

Sealing Wire Wheels

For

Tubeless Tyres

I can hear the chorus from here “Why would you bother”, we have been driving on tubed tyres for over a hundred years and punctures are now relatively rare! Well maybe they are but when they do occur they are a big pain in the (a..e) er backside! Particularly in a YT when your wire road wheel is too big to fit in the spare wheel compartment where your space saver spare lives, so it has to go on the back seat with your picnic basket or luggage and/or grandkids, plus if it is a rear that has gone flat you have to exchange a front on to the rear so your tiny spare doesn't destroy the differential. Fortunately Y Types have Jackalls so after loosening the knock-ons you can lift the whole car to exchange wheels. But not really a problem at all when you are travelling in convoy with a mate driving a Ute – eh Ralph!!!

However, there is quite a bit more to this discussion. To repair a tubed tyre you somehow need to break both beads, this may have already happened before you have had time to stop, then you have to lift one side of the tyre over the rim so you can remove the tube, then repair or replace the tube, then put it all back together. This is not an easy task as we know, and usually requires a visit to a garage or tyre supplier. Not a job you want to tackle on the side of the road.

Alternatively a tubeless tyre can frequently be easily repaired by inserting a plug into the puncture using a repair kit. If you don't have an air pump on board you stop at the next servo or garage to reinflate the tyre – simple, job done!

The other reasons for getting rid of inner tubes are now starting to mount up to the point of frustration! The last two punctures in the past 12 months were actually tube failures not tyre penetrations. The first was a pinhole and the second a split about an inch long along a mould seam and in both cases no sign of an object that caused these failures. One asks the question, are these tubes past their use by date before we purchase them, or the date lapses in use because they had been sitting on a wholesaler's shelf for yonks? On the issue of supply it is getting more and more difficult to get tubes the right size, it seems one size fits all nowadays, but do they? I have been using undersize tubes (14”) to try and overcome the problem of tubes creasing and then cracking in the crease. I have been blaming creasing, on the tubes being too big but I think there is a lot more to it than that! One of the problems is many tyre fitters today are not familiar with the correct way to fit tubes by inflating and deflating a couple of times, and also do not use talc to coat the tube and inside the tyre case to allow the tube to slip and align itself correctly and be able to move a little in service. Another thing I have noticed is the inside of tubeless tyre cases are now not smooth, they have lots of ribs moulded into the surface which would hinder the tube being able to move. Recently after dismantling a tubed tyre I noticed a significant amount of rubber dust and crumbs inside the tyre, and the sides of the tube considerably abraded. Obviously there has been abnormal friction inside the tyre, and claims by tyre manufacturers that tubes can cause tyres to run hotter and increased wear may well be true.

However, there is something else that I now believe is a major contributing factor. How many of you use duct tape, 100mph tape, race tape or some other alias for adhesive tape wrapped around the wheel well to cover the spoke nipples to protect the inner tube - hmmm - that many? Well I have noticed for some time that there have been small deposits of what looks like resin around tube creases and randomly on the tube. I was puzzled by this but never bothered to investigate where it came from or whether it was an issue. Well I

am here to tell you it certainly is an issue and it comes from the bloody tape!!! Over many years of long distance driving the tyre and tube get nice and warm and the tape adhesive starts to weep out into the wheel well and coats the wheel well and the tube with gum. Consequently the tube and wheel surface are sticky and the tube binds and creases. I discovered this when I was preparing my first wheel ready for sealing and started with a solvent (Methylated Spirits) to clean the wheel well and around the spoke nipples. The Method was identifying that there was something on the surface but was not readily removing it – then the penny dropped – **GUM!** I learnt many years ago from she who must be obeyed that Eucalyptus Oil is the best thing to remove sticky substances so I rushed inside and requested a bottle of EO from SWMBO and I was in business – it worked a treat! So, it would appear that some of the issues discussed above can be avoided if you make sure you clean inside the wheel thoroughly before fitting a new tube and tyre and/or don't use adhesive tape!

