

Servicing the MGF

Part Three

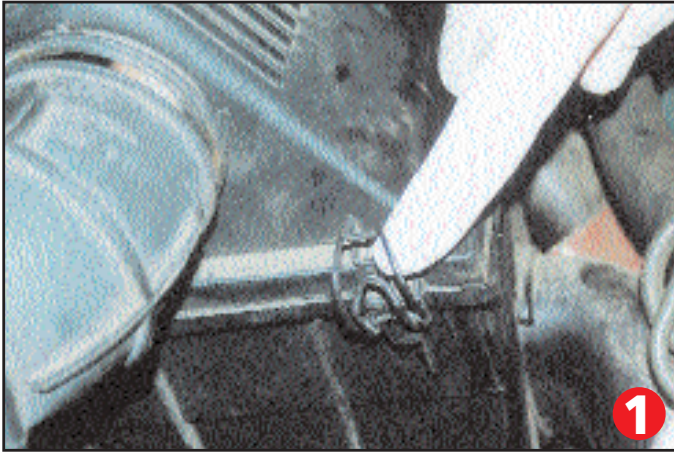
Induction, Coolant and Brakes

Roger Parker describes how to change an air filter element, bleed engine coolant and re-new front brake pads

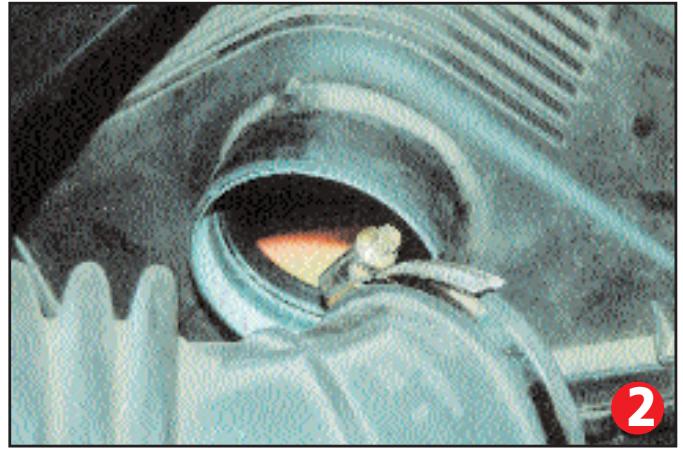
Air Filter

The only other regular engine service item is to change the air filter element, unless this has previously been replaced by one of the popular aftermarket air filters. This is a very opportune time to mention a problem that can often afflict cars with non standard air filters. It is one where the idle speed is too high and which is associated with a sticking throttle. The MGF until recently used a plastic throttle body and the aftermarket air filters use normal worm type clips to attach air pipes to the throttle body. The problem is that it is too easy to over tighten these and cause very slight distortion to the throttle body. This is not a service item, but one well worth bearing in mind if you suffer such problems.

The standard airfilter assembly uses a replacement panel filter and is accessed from the left side of the car. Four spring clips hold the top to the bottom and when all are released it is a simple matter to remove the top and replace the element. You may find that the element sticks to the top half and this makes removal of this more difficult with the restricted headroom. If so, peel the filter so it sits in the bottom half until the top is removed.



Undo the spring clips on the air filter box



Undo the jubilee clip and pull off intake hose



Lift top of air filter box clear



MGF air filter - note the blanket attached to this filter element base is a standard factory fit

Cooling System

With a mid-engined car it always good practice to be extra vigilant about the efficiency of your cooling system and to regularly check coolant levels, and also keep a very close watch on the engine temperature.

Coolant concentrate

Checking the coolant concentrate is not a simple task, but with the ready availability of coolant testers in most major motor shops at a couple of pounds it is worth getting a tester and using it.

Operation of the tester is similar to battery hydrometers in that you suck up a small amount of coolant from the header tank and plastic spheres in the tube rise or fall depending on the antifreeze content of the coolant. You looking for between 33% and 50% antifreeze to water, but if any refill is needed, do first check the label surrounding the header tank cap as more recent cars have a different type of coolant called OAT. Earlier cars should have a more traditional type of anti freeze.

