

## Renewing the coolant on a 'B' Series Engine:

### **Introduction:**

Modern antifreeze is not suitable for classic engines which need 'Inorganic Acid Technology' (IAT) based antifreeze. My favourite is 'Bluecol' which for maximum protection is mixed 50:50 with water before you put it in the radiator etc. once mixed it is referred to as 'Coolant.' So what water do you use to turn antifreeze into coolant? The best is distilled water and five litres will cost you circa £10. In the past I have used water from a dehumidifier and 'Peckham Springs' and even tap water without any apparent problems. I currently mix five litres of Bluecol (circa £20) with five litres of distilled water giving ten litres of coolant for £30 which is more than enough for most NG's.

### **Note.**

*Bluecol antifreeze has a recommended life span of 30k miles, or two to three years, with two yearly changes recommended on low mileage cars.*

### **Flushing the system:**

If you are going to change the coolant you really need to flush the engine and this is best done with the bottom hose disconnected at the radiator and with the block drain plug, heater tap and thermostat removed, now comes the problem; removing the thermostat housing to access the thermostat. Sometimes the housing will come off with some gentle tapping, but not always as the housing often corrodes itself against the studs.

Cracker the TC's thermostat housing put up a struggle and as the outlet was badly corroded I decided to renew it, this makes removal of the housing pretty easy, just use a slide hammer. Although I do have a proper slide hammer it's no good recommending removal with a slide hammer as most members won't have one. So here's an alternative method as tried and tested on Cracker. Simply drill a hole in the top of the housing, insert a screw and then use a claw hammer to free the housing by jerking the hammer up against the screw (photo). As these housing are often corroded after a few years of use it's probably best to bite the bullet, budget for a new one, remove it with a slide hammer and avoid damaging the cylinder head by trying to lever it off with a screwdriver.



**Note the corrosion in the thermostat housing.**

I would normally advise against removing studs that are in good condition but I would always try and remove the thermostat housing stud that is on the near side of the car; the reason is that these are screwed into a threaded hole that goes through into the water jacket, sometimes the stud closest to the rocker cover also goes through (you can check for this by putting a finger in the thermostat housing and feeling if the stud is protruding). The third stud is in a substantial boss and is never through drilled A gasket won't secure against a water leak at this point and you will need to seal the

threads of that particular stud. If you have a leak at that stud (indicated by antifreeze round the base of the nut) an emergency procedure, which often works, is to remove the nut and washer, smear a fibre washer with sealant and place it in position over the stud then refit the washer and nut. It should be noted that it is just about impossible to remove a thermostat stud without removing the thermostat housing, hence an emergency/temporary repair can keep you going until time allows to sort it properly.



When flushing the system remember it should be reverse flushed, so put the garden hose in the top heater connection, the bottom radiator connection and in the thermostat housing. Once you get clear water coming out the water pump outlet (or bottom hose) transfer the hose from the housing to the block\*\* and heater tap connection.

**Note.**

*\*\* In the early days MGB's had a brass water tap in the block which was replaced with a plug. My experience is that water doesn't come out this hole on some badly cast engines, which is no doubt why they substituted the tap for a blanking plug. If water comes out of your blanking plug hole and you wish to fit a tap then a brass one for a Fordson Tractor is the same thread and about £20 cheaper than one from an MGB parts bin.*

**Filling the system with new coolant:**

My normal modus operandi for filling the system with coolant is as follows.

1. Open the heater tap.
2. Fill the radiator almost to the top with coolant.
3. Start the engine.
4. Set it on a fast tick over and top up the radiator as the coolant level decreases.
5. Continuously check for leaks in all areas of the cooling system.

6. Turn on the heater and check for correct operation. If the heater isn't working you may have an airlock but this is most unusual. The cure is to let the engine cool down, get a helper to put a finger over the heater connection by the bottom hose/water pump as you remove the hose (alternatively plug it with a pre-prepared piece of wood etc.) lift the hose up and using a funnel fill the heater through the hose; when water flows out the hose replace the hose trying to lose as little coolant as possible.
7. When the gauge shows normal operating temperature replace the radiator cap and run for five more minutes.
8. Allow to cool.
9. Check/tighten all hose clips.

**If you don't have a coolant overflow bottle:**

1. Remove the radiator cap, top up the coolant to the bottom of the filler neck and place the radiator overflow pipe into a bottle etc.
2. Replace the radiator cap and run the engine up to normal operating temperature, preferably by going for a drive.
3. Check for leaks.
4. Stop the engine and allow to cool.
5. Remove the radiator cap and check the level. This will be the level you will expect to find on future pre-use checks.
6. Remove the temporary bottle and keep the coolant for topping up.

**If you have a coolant overflow bottle:**

1. Ensure that the overflow bottle is empty.
2. Remove the radiator cap, top up the coolant to the bottom of the filler neck.
3. Replace the radiator cap and run the engine up to normal operating temperature, preferably by going for a drive.
4. With the engine at normal operating temperature check the level in the coolant overflow bottle.
5. Stop the engine and allow to cool.
6. Check that the coolant has left the overflow bottle.
7. Check the level in the radiator is at or near the top
8. Add a small amount of coolant to the overflow bottle; e.g. if the level was 2" from the top when you checked it in para 4. then add an inch.

Future coolant level checks when cold are now confined to visually checking the level in the overflow bottle (and keeping it at that level).

**Note.**

*If the overflow bottle is higher than the radiator cap you may lose coolant if you take the radiator cap off. The answer is to lift the bottle off its bracket and lower it. If your bottle is permanently fixed at a higher level then a brake pipe clamp can be used to grip the pipe between the overflow bottle and the radiator, alternatively using a piece of cardboard between the jaws of a carefully applied pair of mole grips will do the trick.*

On complicated bespoke cooling systems some people recommend going round squeezing various hoses to discourage air locks, if I had a system like that I would fit an air bleed nipple at a high point in the system.

If your cooling system is in good condition it is perfectly capable of functioning without the need to top up between services, nevertheless I would always check it (pre-use checks) every day I use the car. I also keep a litre of coolant in the spares-pack/tool kit.

**Summary:**

If you are going to change the antifreeze you really need to flush the system, if you flush the system you will do a better job if you remove the thermostat housing and thermostat, if you are going to

remove the thermostat you might as well renew it, as a bonus the heater will often perform better.

Approximate prices are,

£20 = 5 litres of Bluecol (more than enough as it is mixed 50:50 with water).

£10 = 5 litres of distilled water.

£7.50 = Thermostat and gasket.

£0.50 = Heater tap gasket.

£4 = Radiator cap (15lbs).

£18 = Thermostat housing.

**TOTAL = £60.00.**

And if you're going to all that trouble why not renew the hoses as well? 'They don't last forever.'



**All finished with reconditioned fan and silicone hoses.**

### **Finally:**

Aftermarket heater taps for 'B' Series Engines are nowhere near as good as those provided by OEM (Original Equipment Manufacturers). On Emma my TD I fitted a manual MG Midget tap, I have also fitted one to Rufus and will no doubt eventually fit one to Cracker. It's worth remembering that if the diaphragm in your original style heater tap fails then switching off the tap will often cure the leak.

To read about fitting an MG Midget tap to a 'B' Series Engine please follow the link below.

<http://www.ngownersclub.org.uk/Emma/Emma%20Replacement%20Heater%20Tap.pdf>