

## TR DRIVER SURVIVES ROLLOVER

**Geoff Byrne**

Danny Fitzgerald long-time friend and pit crew of Andrew Gibson, rolled his TR4A at Wakefield Park when competing in a regularity event at the recent Wakefield 25<sup>th</sup> Anniversary meeting on 16 November 2019. The TR rolled due to the left rear hub breaking and the wheel flying off when Danny was coming onto the back straight. He was lucky to survive. Though badly injured he survived the crash due to having a roll bar and having slowed down because of how the car was handling. Danny's brother Michael commented that, as he drives the car to the circuit, it was lucky that it did not happen when on the expressway driving home at much higher speed. Three weeks prior to the accident Danny had competed in the TR at a relay race. Danny remains in hospital with broken ribs and a crushed right hand.



Danny's damaged TR4A above and the wheel showing the broken axle still inside the hub with the brake drum still attached

I have written and spoken many times about the dangers of the rear hubs on all the independent rear end Triumphs. The hubs on TR4a, TR5, TR6, 2000 / 2.5 sedans, and Stags are all the same and have the same weakness. The outer bearing is on the hub and the inner bearing is on the axle which is very poor engineering design. There are numerous reports of hub failures. A roll over is most likely when the hub breaks and the wheel gets caught under the rear guard pitching the car into a rollover. In a high speed situation this is extremely dangerous. There are several reports of hubs breaking and the wheel leaving the vehicle without getting caught under the guard and the driver watching the wheel career down the road.

There are two locations where axles have, in the past, broken. The first is at the base of the threaded section at the outer end of the axle and the second is at the inner section of the axle just inboard from the inner bearing and in line with the backing plate. This is where the axle on Danny's car broke. Once the hub breaks and the wheel and brake drum come away from the brake backing plate there are no brakes on a single cylinder system such as on a TR4A and Mk1 2000. With a dual braking system you would still have front brakes.

The picture below is of a outer axle I removed from a Mk2 sedan which I bought in the mid eighties as my and Rhonda's daily drive. When I acquired the car and checked it over I was concerned about play in a rear hub. On removal I discovered the hub had fractured completely from the bearing mounting boss. The ring on the axle is where the bearing sits and you can see the break point where the flange should be for the wheel to bolt to. It was only a matter of time before the axle broke and the wheel parted company with the car. A lucky escape for me and the family. You can also see from this picture the sharp corner and therefore stress riser point where the thread stops. Another common break point.



The story of rear hub failures began with the development of the Triumph 2000 and the independent rear suspension back in the early 1960 's. There is a report that the prototype Triumph sedan , while driven by the development engineers suffered a rear hub failure causing the car to roll over. There is no record that I can find of any evidence of a redesign of the rear axle assembly as a result.

The problem is so well known and documented, that every aftermarket supplier of Triumph parts offers a replacement axle assembly. I have run several different replacement axle arrangements in both my race car and road car. When I purchased the road car I would not drive it at highway speed until I replaced the rear hub assemblies. In the first instance I replaced the hubs with modified Hyundai front wheel hubs using the original splined axles . This solved the problem of now having failsafe hubs but the original axle splines were worn causing a clunk on selecting reverse and generating a gear stick rattle. After researching the available after market axles I bought a set from Moss with cv joints. They are manufactured in Germany by Limora and are an excellent piece of engineering. They have really transformed the car, smoothing out the power transfer and eliminating the gear stick rattle . I highly recommend them.

In my race car I run modified Hyundai front hubs with CV joints and special high strength steel inner and outer axles.

I strongly advise any driver of an independent rear end Triumph to consider replacing the standard rear hubs with one of the readily available upgrade hubs and also consider installing cv joint axles. These cars are now many years old and most drivers do not know the maintenance history of their vehicle. This advice especially applies to cars fitted with modern sticky tyres and those competing in speed events. Its commonly said " its not if the hubs will fail but when" . Please don't be fooled into putting in Datsun axles which will smooth out the torque transfer but ignore the real and present risk of a hub failure , your life may depend on it.