

Austin Healey "C" Series Engine. Oil traces in Cooling System.

The Problem. Even the most youthful 6 cylinder Austin-Healeys are now well over 30 years old, as time passes a weakness in the design of the engine blocks is becoming more apparent. There is an area within the block where the oil galleries and the water cooling passages are very close to each other. If at any time in the past, the engine has been neglected or not set up for long time storage, it is possible for the block to corrode to the extent that this area becomes porous, allowing the oil, being at higher pressure to enter the coolant passages. The problem usually manifests itself as an oily sludge in the radiator. Unfortunately freshly rebuilt engines, in which all the scale and corrosion has been removed from the coolant passages (and the oil pressure restored) are particularly prone to this occurrence. In the past this has meant that an otherwise sound engine block has had to be scrapped.

The Solution. The solution to this problem is to reinforce the areas of the block that are susceptible to this corrosion with seamless stainless steel tubing. This then allows the repair of otherwise unusable blocks and will prevent this problem occurring in blocks which currently appear sound.

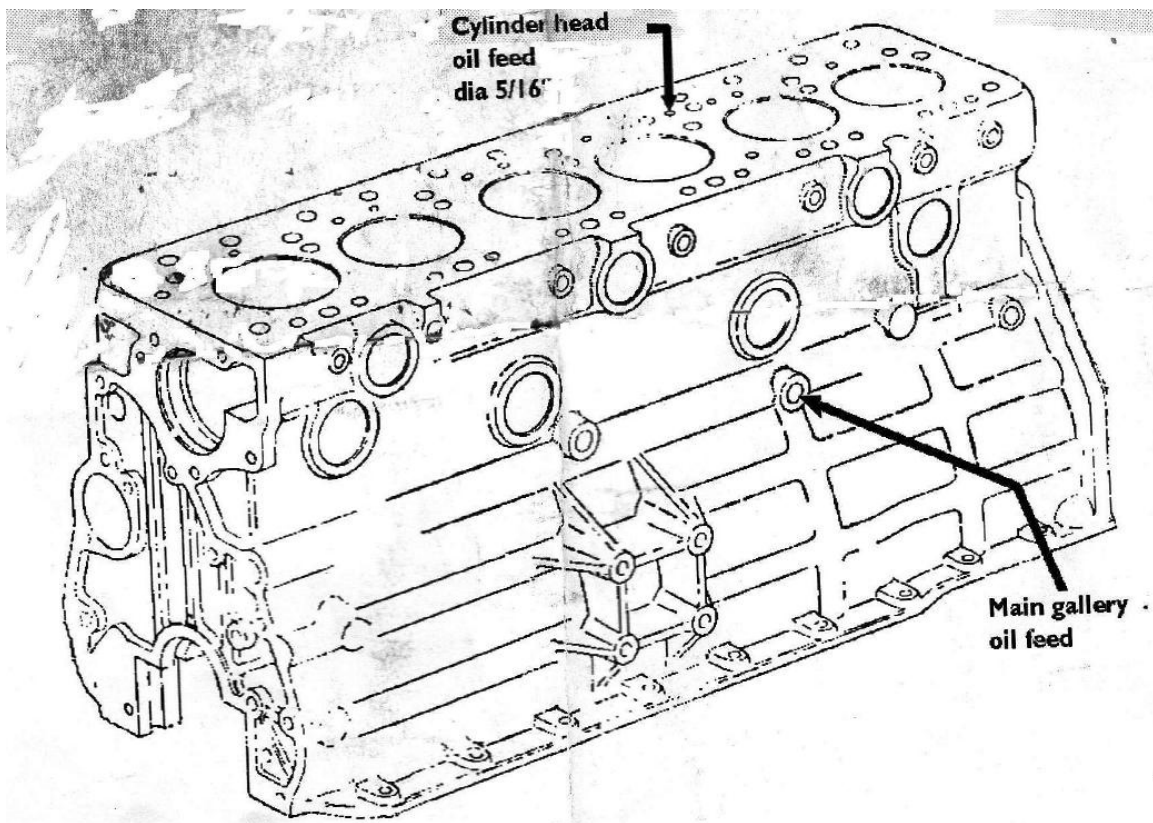
A Repair Kit. An oil gallery repair kit usually contains the following items.

- 1 Stainless steel tube 9/16" O.D. x 4 1/8"
- 1 Stainless steel tube 7/16" O.D. x 5 3/8"
- 2 Press tools
- 1 3/8 BSP plug
- 1 Copper Washer.

Fitting the Block Repair Kit.

This kit requires access to equipment that is capable of drilling relatively deep holes within fine limits and as such DIY enthusiasts are advised to entrust this work to an experienced engineer. The two locations that require attention are the main oil

gallery feed drilling and the cylinder head oil feed. The position of these two galleries is illustrated in the diagram below.



Preparing the Block. Once the engine is stripped it is recommended that the block be thoroughly degreased and that the waterways are de-scaled using an acid solution.

Drilling. Using a 7/16" (11.11mm) diameter drill with a working length of at least 5 1/2" (140mm) open out the cylinder head oil feed to a depth of 5.375" +/- 0.020 (136.53mm +/- 0.25) taking care that this remains concentric with the existing hole and perpendicular to the head gasket face.

Using a 9/16" (14.29mm) diameter drill, again with a working length of at least 5 1/2" (140mm). Open out the main oil gallery feed to a depth of 5.375" +/- 0.020 (136.53mm +/- 0.25). Care should be taken to ensure that this hole remains parallel to the head gasket face.

NOTE. – It is important to drill to these tolerances in order to avoid breaking through to the main oil

gallery and to ensure that the orifice to the centre main bearing remains unrestricted.

Re-forming the thread for the oil gallery plug. The thread for the replacement oil gallery plug is 3/8" BSP. The hole will need to be opened out to a diameter of 0.60" (15.25mm) to a depth of 5/8" (16mm) prior to tapping.

Once these operations have been completed it is **VITAL** to ensure all traces of swarf have been removed from the oilways. It is recommended that a high pressure air gun be used for this purpose.

Fitting the Stainless Steel Tubes. It is recommended that before any sealing compound is employed, the tubes are pressed a little way into their holes in order to check the fit. The tubes should be a reasonable press fit. If a great deal of effort is required it is recommended that their diameter is reduced a little with emery cloth until a reasonable fit is achieved.

Both tubes should be fitted using the same technique. The sealing compound (Loctite 640 in this case) should be applied sparingly (according to the manufacturer's specs.) to the tube, leaving the last 1/8" (3mm) of each end dry. The tube should then be driven home either with a hammer or press using the tool supplied. Once the tool comes up against the face of the block the tube will be in the correct position. Any excess sealing compound should then be removed and the new plug and washer can be fitted in the normal way.

It is also recommended that once the kit has been fitted and the sealing compound allowed to fully cure, the cylinder block oilways be pressure tested at about 150 psi (10 Bar) to ensure the repair has been completely successful and that there are no other flaws in the block.

This kit is available from *Cape International* of the UK , I also believe SC Parts also retail a similar kit.