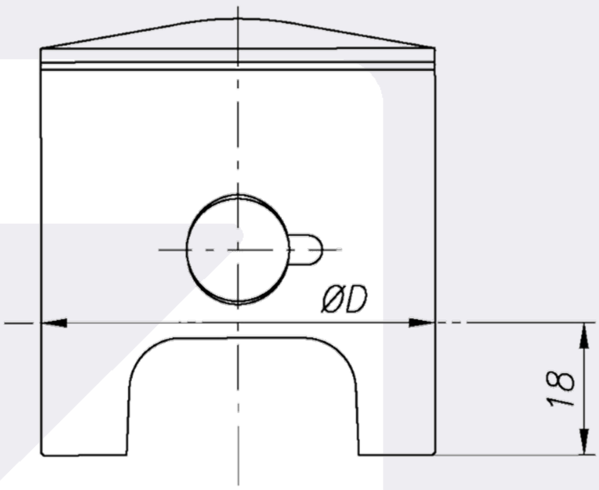
PISTON / CYLINDER MATCHING

The piston replacement must be done at specific intervals measured through fuel mixtures using in liters and depend also of how you will use the engine, for competition (reach the best performance possible) or hobby.
IAME suggests replacing the piston at **30lt** of fuel mixture or before (competition using), and if the play piston-cylinder is higher than **0.09mm**.

For NOT competitive use, you must change the piston at **60lt** of fuel mixture or in all the case when the play piston-cylinder is higher than **0.11mm**.

The recommended play between piston and cylinder with a new piston is **0.07÷0.08mm**.

The real diameter of the piston as to be check at **18mm** from the base, perpendicularly to the piston axle.



The measure marked on the head of the piston is the real rating.

In addition, the play between the piston ring tips (installed in the cylinder) must be **0.40mm**.

The play can be checked with a feeler gauge, by inserting the ring in the cylinder.

MAIN ENGINE COMPONENTS AVERAGE ESTIMATED LIFE

The estimated life of the different components of the engine, changes according to the use and to the desired performance.

PISTON

As detailed in the previous paragraph, during a competition use we suggest the replacement after **30lt**. For hobby use the replacement can be made after **60lt**.

MAIN BEARINGS

With the roller bearings, the life of these ones is the same than a full sporting season.

CONROD BIG END CAGE, CRANKPIN AND SHIMS

During the competition use we suggest the replacement every **90tl**.
For hobby use the replacement can be made around every **120lt**.

CONROD SMALL END CAGE

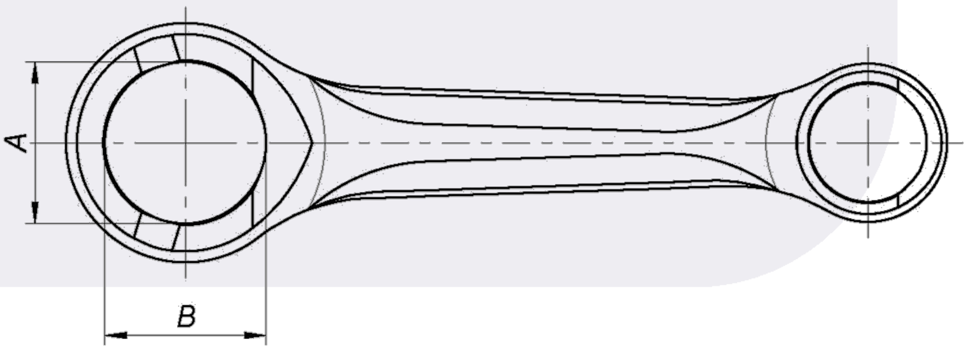
The replacement must be made every **60lt**.

CONROD

During the competition use we suggest the replacement around **180lt**.

For hobby use the replacement can be made around **240lt**.

Anyway, it must be replaced when the conrod head hole ovality exceeds **0.01mm**. This value is the difference between the diameter measured in "**A**" and "**B**" as indicated below.

