

CYLINDER HEAD ASSEMBLY AND TIGHTENING MORRIS EIGHT 1934-38
Suggestions from previous experience in order to possibly help prevent premature head gasket failure

The following assumes that the engine block face is clean, sound and true; and that the cylinder head face is clean, sound and not cracked or warped. If either is damaged, re-facing (particularly of the cylinder head) will be required. It is worth checking the separately manufactured water outlet on the front of the cylinder head for internal corrosion that can weaken the fixing web and make it impossible to tighten it sufficiently to prevent leaks. Replace as necessary, fit a fibre sealing washer to its flange, and a fibre sealing washer and steel washer below the dome headed fixing nut. It is also worth assembling with blue 'Hylomar'.

If there is any doubt at all as to the condition of the cylinder head studs they should be replaced; I did it as a matter of course, because years of use can weaken, stretch, corrode or otherwise seriously damage them. Much easier to get them out before they break as you tighten them. Personally I fitted them to the block using blue 'Hylomar' and also used new nuts.

On this earlier type cylinder head, the dynamo cradle, in some cases the horn, and the air silencer bracket are all assembled on the cylinder head studs. Personally I think that it is satisfactory to tighten the nuts onto the dynamo cradle and still achieve the correct tightness. However with regard to the horn and air silencer brackets it is worth considering fitting a slightly longer stud so that tightening down is done without the brackets, which can then be fitted later using an additional shallower nut. It may also be necessary to temporarily remove the distributor when checking/re-tightening the cylinder head.

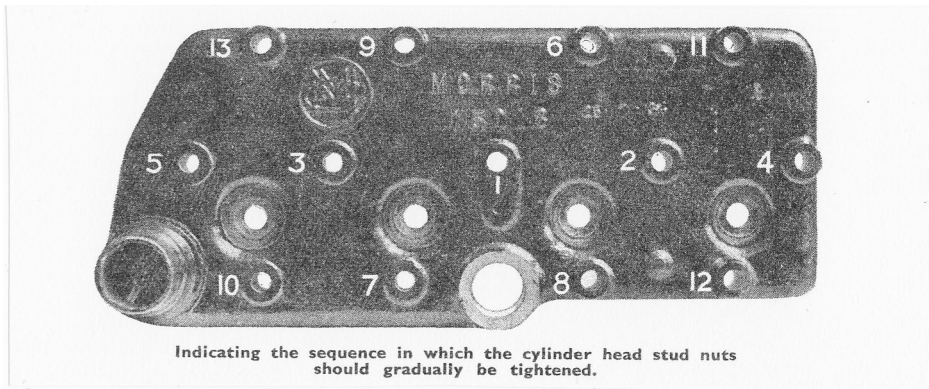
Personally I recommend using a torque wrench to ensure consistent and even tightness, set to 40-45 lb.ft. provided new studs are used.

- a) Using a new gasket, ensure that the face marked 'top' is facing upwards (this is normally the flat face), that the gasket has not been bent, then carefully pass over the studs using a piece of tubing to tap down each stud to prevent de-lamination of the copper faces and damage to the asbestos interlayer. The consensus of opinion is that the gasket should not be fitted 'dry'. Morris Motors recommended smearing gold-size on each face of the gasket, but usually heavy grease will suffice as recommended in 'The Modern Motor Engineer' by Arthur Judge. I have successfully used Blue Hylomar non-setting jointing compound, others suggest high temperature aluminium paint.
- b) Fit the cylinder head, dynamo cradle, and nuts, placing in position the distributor (complete with correct drive dog) to ensure that the corresponding cylinder head and cylinder block holes are in line, tighten the nuts following the sequence in the car's Operation Manual or the Morris Register Manual until the cylinder head cannot move laterally, remove the distributor and tighten the nuts gradually in sequence up to the recommended torque setting. (see also 'Important Notes' later).
- c) Assemble everything, refill radiator etc. and run the engine until hot. Then dismantle ancillaries again, slacken each nut in sequence and re-torque whilst hot.
- d) Run the car in at low speeds for 250 miles, then dismantle and re-torque again as in c)
- e) For peace of mind, this re-torquing whilst hot should be done again 500 miles or so later.

When re-torquing always slacken off slightly first so that the reading is taken whilst the nut is turning, otherwise the result will be inconsistent and inaccurate.

The head gasket compresses in use, and it is absolutely vital that re-torquing is carried out, otherwise in effect you are running an engine with a loose cylinder head. Running in this condition will mean that water loss could occur causing overheating or worse. But also compression gases will escape from the cylinder and will burn the gasket until it fails, which will manifest itself in a sudden and major lack of power.

I do believe that a significant factor in head gasket failure is the temptation to use a spanner to tighten by 'guesswork' without first removing plugs/distributor/dynamo/horn/air silencer. Even using a socket set/torque wrench the rearmost nuts are a little awkward even with everything off. Okay, it is a lot more time consuming to take all the ancillaries off, but it is in my opinion well worth the extra effort. And as I have said before, to not re-torque as c) and d) above is, frankly, a recipe for disaster.



Important Notes.

I am reliably informed that modern gaskets are copper/asbestos substitute (as asbestos is considered a health hazard), and that the copper is now slightly thicker, and the asbestos substitute layer slightly softer, than before. In my opinion this makes accurate and even pulling down even more important, and the re-torquing whilst hot (as previously described) together with further re-torquing whilst hot after 250 miles or so (as previously described) even more important than before.

In Paragraph b) above either the distributor or the distributor alignment special tool must be inserted into the head before tightening down, otherwise it may not be possible to insert/remove/turn the distributor due to misalignment of cylinder head/cylinder block holes.

It is always worth smearing copaslip type grease onto the section of the distributor body that fits into the cylinder head/cylinder block; this should help prevent seizure that often happens in use rendering timing adjustment and removal difficult if not impossible.

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