

HOW TO KEEP A TWIN CAM FROM BURNING PISTONS (Bill Spohn)

After I wrote an article for the Twin Cam 50th Anniversary publication I received enquiries about the modification to prevent piston holing. In response I excerpted portions of that article and have added additional material on sourcing parts.

Let me state once and for all that there is nothing wrong with the 9.9:1 high compression ratio of the Twin Cam engines and the rush to fit low compression pistons is nothing but a panicked reflection of the old factory ignorance when they had engines burning pistons right and left around them and they resorted to different distributors and advance curves, first thinking it an ignition problem, and then lowered the compression in desperation when that didn't help.

In fact the problem was found to be a lean burn situation brought on by a vibration period of the engine causing the floats to jam on the centre posts, easily curable by rubber mounting the carbs.

This is easily done using modified Weber mounts or possibly by fitting SU carbs with different float bowl mounts (HS6), and should now be routine when rebuilding these engines. This will eliminate the worst problem above 5000 RPM that caused all the warranty trouble. If you wish to retain original appearance, modifying the stock SUs are in order.

Here is a picture of an O ring mount (on a Weber manifold, but the principal is the same).



They also come in the form of plastic or composite pieces in the shape of the Weber carb gasket with a thin O ring on each side, or one thicker O ring manufactured as part of the gasket itself.

Look for a soft mount kit for one DCOE carb to suit both SUs on a Twin Cam. (Weber #99005.110, Warnford #301-110). The pictures below come from www.merlinmotorsport.co.uk for example.



They need minor modification from the Weber bolt pattern, to fit SUs. This is easily done by laying one of the 4 stud SU gaskets on top of the Weber gasket and marking where you need to move the holes, and then easing them with a suitable rat tailed file, Dremel or wad punch. Obviously the two holes will fit over only one diagonal pair of the SU manifold studs.

The next problem is how to keep just enough pressure on the nuts to seal the O rings but not enough to eliminate flexibility. I was contacted by the owner of YD1-2313, David De Saxe, who had holed a piston and wished details on how to perform this modification, and he was kind enough to send me pictures of the process on his engine.

You use Thackery washers – double wound spring washers that look like this:



on all the studs, and you just tighten them until a feeler gauge of 0.035”- 0.040” can fit between the coils. You then need to lock the nuts in place and that means using some form of lock nut. As the thickness of the new gasket uses up some of the available stud length, conventional locknuts with a nylon insert on top may not tighten down far enough to engage the nylon. This can be overcome by fitting slightly longer studs, or by using a different form of locknut – either the ones that look like a normal nut with a small nylon insert in the side, or all steel nuts meant for high heat use that have a slightly ovalled section (be careful with these as they may grab the stud so tightly that the next time you undo them the stud comes with them).

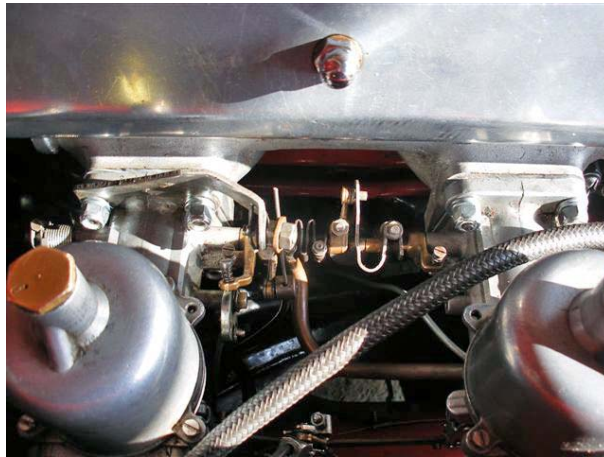


You can see in the picture the pattern of the stock Twin Cam carb gasket.

Here is the new modified gasket sitting in place:



The amount that the holes need to be eased is quite small. The carbs are then fitted and the Thackery washers are used:



The appearance is altered only by adding a small gap between manifold and carb. The nuts look like they are tightened about the right amount (you can double check by grabbing a carb on the outside and trying to move it up and down – it should have a small amount of available wiggle). It also looks like David will be looking for slightly longer studs or different nuts as the nylon portion doesn't appear to be biting. Racers will also pin or lock-wire these fasteners, of course, but the nylon locknuts will probably be sufficient for street users.

It is truly unfortunate that this problem wasn't sorted out by the factory in the production period. They need only have noticed that none of the race cars using Webers suffered this particular problem to have been put on the right track. Interestingly, when I looked at one of the factory race cars fitted with 2" SUs, they had a thin rubber gasket. Could this have been the glimmering of a realization of what their problem was? Had this been fixed and the all too easy over-revving by enthusiastic new owners (just stick in an RPM limiting Lucas rotor as used by Lotus), the cancellation of the model might have been postponed or avoided – we'll never know.

Finally, you will notice that the throttle cable bracket is slightly 'wiggly' as it isn't clamped as tightly against the carb. Not to worry, it will take you several decades before wear will necessitate a replacement of the bracket and/or the stud due to wear.