

Preamble

This article, with many, many more lies within the pages of the [University Motors Technical Book](#). This book is being revised for the 1997 Technical Seminars and will be available in January, 1997. Please write then if you would like a copy. This article (as others) is copywritten but you have MY permission to reprint it in any publication, as long as my name [John Twist](#), and that of [University Motors](#), appears at the end of the text. Give credit where credit is due!



THOSE DAMN ZENITH STROMBERGS

*By John H. Twist
of University Motors*



Click on the images for
a much larger view.

The carb illustrated is a
slightly modified version from
that of the MGB, but will give
you a good idea of how things
are put together.



Introduction

The Home model MGBs and Midgets were not plagued with this Triumph inspired imitation SU, we are. The Home and most export model MGBs (except North America) continued to use twin HIF4 carbs, the Midgets, HS4s on the Triumph 1500 engine, while the Canadian, Federal, and California specification MGs were fitted with the Stromberg. Emission specifications were cited as reasons to move to one carb (more easily kept in tune than two carbs), but why not choose the HIF6? Despite all the assurances of the manufacturer that this single carb could lessen emissions, the Zenith often runs dramatically rich.

When the carburetor does run extremely rich, and if the emission control system (air pump and

catalytic converter) is still in place, then the converter will glow cherry red hot. This carburetor is responsible for hundreds of underbonnet fires! Yet, with a little regular maintenance, this carb will perform correctly and safely, while offering relatively high mileage compared to the twin SUs.

Adjusting the Carburetor

To properly tune the Stromberg, one must have the Stromberg adjusting tool (a 1/8" allen wrench within a pinned tube), a 10mm long open end wrench, a small screwdriver, and a medium screwdriver. A tach/dwell is always most helpful.

The engine is started from cold, and the spring loaded idle screw is adjusted until the engine is running at 1800 rpms maximum. Once the engine has fully heated and the engine dropped to its lowest rpm (choke all the way off), then the locknut screw (hence the 10mm wrench) is adjusted until the engine is idling at about 850-900 rpms. All further adjustments to idle speed will be made again with the spring loaded screw.

Now the mixture is adjusted. Lift the air piston ever so slightly and judge the change in rpm. If the idle speed continues to rise as the piston is lifted, the mixture is too rich. Turn the allen wrench anti clockwise to lean it out. If, on the other hand, the idle speed slows or stumbles when the piston is slightly lifted, then the mixture is too lean. Turn the allen wrench clockwise to richen it. A proper idle mixture allows the rpm of the engine to rise and steady, or rise and slowly fall off as the piston is slightly lifted. As the correct mixture is reached, the idle speed will rise, and several adjustments may be necessary to hold the idle at that 850-900 figure. Be certain to rev up the engine, to clear it out, between each adjustment.

When adjusting the carb at home, tighten the air bleed screw (MGB) so that no air passes through this circuit.

Running Rich

The most common complaint is that no matter how many turns anti-clockwise the allen wrench is screwed, the mixture is still far too rich. There are five major areas of concern:

1. The air cleaner is filthy and sooted. This is not uncommon, and any leaks in the manifold/exhaust, especially a cracked exhaust manifold, will soot up a new air cleaner in no time. This causes a much higher vacuum in the venturi, and more gasoline is drawn into the air stream.

2. The ELC system is pressurized. This is very uncommon, but easily checked. Remove the vapour line, the vent line, the overflow line from the carburetor. This line travels across the valve cover on the MGB to the charcoal adsorption canister, or directly to the canister on the Midget. There should be NO CHANGE in the idling or operation of the engine. If there is any change, then the ELC system needs to be cleaned, and checked for blockages. It is far more common for this system to develop a vacuum which creates a lean running condition, in fact the primary reason for lean operation!

3. The automatic choke is the most common cause of rich running. These problems are:

The choke assy has come loose from the body of the carb. The vacuum from the carburetor then draws fuel from the float bowl around the valve which should be closed during warm running. Simply tightening the three slotted copper coloured screws eliminates this as a problem.

The choke lever and cam have stuck in a part-open position. A good tune-up requires that the

choke assembly be removed from the carb, that it be well cleaned in spray carb cleaner, the pin nut tightened, and the unit well lubricated.

The bi-metal spring in the heat mass is not correctly calibrated. Simply place the heat mass in a pan of boiling water, and wait for the bi-metal spring to rotate clockwise to its fullest extent. The notch on the bi-metal spring should be in line with the mark on the aluminum housing. If it does not line up, then scribe a new mark with a hacksaw blade. The line on the heat mass, on the black plastic insulator, and the choke body should all be in line.

The small passageway from the carb throat (past the butterfly) to the top of the auto choke assy allows vacuum to pull off the spring loaded enrichment plunger. When this passageway fills with soot (as it does after years of running), this plunger remains seated, holding the choke ON. By cleaning this passageway with a small wire, the vacuum can take its proper route.

The mating flange of the auto choke can become warped and allow petrol to by-pass the choke valve. SURFACE this mating flange on a smooth block with fine grit paper and thoroughly clean after the surface is smooth.

Only several times have we encountered a choke assembly whose brass choke valve was not fully inserted into the housing, so that even when the choke pin was moved fully downwards, it was not seated in (and therefore not closing off) the choke.; This condition can be positively determined by removing the automatic choke and covering the screw holes and fuel passageways with a piece of masking tape, then checking the mixture again.

