Temporary manual engine EOS 150

EOS 150

— LIGHTWEIGHT & RELIABLE POWER —

Until the new engine manual **EOS 150** has been completed we refer to the engine manuals;
"manual EOS 100_EOS 100 Booster"
and
"appendix_manual_EOS_100_EOS_100_Booster"
to find under; http://www.eos-engine.com/index.php?lang=1&hID=47
which are valid also for the engine **EOS 150**, except the following;

Picture EOS 150

Technical Data

engine	one cylinder 2 stroke
displacement	154cc
stroke	52,5mm
bore	61mm
compression ratio	1:10,5
gear ratio of belt drive	1:3,5

carburetor	membrane Walbro WB 37
spark plug	NGK BR9HS, B9HS, BR10HS, B10HS
power	25,7HP (18,9KW) at 9000RPM
thrust	>66kg / >70kg 125cm / 130cm prop
starter	rope hand starter / EASY-STARTER
cooling	fan cooling
average consumption	3,3 - 4l/h
fuel inlet	membrane, fiber Reed valve
air inlet	HIFLOW-SHOT air box
fuel recommendation	unleaded 98 Octane
fuel mixture	2%
2-stroke oil	full synthetic
weight (w.o. exhaust)	9,85kg
weight (with exhaust - all complete)	12,2kg
exhaust	Nickel plated
max. build-in length	21cm
dimensions	57x34x25cm
propeller recommendation (rotation anti clockwise) diameters 125cm or 130cm	EOS P&T Carbon 2 blade

Starting the engine

cold engine
Press the membrane on the carburetor (gentle!) and with the in the fuel system installed rubber hand pump bring up fuel in the fuel line until you can see the fuel entering the nipple on the carburetor (transparent fuel lines are recommended therefore). Do not pump more/any further. Then release the membrane. Press the rubber hand pump once more to build up fuel pressure in the fuel lines. Then after that press the membrane on the carburetor again one time what results in filling the chambers of the carburetor with sufficient fuel but not flooding the engine.
Start the engine by pulling on the starter until the engine starts, no throttle. In case there should be insufficient fuel in the system you can try with 10% throttle.

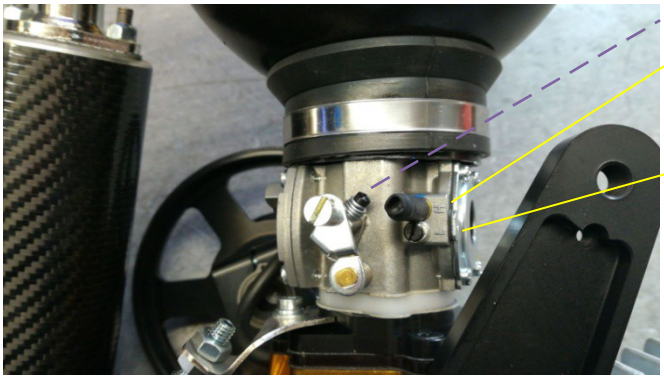
warm engine
Start the engine by pulling on the starter until the engine starts, no throttle. In case there should be insufficient fuel in the system you can try with 10% throttle.

Adjustment of the Carburetor

The **EOS 150** is equipped with the type Walbro WB 37 (modified), no choke.

<u>Standart settings:</u>
L jet adjuster screw: 1 1/4 turns out (anti clockwise) - 1 turn and 15 minutes

H jet adjuster screw: 1 1/4 turns out (anti clockwise) - 1 turn and 15 minutes
Pop Off pressure: 11 PSI
Lever distance: 1mm



idle adjuster screw
H jet adjuster screw (sealed with shrink tube or laquer)

