

IGNITION SYSTEM EMERGENCY TROUBLESHOOTING

START: NO SPARK TO PLUGS

(1) TEST PRIMARY: USE SCREWDRIVER TO OPEN AND CLOSE POINTS

NO SPARK	GOOD SPARK
CIRCUIT	GOOD PRIMARY
	AND GOOD COIL

(2) TEST POINTS: USE SCREWDRIVER AS POINT SET

NO SPARK	GOOD SPARK
DEFECTIVE COIL OR CONDENSER	CLEAN CONTACT POINT SET

(3) TEST CONDENSER: CHECK SPARK AT SCREWDRIVER TIP

NO SPARK	GOOD SPARK
OPEN CIRCUIT	SHORTED CONDENSER

(4) TEST COIL: OPEN/CLOSE CONTACT POINTS WITH SCREWDRIVER

NO SPARK	GOOD SPARK
DEFECTIVE COIL	DEFECTIVE ROTOR, CAP OR SPARK PLUG

(5) TEST ROTOR: HOLD WIRE ¼" FROM ROTOR

NO SPARK	GOOD SPARK
ROTOR OK	SHORTED ROTOR

Test 1: Spark

Once you are satisfied fuel is not your problem, turn to the ignition. As long as your MG doesn't have electronic ignition, usually a 1975 or earlier, begin by taking the spark plug wire off the #1 cylinder. Hold the wire about ½" from the engine block and crank the starter (ignition switch on). There should be a healthy spark from the wire to the engine. If there is no spark then you will need to test the points. To test the points, remove the distributor cap and with the points closed, and the ignition on, use a screwdriver to open and close the points while holding the center wire from the distributor about ½" away from the engine block. You should get a spark when you open the points. A good spark means a good primary circuit (small wire to and from the coil to the distributor, points and condenser) and a good coil. If you get no spark, go on to the breaker point test.

Test 2: Breaker Points

To test breaker points, turn over the engine until the contact points are open. Slide a screwdriver blade up and down making contact between the movable point and the bottom plate of the distributor. The screwdriver tip and the bottom plate are now a set of contacts. A good spark from the high-tension wire to the ground, after no spark in Test 1 means a defective set of contact points. No spark or a weak one means primary circuit trouble other than the points or a bad ignition coil.

Test 3: Condenser Test

A shorted condenser can be checked by noting in Test 2 whether the tip of the screwdriver blade sparked against the ground plate as it was slid up and down. No spark at the blade tip means either a shorted condenser or a break in the primary circuit. This can be checked further by disconnecting the condenser case where it is

Emergency Fuel Pump Replacement

Here is a manual (oral?) method to keep you on the road after a fuel pump packs it in. Originally written by Don Klein for the A-Antics Tech Tips Manual (Michigan Chapter, NAMGAR). Can be invaluable if you don't carry a spare fuel pump. The premise behind this little "quick fix" is, in the absence of a functional fuel pump, one can create a closed, pressurized fuel system, with about 2.5 - 3 lbs. fuel pressure to the carbs, by blowing in a tube attached to a rubber bund inserted in the gas filler opening.

Parts:

- approx. 8' of 3/16" (ID) rubber of pliable tubing
- size 9 ½ single hole rubber stopper
- 2" - 3" brass/copper tube bent between 45° and 90°
- a screw type pinch clamp

Method: Insert metal tubing through rubber stopper and attach pliable tubing to the outside end. Insert rubber stopper in gas filler opening and run pliable tubing to maintain 2.5 - 3lbs. of fuel pressure. Seal the system with the screw clamp. The basic unit can be improved by adding a one-way valve & an inexpensive pressure gauge mounted with a T-connector. The unit can be placed in zip lock bag and stored in the boot.

ROADSIDE REPAIR



**With acknowledgements to
The Ontario MG T Register
and members of The Ottawa MG Club**

CARE & CAUTION MUST BE EXERCISED WHILE CONDUCTING THE TESTS.

REMEMBER: GASOLINE IS A FLAMMABLE LIQUID!!

REMEMBER: VOLTAGES FROM SOME OF THE ELECTRICAL COMPONENTS

CAN CAUSE SERIOUS INJURY!!

**TAKE YOUR TIME AND MANAGE THE TESTS
WITH THE UTMOST CARE & CAUTION**

screwed to the distributor (don't disconnect the condenser wire lead). Hold the condenser so its case doesn't make contact with any metallic part of the distributor. Repeat the test of moving the screwdriver blade up and down while holding it against the movable point. Be sure the points are open while making this test. A spark at the screwdriver tip, which was not present with the condenser in the circuit, means the condenser is shorted out. No spark at the screwdriver tip, with the condenser out of the circuit, means an opening in the primary circuit. Check the small wire lead from the primary terminal to the moveable contact point. This wire lead is fragile and easily broken.

