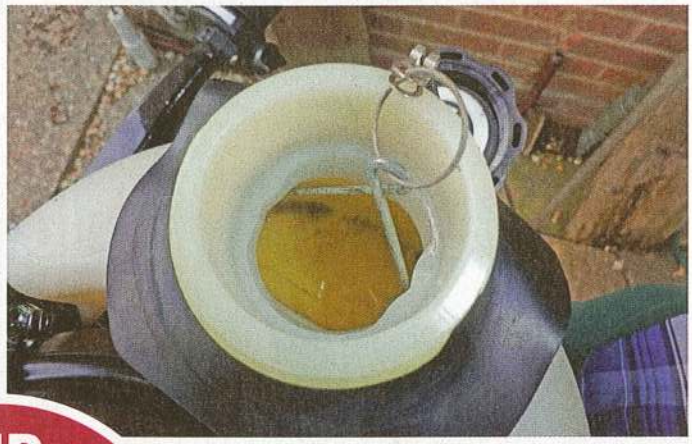
How to clean an outboard motor carburettor step-by-step

If you have trouble with a small outboard motor it can often be attributed to the fuel. David Parker describes how he saved a lot of money with a careful strip-down and clean of the carburettor

It only took me a few trips of rowing my trusty tender up the busy River Hamble to my main boat to make me realise how much I missed the convenience and ease of my little outboard engine. Unfortunately it had developed a gearbox problem that was not going to be straightforward to fix. A friend kindly loaned me a Honda 2hp to tide me over, but I never feel comfortable borrowing other people's equipment. I always worry something might happen to it, so I decided I needed to sort myself out with a replacement engine pretty quickly.

However, it turned out to be a bit of a case of 'buy in haste, repent at leisure'. I saw an advert for a Suzuki DF2.5 on the Isle of Wight, the same lightweight engine as I'd had before. So I made a bit of a rushed trip over in our Seaward 23 to see it. Now, although it is only a short crossing, Solent waters can get pretty frisky (as many readers will know), and this was one of those days. In fact, things got so lively that water from waves breaking over the boat was forcing itself through the wheelhouse windows, and the thumping we got even left a cabin light hanging down by its wires below. The signalling horn also got such a drenching it would not work again afterwards and needed to be replaced.

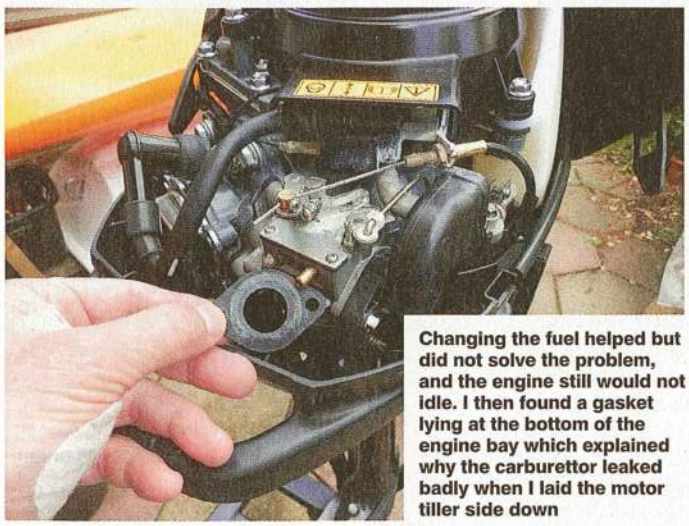
There were very few boats out, and on the radio we even heard a Mayday being called in, so by the time my son and I got to see the engine I was keen to buy it and get back again. I should have been more cautious, because the engine would not idle properly and the seller seemed to have to rev it excessively to keep it from cutting out. However, the engine was only four years old, and although the tank had been topped up with new fuel we agreed that it must have been old fuel in the carburettor causing the problem. I should have investigated the problem more thoroughly, but I handed over the cash and we set off again.



Old or dirty fuel can often be a problem with outboards, but I hadn't seen any quite like this before. It was full of debris which would soon get stirred up with any movement

TIP

To prevent residue build-up in a small carburettor, turn off the fuel tap with the engine running and then run the carburettor dry. Alternatively, use a rag and the drain plug at the bottom of the carburettor to drain it, especially if leaving the engine unused for long periods.



Changing the fuel helped but did not solve the problem, and the engine still would not idle. I then found a gasket lying at the bottom of the engine bay which explained why the carburettor leaked badly when I laid the motor tiller side down

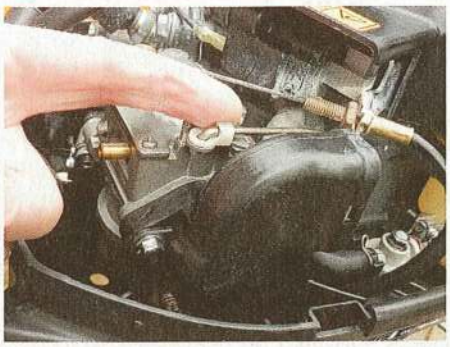
Problems persisted with the engine when we got it back. It still wouldn't idle and had to be revved excessively to keep it going. This meant you had to be very careful how you throttled back enough to engage drive so you did not damage the gearbox.

