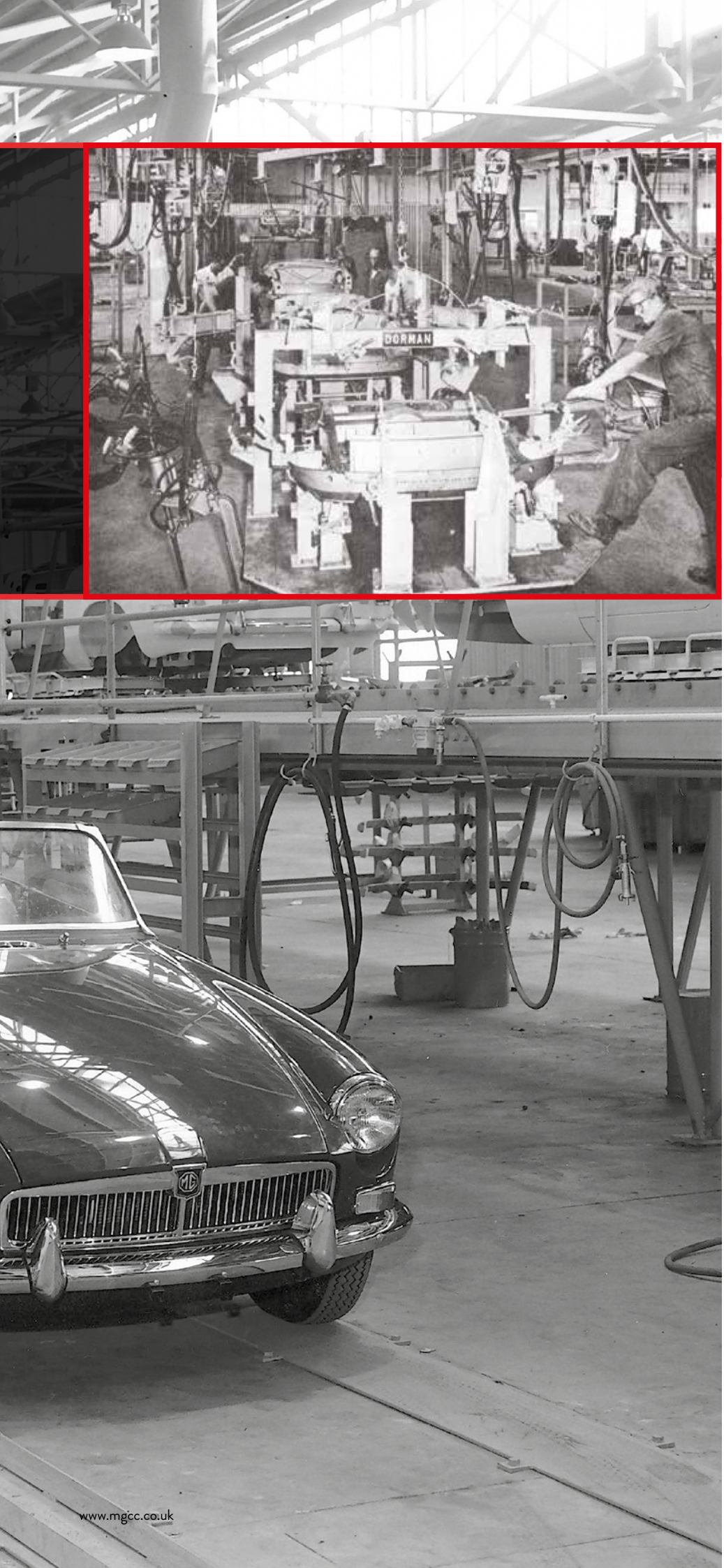
THE MGB CASE OF "THE BENDS"