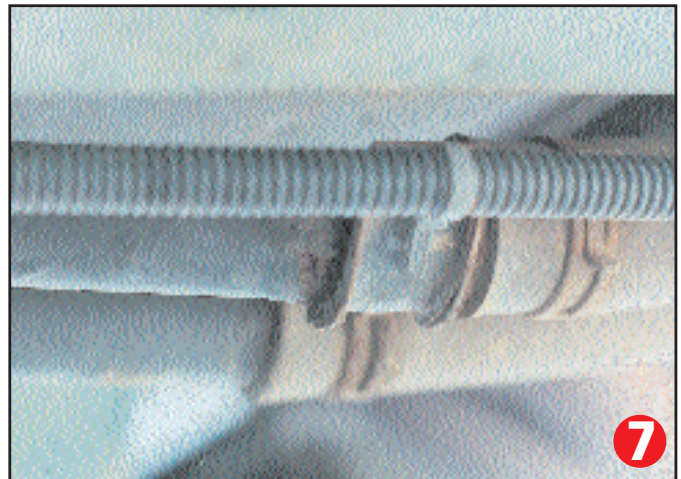
Coolant leaks

Whilst the engine cover is off it is an opportune time to examine both the front and rear of the engine block for tell-tale signs of white crystalline stain deposits. Staining like this points to dried up antifreeze and would indicate a leak. Any coolant leak on an MGF is potentially a very serious matter, demanding immediate attention and rectification.

As the cooling system of the MGF is more complex than a front engined car, you should examine all the hoses, pipes and clamps, not forgetting the main coolant pipes running from the back to the front, under the floor. These long coolant pipes (photo) are known to suffer from corrosion and being exposed can suffer damage. A few minutes spent investigating in this way may save you not just inconvenience on the side of the road, but more importantly a very big repair bill.

Coolant change

The coolant must be changed at the appropriate service points. This can be done a couple of ways. The manual describes releasing a clip from a lower hose to under floor coolant pipe and removing the hose to allow the coolant to be drained. Hot coolant is rather like hot oil, but it splashes more, so it is best changed when the engine is cool. There is a distinct advantage in wearing some waterproof gloves, be these the more commonly available latex gloves associated with medical activities or the



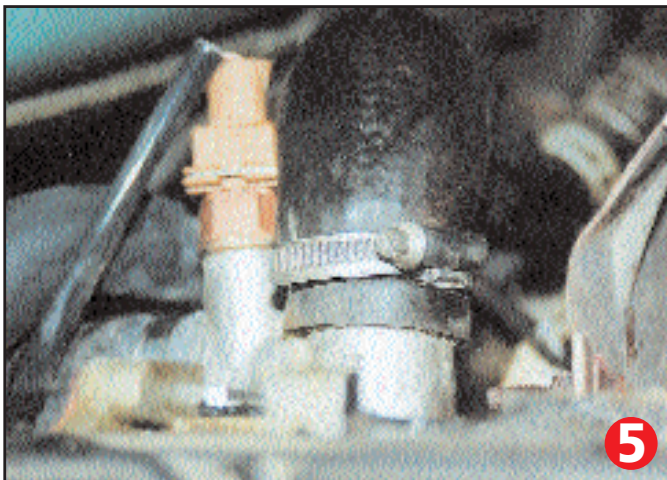
Check under car main coolant pipes displaying corrosion

good old kitchen rubber gloves, to save having washing your hands with the coolant.

The system should be flushed with clean water and then refilled with a 50/50 mix of antifreeze and water, premixed so you're not guessing at that mix ratio. There are some well discussed difficulties with refilling the cooling system of a K series engined car, which are not assisted by the added complication of the MGF's layout. However, following the rules should mean that the job is clean and efficient with no problems.

Bleeding the system

There are three bleed points on all MGF s, on the top left side of the radiator (photo 8), from the heater, but is seen in the centre of the bulkhead panel under the screen with bonnet open, visible



Check the hose connections to engine block



Bleed point one, at the top of the radiator



Check for crystalline staining



Bleed point two, at the heater, only visible when plastic cover is removed

only when the plastic cover trim is removed. (photo 9) The third is in the engine bay and accessed only with the engine cover removed. It is in the top of the metal coolant pipe, which runs across the top of the gearbox and is an 8mm headed bolt. (photo 10)



Bleed point three, pipe in engine bay

The procedure is to open both the radiator and heater bleed points and ensure that the heater control is in the fully hot position. Then fill the system from the expansion tank. The radiator will be the first point to show coolant and when a steady stream is flowing through, close it off. (5Nm) A short while later coolant will be seen to flow from the heater bleed point and once this is a steady stream with no air bubbles then close this off too. (7Nm) Continue filling until up to the correct level in the expansion tank and allow a few minutes for the level to settle. Once it has settled run the engine until the engine fan has cut in and then check that there is heat coming from the heater. If not then you have to open the third bleed point, but only when the engine has cooled. (A small point to note is that the water pump provides a significant greater flow when running at 1400 rpm or more so when warming the engine I find it better to run at about 1500 rpm. As this is done by holding a very light throttle it is also a very useful way of monitoring the temp gauge and feeling the heater output.