Also, when I laid it tiller side down and petrol leaked all over the boot of the car, I kicked myself again for not checking the motor more thoroughly. It was then that I took a look inside the fuel tank for the first time. The fuel had serious deposits of dirt in it, and the tank would need to be completely cleaned out. Then something else caught my eye lying in the bottom of the engine compartment: it was a gasket from the carburettor, so no wonder this engine had leaked fuel all over the place. Clearly the carburettor had been removed at some point, so not only had it been incorrectly refitted, the reason for the strip-down indicated this engine had had more problems than I'd been aware of.

Changing the fuel and refitting the gasket helped the running and starting of the engine, but it still refused to idle. Phone calls and visits to various dealers unfortunately didn't shed a lot of light on the problem, and one said I would probably need a new carburettor. Another said the carburettor could be ultrasonically cleaned, but if that didn't work I would then need a new carb – so potentially a bill with labour of over £160.

I took the engine away and did quite a bit of research online and on forums such as www.pbo.co.uk, gathering information bit by bit. Many small outboard carburettors share features in common, and one of the most useful things I found was also being able to download a parts diagram for this one which was not included in the basic service manual. Anyway, after a lot of trial and error I was able to cure the problem myself. Here's what I did.

REMOVING THE CARB



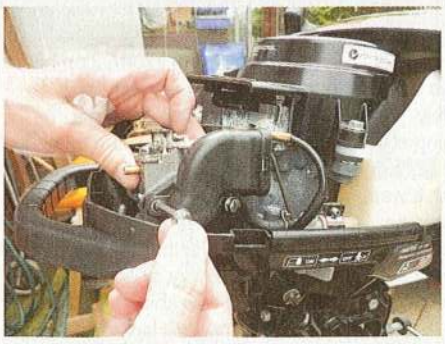
To investigate the problem further, the carb needed to be removed

First the choke cable needed to be disconnected by releasing a small plastic clip and then lifting out the choke cable rod

It was easier to disconnect the fuel pipe from the fuel tap end. When unclipped the pipe is a push-fit, and the end can then be eased off

The throttle cable is connected by a locking screw on top of the carburettor. Because adjustments may be required on refit, make relevant notes (eg cable tail lengths) or take pictures of anything you remove to make refitting of components a little easier.

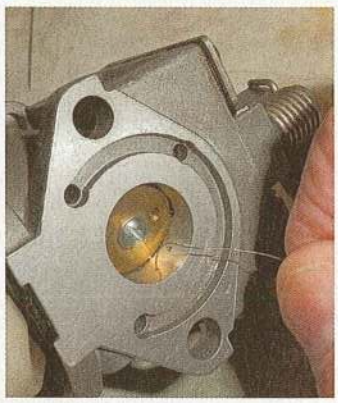
The carburettor itself is held on this engine by two bolts which go through the air filter and hold the whole assembly against the engine casing



By carefully withdrawing the long bolts the carburettor could then be lifted clear, but take care to keep it upright to avoid any residual fuel spillage

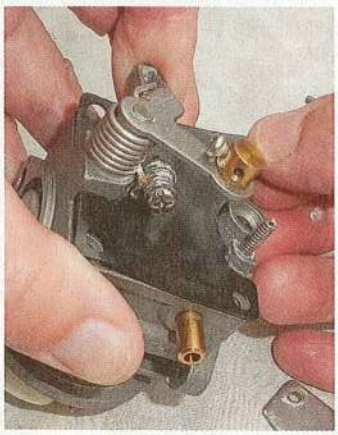
CLEANING THE CARB

1 The first job was to remove the float bowl from the base of the carburettor. Note the screw with the spring, which can be seen at the top. This is used to drain down the bowl when the carburettor is on the engine.



6 Shown here is the throttle flap; fine fuse wire was used to make sure the small holes were clear. At this point I refitted the carburettor and the engine performance improved, and now it would idle for a short time but then cut out.

7 The main jet when unscrewed has a nozzle tube above it which feeds fuel directly into the carburettor chamber. However, because the engine would now run well in gear and under load, but still not tick over properly, I knew that the problem was with the idle circuit in the carburettor.



