

# The 2-Stroke Column

By  
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*OF PROTECH*

Hello again friends, I hope you are all enjoying this lovely warm weather we are getting at the moment. If you are like me you will be but partly complaining about the close nights which makes it difficult to sleep. We are never satisfied are we! Let's try this as my subject for this month:

## **CHOKING ON THE CIRCUIT - IS IT NECESSARY ?**

This is yet again a question that comes up regularly on my advice line mainly of course from people who are relatively new to the sport and one which I feel needs answering fully so you all know the true situation. People see drivers choking their engines on the circuit and want to know if they have to do this. The first point is no you don't have to do it and to put it in context as I often say you could race successfully for years without ever learning how to choke correctly. I use the word 'correctly' as many people join the club and are never taught how to do it properly.

Now before some people out there have palpitations let me stress that although it is perfectly true to say it is not a necessity it is also true to say that if at some stage you are able to learn how to do it well it is a slight advantage. However, it is not an advantage for the reason that many of you think or are told it is. The point I want to get across here is that no matter what class you are in it should never be necessary to choke to avoid a seize. Many people believe that one of the 'secrets' is to have your engine so weak on the jetting that you have to choke to avoid a seizure and by doing this you gain extra

speed. This whether you want to believe it or not is sheer nonsense and the fact is if you are set so weak that choking is required to avoid an engine failure you have to be losing a fraction of speed apart from risking a non finish due to a possible seizure. This idea that people have is based on the principle that the weaker an engine is the faster it goes but it is not true as when you get to this last stage of weakness the additional heat that this produces creates more distortion and friction in the engine and the loss of power this causes outweighs the fractional increase in speed that the weak mixture is producing. All our engines suffer from distortion in the liner, piston and rings due to the tremendous heat produced and that it is not uniform across the engine. Obviously a water cooled engine fares a little better in this respect as the temperature is more uniform and it can be argued therefore that the same engine in water cooled form can be run a fraction leaner on the jetting with the associated slight increase in the running temperature and yet produce a fractional increase in power.

Before I go further let me explain that your engine's performance depends on a balance or more correctly many balances and it is how well these are all addressed that dictates its finite speed. One example is the jetting and yes it needs to be weak enough that in this respect the engine is producing maximum power but go a little further and the increase in heat and therefore distortion will actually lose a fraction of power even before the mixture is weak enough to cause a seize. The theory that the weaker an engine is the quicker it will go is quite right taken on its own but you can't take it on its own as these other negative forces will automatically come in to play whether you like it or not. Similarly the theory that the less oil you run in your mix the burn will be more intense and therefore the quicker the engine will go is also quite right taken on its own but the lesser quantity of oil will result in an increase in friction/heat/distortion and this can outweigh the fractional improvement in performance produced by the cleaner burn. This is what I mean by your engine is a complex balance of many factors and the more perfectly these and many other aspects are balanced the quicker the engine will be.

So, going back to what I was saying before, choking when done correctly is a slight advantage but it is because when the engine has been beautifully jetted the engine is just cooled nicely on a couple of occasions per lap and apart from the obvious advantage of this keeping it a little happier and therefore less likely to fail in some way it can theoretically

give a fractional increase in speed because it is keeping those negative forces of friction, heat and distortion down a little. If you are beginning to understand how choking should be used you should also have realised by now that you must never choke an engine while you are trying to set the mixture up beautifully. Too many people do this and of course the affect of the choking is to mask the true effect that the alterations in mixture are producing. When you are adjusting the jetting therefore you must refrain from choking and then bring it back in again when you are happy you have the mixture at the optimum level.

Now we need to define what I mean by learning to choke correctly and without losses and this is a little difficult to get across. If you watch drivers out there choking you should be able to see those who are doing it so lightly that they are having no effect and similarly those who are choking so heavily that they are having a detrimental effect. The latter people are causing an enrichment of the mixture which will slightly kill speed on the exit of the next bend. I realise I should at this point explain where you should choke on any given circuit. You will again see many drivers choking many times on a given lap and this is simply over the top and can easily be detrimental instead of advantageous. It should be done once or twice at the points on the circuit when the engine is at its highest stress levels which is of course at the end of the longest straight just before you shut off and at the end of the second longest straight. Done correctly it will produce a slight puff of smoke out of the exhaust and there will be a very slight note change from the engine. This is something which will only come with practise and I suggest that until you get it right you only try it when practising.

I have said that choking should be done correctly and without losses and getting the degree of choking right is to avoid one type of loss but the other is that the driver should perfect the technique in practise so that they are comfortable with it and don't suffer losses from the point of view of their driving. In other words they need to be able to take their hand off the wheel, choke and then put their hand back on the wheel without in any way detrimentally affecting their handling and confidence into the bend. Fathers or friends who are there assisting drivers can help them in this respect as they can often see better whether using the technique is affecting their drivers and if so good advice is to carry on perfecting it at practise before adopting it in actual races.

OK, that's it for this month and I hope as usual it has helped a lot of you, especially those who are relatively new to the sport. I know quite a number of you feel pressured into choking very early on and this should have pacified you that you can bring it in as and when you are totally happy with it. I'll speak to you again soon.

### **ADVICE LINE**

You may telephone for technical advice on 01253 868368. Leave a message and Chris will get back to you.