

These notes will be useful to TR3-6 owners (and TR2 owners with a Girling axle) who are finding they handbrake is inadequate and needs improving. We explain here how to repair the back plates to bring the system back to its correct operating standard.

### **BACKGROUND**

The handbrake mechanism at the rear wheels of TR3-6 cars with Girling brakes fitted, is a relatively simple design. Owners will find on inspecting the components, that equal pressure is exerted on both shoes, when the handbrake is applied, even though there is only one slave cylinder. This is achieved by allowing the slave cylinder in which the handbrake lever is accommodated (as well as carrying out its primary function of operating the rear brakes hydraulically) to slide back and forth with the back plate. When one shoe touches the brake drum, this becomes the fulcrum, allowing the slave cylinder and the other shoe to slide over the backplate until it too touches the drum. The lever then is allowed to rotate further to apply mechanical pressure to the shoes to effect the handbrake (parking brake).

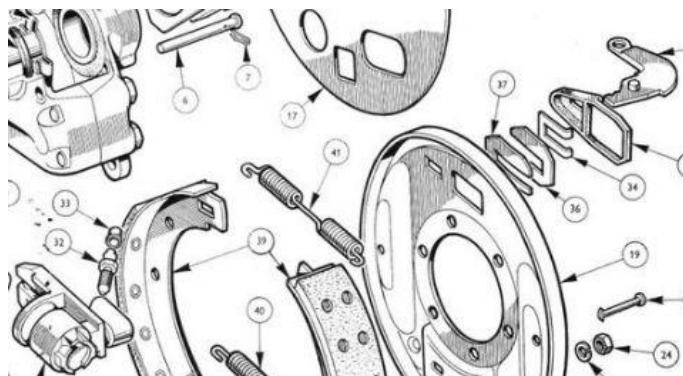
### **THE PROBLEM**

The mechanism described above would work fine day one and for the expected life of the car, not 60 years! The lever that does all the work has a pin protruding from either side as can be seen in this extract from a parts book (top right). These pins sit on the backplate and inside the slave cylinder (bottom left).

The problem that occurs is that as the lever rotates on the backplate, and given that it is generally in the same place, a divot is created either side of the slot the lever operates in, as the pin is repeatedly acting on the back plate in the same place.

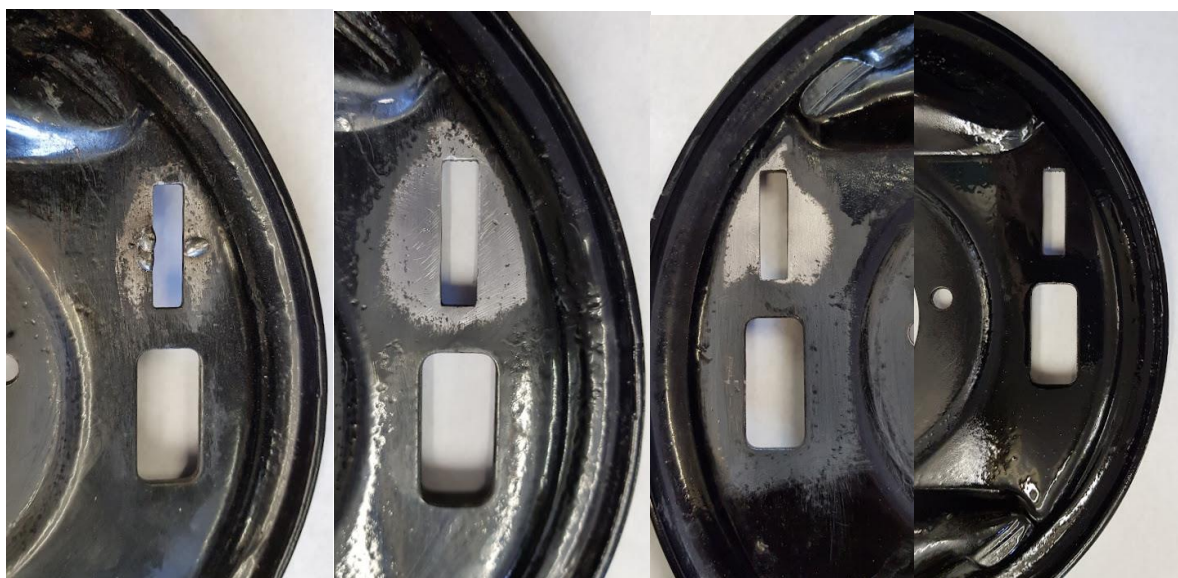
The divots can clearly be seen in this photo of a backplate that has been cleaned ready to be repaired.

It is often said that the TR4A to 6 handbrake is fundamentally poor in design and that fabricating extra-long levers or fitting some additional lever mechanism is needed. This is not a fair statement and shows a lack of understanding of the basic mechanism and the problem induced by the divots. Once these divots are sufficiently deep to prevent the slave cylinder from sliding as it should, the lever stays in one place and therefore only one shoe comes into contact with the drum, thus halving the braking efficiency of the rear brakes. Clearly fixing the problem and restoring 50% of the braking efficiency is going to provide significantly greater handbrake efficiency that attempting to improve the leverage on 50% of the system.



### THE CURE

Having understood the problem, fixing it is quite easy. In the absence of new back plates, welding up the existing parts and restoring them to their original condition is the answer.



*Welded up*

*Welds finished off*

*Finish painted.*

### IN CONCLUSION

With the backplates restored to as new condition, the handbrake should work as it did when the car was new. Please bear in mind that this mechanism on a TR4A-6, even though there was little design change from the TR4 at the business end, the mechanism had a new role. It was now to be a parking brake, not an additional brake to arrest the car by a hand lever, but to stop the car from moving whilst at rest. You could call this the difference between keeping potential energy harnessed (whilst the car is stationary and preventing it from moving on a hill especially) and arresting kinetic energy whilst the car is in motion. Two quite different jobs.

Needless to say, all the other parts of the handbrake mechanism need to be in tip top condition and properly lubricated and adjusted in accordance with the workshop manual to achieve the best result.

One last point.

The whole thing is about levers and leverage. This all starts with the mechanical advantage that is offered by a long lever to pull on versus a very short lever operating the handbrake cable. (force x distance = work). Triumph obviously did realise that the TR4A handbrake could do with improving, so for the TR250 and TR5, the hole in the handbrake lever accommodating the balance bar connected to the two handbrake cables, was moved nearer to the pivot point, thus increasing the lever travel compared to the TR4A but increasing the force provided for a given travel.

## Improving TR3-6 Girling handbrake (Repairing Backplates)

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TR3-4 of course can lock the rear wheels from 50KPH due the significantly longer handbrake lever, but then, as pointed out above, it was an emergency brake as well as a parking brake.

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