

Squealing Brakes (20hps, 20/25s and Phantoms)

Internal RR records show that early 20hps suffered from squealing rear brakes. This was not mentioned in press reviews at the time, but in 1923 various internal documents discussed the problem, eg Fasal pages 92 and 110. So true to form Rolls-Royce developed something complicated they could bolt on, and called it a “squeak damper”. They consisted of four cast aluminium “sectors” attached to each drum, shown shaded in **Figure 1**. The sectors were held against the rear brake drum by a strong circumferential spring (A) and on the earlier 20s engaged a mechanism (B) which allowed some freedom of movement but stopped them wandering across the drum. According to GA drawing G50795 they were fitted “up to the end of F series if required”. During F series (latter half of 1925) further important changes were made to the 20hp brake system:

- Front wheel brakes introduced from GPK1, increasing track by 2 inches
- Wider rear brake drums from GPK1, ditto
- New improved rear brake squeak dampers (C) fitted as standard

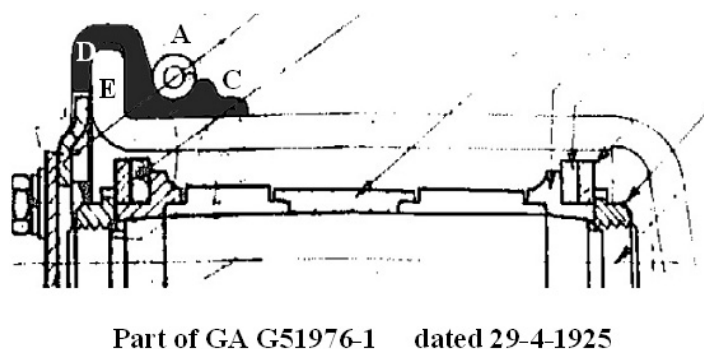
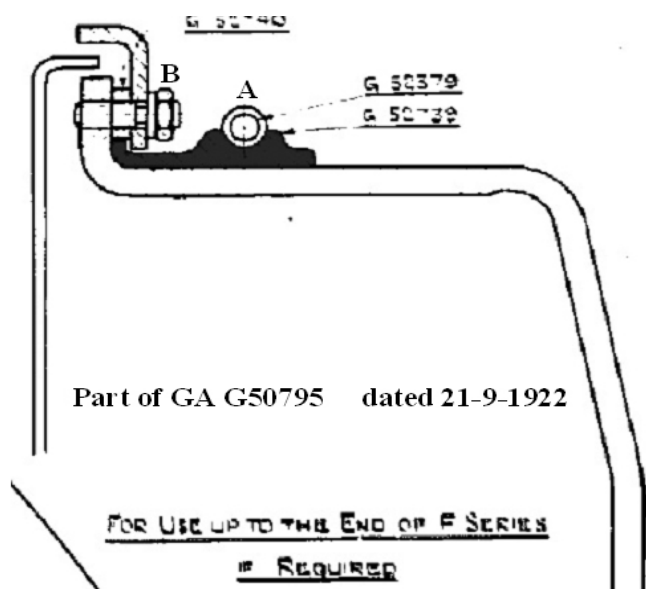


Figure 1 Early (left) and later (above) brake squeak dampers fitted to rear brake drums

Two years later, squeak dampers were fitted to the front brake drums as well, starting from GRJ 73 and continuing with early 20/25 cars up to 1933. In 1932-3 squeak dampers were discontinued when Rolls-Royce redesigned their brakes by introducing pivoted brake shoes (to prevent squeaking) within cast iron drums. Initially these were fitted to the rear, and later on to the front.

The Phantom cars followed a similar development path: later P-Is and early P-IIs were fitted with squeak dampers which were replaced by pivoted brake shoes and cast iron drums in 1932-3.

Rolls-Royce evidently put much effort into developing their squeak dampers, but there seems to be no published information on how they should be cared for and maintained. In particular, if the dampers become cemented to the drum, then they cannot work properly because a damping effect depends on a degree of mutual movement between each sector and the brake drum. The following describes how to refurbish the dampers on all four wheels.

Removing the dampers is relatively straightforward, by levering off the springs (with care because they are immensely strong and store a lot of potential energy) and removing the four

damping sectors from each drum. **Take great care not to press on the exposed back plate of the front brake assembly (J) with the lever.** This is important. The back plate is relatively fragile, made from aluminium, and can be damaged. The sectors are made of cast aluminium alloy and may be cemented in place by decades of baked-on oil, paint, dirt and rust powder, so take care not to break them! Remember they are not doing their job if they are cemented to the drum.



Figure 2 One of the aluminium sectors removed from the front brake shoe, showing channel in sector (D) and spigot on brake shoe (E)

Cleaning the sixteen damper sectors can take a long time and be tedious. Soak them in paint stripper and then brass-wire brush them to remove oil, paint and any other deposits. Any baked-on deposits can be carefully removed using sharp chisels. It is particularly important to remove all traces of deposit from inside the channel in each of the sectors (**D**). After further cleaning with wet-and-dry emery paper and wiping with solvent, the outer surface of each sector should be painted with black Hammerite “High Heat” paint, or similar.

