

Tech Dummy

By Riaan Struwig



How to tune a Walbro WG-8 Carburetor on PPG Motor

Warning: to be used as guideline, if not certain please contact your local dealer, service center or school for assistance.

Introduction

The Walbro WG-8 carburetor is used on most of the PPG motors, for example the Simoni and Minari motors etc.

I do recommend that a carburetor must be serviced or rebuild at least once in 2 years or within six months after last flight. The workings of the carburetor rely on the usage of rubber membranes that will perish over time and especially if the motor is standing it will dry out.

Symptoms

In most cases you will notice loss in performance and if you try to adjust the motor, you will notice the top end fuel mixing screw won't make any difference. It can be very dangerous to adjust and keep on adjusting when trying to correct a faulty carb. I do recommend an EGT or CHT probe. EGT is more reliable and reacts quicker to change.

Information about 2 stroke engines

The 2 Stroke motor lubrication is different from 4 stroke engines. 2 Stroke motors oil is mixed into the fuel and is burned together with the fuel. Therefore, it is extremely important only to use the best possible 2 stroke oil in the correct mix, you MUST follow the engine manufacturer's specification and guide lines.

Typical mix 40:1 but some manufacturers use 50:1. Use only Full Synthetic oils, Typical Castrol TTS.



EGT

Idle – 450C

Cruise – 520C

Max Temp – 575C

CHT

Idle – 100C

Cruise 120-150C

Max Temi – 200C

If you have any questions please post a comment or send an email to riaan@epic-aviation.co.za
www.epic-aviation.co.za

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Adjusting Walbro Carburetor

I would highly recommend the motor to be on someone's back, well secured and in safe operating conditions, no loose items, straps, hair etc. I would also recommend that a second person assists with adjustment.

Before starting, set the carburetor LOW Needle to $\frac{3}{4}$ turn open and high end screw to 1 $\frac{1}{4}$ (one full turn open + $\frac{1}{4}$). (starting point)

Ensure that the throttle cable is loose and moves freely from min to max and back to idle stop.

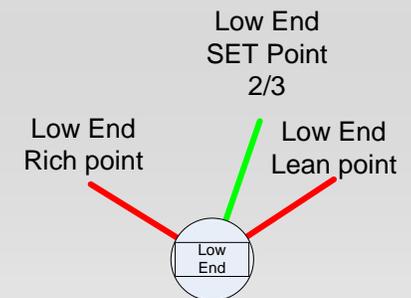
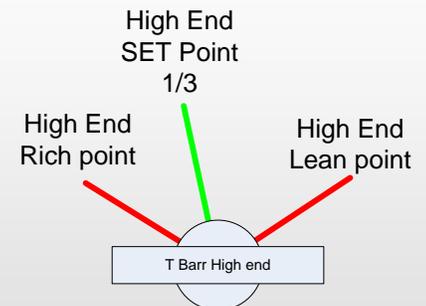
Start the motor, keep the idle to about 2500rpm. Wait +/- 2min for the engine temperature to reach operating temperature. Adjust the idle screw so that the engine, without throttle cable assistance, runs at idle RPM of about 2500rpm.

Slowly increase RPM to MAX, turning the HIGH end needle (T-Barr) anti-clockwise, this means: turning it out until the engine loses power/RPM. This point will be the High end rich point, this point is where the fuel air mixture is rich, too much fuel. Make a note of the position. Then turn it in again, Clockwise, the RPM will pick up and keep on making small turns until the motor cuts. This point will be the HIGH end LEAN point.

Turn the T-Barr High end needle to a $\frac{1}{3}$ position from the High End Rich point.

Meaning the engine setting is 33% richer on high end than on the lean end.

Now, for the low end needle, from full Throttle drop RPM suddenly, listen if RPM drops linear. If it still idles high and only drops after a second or two, the bottom end is too Lean. Turn the low idle screw anti-clockwise until the motor almost dies. Where the RPM suddenly drops, it is the Low END Rich point. Turn it back $\frac{1}{2}$ turn, clockwise. Let it idle for about 5 seconds. Then gradually increase power to full throttle. If the engine does not respond and takes a while to react, it is too lean, not enough fuel, too lean. This will be the Low End lean point. Turn the Low end needle anti-clockwise $\frac{1}{4}$ turn. Do the same exercise. If the engine starts stuttering, it is too rich. Make small adjustments at a time, +/- $\frac{1}{8}$ turns. The needle will be more or less at $\frac{2}{3}$ position between low End Rich point and Low End Lean Point.



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Logic behind the adjustment

Most of the carburetors used only have a low and high end needle adjustment setting. But all engines/carburetors have a mid-point, meaning half throttle on the actual butterfly opening. Without a mid-point adjustment needle, you have to adjust the top end and bottom end needle to get the optimal setting for midpoint as well. One of the biggest problems will always be to get the midpoint on the lean side. You will notice on the picture that the high end and low end curves cross (yellow Point) more or less on the bottom end closer to being rich.

By adjusting the Bottom-END-Needle to about 2/3, leaner than rich and the Top-END-Needle 1/3, richer than leaner the mid-point will be more or less correct.

At the same time some pilots fly their motors lean, for performance and they then adjust the bottom richer to compensate and correct the mid-range. By flying with a EGT probe it is possible to adjust the motor to optimal performance.

Engine Monitoring

By using proper engine monitoring system, like the Epic-C (www.epic-aviation.co.za) you can manage your engine performance and ensure reliability. One of the most reliable monitoring systems is to measure EGT. EGT reacts almost immediately with RPM change. CHT on the other hand does not change instantaneously and it might be too late to prevent overheating.

Also monitor your spark plug, with the correct oil and oil mixture and the correct carburetor setting you will notice that your spark plug color will be a nice brown color.

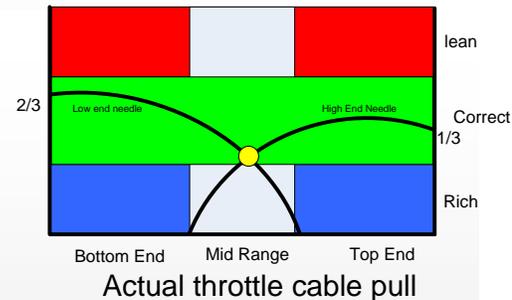
If possible try and check at least every 5 hours, especially if climate changes or if you do make carburetor adjustments due to altitude changes

Some useful links:

www.planetppg.com

<http://www.xplorer.co.za/articles/>

www.footflyer.com



To Lean



To Rich



Mixture Correct

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