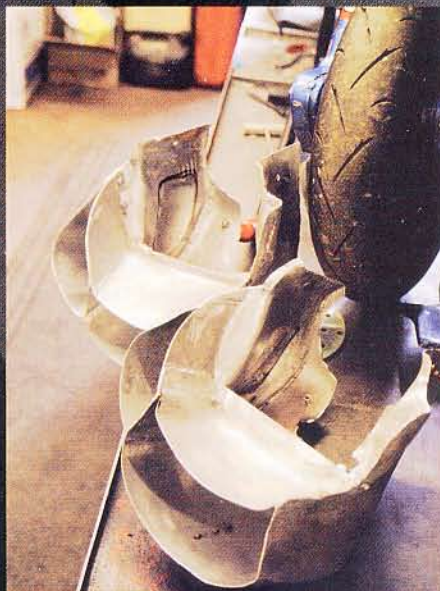




The EBC disc and pads that Charlie modifies for his front brake.



Cooling scoops have been carefully designed and sectioned to direct air across both the barrel and the head.

end, but on the midrange and top end they are flat. A lot of people say you want a flat topped power curve. You don't want to be looking at the power curve, you need to look at the torque curve – that's what needs to be flat. You need 30hp with 20ft-lb of torque – that's how you get a scooter to go well."

On gearing...

"Until I came along everyone was using three gears for racing: first gear just to start and then riding around in the other three. At slow corners

they'd have to slip the clutch like mad in second to get out of the corner. My idea was to use a taller first gear and then use all four gears when I'm riding. Let the clutch do the start, and then when you come to a slow corner you can use first gear.

"In my gearbox all four gears are close and you change through them very quickly. To do this though you must have a clutch that is designed to be slipped. Tino suggested making the alloy plates and I tested them. The thing with the alloy ones is that they dissipate the heat better and

don't warp when they get hot like the steel ones. Plus you are saving weight – almost 300 grams over a complete eight-plate clutch!

"Having the gear ratios so close prevents a lot of strain on the gearbox. In layman's terms it's the difference between trying to climb three stairs at a time, and trying to climb just one."

On race politics...

"When the competition have been doing something for 20 years and you come along and basically annihilate them, they think you must be cheating. I take my hat off to them for what they've done, but now they have to rethink what they are doing. They think too much about 'scooter tuning'. If you think that way you'll always stay the same – you need to look at race engines and why they've evolved the way they have.

"I'm always looking to improve. I tested a water injection system at the first race of the year. By injecting water into the pipe you are tricking it into behaving in a different way so it makes more power at low rpm so it is useful when coming out of a corner. It just happened that one of the hoses came off in the paddock, it started leaking and the switch was stuck on so everyone saw it. Nothing in the rules said you couldn't do that but I took it off.

"The biggest arse is that the system I came up with could have been built and fitted to anyone's scooter for about £50 using really easy bits. I used a car washer jet pump, a micro-switch and a cyclist's drinking bottle. Some people thought it was a good idea and others thought it wasn't in the spirit of things, but at least I was trying different ideas.

"It's only through this sort of thinking that we are allowed to use expansion chambers in Group 4 – they used to insist people ran the standard box exhaust until someone cut one up, flattened it and

Riding the beast

Dynojet Performance Evaluation Program



Fast circuit specification.

I forgot quite how boggy large-carbed piston-port engines are below the power band and almost stalled the engine when pulling away between the lorries on Charlie's 'private test track'. Another try with more revs and more clutch slip and suddenly the engine lights up and we are away.

On Three Sisters 'short circuit spec' the scooter just wants to stand on its tail as soon as you hit the power in first gear. After that it's a frantic

Dynojet Performance Evaluation Program



Short circuit specification.

effort to feed it more gears and keep it boiling between 8000 to 10,000rpm. When it's in 'the band' it accelerates strongly but predictably, with no steps or surges in power. This is the key to obtaining the good off-corner acceleration needed to win races. Out of the power band it's an evil spitting pig. My god it's fast, but thank heaven for reed-valves!