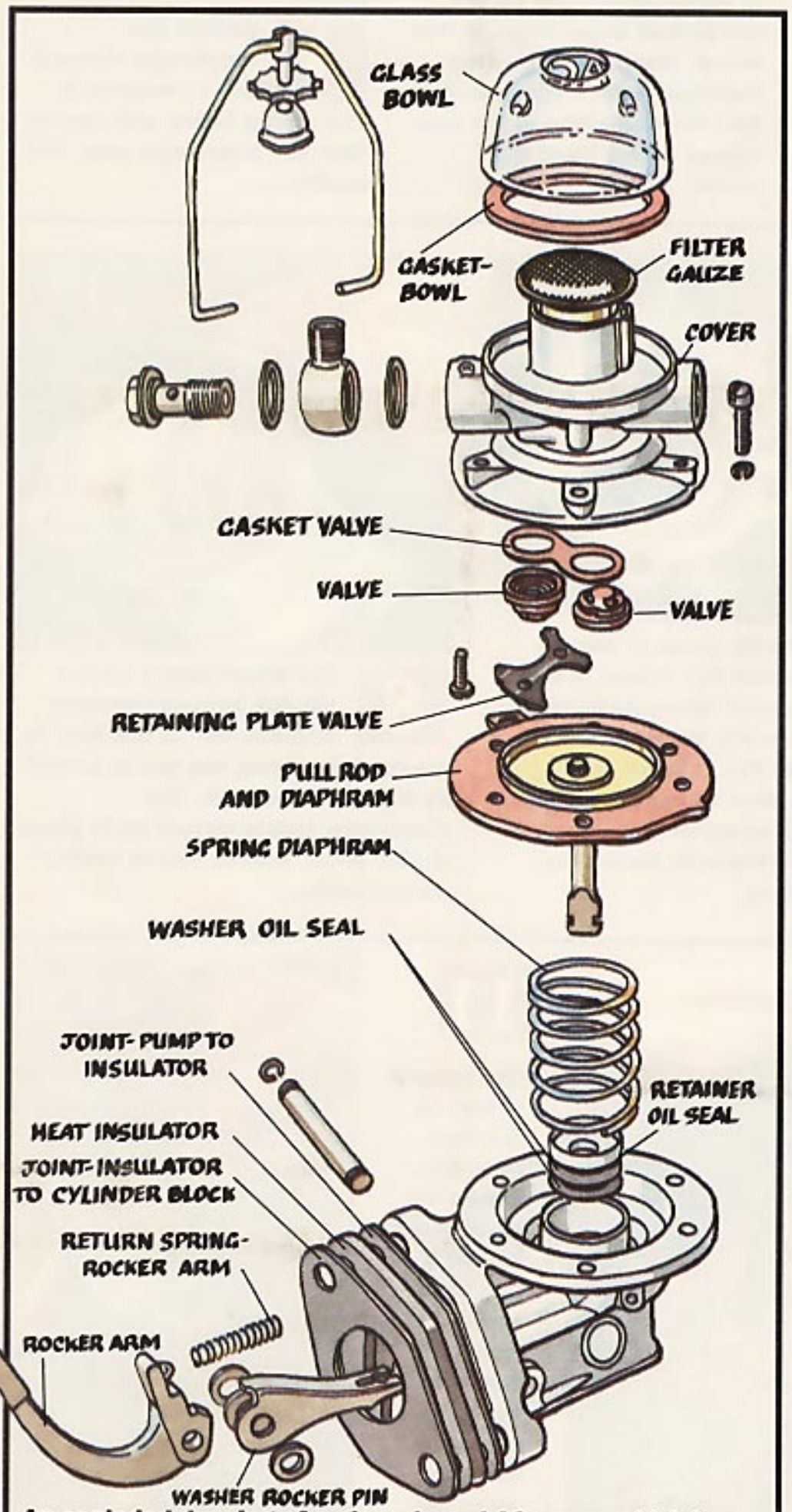
PUMP AND CIRCUMSTANCE

Mechanical fuel pumps are easily overhauled. DAVID HILL explains how it's done.



An exploded drawing of a glass-domed AC pump, which is overhauled in a similar way to the pump featured in the picture sequence.

Churn, churn, churn...Churn, churn, drubba, drubba-koff-sigh. Churn, churn...churn...click, click, click...silence. This is a sonic scenario familiar to anyone with fuel pump problems. The internal combustion engine can't run without anything to combust and if the fuel pump isn't delivering the goods, it won't start.

