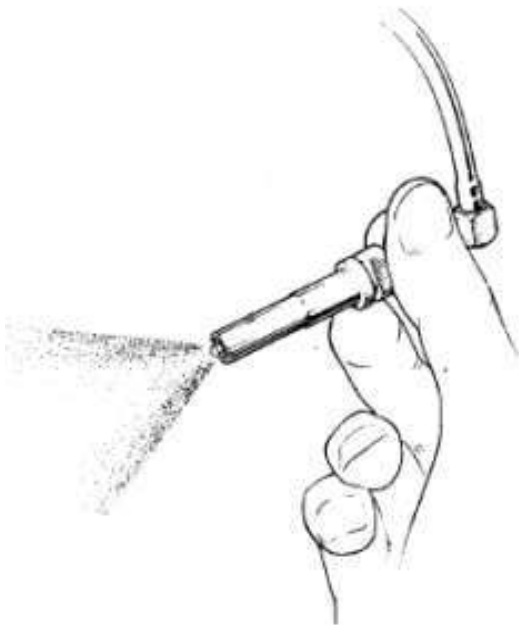
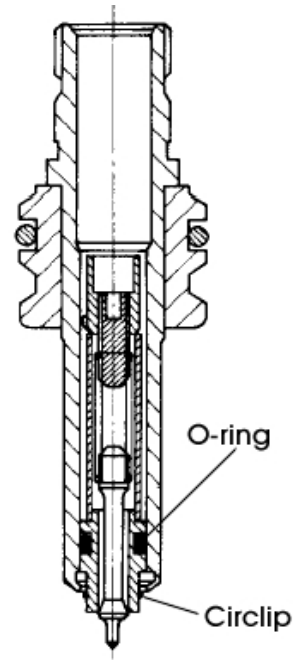
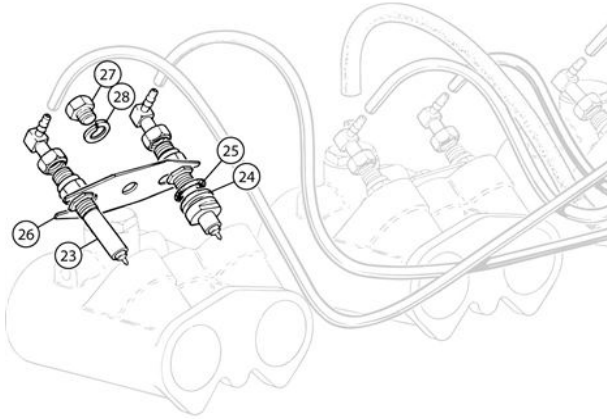


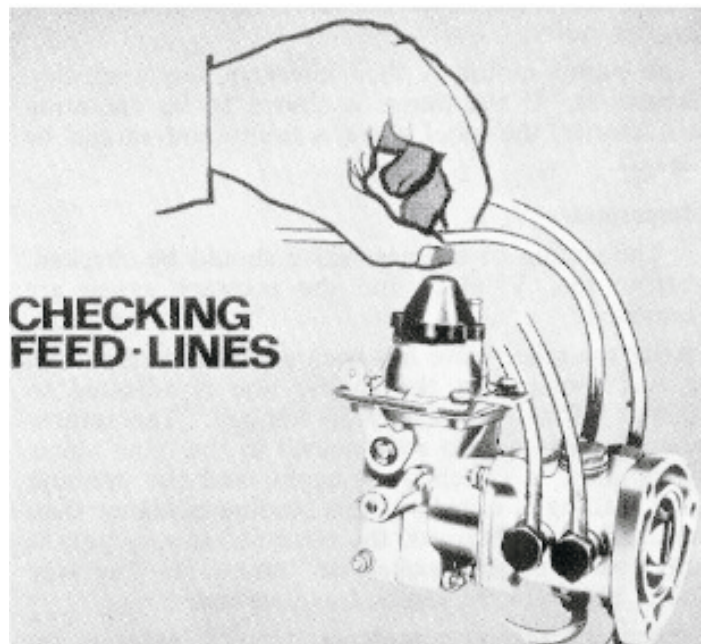
## DISCLAIMER.

