

Sealing the Sender Unit

Take a beautifully made petrol tank and cut a two inch diameter hole in it just near the bottom. Then try to seal the hole using a piece of bent metal held in place by six small screws. TA and TB owners will be blissfully unaware of what I'm talking about, the rest will often know to their frustration and cost!

In a previous article I dealt with the rebuilding of the sender unit and remanufacture of the float. I wonder how many people read it and secretly wondered how well this refurbished unit would seal into the tank?

The answer was, "not very well!". The unit works well but leaks copiously, and of course, the more fuel in the tank, the greater the leak. Obvious when you think about it; greater head of liquid hence greater pressure at the bottom, but very annoying when you test the seal with a small amount and then, seeing no appreciable leak, fill the tank, only to find a strong smell of petrol in the garage next morning and a steady drip from the bottom of the tank! Ten or twelve gallons take a lot removing and storing whilst the problem is tackled.

The body of the sender unit is a casting of Mazak type alloy. These are zinc-based alloys for die-casting of fairly intricate shapes. The alloy will have been chosen to give an excellent reproduction of the sender unit body, not for its strength; the weakness of these alloys is one of their disadvantages. When new this would not have been a problem. Sixty years down the track, however, is a different story, as the many letters and enquiries about leaking sender units to various journals will testify.

Originally the flat flange of the sender unit fitted to a flat area of the tank. Machine screws pass through the sender unit flange and skin of the tank and into tapped holes in a support ring secured inside the tank. A gasket evens out any slight blemishes in the matching surfaces and provides a petrol-tight seal.



Over the years, especially if the car is left for any time, moisture may penetrate the gasket which expands. This causes the flange to distort between the machine screws. Petrol can now seep past the gasket. A common answer is to fit a slightly thicker gasket to take up the distortion. However, the softness of the Mazak will result in further distortion of the

flange. Sealing agents may work in the short term, but the scenario referred to in the opening paragraph, sealing the hole with bent metal, won't work in the long term.



Faced with this problem I went back to first principles. Since the Mazak is weak, a strengthening steel ring was turned and drilled to fit over the flange. Carefully, the flange was flattened by gentle tapping with a hammer. Although most of the distortion was removed there was still considerable room for improvement as can be seen in the photograph. The solution

was to turn a flat surface using the lathe.

The sender unit body was mounted in a four-jaw chuck and centred. Great care must be taken as the body may be crushed by the chuck jaws if they are over tightened. Since the body can only be held lightly, fine cuts were removed until a perfectly flat, blemish-free surface was obtained. A total of about 20 'thou. ($\frac{1}{2}$ mm) was removed. If the cuts were too heavy the body could have been



distorted by the chuck or even thrown from the chuck completely. After re-assembling the sender unit it was ready for replacing in the tank. A new gasket and careful tightening of the screws to ensure no distortion and the job is done.



The bubbling of the paint is due to petrol previously having got under the two-pack paint. So far, – no leaks!

© Stephen Rigby