Testing a suspect pump is a better way to use that battery power. All you need is an empty jam jar and the appropriate tool to disconnect the fuel line from the carburettor. After negating the fire risk by unplugging the coil HT lead, turn the engine by solenoid or key as applicable. The result should be a strong, regular spurting of fuel into the jar. Half-hearted dribbles indicate pump trouble; no significant output indicates a pump in the terminal stages of failure. In either event, it's overhaul time.

How your overhaul starts depends on the pump involved. Finding the overhaul kit for a five-bolt AC unit like the one shown in the picture strip was easy. The same goes for the six-bolt units. Kits for the earlier, glass-topped pumps (see illustration) might be tricky to find and if your pump's cap is crimped on you have but one choice - buy a new one.

A full overhaul kit will include valves, gaskets, seals, a diaphragm assembly and, in some cases, a steel pin for the diaphragm link. The small number of parts involved implies that the overhaul can be done quickly. This is so, provided the necessary care is taken to avoid damaging the soft alloy casing of the pump.

Dealing with liquid fuel means fire precautions must be observed. Disconnecting the battery and clearing the vicinity of naked lights is essential.

The line from the tank is also liable to eject fuel, so have a suitable plugging device handy. If the line is flexible, attach a pipe clamp or use a self-grip wrench, with cardboard protection, before unfastening the pipe joint. The line to the carburettor may also hold a little fuel, which can be collected in a jar.

The pump can then be removed from the engine block. Some have a spacer, some have only a gasket but all are fitted with bolts and washers - note their location and check whether the bolts are the same length.

Make your mark

The pump can now be removed, drained and given an initial clean-up in paraffin or cleaning fluid.

The pictures show how the overhaul's done but there are some details to be mentioned. Before separating the upper and lower halves of the pump body, mark them to ensure that they are reassembled in the same relative position. Marking the non-return valve locations is also necessary on some units - if in doubt, mark them anyway.

Once the pump is stripped, soaking the metal parts in cellulose thinners will remove all traces of oil, gummy old fuel and sediment. Then, the parts can be inspected for damage.

The pump's worst enemy is hamfistedness. Stripped threads, nicks in joint faces, battered top caps and cracks are possible. All are potential leak points so if such damage is present, it's better to find another pump body to accept

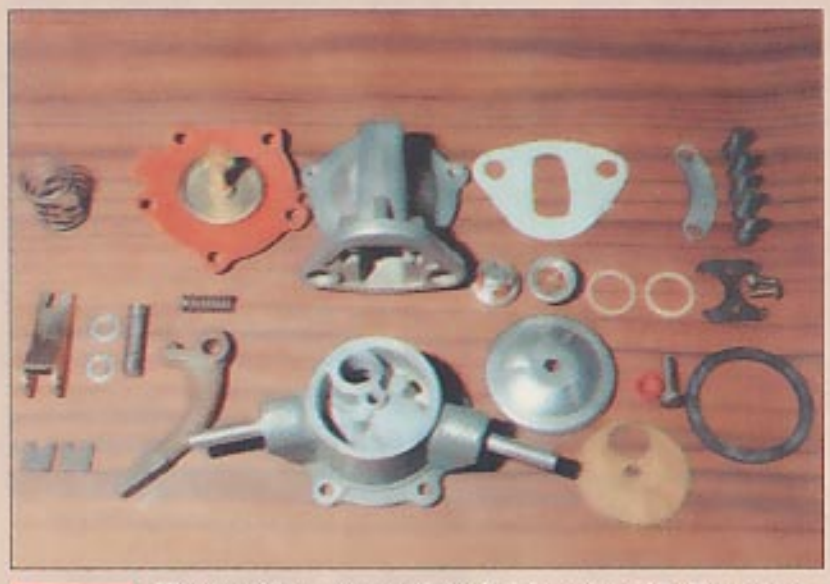
STRIPPING AND REBUILDING

1 A paraffin bath will remove most of the accumulated filth from the pump before the strip down starts. Work the liquid into the lever chamber to get rid of the old oil.

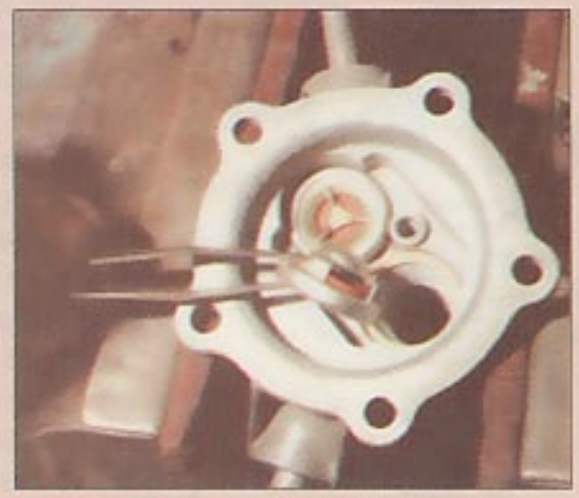
2 The brass filter screen is very delicate and should be removed carefully. Cellulose thinners will deal with gum deposits on all the metal parts.