L jet adjuster screw

<u>For general understanding;</u>
The engines come pre-adjusted from the factory in Austria with above mentioned standard settings. These are "safe" settings rather on the rich side, for a rich combustion. These resulting in a spark plug picture being on the rather "black" side - please see manual page # 10 (or figure at the end of this chapter) - picture from #14 "best" in direction to left/up/rich. The Austrian factory being on a certain area in a certain altitude MSL (mean sea level), but also in changing conditions of air temperature and humidity. Therefore whenever the engine being operated at another location / in other conditions there is practically need of doing re-adjustments of L jet and H jet screws. As a general rule please note;
- combustion getting richer when;
- - engine operated in higher altitudes above MSL
- - engine operated in warmer air temperatures
- - engine operated in more dry (less humidity) air conditions
- combustion getting leaner when;
- - engine operated in lower altitudes
- - engine operated in colder air temperatures
- - engine operated in more humid air conditions
A slightly to rich engine setting is no problem and safe (spark plug pictures #9-#13 / manual page 10 / figure end of this chapter). A far to rich setting resulting in rough engine run, not reaching max. RPM and has lesser power, dying at idle. Worse start up then normal. Impurifying the engine, excessive oil may come out from the exhaust. Higher to even excessive fuel consumption. Debris building inside the combustion chamber (piston, head). BUT; no damage to the engine can occur! CAUTION(!); - In opposite, a to lean setting will lead to a soon or even instant(!) engine overheat and damage (hole in piston head, seizing). All onward pictures #21-#29 / manual page 10 / figure end of this chapter indicate a to lean up to a way to far to lean setting.
We recommend to aim to reach a spark plug appearance as per pictures #11-#14 by adjusting the H jet accordingly!

If you have any problems or doubth for a correct engine setting, go back to the standard H-jet and L-jet setting as above described and consult with an expertised person and/or your dealer!

Please note; - With a wrong setting of the L jet adjuster screw the engine cannot get damaged. Hovever, with a wrong setting of the H jet adjuster screw very quick (only in case to lean)! The setting of the L jet will not influence the spark plug picture!

spark plug pictures - steps from rich to best;
(H jet adjuster screw only!)
- in 5min. turn steps (clockwise) - each of this step will "jump" about over about 4 pictures

spark plug pictures - steps from best to hot / lean;
- in 1min. turn steps (clockwise) - each of this step will "jump" about over 1-2 pictures
CAUTION(!); - do not proceed with 5min. turn steps(!). Do not exceed a 3min. turn clockwise from the optimum spark plug picture towards lean as here already the engines starts to run to hot with danger of damage!

=> turning the jet adjuster screw clockwise will go from rich to lean (H and L)
=> turning the jet adjuster screw anti clockwise will go from lean to rich (H and L)

=> the L jet influencing idle to low/medium RPM combustion
=> the H jet influencing medium to high and full RPM combustion

Remark; - To get indication from the spark plug there is need to run the engine at full power from 3min. constant run onward. Engine runs in low or medium RPM will not considerably change the spark plug picture and/or bring a usable result. But also do not run the engine excessively at full power as 3min. or 3-5min. is enough!
CAUTION(!) - run the engine safely fixed on ground with appropriate distance to the propeller! Or run it on your back only.

If you feel your engine starting and runing fine, idles well then stay with the standard factory settings. In case you have problems with idle run, bad acceleration, low power and not reaching max. RPM, seeing a wrong spark plug picture then proceed with adjustements of the L or H jet or both. Also make sure you have a correct setting of the idle adjuster screw!

Remark; - Make sure you have a correct and a from EOS engine recommended propeller installed! A not with the engine matching propeller will never allow a correct engine run!
Make sure you have a correct fuel/oil mix! A to oily mix will not allow a correct engine run.
CAUTION(!) - A to poor oil percentage will make the engine seize! Make sure you have a fresh good working and correct type of spark plug!
For adjustments proceed as follows;
- adjustment of the idle screw
- adjustment of the L jet screw
- adjustment of the H jet screw
starting from the factory settings; L jet adjuster screw 1 1/4 turns out (anti clockwise) and
H jet adjuster screw 1 2/6 turns out (anti clockwise)
To start the tuning procedure;
After having checked and/or set the jets to standard settings, start and run the engine in low RPM until warm. Check idle run and if needed ajust the idle adjuster screw until you reach a smooth constant running with about 2000 RPM.

1st step - L jet

Activate throttle by quickly accelerating the engine and quick releasing the throttle therafter, watch how it comes back to idle each time …

… acceleration is fast and even, engine run comes down to idle quick and stays at proper idle	no adjustment needed
… engine run comes down to idle quick but engine kills	to rich setting, turn in clockwise the adjuster screw
… engine run comes down to idle to slow but then stays at idle (and/or idle run is unstable and "dancing"), and acceleration is not fast enough	to lean setting, turn out anti clockwise the adjuster screw (mostly from that point a 5min. turn out anti clockwise then is the right setting)

Make changes of the adjuster screw in 5min. turn steps only and re-try procedure until finding the right setting. There may be need to also re-adjust the idle adjsuter screw after having made to big adjustments on the L screw! Both settings have to be balanced together.