Then finally we have the statement you cannot run tubeless tyres on standard rims they must be safety rims! OK, well let's think about that statement in a slightly different way – a deflated inner tube will keep a tyre bead in place on a standard rim – really – I don't think so!!! The safety rim came into being with the advent of tubeless tyres and the concept that the tyre bead will stay in place on the rim at low pressure and slow speed and enable you to continue to hopefully a nearby garage or get safely off the road. This is because frequently a tubeless tyre with a small puncture would lose air slowly unlike a tubed tyre that commonly deflates rapidly. Also tyre construction has changed dramatically since the early days of tubeless crossply tyres and now we have radials with very soft compliant walls. I have never experienced or heard of a radial coming off a standard rim! Further reading can be found on various forums and the MGA Guru. I will let you make up your own mind!

Now with all the above discussion out of the way we can get down to the nitty gritty of sealing a wire wheel. For this process to work the surface has to be very clean of any contamination such as water, dust, rust, flakey chrome and paint and of course any sticky substances, but I have let the cat out of the bag on that one! Before you start you need to set yourself up with a good work position, I used a piece of pipe through the wheel centre supported between rungs on a trestle ladder like an A frame which enabled me to easily rotate the wheel between my knees whilst sitting on a chair. You need to be sitting down because you are going to be there for quite a while!!! Depending on the condition of the wheel and whether it is painted or chromed there may be a fair amount of surface preparation required to the point where a trip to the local abrasive blaster might be required to effectively clean the old surface. Light rust and flakey paint can be easily removed with an angle grinder with sanding disc or wire wheel. Before repainting a wheel rim you need to make sure your choice of sealant can be applied over a painted surface. In my case it was a chromed wheel, which although 26 years old is still in good condition.

With the wheel well nice and clean it is then time to work on the critical part and that is the spoke nipples and sockets. I found a DREMEL was the ideal tool using the flexible drive extension and with quite an assortment of small abrasive tips and wire wheels available, particularly those made with stainless steel wire you can work around the gaps between the nipples and the sockets and remove any contamination as mentioned above. If you have had the wheel abrasive blasted there could be small granules of abrasive wedged in there which must be removed. Then it is time to give the nipples a final wash with solvent and thoroughly blow out any residual solvent or grinding dust with compressed air. If you haven't done so already now is the time to check all the spokes for tension and if there are any that are broken or loose and will not tension up then replace them. A loose spoke will almost certainly leak even with sealant in the socket. A word of caution during these processes – make sure you are wearing safety goggles and a visor. Little bits of wire, solvent, grit and dirt in the eyes can be very unpleasant!

Waited long enough – What did I use to seal the nipples? There were quite a few interesting and useful videos on U-Tube but only a couple mentioned any products. One product was from 3M and an email

response from 3M said that “Window Weld” was not available in OZ but another of their products 5200 Polyurethane was. The email also suggested I give their respondent a call because they have a very good tape that would be worth considering but there would not be an official written recommendation from 3M. I also sent an email to Dow where I went into a bit of detail about products I had researched but their response was a total waste of space. I don’t think the respondent knew what a wire wheel was!!! I don’t remember getting a response from Sika but it didn’t matter. I was discussing my experiment with son Luke and he suggested a product they are using for all sorts of things at work – Sikaflex 529AT. It is a Hybrid Seam Sealant used in the auto industry for gluing body panels together. So I figured if it holds a car together it must be good – plus he had a tube on the shelf for free – it didn’t matter that the use by date was August 2015!!!

I fitted a long nozzle with a small hole to the sealant cartridge which allowed me to control flow and initially only apply small quantities of sealant around the nipple then work that into the gaps by prodding with a stiff short bristle brush. Gradually add a little more sealant working it into the gaps until you are satisfied that the gaps are full. Then you can proceed to slowly add more sealant around the nipple, ensuring that there are no air pockets, until the nipple and socket are completely covered. I don’t think air will escape between the nipple and the spoke via the thread but just in case make sure the end of the spoke and nipple are well sealed with more prodding with the brush. From here you laboriously continue on sealing each nipple in turn creating a little mound of sealant about 25mm (an inch) or so diameter over the nipple and socket.

There are probably other sealants that would work well but the 529 applied very easily and has a creamy consistency, a bit thinner than a typical silicone gel, which was ideal because it worked into the small gaps very well and flowed nicely when I built up the thickness around the nipples. When cured the product is very rubbery so under pressure I visualise it would probably compress into the socket and very unlikely to come adrift. I left the sealant to cure for a few days before having a tyre refitted but in hindsight I possibly could have fitted a tyre and used a low pressure to further force the sealant into the sockets?