Please be aware that although this process worked well for me I accept no responsibility if, you try it and it does not work. Only have a go if you feel you are competent enough and, maybe on a spare injector first.

## TR6 Injector overhaul



Conical spray pattern required.



Check for strong pulses in the fuel lines.

One of the injectors on my TR6 was acting up which caused occasional rough running. On checking I found that there was little or no pulse on that injector. Now I've had some spare injectors off a 1969 TR6 for 40 years, so I replaced this injector with one of these spares and managed to get it working well with a good conical spray. The engine ran smoothly again.

I decided to recondition *all* the injectors even though the 1969 ones hadn't seen petrol in 40+ years, replacing all the internal O-rings and filters and cleaning all the internal parts.

Fuel is injected into the engine through the injectors via a *poppet valve* (as described in the Lucas Manual). This valve is kept closed by spring pressure that is set to open at 50 lbf/in<sup>2</sup>. I was careful not to turn the plastic spring retainer on the injector throughout the process because the opening pressure can be adjusted by turning it clockwise or anti clockwise.

If the internal O-ring starts to break up, bits can stick in the injector valve seat. This will prevent the *poppet valve* closing and seating correctly thus causing dribbling and/or spitting. These impurities can sometimes be removed by connecting to filtered air supply with a pressure about 80 lbf/in<sup>2</sup>.

Larger pieces can also jam the opening of the injector valve causing little or no fuel to be injected. Weak or broken O-rings will cause the internal injector to move in the main body also. This can be easily checked by moving the injector point side to side and if shaken it will rattle!

I couldn't find any reference to the injector filters in the Lucas Manual, but they were fitted to both my 1969 *and* 1975 injectors.

These obviously will prevent debris in the fuel and any pieces from the metering unit entering the injector. These filters could become clogged cause running problems and/or limit maximum power. So even if the injector is *not* to be dismantled it's probably worth cleaning them, perhaps with a fine artist's brush?

The O-rings on the injectors that had been used on the car were still pliable and easily removed, though most broke up. All the injector O-rings were past their sell by date! However when I dismantled the 1969 injectors I found that their O-rings were more like hard plastic and had to be *broken* off!

## Reconditioning

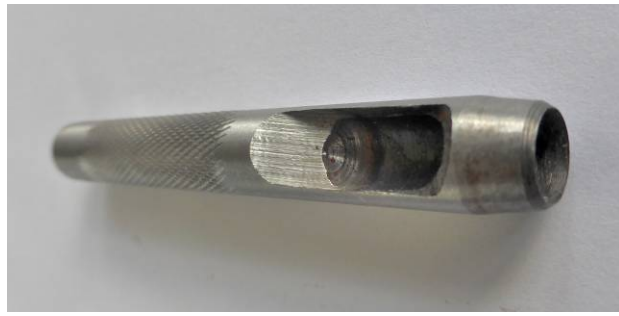
### Materials required



The pink piece was used to protect the tip.



First hole punch



This 8mm was £2.50 on e.bay



A variety of golf tee pegs.

This particular tee was a good size and shape for drifting out the internals and holding the filter body for cutting in half. (cut the tip off).

For dismantling I used a *selection* of cut down *plastic* golf tee pegs (do not use wood ones as they will splinter), a 4mm Allen key, relevant spanners plus a vice. Soaking the injector with WD40 overnight helped. Also I used some oil down the main body.

The new filter mesh I used was *Stainless Steel Woven Wire Fabric, 0.04 250 Mesh* from [WIRES.CO.UK](http://WIRES.CO.UK) A 14cm x 25cm piece cost £6.04 inc. P&P.



Main body, with the internal injector, showing the spring holder, filter and O-ring. This O-ring was the one that had been on the previously working injector so was still flexible enough to remove intact. The other 1969 ones were so hard they had to be broken off.



The left groove is for the circlip and the right hand rectangular section one that has a 4.7mm diameter and is 2mm wide is for the O-ring. NB. You can see the injector point is somewhat delicate and should be protected, particularly when drifting it out of the main body.



It's important that this valve seats correctly otherwise spitting and dribbling will result. It can be blown out with compressed air but not for long periods of time. The injectors should start spraying at a pressure of 45 to 55 PSI.



