

# TUNE-UP GONE WRONG BECAUSE OF SKIPPED STEPS

## Issue:

Engine Runs On after shutting down and the exhaust smoke is often black indicating too rich mixture.

## History:

The car was recently purchased. It is a 1980 MGB but all the anti-smog devices are removed from the engine. Additionally, I was told that the engine was re-built by Miniman in Ottawa (who no longer exist) and that there is a sports performance camshaft, two timing chains, shaved head, and additional mumble-jumble that did not completely sink in while I was being told.

## The Plan

1. Adjust The Valves
2. Time the Engine
3. Reset and adjust the SU Carbs
4. Change the Spark Plugs

**NOTE:** If you want to avoid all the steps I have taken and skip to the lessons learned, [click here](#).

## Adjusting the Valves

The MGB User's Manual 1980 that came with the car for the original engine set-up suggests adjusting the valves hot to 0.013". The Haynes manual for the same engine suggests the same but also notes that you can adjust the valves to 0.015" cold. Most videos I have watched use the cold method at 0.015" so that is what we did.

All valves except for number 4 were tighter than 0.013" cold. Number 4 was at 0.015". We adjusted each valve to 0.015".

## Engine Timing First Round

The MGB User's Manual for the 1980 engine stock suggested timing the car to 10 degrees B.T.D.C. at 1500 RPM. We checked the timing, and it was dead on and required no adjustment.

## Adjusting the Carburetors

We followed the recommended process to adjust the SU Carburetors:

1. Start by balancing the carbs individually with the linkage released
2. Adjust the fuel jet mixture so as it not to be too lean or too rich while maintaining an acceptable 800-1000 RPM idle.

After a bit of tinkering, we felt that the carburetors were adjusted correctly.

## Test Run

The test run seemed to clean up the engine, especially since we purposely ran it in 3<sup>rd</sup>, gear at 4000 RPM for a bit to blow out any carbon build up.

## The Plan Failed - The Next Day

We replaced the spark plugs and put back the air filters. I took it to the gas station for fuel and she ran perfect. Upon return I then planned to go to the country when she decided to run on just 2 cylinders. We removed the air filters and discovered that the front SU Piston was not moving freely and in fact would stick in the up or down position.

## Problem Solving

### Possible Dirt

Cleaned the piston, suction chamber and confirmed that the piston moved freely in the pot when not installed. However, when installed and tightened the piston would stick.

**Conclusion:** Dirt not the Issue

### Possible bent or Damaged Needle

1. Removed the needle and examined it and did not see any visual indicators that it may be bent.
2. Switched the needle from the back piston to the front and the piston still sticks.

**Conclusion:** Needle not the issue

## Bent or Damaged Pot Assembly

1. Examined the pot and piston on flat surfaces and there was no indication of damage.
2. Put the front pot and piston into the back and the back into the front and the front still stuck.

**Conclusion:** Assembly not Damaged or bent

## Re-Center Needle into the Jet

1. Removed the adjusting screw and then re-set the needle into the jet and locked the jet screw tight.
2. Re-assembled.
3. The piston moved freely and dropped with a clunk in the same manner as the back piston.

**Conclusion:** This problem Resolved

## Adjusting the Carburetors

We followed the recommended process to adjust the SU Carburetors:

1. Start by balancing the carbs individually with the linkage released
2. Adjust the fuel jet mixture so as it not to be too lean or too rich while maintaining an acceptable 800-1000 RPM idle.
3. We had difficulty adjusting the idle at this point and could not get an idle lower than 1200 and the engine ran on when stopped.

## Timing

Since the engine is not a stock 1980 engine, we decided to adjust the timing to an older engine at 10 degrees B.T.D.C. at 1000 RPM instead of at 15000 RPM.

## Adjust the Float Needle

We adjusted the Float Needle.

## Adjusting the Carburetors

We started from scratch and followed the recommended process to adjust the SU Carburetors:

1. Start by balancing the carbs individually with the linkage released
2. Adjust the fuel jet mixture so as it not to be too lean or too rich while maintaining an acceptable 800-1000 RPM idle.
3. We had difficulty adjusting the idle at this point and could not get an idle lower than 1200 and the engine ran on when stopped.
4. The plugs were indicating a lean mixture (too lean).

## Trip to the Sports Car Factory

Steve at the Sports Car Factory was kind enough to take a break from working on an impossible task with an old 120 Jag to help me out. Three hours later the engine was purring.

Steve started with the same steps as I had performed earlier and had the same results.

Then the following additional steps were performed:

### Vacuum Leak Test One

Steve sprayed brake cleaner on all the fittings and connections around the intake manifold and heat shield to carburetor. The sudden drop in RPM indicated we had a leak at rubber tube (1 ½" thick) plugging one of those holes meant for the anti smog devices. Steve made a new tube and a proper plug and installed it.

### Vacuum Leak Two (My Favorite)

There is a plug with a cap on the top of the intake manifold and they removed the plug while the engine was off and then attached a hose. Mark lit a cigarette and blew smoke into the engine and that confirmed there were no more vacuum leaks.

### Adjust the Floats and Change One

I had adjusted the float in the incorrect way. I measured the 1/8" gap by pushing the float down when I should not have done that. Furthermore, there were two different style floats, the one in the front had a step on the float hinge while the other float had a straight hinge.

Steve went upstairs and found a matching float with a step, adjusted both properly to 1/8" and re-installed them.

## Re-Adjusted Carburetor

This time we started the carburetor adjustment with the jet set 0.050" down below the flat surface as measured with a vernier caliper.

We started the engine and she idled at 900 RPM and when we turned it off the engine did not run on.

## Final Steps

I put 945 Milliliters of Sea Foam into 63 Liters of Ultramar Super (no ethanol). The idle and engine are running smooth. Today I will run the gas through which will hopefully clean everything and at the end of the day, I will re-examine the spark plugs.

## Conclusions

Having performed a basic tune-up for the first time in nearly 45 years I suppose I got ahead of myself, made a few too many assumptions and skipped a few steps.

The result was a few days of frustration with no solid results.

So, the important part is I have learned a few lessons. The following pages are lessons that I have learned.

# Lessons Learned

DO NOT SKIP ANY OF THESE STEPS