Surface rust is removed from the two front drums using emery paper, and from the rear drums using a portable belt sander with a dust collecting bag. Each of the four drums has a ridge (or “spigot” in RR parlance) (**E**), which engages the channel mentioned above, and these ridges are also cleaned of rust. After thoroughly washing all surfaces with solvent, areas of the **rear drums not covered by the dampers** are best painted, again using heat resistant paint. The dampers should then be lubricated to ensure they remain free to move relative to the drums; spray both mating surfaces with PTFE aerosol. This is a dry lubricant, resistant to heat, oil and water, and hopefully will keep the dampers working properly.

Next the springs are cleaned with paint stripper, wire brush and solvent. It is important to remove any old paint which might interfere with the springs expanding properly. Aerosol chain grease is then injected into the centre of each spring and the outside brushed with Waxoil or similar to prevent corrosion. If any springs are damaged, new ones can be purchased from the usual suppliers.

Now for the really difficult bit: refitting the dampers and springs. Each spring is immensely powerful and must be expanded by about 5 inches, which is impossible without using strong

tyre levers. The method described below for the front brake drums is effective and does not require any special tools, (**Figures 3, 4, 5**):

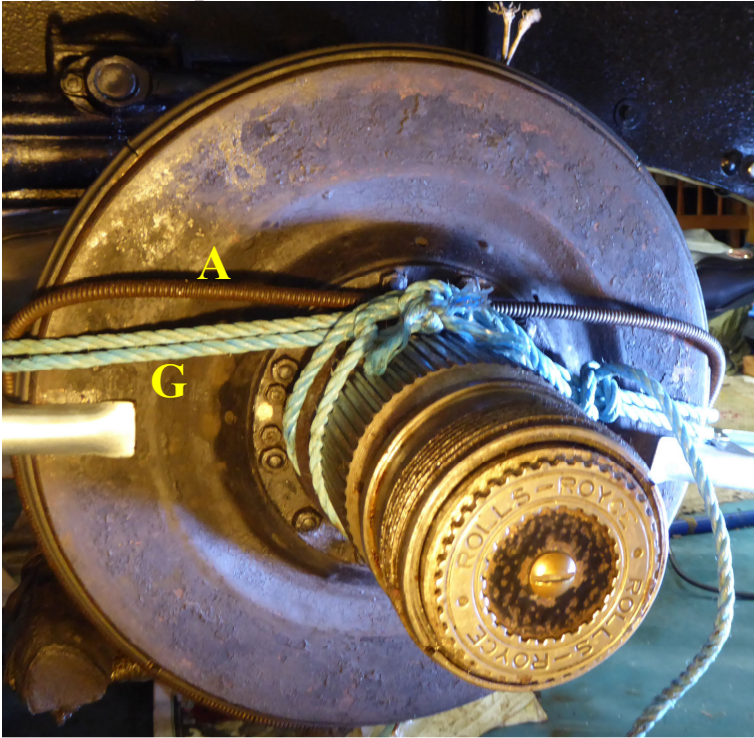


Figure 3

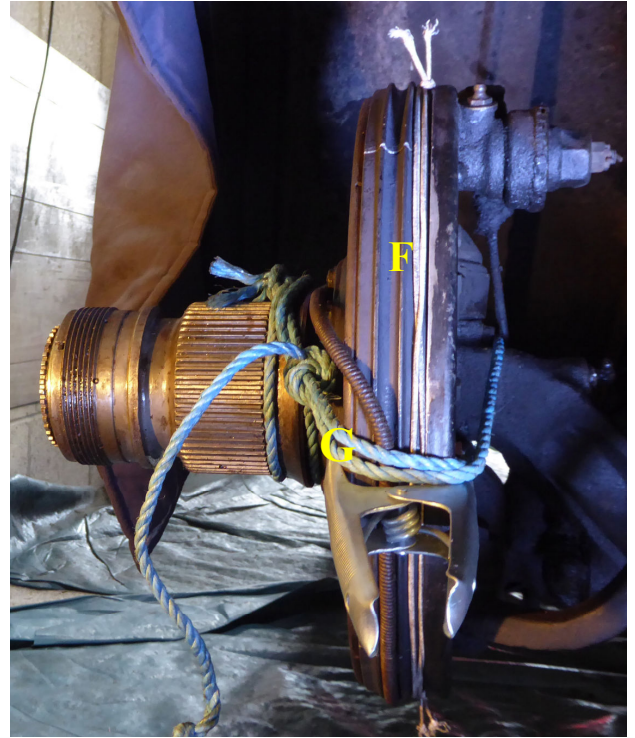


Figure 4

- Make an elastic band (**F**) to hold the four sectors in position around the drum
- Hook the ends of the spring together to make a circle, then insert the spring (**A**) into the grooves of those sectors on the bottom half of the drum
- Hold the spring in place with clamps, and tie very tightly with rope (**G**) so that it cannot pop out of its groove
- Using two robust tyre levers (**H**), carefully lever the spring inch by inch over the drum and into its groove on the damper, **Figure 5**. Take care that the spring, with its enormous stored energy, does not fly off the drum and cause injury
- Take great care not to press on the exposed back plate of the front brake assembly (**J**)