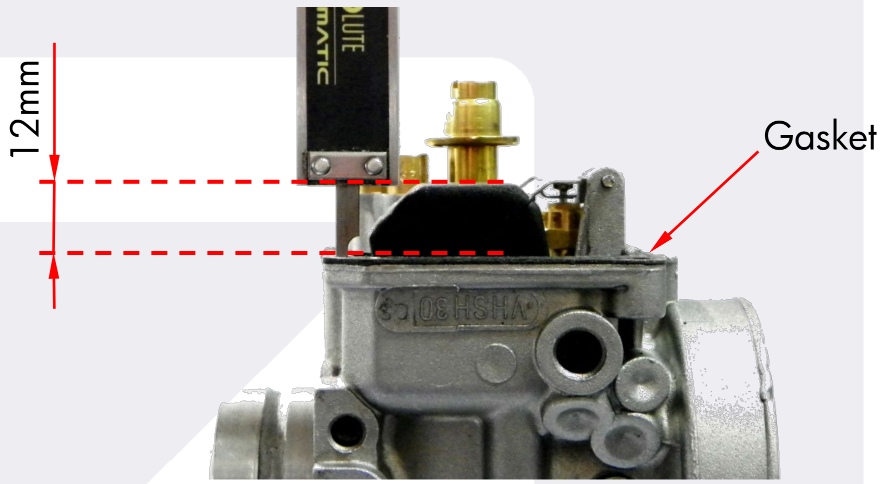


SETUP CARBURETTOR DELLORTO VHSH 30 CS

BASIC SETUP KZ SCREAMER 3		
jet max. = 165	atomizer = DQ 270	Fuel needle = 300
jet min. = 62	needle = K94 (3rd notch)	Throttle valve = 50
Idle emulsion tube B55	jet starter = 60	float = 9g
Float chamber level = 12mm		

The basic carburettor setup is deliberately very rich, planned for external temperature of 20°C, because it's not possible to know in which conditions the engine will be use for the first time.

THE SETUP OF THE FLOAT CHAMBER LEVEL IS VERY IMPORTANT: IT MUST BE 12mm WITH THE GASKET INSTALLED ON THE CARBURETTOR AS SHOWN IN THE PICTURE.



If you have another dimension, please adjust the two metallic plates which support the floats to obtain the prescribed level.

We recommend checking the float level of **both floats** to obtain the same value.

If you want a good setup of carburation in each condition, you will need to work on some points of the possible setup of the carburettor to adapt the rate of mixture depending of the track and weather conditions.
The operations to performed for a fine setting require a specific experience which cannot be acquired only through the support of these few lines; our target is to give simple suggestions to find the best carburettor setting according to the operating conditions.

We generally consider three ranges of engine areas: the minimum engine speed or low engine speed, achievable with slightly opened throttle, the median engine speed or transition engine speed, achievable with intermediate throttle lever opening, and the maximum engine speed, achievable with the maximum throttle opening.
In a float chamber carburettor such as this, there are different devices acting on each specific carburetion areas; their zone of influence are separated, as illustrated below, although affecting each other, even if it's pure theorical.

MINIMUM ENGINE SPEED

It can be adjusted by the screw "A" (see fig. 1), which acts on the throttle gas by slightly lifting or lowering it. Turn it clockwise to engine speed increases and turning counter-clockwise to decrease.

CARBURATION FOR THE MINIMUM ENGINE SPEED

It can be set by these components

the minimum jet in the float chamber
- the idle emulsion tube, above the minimum jet
- the air screw.

Generally, for the standard adjustments, the emulsion tube is not concerned.
You can obtain a richer carburation by increasing the minimum "L" jet size (see fig. 2), and leaner by decreasing the "L" jet size. The idle jet can be reached by removing the carburettor float chamber. A richer carburation can also be achieved by turning clockwise the air screw "B" (see fig. 1) and, conversely, turning it counter clockwise to get a leaner carburetion. It is recommended to adjust gradually by 5'÷10' each time, then check the result.