The wheels on the YT are centre laced and made specifically to suit the car therefore I did not have to seal a row of nipples on the outer edge of the rim as found on other models. I don’t think this changes any of the above discussion however the tyre bead will sit directly over the spokes on an outside laced wheel and will also need to slide over any sealant applied to those spokes when a tyre is fitted, therefore a lot of care will be required to ensure the sealant is not higher than the rim and it is well adhered or it may well get damaged. We have a set of MWS sealed wire wheels on our MGA but I can’t remember what the sealant around the outer spokes looked like. The wheel centre was flooded with a black sealant. The sockets on a standard outside laced wheel appear to be reasonably deep so should not be a problem getting adequate sealant in around the nipples.

Now you are asking why seal each nipple individually and not apply a blanket of sealant to all of the nipples in a single application? Well there are a few reasons. If you don’t seal each one properly and instead apply a blanket the job might fail prematurely. If you successfully seal each of them individually then you don’t need a blanket, therefore far less cost and less weight! If you break a spoke or one begins to leak then you only have one small patch of sealant to replace. With a blanket of sealant a repair would require cutting a hole in the blanket and then the risk that the repair may not seal and you may need to replace the whole blanket! Also applying a large amount of sealant may be a bit tricky with the tack time of the sealant and achieving a neat even job. Although, using a spreading blade cut to the shape of the wheel well and deep enough to only leave a good depth of sealant can get the job done quite quickly and neatly.

Next question did I consider using tape? Yes I did but decided against it even though it is very popular for sealing motor bike wheels and kits are available off the shelf. It has the advantage that it is probably quite quick and easy to apply compared to a sealant. However, the main reasons for not using a tape are very

much the same as not flooding the wheel well with sealant. A repair to a leaking or broken spoke will require cutting the tape and then most likely completely replacing the tape to ensure a good seal is again achieved. Secondly and one concern I did not mention with sealant is that a blanket of tape or sealant over the nipples might exclude air from escaping out of the tyre but it does not stop moisture from entering past the nipple and collecting in the socket unless the gap around the nipple is first sealed. As I have already said above if that gap is sealed you do not need an overall covering of anything. If moisture does collect in the sockets under a blanket then corrosion could be rife and particularly anaerobic corrosion in a moist low oxygen environment can be very aggressive.

Unfortunately I did not take any pictures of the process or the finished job so you will just have to picture in your mind's eye a wheel rim with cream coloured measles. However I have attached a couple of pictures of the brushes I used and what is left of the DREMEL wire wheels and a tiny abrasive point. The picture of the brushes shows both new and used and the main brush I used was the flat one. The 6mm round one I only used where the spoke was recessed in the nipple. The sealant had no detrimental effect on the bristles so one brush will do a whole wheel or more if you have prepared more than one wheel.

The wire wheel brushes were the main tool to clean around the nipples and occasionally the cup brush. The two small round brushes I only used where the spoke was recessed in the nipple and fortunately there were not many of those because the brushes did not last long. The small point was to reach into the smaller gaps where there was a bit of corrosion that the wire wheels did not get to. The last picture is of the 529AT in a cartridge gun and you can just make out the diagrams of typical applications on a car. You cannot read much because it is in 'spider writing'! I only used about a quarter of the cartridge to seal 60 spoke nipples!

The good news is it is now nearly 4 months since the tyre was refitted and inflated to 32psi. During this time the car has now had a quite few day trips around town plus a 500mile excursion to Margaret River and Augusta and back and it has not lost a single psi since – I am stoked!!!

Note that a standard tubeless valve will likely be too small to fit the hole in a standard wire wheel rim but no fear your local tyre man should have a fatter stubby version used on industrial wheels such as for 'Bobcats'! You could use the threaded type used on Mag and Alloy wheels but dare I say the black rubber ones look more original?

Well there you have it. I am certainly not the first person to have successfully sealed a wire wheel but now you have all the reasons why it is such a good idea, how to do it and all the arguments why I did it MY way!

Good luck, enjoy the challenge and the success!

Richard Prior

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