Test 4: Secondary Circuit

If the primary circuit is OK, now test the secondary circuit (cap, rotor, high tension wires). With the contacts closed, turn on the ignition switch. Hold the main high-tension wire (removed from the center of the distributor cap) 1/2" away from the engine. Open and close the contacts with a screwdriver only touching the movable breaker. No spark or a weak one means a bad coil or bad main high-tension wire from the coil. A good spark here (with none at the plugs) means trouble with the cap, rotor or spark plugs. It's unlikely all plugs or high-tension wires would die at the same time. To check plugs, take the high-tension wire out of the center of the distributor cap and hold on #1 spark plug. Crank the engine with the ignition on. You should be able to get the MG to run on one cylinder. It runs rough and you can't drive it that way, but will tell you the plug is OK.

Test 5: Distributor Rotor

You can test the rotor by placing it on its position on the distributor shaft and hold the coil wire 1/4" from the top of the rotor. With the ignition on, crank the engine.

If the spark jumps to the rotor it is grounded and no good. If no spark jumps then the cap must be defective. I have used this procedure to troubleshoot an MGB that wouldn't run. The test said "defective cap". The cap looked fine, I eventually replaced the cap and the "B" ran.

Test 6: Cylinder Test

Most MGs are 4 cylinder engines and unlike the big V-8 engines won't run very well (and sometimes not at all) with even just one cylinder down. Here is how to check for a defective cylinder. With the engine idling, begin by removing #1 spark plug wire from the spark plug. Listen to the sound of the engine. If the idle speed slows down, then #1 is OK! Pull the successive plug wires, looking for a drop in engine RPM. When you can pull a wire and don't get a drop in RPM, then you have found the defective cylinder.

Test 7: Compression Test

The best way to check cylinder compression is with a compression gauge that replaces the spark plug in this test. Most automakers say that the individual cylinders should not vary more than 10%. If you are on the side of the road and your MG isn't running at all or isn't running well, you can do a simple compression test by removing a spark plug and placing your thumb over the spark plug hole. Crank the engine and when the piston in the cylinder reaches "TDC" (top dead center) both valves should be closed and it should blow your thumb off the hole with authority. Check all cylinders. If you have two adjoining cylinders with low or no compression, you probably have a blown head gasket. If you have only one cylinder that tests low, you could have a valve stuck open, a burnt valve, a broken valve or a hole burned in the top of the piston.

ROADSIDE REPAIR

It's happened! Seconds ago you were at peace with the world driving your perfect MG down the street / freeway / interstate and it happened. The engine coughed, sputtered and died and now you are on the side of the road. What now? You could sit patiently, for a day or two, waiting for the highway patrol and a tow truck, or you could try to fix the thing yourself. If you can't fix it and get it running you might at least be able to diagnose the problem, and at the very worst you can occupy yourself and take out your frustration on the brat. To diagnose will require a supply of emergency spare parts. The necessary tools and spares that you should carry will be the subject of a future technical article, but for now concentrate on "what to do".

Theory: Your car needs three things to run: fuel, spark and compression. Because your MG is probably cursed with the infamous SU fuel pump the logical place to start is with the fuel.

FUEL

To be sure fuel is getting to the carbs, disconnect the fuel line where it attaches to the first carb. Dangle the fuel line in a container if possible (a beer can or windscreen washer bottle will do) and turn on the ignition to run the fuel pump. If fuel is rapidly pumped into the container, then the fuel system is not the problem. If no fuel is pumped, check to be sure there is fuel in the tank. Listen to the sound of the electric fuel pump. If there is no sound, be suspicious. Suck on the fuel line. If you can suck up fuel then the lines and tank are OK and the pump is probably at fault. If sucking on the line produces only air and no liquid then there is no fuel in the tank or there is an air leak in the fuel line between the tank and the pump. If sucking on the line feels solid and you cannot suck up fuel, then there is an obstruction in the line or a plugged gas tank vent. As a last resort, take the cover off one of the float bowls and check to see if there is fuel in the bowl. If you have a good stream of fuel at the fuel line and none at the bowl, check the screens in the float bowls and the in-line filter if so equipped. If screens and filters are clear, check out the float bowl needle valves.

MG Roadside Repair Travel Pack

SPARES:

Complete Distributor (with points pre-gapped)	Electronic Fuel Pump	Rad Hoses
Fan Belt	Fuses	Hose Clamps
Length of 14 Gauge Electrical Wire	Zip Ties (assorted sizes)	Spark Plugs
2 Litres 20w50 Oil	Electrical Connectors	Duct Tape
Electrical Tape	WD-40	Small Hammer
Feeler Gauges	Jumper Cables	2 ft of Fuel Hose
Workshop Manual		Fire Extinguisher
Wiring schematic for your car - print colour copy from http://www.advanceautowire.com - have it laminated		
Square piece of board to ensure solid base for jack if on soft ground	Moss Motors catalog	A couple of pavers or bricks to stop car from rolling
NAMGBR mutual aid directory	Cell Phone	CAA Card

TOOLS:

Combination Wrenches - 1/4" to 3/4"	Adjustable Wrench
3/8" Socket Set	Spark Plug Socket
Multi-bit Screwdriver (don't forget Pozi bits)	Wire Crimping Pliers
Assortment of Pliers	Vice Grips
Pocket Knife	Continuity Test Light
Multi-Meter	Flashlight
Shop Towels	Hand Cleaner