4.Should the rubber diaphragm in the carburetor tear or perforate, then the engine will run very, very rich, and the maximum speed of the MG will be limited, until, at last, it can travel only ten or fifteen miles per hour, all the while spewing forth incredible clouds of black, sooty, uncombusted exhaust. A torn diaphragm is easily found by removing the top of the suction chamber (four phillips screws).

While the diaphragm is being inspected, pay attention to the following.

5.Rarely does a needle disassemble itself, but it does happen. The metering needle is held in a small barrel against spring force by a very small pin. If this pin breaks, the needle pops upwards by 1/8" or so, and no amount of adjusting can correct for such a gross misplacement of the needle. The shoulder of the needle can always be seen on the underside of the air piston. If it has slipped up inside, and the metering needle has a lot of up and down (against the spring) movement, then the pin should be check and replaced (paperclip works wonderfully).

Running Lean

A leanness at road speed is often described as a hesitation, as if a wind was blowing against the car. This can be caused by retarded timing or not enough gasoline in the air/fuel mixture. There are several possibilities for a lean running condition:

- 1.The ELC System (Evaporative Loss Control) is plugged which can place a vacuum above the gasoline in the float bowl. As noted above, remove the vent line from the carb and note any change. A plugged charcoal adsorption canister (from dirt or from a previous overflowing carburetor condition), or a plugged vent line from the bottom of the anti- run on valve are the most common problems.
- 2.The float height is set far too low.
- 3.The air cleaner is not fitted to the carburetor. as unusual as this seems, and for reasons that are

unclear to this author, the Stromberg carburetted MGB will not run with the air cleaner removed (or a vanity air filter to replace the original). Oh, it will get to 2500 rpms or so, but then flattens out -- not good for any kind of driving.

Carb Will Not Idle Down

Sometimes the carb will not idle at lower than 1000 or 1200 rpms. This is almost always a mechanical problem, but the possibilities include:

1. Throttle cable is stiff or incorrectly adjusted. Leave this cable loose until the carb is completely adjusted, THEN tighten the two nuts with 7/16" wrenches.
2. The cam within the automatic choke is not returning to a "full off" position, sometimes caused by a melted plastic plunger on the bottomside of the unit. Melted? Remember that cherry red hot catalytic converter? Sometimes the levers are bent. They all work on nice, sharp, 90 degree angles.
3. The overrun valve is floating open at a very low manifold depression. The spring loaded valve on the throttle disc is designed to open only at extreme manifold vacuum -- deceleration. If there has been a fire within the carburetor, the spring may have lost its force. The valve is easily soldered shut obviating any further problem (and increasing throttle deceleration response). Heat the valve from the button side with a propane torch and flow solder into the valve from the spring side. The Midget overrun valve can be completely shut off by fully unscrewing the small slotted screw on the triangular shaped device on the right side of the carb.

Air Leaks at Idle

Any tuning or mixture adjustment is impossible if there are air leaks between the carburetor and the cylinder head. This is a very common occurrence, unfortunately, but the leaks are easily identified. With a can of aerosol carburetor cleaner, spray into areas where leaks are found while the engine is idling. If there is an air leak, the rpms will rise or fall (depending on the size of the leak, the adjustment of the carb, and the type of aerosol spray). Areas the leaks most commonly occur are:

1. Between the cylinder head and the intake manifold, most commonly at the 1/2 intake port.
2. The tubing and fittings associated with the smog pump (gulp valve, line from the valve to the 90 degree fitting, and the 90 degree fitting itself).
3. The EGR (Exhaust Gas Recirculation) Valve located right on top of the intake manifold between the brake master cylinder and brake booster.

Any leak MUST be corrected before tuning commences.

Other Common Problems

Oil in the dashpot is essential for proper operation! If there is no oil the engine will start with difficulty and will not accelerate quickly. Use ENGINE OIL, and do not worry, the dashpot (despite warnings to the contrary) cannot be overfilled. If the oil disappears too frequently, then the O ring must be changed. A need for oil more than once per fill-up would certainly be aggravating.

The screws holding the heat mass to the choke assy are stripped and the heat mass will not keep a proper alignment. The holes in the choke housing can be tapped out to 10-32.

The screws fixing the top of the suction chamber to the carb body are frozen tight. They can be freed by using vise- grips for the first 1/10th turn (then use the screwdriver), or smack the end of the phillips (posi-drive) screwdriver with a hammer to seat the end of the screwdriver and shock the threads loose. Use new 10-32 screws when reassembling.

The carburetor heater is cracked, broken, or not connected. There is no concern here. Everything works just fine without this piece of emission control.

A last warning. Do not spray carburetor cleaner down the throat of the carb. The aerosol will attack and expand the rubber diaphragm. Be safe -- *carry an extra diaphragm!*

The Zenith Stromberg carburetor will work wonderfully well on your MGB or Midget -- if you keep it clean, oiled, and adjusted. Refer to your workshop manual for more details, and work with it BEFORE buying some foreign carb to replace it. Remember, if MGs were meant to have Webers, Kimber would have made a deal with Mussolini.

Please remember: This article was written by [By John H. Twist of University Motors.](#)

[Return to my 1978 MGB Page](#)