By Tom Aczel



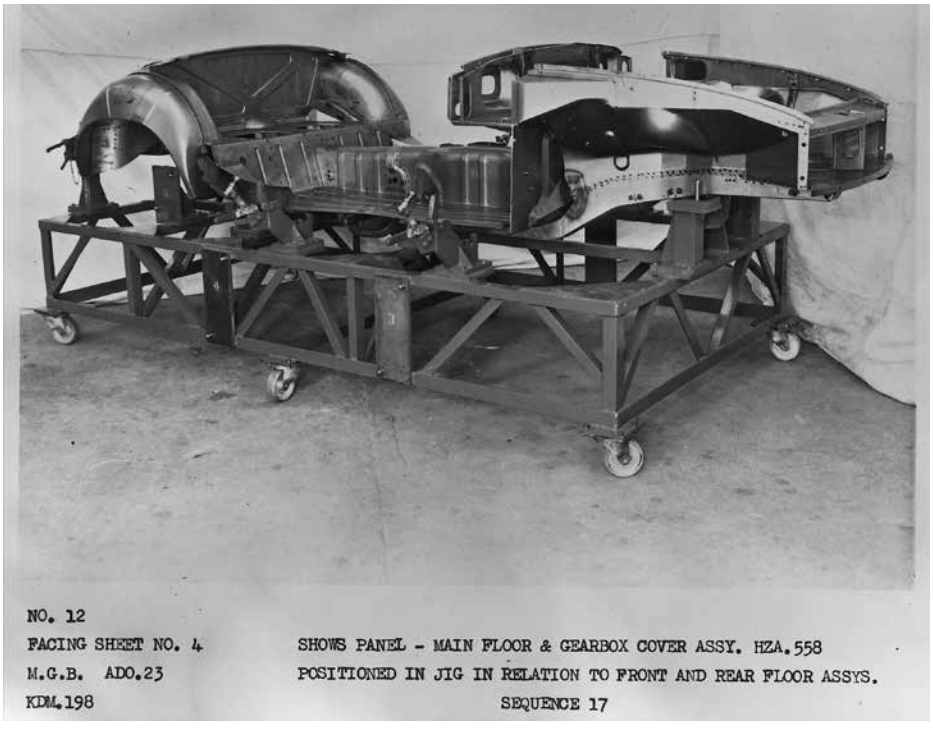
I have always been amused by John Lindsay's re-telling of the story of the first few MGBs to come off the line at Zetland in Sydney. How the Australian management thought they'd show the Brits a thing or two about manufacturing tolerances, and configured the door aperture gaps on the MGB to be finer than those of the English built cars, only to discover to their horror that once the cars came off the assembly track and were on the ground supported on their own their wheels, the doors proved impossible to open. The door gaps had closed up slightly under the weight of the car!

New slightly smaller door skins were hurriedly drawn up to be fitted to these first cars to make them able to be sold. Now the MGB was, deservedly, always said to be an unusually rigid sports car compared to its contemporaries. Certainly for example, despite their undeniable appeal, the Triumph TR4, 5 and 6 were rattily and less solid. A large part of this was due to the different form of construction of the MGB and the TR series of sports cars. The TR cars were built in the traditional method of a body mounted onto a chassis. (So too were of course the MGA and the preceding T series.) The MGB on the other hand was "unitary" construction. There was no separate chassis; rather the body and the structure underneath the body were built into a single three-dimensional unit. Why should this matter? Well, something that is of a flat (two-dimensional) form is much easier to distort than a three-dimensional item, even made of the same material and the same weight.

Consider a match box for example. It is quite resistant to being twisted or bent. Stamp on the same matchbox and flatten it out, and instantly it is easily bent or twisted. The same applies to a flat two-dimensional chassis with a body mounted on to it. The MGB on the other hand is built as a three dimensional unit, without a separate chassis, but rather a substantial substructure beneath a body that is then welded to the three-dimensional underlying structure. But the difficulty with a roofless sports car is that in the middle, along the length of the door

apertures, the three-dimensional box has to become flat and close to two-dimensional. So how is this intrinsically weak part of the car reinforced? The solution to this problem is to build into the basic platform longitudinal, three-dimensional members. Thus the MGB has a substantial transmission tunnel running along the middle of the car, welded into the very substantial bulkheads at the front and rear of the cabin. Along each side of the car run very strong boxed three-member "sill" structures, again tied in to the front and rear bulkheads.