The additional engine bleed point is opened and any air

trapped will be ejected. Once a steady coolant flow is visible, the bolt is refitted and tightened. (9 Nm) Top up to the Max mark on the expansion tank before running the engine up until the engine cooling fan operates. Confirm that the heater is putting out hot air again, then switch off, and prepare to tidy up. Once the engine has cooled, there may be a further need to top up some more before taking the car a test run. A few miles use and return followed by another check of the level should now finish the job. However, do a level check for a few days to ensure that if stubborn air has now moved the level is still OK.

Alternative Coolant

The issues surrounding the cooling system and connection with head gasket problems provides a platform for advantageous use of an alternative coolant called 4Life. Amongst its properties are two that offer more for the MGF owner than when used in other cars. 1, is that the product lasts for 10 years and so reduces the need for coolant changes, and 2, is the fact that when exposed to combustion chamber gasses the colour of the coolant changes. This is a real potential bonus as very early signs of gasket problem issues can be seen long before they normally become serious enough to strand you on the side of the road or with a massive replacement bill. (Photo 11)



Replacing coolant with 4Life offers extra advantage of coolant colour change as warning for gasket problems

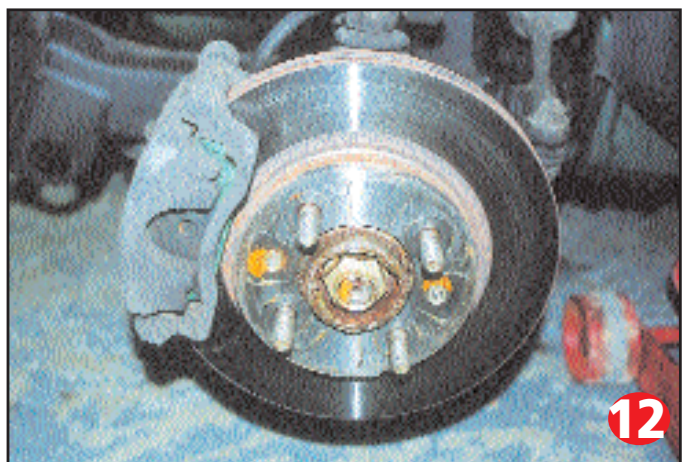
Front Brakes

The most common change will be of the front brake pads. These carry the majority of the workload and show the most wear. How frequently you need to change pads is totally dependant on your driving style, the road conditions you live with and the loads the vehicle is subject too. It is not impossible for a set of pads to be run to minimum thickness before the first service if the conditions are heavy enough. It is more realistic to get between 20,000 and 30,000 miles from a set of front pads and often over 40,000 miles from a set of rears. However, such long service intervals are often tainted by other issues that I shall mention shortly.

The pads should be replaced when approaching the minimum thickness of 3mm. This is 3mm of friction material and applies to front and rear pads. There are no wear sensors present on the fronts, perhaps displaying their heritage from the Rover Metro, yet the rears have a 'tuning fork' sensor, and these hark from the rear of Rover 800's!

Discs are also items that wear and should be monitored for wear and other damage, such as surface cracks and warping. Cracks are visible and warping is felt with a pulsing brake pedal. The original thickness of the front discs is 22mm thick and should be renewed when they are down to 20mm. Measuring this is not easy without the right equipment, so a simple guide would be to examine the wear ridge that forms at the edge of the disc where the pad doesn't contact. If this is 1mm or more deep then it's time to renew. The rear discs for the record start at 10mm and should be renewed when down to 8mm, however, other issues usually

force renewal before wear. More on this later. (Photo 12)



MGF front brake disc

Front pad replacement

Pad choice is wide, but since the pad is the same as a Rover Metro, there are wide ranges of alternatives from suppliers who sell budget priced parts. With brakes, I suggest that any

component bought should be of a known minimum standard, especially as the MGF is capable of far higher performance than a 1.1 single carburettor Metro! Most quality suppliers now supply pads that have anti squeal materials on the back of the pads and new caliper to carrier bolts with the appropriate thread lock already applied. If yours don't then ideally you need to obtain them.

