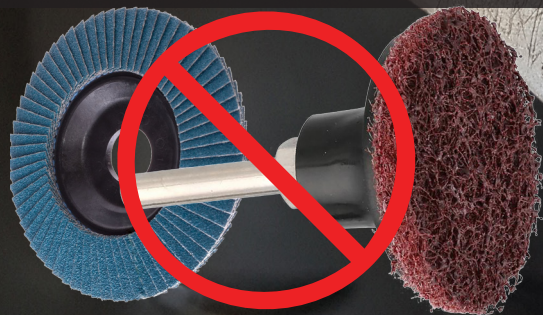


No.1 Cause of Modern MLS Head Gasket Failure: Poor Surface Preparation



We would like to thank Geoff, from All Head Services, for this technical knowledge. www.allhead.com.au



You can see the damage caused to the sealing surface of this cylinder block by a "Whizzy Disc" which has made the surface too rough. This would cause an MLS head gasket to fail.

All Head Services receive regular calls from customers with Multi-Layer Steel (MLS) head gasket sealing issues. This is despite continual technical articles and information being provided regarding the extreme importance of the head gasket surface area needing to be in the correct condition for MLS gaskets to have any chance of sealing.

MLS gaskets cannot conform to surface irregularities outside of their specifications, usually 20-30 Ra or less. RA stands for "Roughness Average" which is the average measurement of peak-to-valley roughness height of a "flat" surface. The lower the Ra number, the smoother the surface. Air powered whizzy discs tend to severely damage the gasket surface, by increasing the RA number, especially on aluminium cylinder blocks. This will inevitably lead to head gasket leakage and engine failure.

For the average workshop it is recommended to clean the block surface with a spray on gasket cleaner, then a plastic razor blade, then sharp steel razor blade held at 90 degrees to the block which should remove all of the old gasket material. Then sand the surface with ultra-fine wet and dry paper on a flat sanding block to produce a polished finish.

Aluminium cylinder block gasket surfaces can warp if the engine is severely overheated. Once clean it is recommended to measure the block surface with a flat edge and feeler gauges. The popular rule of thumb is that the combined surface flatness of the head and the block should never exceed the number of cylinders on each bank across the length of the head/



This head was sent back due to the head gasket leaking. As you can see it is covered in aftermarket sealant which has caused the MLS gasket to fail. As a result, NO warranty cover.

block when measured in thousandths of an inch (e.g. 3 cylinders = .003" (0.076mm), 4 cylinders = .004" (0.102mm), and so on). The measurement across the head or block should not exceed .002" (0.051mm). If the block surface is out of specification, it will need to be machined or replaced.

There is also the continual use of additional sealants (e.g. Hylomer etc.) on the gasket surfaces which will cause the head gasket to leak. MLS head gaskets already have a sealant applied, and any additional sealant coatings will stop the gaskets from working as it has been designed and it will fail to seal.

I cannot stress enough the importance of the block preparation and following of the gasket manufacturer's instructions when fitting MLS head gaskets to alleviate any chance of failure down the track. If you have any question on this topic refer to the Jan/Feb 2017 issue of Tech Talk or contact your gasket supplier. 🐦



This is a block surface fresh of a surface grinder with a 15 RA surface finish as measured with a profilometer. You should aim for the closest to this as you can with sandpaper on a flat block.

