

The Single Throw Window Winder

by Chris Gillings (NSW)

One of the features of the Mk VI Standard Steel Saloon and other models of RR is the "Single Throw" window winder provided for the driver. Rather than the usual three to four turns needed to fully open and close the window, a long arm does the same with a single 120 degree arc. In the days of hand signals and manual toll booths it was a great feature to have. Nowadays it's more of an oddity and party-piece.

As you might imagine, the single-throw mechanism takes a lot of stress; its very nature means it gets used hard, if not brutally at times. It gets banged to the top and thumped down again and can be quite difficult to use slowly or gently. In wet weather, aging fabric window guides expand and make the action stiff. Sometimes I can even feel the handle bending slightly.

Snap!

Driving along one sunny day in May 1999 I was bothered by a whistling through a small gap at the top of the window and gave the single-throw arm a thump to close it. The arm went a little further than usual: accompanied by a suspicious 'click' sound. I managed to get the window open and closed once or twice at the Harbour Bridge toll gates before the arm just went 'round and around'. Obviously something fundamental had broken in the mechanism and had to be repaired.

Removal

The mechanism first has to be removed from the car, which means the door trim has to come off. This is quite a straightforward job and needs only a few tools.

"Jewellery first, Madam, if you please."

Remove the single-throw handle by unscrewing its centre screw. The handle slides off with a bit of jiggling. The door opening handle is held on by the large inner ring (Figure 1). If you don't have the appropriate tool (and I don't) you can loosen the ring with adjustable pliers; but be very careful of the chrome finish. Chamois over the teeth might help. Once it's loose it can be unscrewed by hand until the handle slides out (Figure 2). It's a close thread so it takes quite a few turns.



fig 1



fig 2



fig 3



fig 5



fig 4

Slide the arm rest up and out by using the adjusting lever underneath. The armrest mount is the last fitting we



need to remove (Figure 3). Unscrew the bolts, taking care not to lose the spacer tubes (Figure 4).

Stripping the skin

Starting on the lower front of the door, slide a large flat bladed screwdriver between the door and trim and pop the clips out (Figure 5). Carefully work upward and around to the wooden door cap. Pull the trim out and down to release it from under the door cap. Figure 6 shows the door free of its skin. The single-throw mechanism is the large unit in the middle.

Evidence of earlier explorers

An odd discovery was a large flat bladed screwdriver in the door well (Figure 7). Someone had obviously been here before, certainly within the last ten years, by the age of the screwdriver. What were they doing, I wonder? How ever did they forget about it? Hopefully it wasn't the previous owner whose profession was 'thoracic surgeon'!

Only a C-Type? Take it back!

The single-throw winder (Fig.8) is a C-Type "Bright Regulator", British Patent 382377 43/892, made by the Bright Manufacturing Company Ltd of Coventry. As I feared, it's made of die-cast metal. What possessed Rolls-Royce to allow use of this material for such a task eludes me. I'm surprised it lasted this long.

The easy way?

Getting the winder out was a bit tricky because it seemed to be stuck in the open (lowered) position. I unscrewed the bolts holding it on and tried to manoeuvre the whole set, glass and all, upwards. I was having moderate success when the glass came free from its holder, which is a 10 inch steel slot and channel with a cross section like a lower case 'y'. The lifting arm of the winder rolls inside the lower channel as the glass moves up and down, supported in the slot. (Fig.9)

Having the holder come free was a blessing in disguise. I chocked up the glass and had the winder out a few moments later through the door frame gap just above it. The holder was very rusty so I was glad of the chance to clean it up a bit.

The patient is ready for you, Doctor.

The winder as removed is shown in Figure 10 and the reverse in Figure 11. On closer inspection the first thing I noted was the welding on the die-cast back plate (Figure 12). It's obviously been repaired before, perhaps by my screwdriver-misplacing predecessor.

Upon removing the nut from the centre bolt and lifting the centre



arm, all was revealed (Figure 13). The back plate had completely fractured as a result of the pressures exerted by the square centre shaft. There was a square bush between the plate and the shaft - now more or less circular (Figs. 14-16)

If you pick at it, it only gets worse.

After a bit of fiddling with the plate, with a vague thought of repairing it, the fracture completed and the plate fell into two pieces (Figure 18). Finding a replacement part was not an option, especially on a Saturday afternoon, so I called on Barrie to ask him to help me fabricate one.