When changing front pads it matters not which side you start with. Turn the steering to give better access to the brake caliper and pads. There is a special caliper retraction tool but in lieu of this take a very stout flat blade screwdriver and push it into the space between the outermost pad and the outer part of the caliper. (When looking at the disc edge on and directly over the caliper there is a 'window' slot in the caliper body through which you see the pads. This is where I refer.)

With the screwdriver in place gently lever the pad and caliper apart. This has the effect of returning the caliper piston back into its bore and freeing space for the new pads which will be thicker due to being new and unworn. It also keeps any potential damage away from the friction surfaces and the piston and seals.

During this procedure, keep your eye on the fluid level in the master cylinder. If the cylinder has been topped up as the level drops, due to normal wear on the brake pads, you will find that when returning the pistons back into the caliper body it displaces fluid back to the master cylinder. Often this leads to overflow so have a rag around the underside of the cylinder to prevent fluid getting onto the paint, as it will eat it!

Also have a water supply handy, such as a refilled 'Fairy washing up bottle', (Blue Peter should have a few to spare!) and if you get a spill, then quickly spray it with liberal amounts of water and wash it away. However, do be sure to keep water away from the master cylinder reservoir! Brake fluid is hygroscopic and absorbs water so it is easily washed away.

You will soon reach a point of max retraction with the screwdriver, which unfortunately will not usually give enough piston retraction. Now manually slide the caliper inwards by hand and using the inner pad as a cushion gently lever the piston inwards to give that little bit more clearance.

Now take a 12mm ring spanner or socket and undo both the bolts holding the caliper to the carrier. Remove both bolts and lift the caliper clear of the carrier. This exposes the pads to be removed. Tie the caliper to a convenient position so that you do not stretch the brake hose. This allows both hands to be free to remove the worn pads and then clean the carrier of residual brake dust. Specific brake cleaning products are available to make this job more comprehensive and potentially less of a hazard since brake dust is harmful and should not be inhaled. Using a brake cleaning fluid dampens down the dry debris and so airborne dust is considerably reduced.

Now check that the new pads are a slide fit into the carrier and that they do not bind. Sometimes the steel backing is not stamped out quite as accurately as it should be, or there is a blob of paint causing the interference. Again, it should be said that higher quality parts suffer less of these problems. If there is a problem then clean up the offending pad with a file. A very light smear of copper grease on the contact points also assists to prevent later stickiness and seizure.

With the pads in place in the carrier and against the disc face, it is time to refit the caliper to the carrier. Take care here to ensure that the piston hasn't eased out slightly with residual fluid pressure in the system. If so, ease it back in until the caliper is an easy fit over the pads. Note that there are also anti rattle springs, the little bits of twisted wire on the top centre of each pad, and these have to be inside the caliper when it is closed onto the pads. This should happen automatically, but I have seen the occasional rogue end sticking out of the caliper 'window'.

Use the new bolts supplied to secure the caliper and torque them to 45Nm. Apply several pedal applications to seat the piston and pads and take out free play before moving to the other side. Note also that after applying the pedal to a point where you feel brake pressure, and releasing, the wheel should be free to turn.

Now move to the other side and repeat the operation. Note that all friction brake parts are ALWAYS replaced in axle sets to maintain even performance side to side.

One small observation is that it is possible to replace the pads without fully removing the caliper. This involves some extra care, and is not the method advised by the workshop manual. However it is widely used and because of this being common knowledge is included to ensure the problem areas can be highlighted.

Undo the lower of the two caliper to carrier bolts and remove. Swing the caliper upwards, pivoting on the remaining bolt. Be aware of a potential for the flexible brake pipe to be caught, so do not stretch it. Ideally have the wheel in the straight-ahead position, which effectively gives more free length on the brake hose. The cleaning and pad replacement is as before, with the need for only one bolt to be refitted.

Caliper Carrier Seals

The standard MGF calipers, front and rear, but not Trophy fronts', is known as a slider type. Essentially the single piston is able to act on both sides of the disc through the action of the piston pushing the one pad onto the disc face, but also pulling the caliper and bringing the outer pad into contact with the opposite disc face.

The caliper sits on a carrier that incorporates two pins onto which the caliper slides back and forth. These pins are pre-lubricated and are protected from weather and debris by rubber boots. Check that these boots are not damaged, which could allow water and debris entry that will soon cause the slider to stick and ultimately seize. Advance signs of such problems, even if there is no obvious boot damage, will be seen with the inner pad wearing much more than the outer.