Spring holder shown has a hexagonal internal section. This changes the fuel pressure so I was careful not turn it too much! I used an Allen key to push the internal component back into the main body. I also found a plastic golf tee was equally effective.



- I tried prising the tip of the internal out with a modeling knife under the circlip first. I also used a fly tying vice to hold the injector valve tip whilst pulling on the main body. This gave enough clearance to get the modeling knife blade under the circlip in order to remove it.



Fly tying vice to pull the internal out enough to remove the circlip



Filter with mesh intact.

- This didn't always work so I used a 4mm Allen key that fitted into the plastic spring retainer in order to gently press the internal injector assembly back into the body. This damaged the filter mesh but it was necessary to move the tip out enough to gain access to the circlip on the ones that *couldn't* be prised out.
- I gently eased the circlip off starting at one end and kept my thumb over the injector point so I didn't loose it. I used a small modeling knife to start levering it off.
- A plastic golf tee was used with the point cut off. This was necessary so as not to damage the injector point. I then tapped the injector back through the body. It came out the other end along with the filter. The tee bent on a couple of occasions so I cut a section off the tee, fitted it inside the body and used a metal drift. I made sure this plastic section was long enough so I didn't damage the injector point.
- I had to drive one of the internal injectors back and forth a number of times before it finally came out of the body. I used a small piece of golf tee peg located on the injector valve point to protect it you can see the pink section in the photo above.

## Refurbishing the injector filter



If the filter mesh was damaged when it was drifted out then it would have to be refurbished. It was obviously assembled originally in two halves judging by the groove running round the filter body so was easy to cut into two pieces.



To refurbish I placed the filter body on a plastic golf tee peg in a vice and cut it in half using a Stanley knife. I used the 8mm Hole punch to cut a disc out of the 250 stainless steel filter mesh.

The filter mesh I used was *Stainless Steel Woven Wire Fabric, 0.04 250 Mesh* from [WIRES.CO.UK](http://WIRES.CO.UK) A 14cm x 25cm piece cost £6.04 inc. P&P.



Wet and dry paper to smooth the edges of the two halves, making sure that there were no loose pieces of old filter mesh left.

- Again, when the internal proved very difficult to remove then the filter mesh would likely be damaged, requiring refurbishment.
- A couple of injectors *were* very difficult dismantle and the mesh was indeed damaged. However a few came out easily, with the filters intact!
- As I said these filters, which are of a fine mesh could become partially blocked over the years reducing the amount of fuel injected, particularly at higher engine speeds. Obviously leading to lower performance.
- I understand that *some* reconditioned units may not have these filters fitted. In consequence, the valve seat will not be protected from debris. (I couldn't find anybody to supply new filters).
- I imagine a small puller *could* be fabricated to remove the filter but mine drifted out OK, although the filter gauze was damaged. There may be a propriety tool to remove the filter undamaged, but I couldn't locate one.
- I then cleaned all the components.
- The O-ring was then removed. The original spec. O-ring is rectangular in section 4.7mm ID X 7mm OD. 2mm wide and 1.5mm thick. The overall diameter may have diminished because I found the internal diameter of the injector body to be 8mm.



Original O-ring and circlip.



The O-ring I finally used.

The original O ring with the rectangular section of 7mm OD 4.7mm ID X 1.5mm thick and 2mm wide. However I suspect the OD had been diminished with age because the internal diameter of the main body is 8mm.

- I then fitted new O-rings. Details of these and the difficulties obtaining the original spec. later.
- The internal component was then pushed back into the main body using the 4mm Allen key so the injector tip projected enough for me to refit the circlip. The new O-ring was a little large so it was smoothed down enough with wet and dry paper.

- Gently heating the main body using a blow torch made assembly easier as did a little Vaseline.



Filter half going back in.

- *Only*, when the internals had been fitted back into the body *without the filter*, and I checked that the injectors were spraying correctly did I fit the new filter. I didn't want to wreck the new filters if I had to remove the internals again!
- If the filter came out intact then it was carefully drifted back into the main body.
- Otherwise I drifted in the first half of the filter body back into the injector body for about ½ inch, and then carefully pushed the filter gauze in making sure it sat flush on top of it.
- Finally I drifted in the other half to trap the gauze between the two.
- The filter body halves were a tight inference fit so the filter gauze was held good and solid.