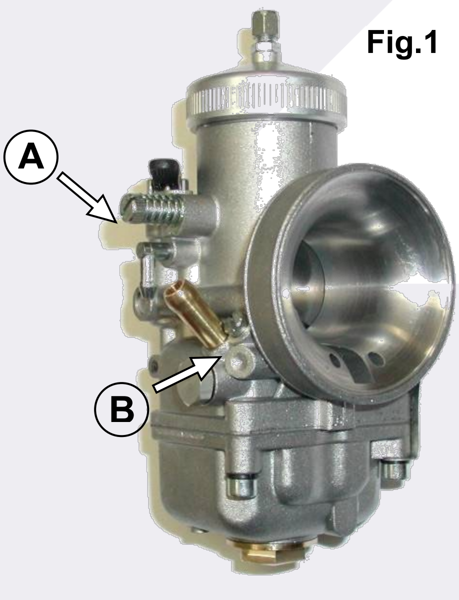


Fig.1

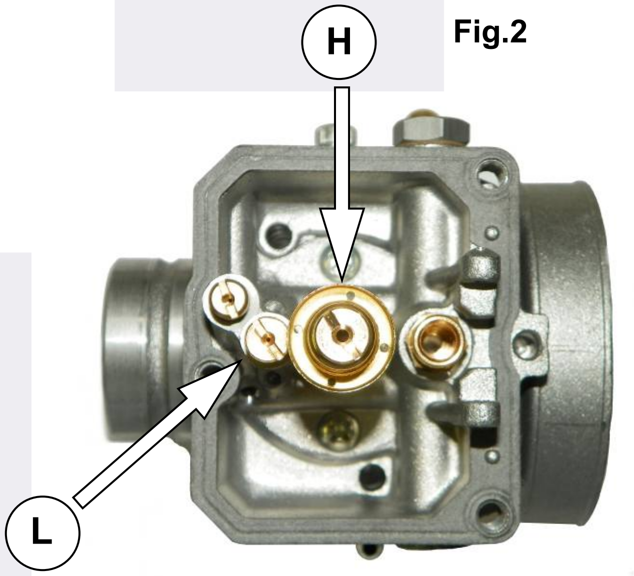


Fig.2

CARBURATION FOR THE MEDIAN ENGINE SPEED

It can be set by these components:

- conical needle
- the atomizer

The conical needle acts as shutter on the atomizer hole, and its axial position is determined by the throttle opening. Thanks to its particular conical configuration, when the throttle gradually opens, the needle creates a less shutter in the atomizer hole, regulating consequently the fuel flow.
The needle and the spray nozzle have been chosen to satisfy the different conditions.
The carburetion setting is performed by lifting or lowering the conical needle compare to the throttle.

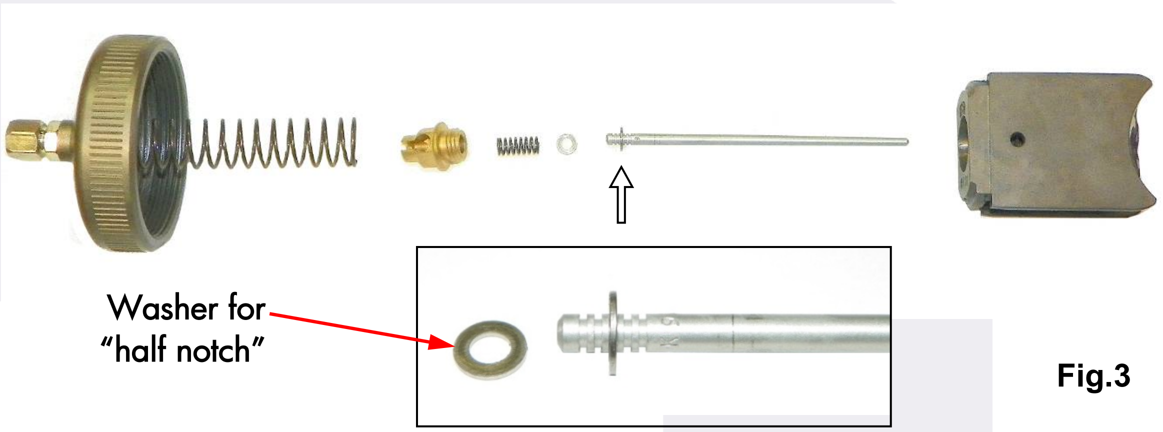
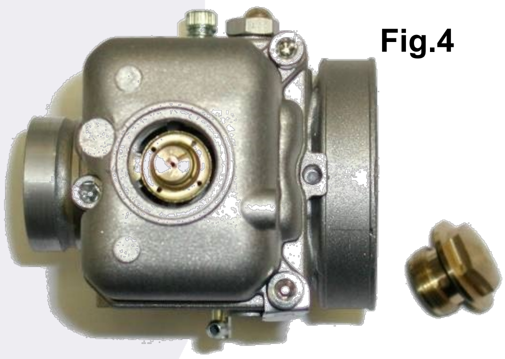


Fig.3

A richer carburetion is got by lifting the needle, by moving down the retainer clip to a lower notch; obviously a leaner carburation is got by lowering it, so moving the retainer clip to an upper notch. (see fig. 3). The basic needle adjustment is shown on the picture.
The conical needle is accessible by unscrewing the upper cover of the carburettor; then pull off the throttle valve together with the needle, off hook the throttle cable, and unscrew the fixing screw on the valve itself.