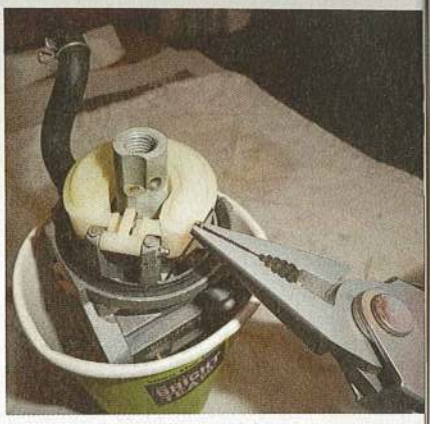
11 Underneath the top plate was a rubber membrane which could also then be taken off. When inspected, this was in good condition so it could go straight back on again afterwards.

12 Now I had access to the pilot jet housing. The jet itself sits under a chrome screw which could be removed with a standard screwdriver.

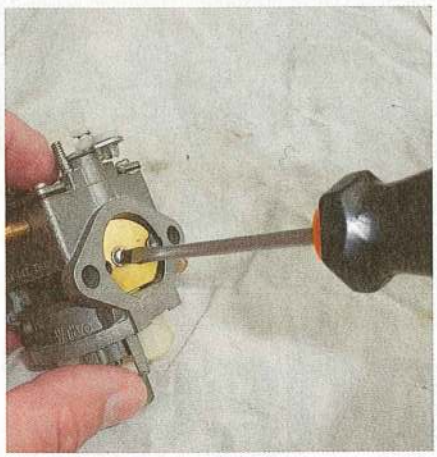
2 The bowl, when removed, can be thoroughly cleaned of any debris or residue. Note the locking nut has a washer, so carefully retain this or replace if necessary.

3 Fuel is gravity-fed on small outboards. The carburettor bowl has a plastic float suspended in the fuel chamber, and when the fuel drops below a certain level it sinks and opens a valve to allow more fuel to enter the bowl. Check that the float moves freely, but be careful because it has delicate springs.

4 I had tried to use carburettor cleaner with the engine running, without success. However, with the carburettor removed I could spray it directly through the main jet and other accessible ports.

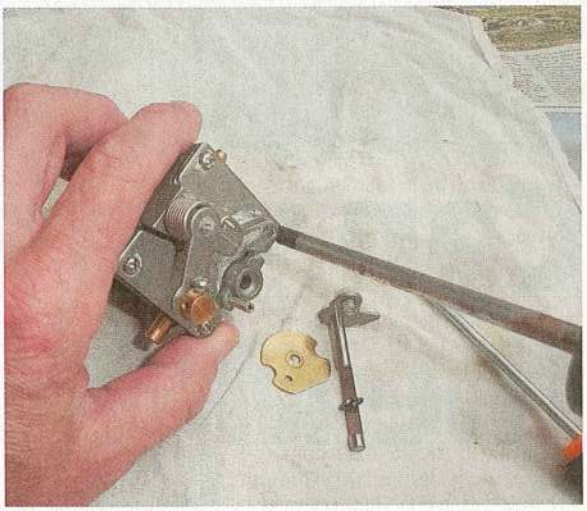


5 The main jet looked clear, but a paper cup proved an ideal soft, flexible holder while I gave it further sprays to soak it and then used a fine needle to carefully clean any of the larger holes.



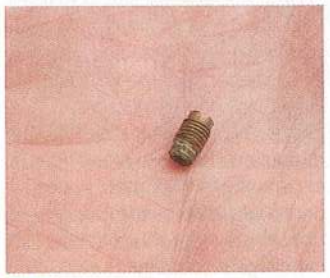
8 The pilot jet for the idle circuit is located under the top plate housing of this carburettor. To remove the plate I first needed to take out the choke. The brass disc which incorporates the choke flap can be unscrewed.

9 The mounting spindle for the choke flap can then be withdrawn. Do this with care, because it has a small O-ring at the top through which the choke shaft rotates open and shut.



10 The top plate can then be unscrewed. In this case it could be slid out from under the throttle mechanism, which may have to be removed on other motors. The thing to remember is not to remove anything you don't have to.

13 I did not have a suitable size screwdriver to unscrew the jet, so I ordered one online from RS Components. It was a Wera 3335 screwdriver, and the blade was 4mm wide by 0.8mm thick and 100mm long.



14 The pilot jet is very small, but when I removed it I could see that it was clogged with residue.

15 A single strand from a bike gear cable proved the ideal diameter to initially clean the hole.

16 After freeing the hole I then left the jet soaking for about an hour in carburettor cleaner. It was much more clean when it came out, and I put the carburettor back together and refitted it to the engine – which now idles perfectly. The carburettor cleaner cost £6.99 and the screwdriver £6.55. PBO

CARBURETTOR JETS

Carburettor jets made of brass are relatively soft, and the head slots will burr easily. Ensure you have a properly fitting screwdriver to prevent damage.