### **New O-rings.**

Finding replacements for these O-rings was a problem. Triumph Injection Specialists refused to sell me them. I suppose this is understandable as they wish to protect their businesses and recuperate any investments they have made.

So I had to look elsewhere for a source. I discovered that the O-rings should made of Viton 75 in order to withstand today's fuels and additives.

Finding the perfect size wasn't easy I initially used *two* Viton 75 O-rings on each of the first two injectors.

- [5mm ID x 1.5mm CS x 8mm OD](#)
- [5mm ID x 1mm CS x 7mm OD](#)



- I found that these two together fitted into the injector groove perfectly and gave an excellent seal when fitted into the body, but were relatively expensive at £2.40 for two for each injector.

They also worked perfectly in the engine giving an excellent cone shape spray.

However, I wanted an effective *single* O-ring to replace the original rectangular cross section ones.

[Exact Rubber Products](#) produced the ones that turned out to be the ideal replacements for the Original Equipment ones. Plus they were a good price!

[12 O-rings 4.5mm ID x 2mm CS x 8.5mm OD](#) £3.91 inc. P&P

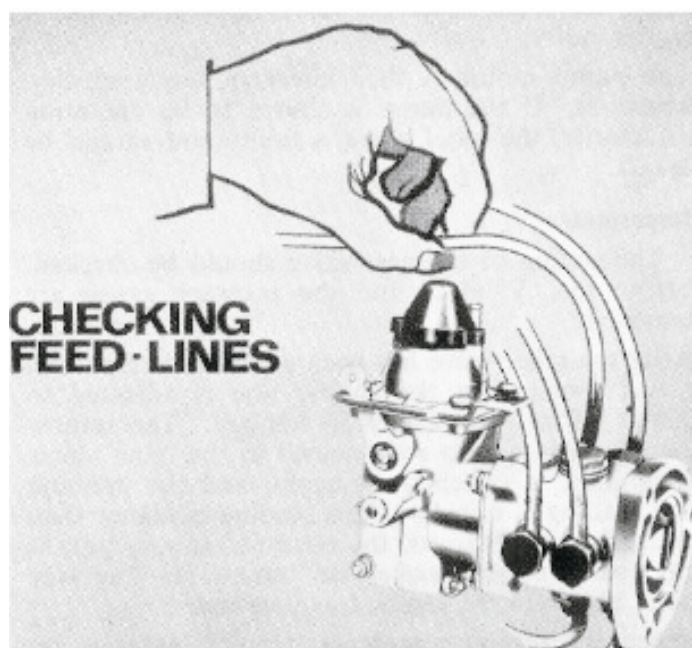
As already said these were a tight fit on the injector. The first injector was drifted into injector body using the 4mm Allen relatively easily. However a 8.5mm OD O-ring into an 8mm bore proved to be a very tight fit on some of the others. I heated the injector body with a plumbers' blow torch. Finally with judicious use of wet and dry paper on the O-ring and some Vaseline it slid in creating a perfect fit.. So these are the ones I will use in future.

So for a total of £9.97p I had the parts to recondition 12 injectors.

#### Fitting to the engine.



Conical spray pattern required.



Finally check for strong pulses in the fuel lines.

As stated I tested the injectors initially *without* the filter, making sure they were working well and producing a good conical spray pattern. Had they not worked correctly, then the internals *may* have had to be removed, and again wrecking the filter mesh!

I decided to replace the injectors one by one in order to establish each had a good conical spray pattern. Again if I had replaced them all at the same time the engine may not have run smoothly enough. The process I used when replacing a reconditioned injector was to run the engine for a minute or so feeling for a strong

pulse on the line. A couple of injectors didn't spray at all at first and I needed to move the *poppet valve* point from side to side until petrol began to spray through (I used a piece of softwood for this). I then replaced the injector, revved the engine, and then, on tick over took the injector out to check the spray pattern (into a jam jar). Only then did I move on to the next injector.