Figure 5

- When the spring is in place, remove the elastic band and rope, and make sure the hooks which join the ends of the spring together are properly engaged
- Adjust the spacing between each damper sector, if necessary, using a screwdriver

The procedure for the rear drums is similar except that the drum is wider, so the spring is first levered on to the drum, and then pushed over and finally levered into the grooves in the sectors, **Figure 6**. Covering the upper half of the drum with masking tape helps prevent the tyre levers slipping on the drum.

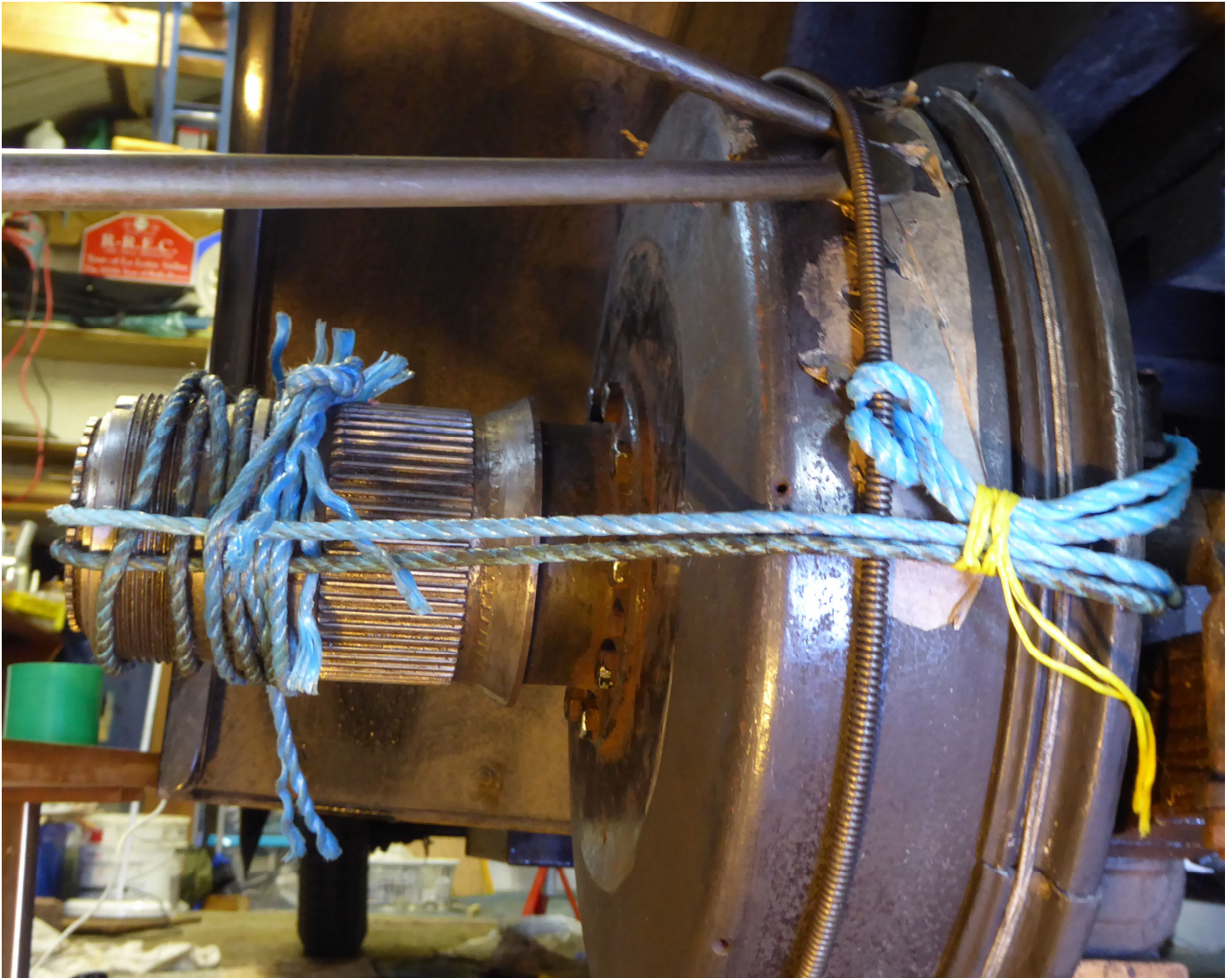


Figure 6

Now road test your car; if it was a “squealer” there will be a satisfying lack of squeal. Royce’s brake squeak dampers really do their job rightly (to quote his famous motto).

Whenever you subsequently remove the wheels, lubricate the spring round each drum, and the area between each sector and the brake drum with an aerosol dry lubricant eg GT 65. This provides a residual Teflon layer which lubricates and hinders the ingress of water.