

# CADET Chat.....

by Chris Wedgwood

## CARBS

In a previous issue I described pop-off and how to test the carburettor using a pressure tester. At the time I said that if your carb popped-off at 20-22psi then you had nothing to worry about. If it doesn't pop at all or at much higher than these figures then you will lose top end power. This is because a low pop-off causes a leaning of the mixture at high rpm. We should probably use different values of pop-off at each circuit, but it seems there is no legal way of getting different pressures. Still, we're all in the same boat...

Getting back to my series on how the carburettor works, please refer to previous articles for more information (back issues are available from Lodgemark Press). The low and high jets, in conjunction with the suction of the venturi rely upon a pool of fuel at constant pressure in order to meter correctly. This pool of fuel is contained in the metering chamber and is replenished by the needle valve opening when the metering diaphragm is drawn downwards. The fuel in the metering chamber is nominally at atmospheric pressure because the dry side of the diaphragm is exposed to the atmosphere.

The fuel on the inlet side of the needle valve is pressurised by a fuel pump in the

topmost section of the carb. This pump delivers the fuel at about 3-4psi above atmospheric. In other words, the needle valve has 4psi across it and the low pressure side (the metering chamber) must be held at atmospheric pressure or the metering will be all wrong. If the needle has a slight leak, this is exactly what happens. Too much fuel is pushed into the metering chamber, which can then only escape through the jets into the engine. The engine runs too rich and disaster ensues.

## PLUG STOPPER TIP

I'm grateful to Leon at Soixante Racing for this useful advice. Normally if I need to prevent the engine from turning over when removing the clutch or flywheel I use a plug stopper which screws into the spark plug hole and contacts the top of the piston. This works well, but unfortunately the piston gets dented after a period of time. If you get an old piece of starter pull-cord folded in two and slip it into the plug hole until it meets the cylinder walls, it will get pinched in the squish band between the piston and the head. This stops the engine from turning, but without any damage to head or piston.

## CARB ADJUSTMENT

Perhaps this section should be titled "How to seize 3 motors a day", because that is the risk you are taking when teaching your driver how to adjust the carburettor from scratch. We've all had to go through this patch, so be gentle and patient. Not only must you be prepared to seize the motor, also for a few months you will be slower in races. After all, Rome wasn't built in a day.

What the driver needs to learn is the sound the engine makes when it is too rich and too

lean. The rich sound is called four-stroking and the lean sound is called pinking or rattling. Four-stroking is caused by putting too much fuel into the motor such that it prevents correct ignition every revolution. The high pitched sound of the engine takes on a lower tone, usually at the end of the straight, but it can happen anywhere if you have the setting wrong enough.

There is no risk of damaging the engine with too rich a mixture. The plug will foul up or the engine may stop, but no harm will come to it. Too lean is a different matter altogether. It is caused by the engine getting too hot. The first motor we seized only rattled for half a lap before seizing.

Before you can teach him what to do you need the right equipment. The high adjusting screw on the carburettor needs a washer brazed into the screw slot. Some fix theirs with Araldite, but I prefer the old fashioned way. Secondly, the driver's gloves must not be too thick otherwise he cannot feel the screw in his fingers. Lastly, go over the whole kart with a spanner and check that there is nothing rattling or making any other odd sound.

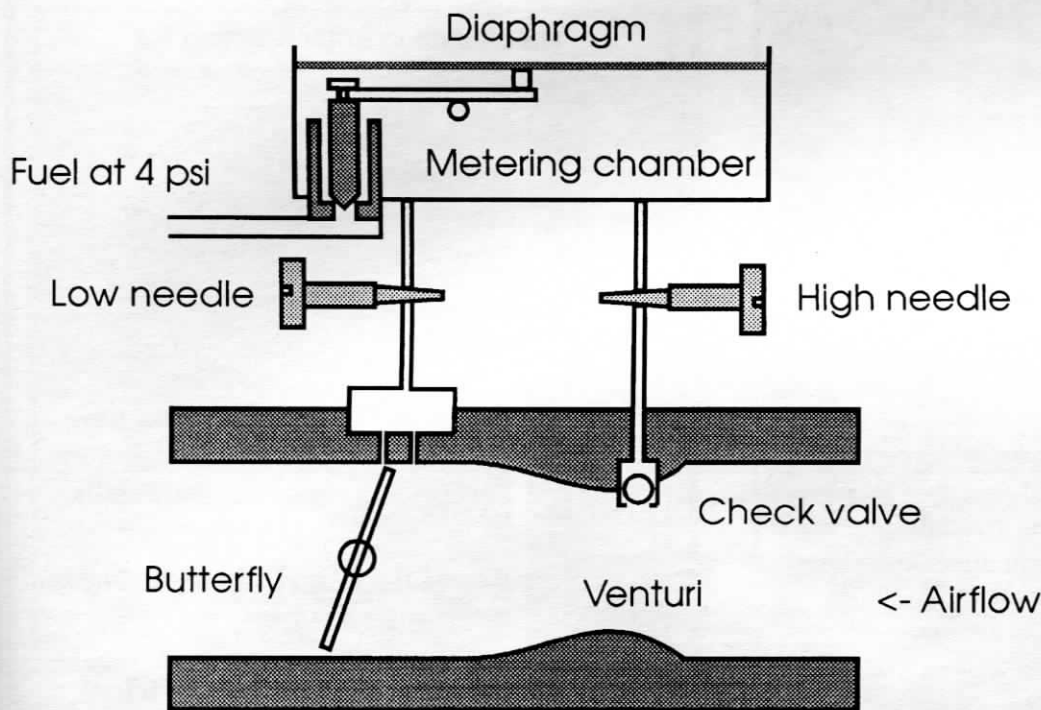
This is likely to be the first time you have asked him to do two things at once, so try not to teach the first stages on a crowded practice day, as he will forget to listen to the engine in the cut and thrust of traffic. What we did was to get on a closed road and send him up and down with the instruction that I wanted him to pass me pinking in one direction and four-stroking in the other. When you feel he has got it worked out, then use it on the track. Set the carb to  $\frac{3}{4}$  turn out on the low jet and a little less than  $\frac{3}{4}$  turn out on the high jet. There will be no chance of four-stroking with these settings, but eventually you should get

pinking in one of the corners. When that happens he should adjust the high screw forwards by the thickness of the washer, even if the motor has stopped pinking. Once on the straight, the pinking will stop anyway. If the pinking returns, adjust forwards again. The beauty of this method is that you should only need to adjust in one direction (forwards), and this reduces the chance of error.

What problems might you expect? Here's a list of some we had. Adjusting the screw when someone else's engine is pinking. Forgetting which way to turn the screw and making the problem worse. Not adjusting "because the rattle went away on the straight".

Oh, by the way - I did say that you would seize your motor before he gets it right, didn't I?

All for now. Comments invited either to Karting magazine or by email direct to me at 100653,2472@compuserve.com.



"The last time I am going to draw the internals of a carburettor."