2nd step - H jet

Go to max RPM / full throttle for 3min. (3-5min.) and afterwards stop the engine.
Check the spark plug for color …

… compare to the sample spark plug pictures below	if matching a picture from #11 - #14 no adjustment needed
… spark plug pictures like #10 or #9 or lower	to rich setting, turn in clockwise the adjuster screw

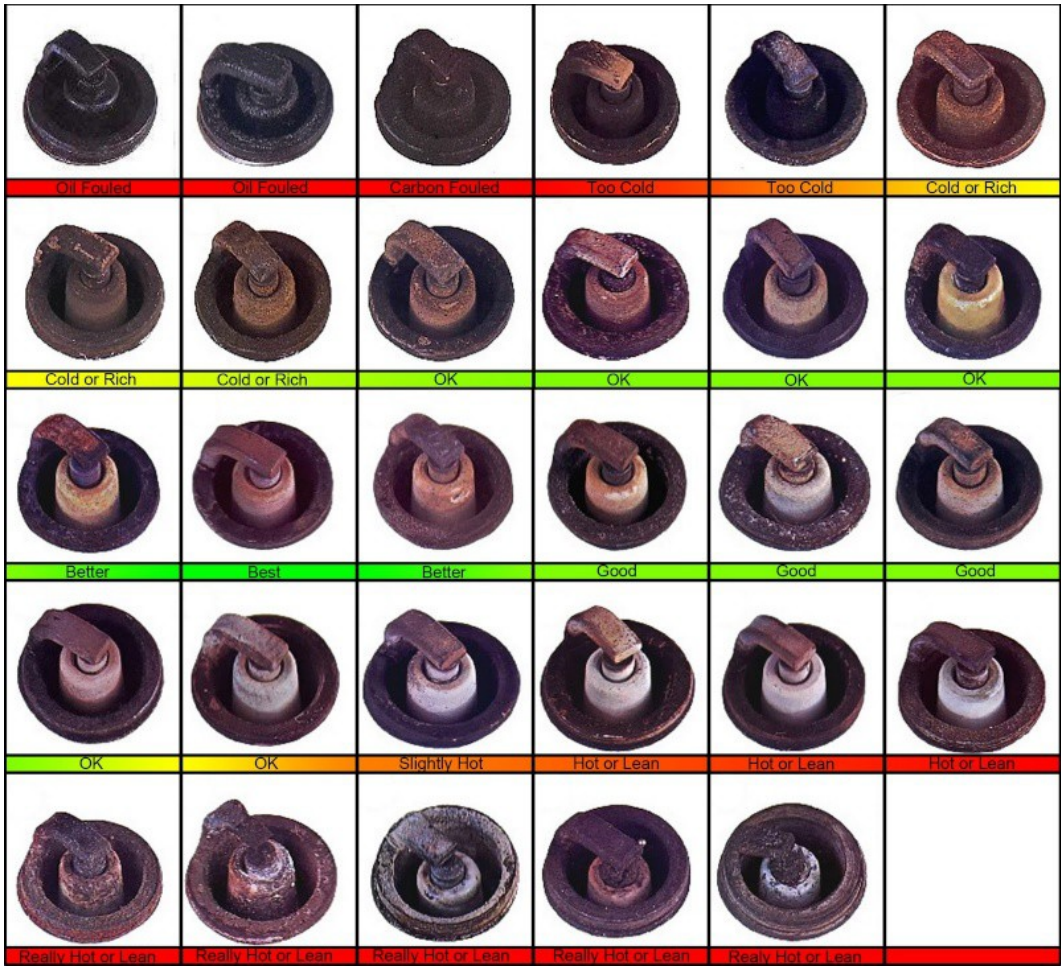
Make 5min. turn steps (clockwise) - each of this step will "jump" about over about 4 pictures
And again …
Go to max RPM / full throttle for 3min. (3-5min.) and afterwards stop the engine.
Check the spark plug for color …
(see advices written before)

… compare to the sample spark plug pictures below	if matching a picture from #11 - #14 no adjustment needed
… spark plug pictures still "to black"	to rich setting, turn in clockwise the adjuster screw

Continue until you have the perfect result.
Please note; - Starting with the standard setting of the L jet should never show a to lean spark plug picture but good or to rich only. In case nevertheless you see a to lean spark plug picture …

… compare to the sample spark plug pictures below	if matching a picture #15 to higher, then as a fist step turn out anti clockwise the adjuster screw for 5min.

Continue until you have the perfect result.



first picture up left is #1, last picture down right is #29, "best" is #14