



FUEL PUMP AND MOUNTING BRACKET ON EARLY POST WAR CARS

Bentley MKVI / R-R Silver Dawn / Silver Wraith SWB

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FUEL PUMP

One singular mechanical item on these cars that can bring about a complete and almost immediate stop is a faulty fuel pump. Even with a new or rebuilt fuel pump in one hand the fuel pump change can be far from easy. It is worthy of note that local garages for miles around are unlikely to have one of these pumps on hand, so either carry one with you or at least wire the system to accept twin switches, as we will discuss. Later we will see how the pump change over may be made a little easier.

The contact points on these pumps are operated directly by the diaphragm return springs but through the medium of the diaphragm, which is the route of many fuel pump problems. Tapping one of these pumps with a screwdriver or other object does not make the points directly break or open. What is happening usually is the diaphragm has been sitting in one position through lack of use and hardens; the process cannot be reversed. Tapping the pump jars the hardened diaphragm, which directly allows the points to trip over centre, and in fact the points cannot trip over centre unless the diaphragm moves.

When the situation is reached whereby the pump needs tapping to get it going this is usually the warning sign the diaphragm need replacing. Fitting a new set of points is only a temporary situation and works because the new throw over setting for the points is taking into account the hardened diaphragm position. As the pump is used the continual hardening of the diaphragm will cause the problem to re-occur as the point throw over position will alter again. Some of the very early pumps, on cars that have been stood for some time are still fitted with diaphragms that will not tolerate un-leaded fuel. In fact modern fuels accelerate this hardening and in recent years it has been necessary to unscrew the diaphragm far more from the contact sets than the workshop manuals suggest to allow the contacts to trip over at the end of the stroke.

Burning of the points is the result of flash over which can be almost entirely eliminated by the fitment of a diode and the removal of the original condenser. These components are easily recognised as the original condensers had only one lead whilst the diodes have two. Care has to be taken with the diode to fit the red (positive) and black leads (negative) to the earth or ground depending whether the car is negative ground or positive ground. Of course all the unadulterated cars will still be positive ground.

The pumps fitted to all the post war chassis type cars are independent pumps, which are pumping into a common central delivery chamber. The design means that the strongest side of the pump or the side in which the return spring is most effective tends to do most of the work. Testing this type of pump whilst pumping air does not constitute a true test, when rebuilt both sides of the pump will achieve this easily. It can however become a different case if the pumps are made to pump liquid (fuel) against a restriction. Although in service checking calls for the supply leads to be detached in turn to try the pumps this also does not constitute a full in service check as to the individual output of each pump end at high engine fuel demand.

In service the only safe way to ensure both pump end units and diaphragms are exercised is to rewire the pump ends to say separate pull switches. This ensures each pump is working satisfactory under road conditions and one can be fairly sure that if one pump unit "fails to proceed" you will at least get home. In the twin switch operating condition either or both pumps together can be used.



Fig 1. Separate fuel pump switches

TWIN SWITCH INSTALLATION

A typical twin switch installation is shown on the left hand side of the steering column on this R type in Fig 1. In the case of MKVI cars for example the switches can be mounted vertically, knob facing downward, and mounted underneath the dashboard just adjacent to the steering column. The original wire leading from the fuse box to the fuel pumps on the right hand inboard of the chassis is disconnected and taped up correctly at both ends.

Once the two switches are mounted two wires can be fed from the original fuse to each switch and then a wire taken from the other side of each switch

down the chassis to the separate ends of the fuel pump. When passing and routeing wires down this right hand side of the chassis it is important to be careful of the limited room available at the top section of the chassis adjacent to the pedals. Adequate movement must be allowed for pedal movement through their full strokes to prevent wiring foul.

At the fuel pump end connect one wire to each pump end ensuring as far as possible that the wires are hanging downwards from the pump connection. This position stops the connecting terminal “spannering” and the wires coming loose. However it will be necessary to form some judgement on this aspect and ensure that the handbrake can be fully applied and released without the cable fouling the wiring at this end. The final tests comprise of ensuring that both switches and pump halves work separately and by elimination learning which switch controls the rear or front pumps.

Although one singular pump is adequate to operate the car it is sensible to try out both pumps on at least a section of the journey to ensure they are working, and to exercise the pump valves and diaphragms. This wiring conversion was always offered as an option and the work can be completed as an ongoing job without interfering with the operation of the car until the wiring ends need changing over.

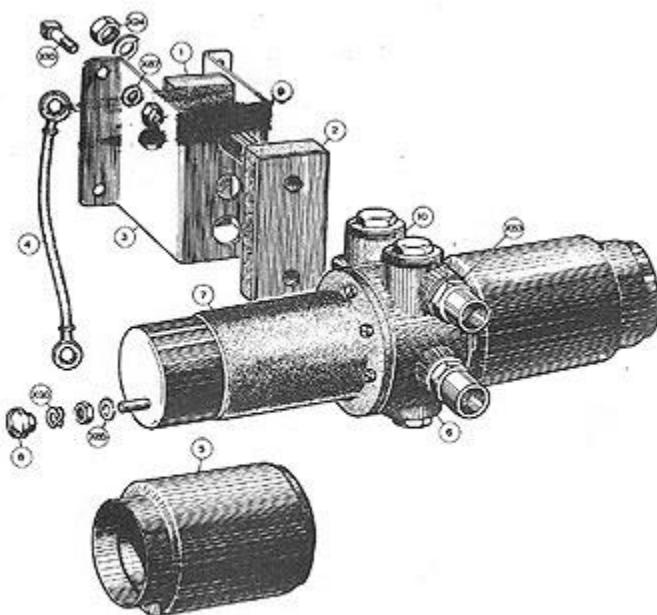


Fig 2. Old type pump with metal valves

NEW OR RECONDITIONED

At the time of writing the economics of overhauling fuel pumps against buying a reconditioned unit from the makers (Burlen Fuel Systems) does not make sense. I would suggest buying reconditioned unit in this case, and even considering buying new, so that you can keep the old unit for a spare, if it is still working. A reconditioned unit will be fitted with a diode and the latest diaphragm material and mods.