However, from the front wheel arches and the front bulkhead forward, there is no room for sills or a tunnel. At least not if you want to be able to steer the front wheels, or leave space in the middle for the engine. Similarly, at the rear it is difficult to run the tunnel back past the rear axle, if you want space for a boot, and likewise it would be difficult to run the sills over the wheel arches, or inside the wheel arches to the back of the car. This problem at the front and back of the car was solved by incorporating longitudinal box-shaped "chassis members" into the floor pan. You can see these well if you look into the



MGB engine bay at the front, or into the boot at the back. These members are of course also visible if you look under the car. *Insert the two photos of the yellow MGB from below here.* The surprising thing (to me) however is that these longitudinal members don't join up - there's a big gap between them! The front members finish at the level of the jacking apertures that you can readily see from the side of the car, roughly just 1/3 the way along the door apertures and the rear members finish at the front of the rear bulkhead, a little distance behind the door apertures.

There is a substantial portion of the length of the MGB, in the very area where the structure is at its "thinnest" and closest to a flat plane structure, where the strength of the car relies entirely on the sills and tunnel, probably close to two feet long! What's more, it is in this very area that the central transmission tunnel is at its lowest in height and narrowest in width, and the sills turn upwards. The lack of support under the floors towards their rear, relying purely on longitudinal swages in the pressings, certainly allows a degree of visible and palpable "flop" in the floors of an MGB towards the rear of the seat tracks. This incidentally is where a large part of the weight of the driver and passenger is located and would I imagine have contributed to the timber supports under my MGB seat tracks fracturing towards their rear ends. It seems to me that it would not have been difficult to continue the front longitudinal members to join the rear equivalents, possibly in a "lazy S" shape or as a diagonal.

Quite why this was not done is not obvious to me. It would certainly have supported the rear of the floor pans better, and may just have helped resist the tendency of the car to fold up in the middle, as the guys at Zetland discovered. Sydney Enever, the Director of Engineering at Abingdon at the time of the MGB development, was very much admired as a particularly gifted engineer. Those who worked under him considered him without doubt to have been a genius. The configuration of the sill sections and central tunnel of the MGB was entrusted to Roy Brocklehurst (who followed Enever as Director of Engineering on the retirement of Enever) and Don Hayter, who also styled much of the car externally. I have absolutely no doubt that the MGB's structure was very carefully considered and very competently executed by these respected and particularly capable designers. BUT, despite Sydney Enever's tendency to over-engineer his designs, even very late in the pre-production story of the MGB, when the first prototype had already been completed, structural problems were identified and changes to deal with these were made. For example, there was an unacceptable degree of scuttle shake discovered in the prototype, and a transverse, square-section tube was added to tie together the central console, transmission tunnel and the inner panels in the kick panel area of the footwells. You can easily find this tube if you look under the dashboard of any MGB. (Allegedly this also resulted in a number of golf buggies, made of the same square-section tubing, leaving the Abingdon MG factory for a while!!)

Another very late decision, after the first prototype was completed, was to revert to semi-elliptic rear springs for the rear axle instead of the coil rear springs of the prototype car. It was decided that these semi-elliptic springs would be 6 inches longer than those used in the preceding MGA. To accommodate the change to semi-elliptic rear springs required the back of the car to be lengthened. This elongation of the car, very late in its development, was precisely in the area we are discussing. While it is complete conjecture on my part, perhaps this last minute lengthening of the car in this area is related to this part of the MGB's otherwise particularly massive structure being relatively under-supported? Perhaps what had been robust enough originally, was now, with a longer flat plane section of the platform, allowing more flex in the car than was originally present and considered acceptable? Sadly all the masters of the MGB's development, Sydney Enever, Don Hayter, Roy Brocklehurst and John Thornley are no longer with us to ask.