Fabricating a (Much Better) Replacement

We took some 3.2mm (1/8") brass plate, traced the outline of the original and cut out a rough circle. We smoothed the circle by hand with a lisher and finished it on a lathe, after drilling a centred hole of the necessary diameter. The cutaways were made by drilling spaced holes along the cutting line, bending and snapping off the waste and finishing by hand with a file.

For the centre reinforcing mound we machined off a 2.5mm thick disc from some 20mm brass stock and silver-soldered it in place using an oxy-acetylene torch. The plate was now the same thickness in the centre as the original, but thicker elsewhere (Figure 19). The two inside tags were hand cut and shaped and also silver-soldered in place (Figure 20).

The centre hole was squared off by hand, using a square file of exactly the correct size. A difference with our hole is that the corners are rounded, unlike the original which had very sharp inside edges prone to cracking. We didn't have square tubing suitable for a bush, so we reshaped the original and forced it into place for a snug fit with the centre shaft. The plate was then polished ready for use.

The whole fabrication operation took no more than three hours. It would have been quicker if Barrie had not insisted on lecturing me on the use of the lathe, oxy torch and other devices as we went along. As we have done in the past in honour of a job well done together, we inscribed the part appropriately (Figure 20). We're confident that this new part will last for many years to come.

That's all very good but how does it work?

The mechanism of the winder is very simple, though I am not entirely sure of the function of the outer spring (Figure 21), except perhaps as a drag to slow the action. The inner spring holds light

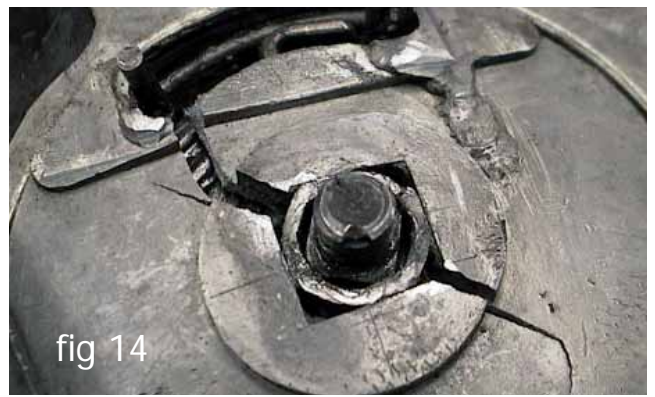


fig 14



fig 15



fig 16



fig 12



fig 17



fig 13



fig 18



fig 19



fig 20



fig 21



fig 22

tension when the window is up/closed and gains tension when lowered. This makes raising the glass easier, as one would expect. It also makes reassembly easier (Figures 23, 24) because minimal pre-tensioning is needed (though by the castellations in the centre lug in Figure 21 it is adjustable).

A tiny bit of scientific procedure

Just to make sure of my theory, I placed the reassembled winder in a vise and tested its operation with a spring scale which measured in Newton meters. For tensioning (window opening) 50 Nm is required at the end of the centre arm, and for releasing (window closing) only 25 Nm, which is more or less what I'd hoped. (If I'd been thinking harder at the time I would have also measured the force required to raise the glass.) Perhaps the purpose of the centre lug slots is to tune the force so it's equal in both directions.

Still the easy way?

Reinstalling the winder was easier again, I am sure, because the glass was out of the holder. I mounted the winder in place and moved the lifting arm to a convenient position halfway. I angled the glass holder onto the lifting arm ball-rollers and then dropped the glass into the holder slot. It fit fairly easily because I had cleaned it out and lined it with silicone sealant. Getting the rollers into the holder channel could be tricky if it's still attached to the glass and cannot leave the vertical.

A satisfactory result

The winder appears to work as well as ever. The liberal application of grease to the spring housing and roller channel is also promoting gentle use of the system.

Postscript 2012: Or is it?

I noticed fairly soon that the upward supporting pressure is not quite enough to keep the window fully closed so it's almost certain that a little more pretension was required. I'd have to take the unit apart again to do that and as this repair was done in 1999 and I still haven't done it by 2012 it obviously hasn't bothered me enough to try.



fig 23



fig 24