3 Mark the pump body halves before undoing the screws. In some pumps the valves are staked in position. In this event, clean out the valve locations with a scraper or fine file and stake in the new valves with a blunt dot punch.

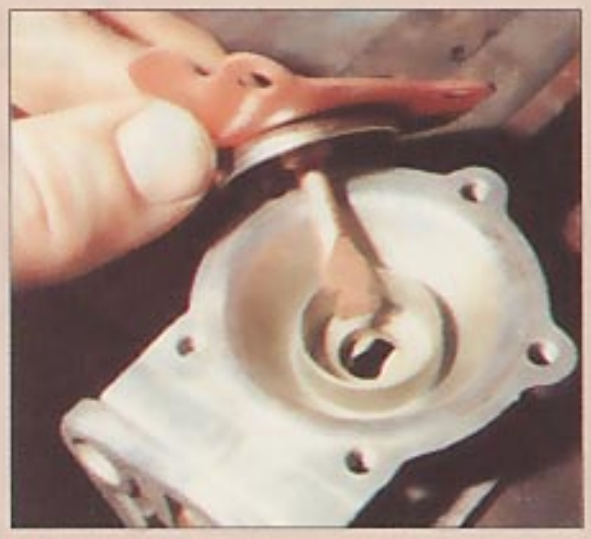
4 Rotate the diaphragm through 90° to remove it. The spring below will ensure that the diaphragm pops out easily.



6 The entire assembly laid out with the contents of the kit. The above-mentioned retainers can be seen at the bottom left-hand corner. Make sure that the working area is clean.



7 The AC pump is cast to accept the valves in the correct orientation, as you can see from the depth of the valve and of the hole which accepts it. Note the paper gasket in the valve location. The valves should be fitted with dissimilar faces showing.



8 The diaphragm's centre pin fits bayonet-fashion into the slot in the link. In practice, ensuring the tab is turned by 90° does the trick. The diaphragm spring should be in place at this point, unless you're taking photographs...

9 Push the lever in until the diaphragm is level with its mating face and hold it there whilst fitting the upper half of the pump body. With the screws finger-tight, work the lever in and out to centre the diaphragm, then tighten the screws fully.

10 When tightening said screws, think moderate because stripping the threads is a real possibility. Shake-proof washers are fitted to three screws; the ones holding the I.D. plate have no washers.

11 The top cap is part of the fuel chamber, hence the seal. There is also a neoprene seal between the cap and body. Check the pump for leaks when the system's primed.

5 **The lever, link and pin come out as a unit after the side retainers have been extracted with pliers. The anti-rattle spring can be seen in the lever chamber - there is a locating pip for each end of the spring.**

your new parts.

Some sideplay in the operating lever is permissible but a badly worn pivot pin and/or lever will reduce the pump stroke and cause inefficiency. Once again, a replacement is the best solution. Note that some pumps have a tiny pressure relief hole in the lower half. This should be clear of debris or it won't do its job and the diaphragm will suffer.

Reassembly

The order of assembly isn't critical but the valves are a good starting point - don't forget their paper gaskets.

When the pump is fully assembled, you can test it by placing a wetted finger over each connection in turn, whilst operating the lever. A vacuum on the inlet side and pressure on its counterpart means that the pump is working correctly. The reverse or no action at all means that the valves are either wrongly fitted or not sealing.

Refitting the pump to the block is simply a matter of using the new gaskets with a little sealing compound and bolting the unit back on. After priming the system and starting the motor, check for leaks and relax, in the knowledge that poor fuel delivery and overnight drain back are things of the past.

HANDY HINTS

- **If the problem's not urgent, try an autojumble for an old stock repair kit.**
- **Hold the pump lightly in a vice equipped with soft jaws.**
- **Don't inhale petrol fumes.**
- **Clean metal parts with fine wire wool - rinse again before assembling.**
- **Leaking bundy pipe connections may need new olives.**
- **Clean the filter screen regularly.**

TOOLS AND EQUIPMENT

- **Small and medium flat blade screwdrivers**
- **Snipe-nosed pliers**
- **Cleaning fluid bath**
- **Socket/spanner to suit pump bolts**
- **Jointing compound**
- **Overhaul kit around £6 VAT.**