CARBURATION FOR THE MAXIMUM ENGINE SPEED

Fig.4



It can be set by this component:

- the max. jet

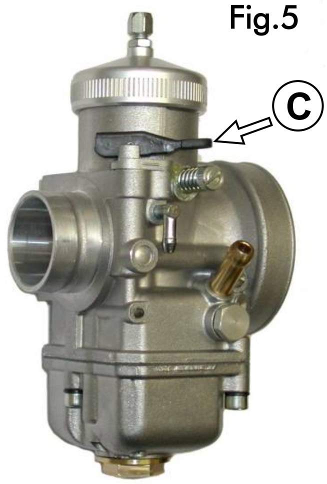
By increasing the max jet size "H" (see fig. 2) we will get a richer carburation and, at the opposite, a leaner one by decreasing the jet size.
To reach the max jet, unscrew the central plug on the float chamber (see fig. 4), or disassemble the float chamber itself.

As explained just above, there is no clear distinction among the areas of influence of the various components, as they interact and influence each other.
Generally, the max jet affects not only the carburation at max open throttle but also the whole mid-range carburation, even if it's less sensible than the needle position; therefore, the needle position slightly influences also the carburation at wide open throttle.
In the same way, when the throttle is slightly opened, the effects of the min jet and the air screw overlap with conical needle position effects.
To properly adjust the carburetion according to the ambient conditions, we are giving some indicative parameters to adapt the max. jet size as a function of the variation of the ambient temperature and the altitude at which the engine is operating.
How to know the carburation? The exact fuel quantity to be mixed to a given quantity of air, is influenced by atmospheric factors, such as temperature and pressure. The more the temperature drops, the more the air density increases and consequently, there will be more molecules of gas in the same volume taken in by the engine. As the carburettor mixes always the same fuel quantity, this would be insufficient, and the carburettor will provide a leaner mixture. When operating with a leaner carburetion, the engine goes under these following risks: overheating, insufficient lubrication, detonation, seizure; this is the reason why **the carburation setting must be adjusted by increasing the max jet by about 2 points for every 5°C. external temperature drops.**

Of course, on the contrary, the more the temperature rises, the more the carburetion becomes richer and gives origin to less critical consequences than the ones experienced with a leaner carburetion. So, in this case also, it is suggested to optimize the carburation setting **by decreasing the max. jet size by about 2 points for every 5°C external temperature increase.**
The variation of the atmospheric pressure, which is significant when varying the altitude, gives origin to the same phenomenon; by decreasing the altitude, the atmospheric pressure increases, consequently in the same air volume taken in by the engine, more molecules of gas are present. Therefore, in this case too, a carburation adjustment is required, **we suggest increasing the max jet size by approximatively 2-3 points for every 350m altitude decreasing.**
On the other way, by increasing the altitude it is necessary to **reduce the max. jet size by about 2-3 points for every 350m altitude increasing.**
The above data are just indicative, as many factors influence the carburetion and only a few are easily ponderable. With these indications we wish to give the user a general guide line and avoid damaging the engine under environmental conditions which make the carburation substantially leaner.
A fine carburation adjustment will always have to be performed according to the experience and to the tests on track.

As completion of this guideline, here are a few general recommendations.
The carburettor is provided with an enrichment system to start the engine, (lever "C" - see fig. 5) when it is cold and/or when it has been kept inactive for a long time. To get the max. efficiency, this device must be used with gas throttle closed or slightly opened. A few seconds after the engine has been started, shut the enrichment system to avoid engine flooding.
The only problems which could be experienced with these carburettors are connected to the fuel feeding.
The fuel feeding is regulated by the floater-valve system located in the float chamber.

