

## BENTLEY CYLINDER HEAD GASKET RENEWAL



As many of you may recall, especially since our venerable Secretary keeps reminding you, it is now almost two years since I blew the cylinder head gasket on my Bentley on the way to Oulton Park. In my defence I had been delayed that morning and was in a hurry to try to get there and watch my nephew Alistair as he was racing that weekend although it was my own fault that I was rather gunning it around the roundabouts!

Nevertheless the damage was done and since it was many years since the head had last been secured in place before being raced around Silverstone by the brilliant engineer Anthony Soameson, who designed her for himself, I knew I would be in for a struggle and that certainly proved to be the case. If Tony had still been alive I am sure he would have come up from Kent and helped me as he had done before

when she needed tuning (and in truth he desperately wanted to see her again) but unfortunately he passed away a couple of years ago. Bearing in mind that I had never removed a head before, after the hours spent removing inlet and outlet manifolds and all the ancillaries I tried many of the methods recommended to me by friends and mechanics but nothing would budge it. After much head scratching (*editor's note: scratching the head will not remove it!*) and genuine offers of advice in the end an experienced mechanic was called in and with the help of Mike's hoist, a number of "wedges" of solid oak, which frequently needed renewing, a lump hammer and a fair amount of sweat, the offending head was persuaded to part company from the block. I realised that I had been far too soft on her (I was wary as she has an aluminium head) and no amount of easing oil or gentle coaxing would work. Anybody that thought that roping the head up and suspending it from a beam with the weight of the car on it would be successful would be sadly disappointed. I know, I tried it!



Getting ready for lift off

I had been desperately hoping that my diagnosis of a blown cylinder head would be right ( I have had some experience as I have blown three head gaskets in the past!) but I was aware that it is possible to get a similar result (loss of power and clouds of steam) from a flipping of piston rings, especially in old cars that have not been driven much, so I was very pleased to find no damage to the cylinder bores and a very distressed area of copper gasket between pots 3 and 4 along with a beautiful cocktail froth of oil and water. Indeed when I drained the sump there was half an inch of water below the eight inches (10 litres) of oil. Unlike the majority of Mark VI with the 4 1/4 litre engine the R type has the "big bore" 4 1/2 litre also developed by Rolls Royce so being a straight six each pot is roughly the size of a pint and a half and as soon as the gasket blows they can't half suck in some fluid.

The aluminium head was taken away to be skimmed and I was amazed to find it all ready for me to collect the following day. There, I am sorry to say, things slowed down somewhat as I had begun a surreptitious affair with another British marque - namely Alvis - and it was to be two Alvis restorations later (see newsletter 28) before I returned to my first love and decided after two years it was high time I restored her to her former glory. Within a week, and a variety of new

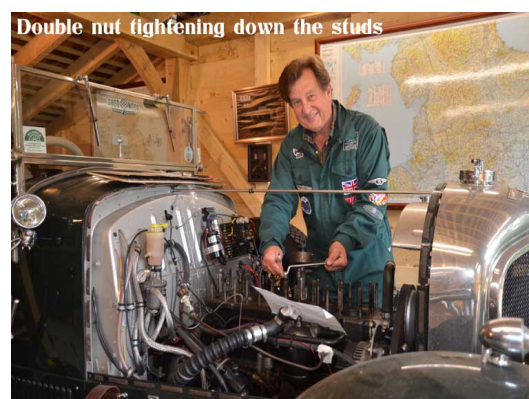
gaskets later, she was back to her old form and driving like the magnificent beast she is. I learnt a lot in those few days especially about the importance of accurately torquing down the 39 nuts on the studs (in the right order), running for a while, allowing to cool, then torquing again, and again.



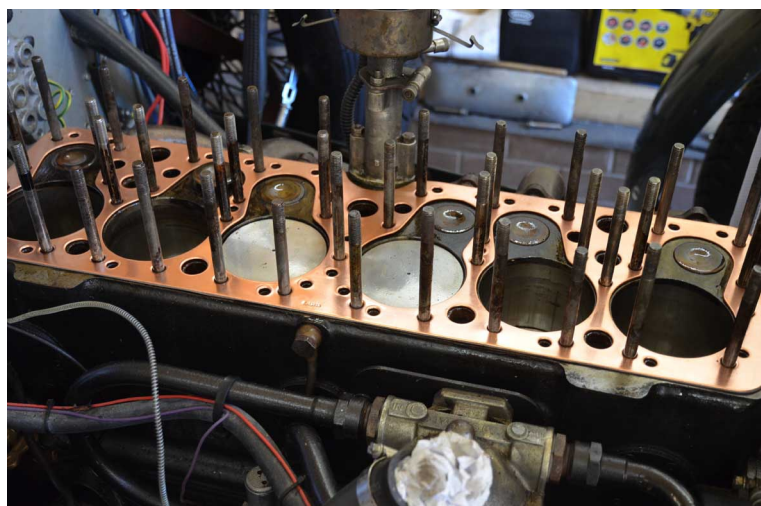
**Oh What a mess! (left)**

One of the pains is that each time this is done not all the studs are accessible to a torque wrench without removing the rockers and

since I had my friend Toby adjust the tappets I was only thankful that I hadn't altered the timing or needed to upset the carburettor settings as well. One thing the cooling off period did allow was for a comprehensive service schedule (as listed by the designer) and king pins, steering and suspension were all dutifully oiled and greased with the correct lubricants. Dual circuit servo brakes topped up, rad flush, more hot flushes (me included), 5 litres of Bluecol added to the coolant, engine purged with all the oils I no longer use before draining again and adding 10 litres of Castrol 15W/40 and after a lot of smoke and burning oil from the exhaust things settled down nicely.



One thing that Martin knows has worried me from the start was that the R type/Mk 6 workshop manual that I use for the engine dictates a torque of 280lb/in (31.6 NM) which seems rather low and necessitated careful choice of torque wrench to cover it. One assumes this is due to the combination of copper gasket, no less than 39 studs and an aluminium head that requires such care and since there is no gasket seal added I only hope those Rolls Royce engineers know their stuff. Who are we to argue?



**That looks a bit better**



**Back together again!**

Many thanks to all those who have helped with advice and encouragement and not least to the memory of Tony Soames, who along with Petersens and Carrosserie came up with a beautiful design with developments that even caused a stir down at the Bentley concourse and earned her a colour photo on the cover of Ray Roberts celebrated "Bentley Specials and Special Bentleys." Can you tell the affair is back on again!





**What an experience but next time I do it should be easier!**

Tony Littlewood. August 2016.