After swapping a rear gearbox mounting on one of these cars, I would always swap the fuel pump before attempting to take any new purchase on the road. At least you should then be O.K in that respect for about 7 years. If the pump looks as though it has been swapped, good, swap it over and keep the old unit for a good spare and then keep



Fig 3. New Pump, in this case an electronic unit

is still fairly common on cars, which have been stood for long periods. On no account is it advisable to attempt to overhaul one of the pumps as shown in Fig 2.

This pump Fig 2 has metal valves and seats, compare it with the more modern pump in Fig 3. You will see that this pump is actually an electronic version part number AZX 1410 EP, the letter "E" denoting Electronic and "P" Positive earth, however from a visual point the contact breaker type pump is basically identical.

Also note that the diaphragm chambers have short stubs protruding to which you need to connect small windscreen washer type plastic tubing and pass the tubes into a non-turbulent air section of the chassis, pointing downward, say behind the fuel pumps. These are chamber breather stubs. On the top you will see a gold coloured cap that forms the air bottle to reduce fuel pressure pulses, and right on each end yet another breather, which is at right angles and allows the electronic chamber to breath. The valve outlet port is always fitted at the top outlet of the pair as shown, whilst the inlet from the tank is the lower, when the unit is fitted to the car.

It is important to note that before a pump can be removed the rear fuel filter lid must be opened to break the fuel line and prevent siphoning when the pump pipes are removed. A new top circular fuel filter seal will need fitting when the filter is reassembled after fuel pump work has been completed.

Owners exchanging pumps are likely to find the pump securing clamps are of no use. They may be rusted heavily or of the wrong shape to fit a new pump. Some pumps are also difficult to fit because of the inclination of the pump, the need to position the outlet at the top and also prevent any foul with the handbrake linkage.

Fig 4 shows a simple and effective bracket unit with the pump secured by "U" bolts, this arrangement will pay dividends to an owner if he need to change a pump. The "U" bolts are 2.00 inches spread and can be purchased from any exhaust centre.

The "U" bolts enable a pump to be mounted loosely and the pipes to be just connected with finger pressure. The pump can be rotated or moved end ways easily for final positioning and the mounting type means that the weight of the pump can be relieved, without the need to struggle with pump and pipes etc.

away from water Fords and Streams.

FUEL PUMP AND SWAPPING

Over the years there has been many variations of the S.U fuel pump model fitted to these cars and in spite of some words to the contrary not all spare parts are available for earlier models. Fig 2 shows one such situation and this pump

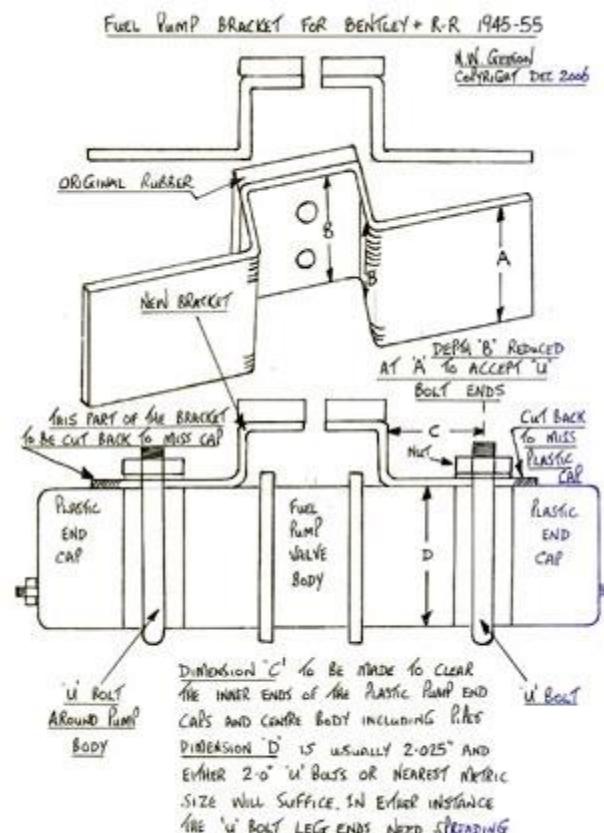


Fig 4. Simple and effective fuel pump mounting



Note that bracket dimensions A and B may need to be different sizes to accommodate leg ends of the "U" bolts. The legs of the "U" bolt that is 2.00 inch will need opening slightly to pass around the pump body which is slightly wider. It may be found that it is necessary to use a straight strip of steel across the bolt ends to act as a retaining bridge, although these exhaust bolts are supplied with a type of bridge at this point. The bracket itself can be made out of any suitable 0.0625 inch steel or preferably stainless steel, the offset centre section width can be copied off the chassis bracket and the length trimmed to miss the plastic pump end caps.

When fitting do not spanner pipes into the pump fittings but enter each pipe initially with finger pressure only, it is extremely important that these fittings are not cross-threaded. Also do not over tighten the "U" bolts onto the pump body and remember to connect all the earth connections and refit the fuel filter after the pump is complete.

One tip, change the fuel pump bracket and bolts now, do not wait to be caught out on the road.