Fig.5



In case the fuel contains impurities, preventing the proper admission valve closing, the level in the float chamber increases, and the exceeding fuel is discharged through the carburettor vents. In this case, it is necessary to disassemble the float chamber, remove the floaters and the fuel valve and clean it with compressed air (see fig.6 - 7).
In case of puncture of one or both floaters, the fuel valve cannot be closed, and so the exceeding fuel overflows through the vents. It will be then necessary to disassemble the float chamber, check the floaters status and eventually replace them with others having the same weight.
In case the engine must remain out of operation for a long period, the fuel admission valve could get stuck (either on opening or on closing positions) for incrustations.
In the first case presents the same phenomenon of fuel overflowing from the vents of the carburettor, in the second, the engine won't start for insufficient feeding.

It is necessary to disassemble the float chamber, and check if there is fuel inside, remove incrustations and re-establish the proper fuel admission through the floater-valve assembly.

Fig. 6

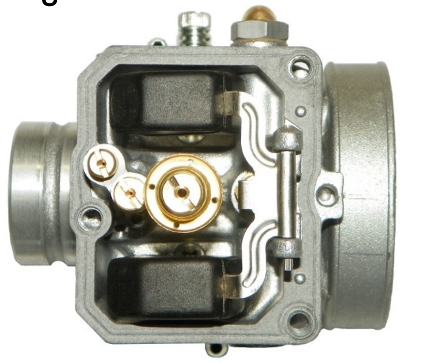
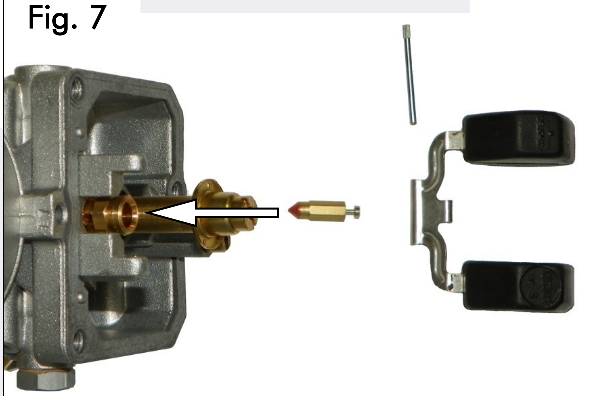


Fig. 7



SETUP CARBURETTOR COMPETITION USE

OUTSIDE TEMPERATURE	NEEDLE	NOTCH	ATOMIZER	JET MAX.	EMULSION TUBE	THROTTLE GAS	AIR SCREW MIN.
T>18°C	K94	3rd (3rd and washer above)	DQ269	160	B55-62	50	2 ROUNDS
T<15°C	K94	3rd ½ (3rd and washer below)	DQ270	165	B55-62	50	1 ROUND AND 3/4
2°C	K94	3rd ½ (3rd and washer below)	DQ 270	170	B55-62	50	1 ROUND AND ½
Rain	K94	1st ½ (1st and washer below)	DQ269	160	B55-62	55	2 ROUNDS

TECHNICAL DATA ENGINE SUMMARY TABLE

DESCRIPTION	DATA	NOTES
FUEL MIXTURE / FUEL	4.5 % OF OIL	98 RON Oil CIK homologated
GEARBOX OIL	230 ml	specification: SAE 75W (ELF HTX 740) or SAE 10W50.
OPERATING TEMPERATURE ENGINE	min.48°C / max.54°C	
EXHAUST ANGLES TIMING REFERENCE	195.5°÷196.5°	Feeler gauge 0.2x5mm
TIMING ADVANCE	1.6 mm	Before the T.D.C.
COMBUSTION CHAMBER VOLUME	13.2 cm³	13 cm³ min.
SQUISH	0.95 mm	Measured with single wire of 1.5mm
CORRECT MEASURE TIPS PISTON RING	0.40 mm	Installed in the cylinder
SPARKPLUG TYPE USE IN STANDARD WEATHER CONDITIONS	NGK BR 11 EG NGK R6254E – 105	
SPARKPLUG TYPE USE IN STANDARD WEATHER CONDITIONS FOR <u>COMPETITION USE</u> (USE WITH SPECIFIC SPARK CAP)	NGK R7282 105 NGK R7282 11	
SPARKPLUG TYPE USE IN RAIN ATMOSPHERIC CONDITIONS	NGK BR 10 EG	