

A look at the Ital Sistem MV21

Introduced in 1992, the range of Ital Sistem 100cc motors from Achille Parrilla, formerly of DAP, quickly established themselves as serious challengers to Rotax, particularly in the rotary valve classes which are the pinnacle of non-gearbox karting. Reed valve motors given a level playing field can be just as quick, but at national and international level it is the CIK rotary classes which have the most prestige, Formula A and Formula Super A. Rotax would not be easy to topple though and they continued to dominate at the World Championships throughout 1992 - 1994 with every title, Formula A and Super A, going to drivers using DSC type motors.

1995 however heralded a new engine homologation period with many new faces such as Vortex, CRG and Titan joining the established names. Not content to rest on its laurels, Rotax went for the radical approach with its DSD range, homologating such avant garde features as a combined drive sprocket and ignition on the inside of the kart. Ital Sistem on the other hand were less radical and their evolutionary approach was rewarded this year with a remarkable double

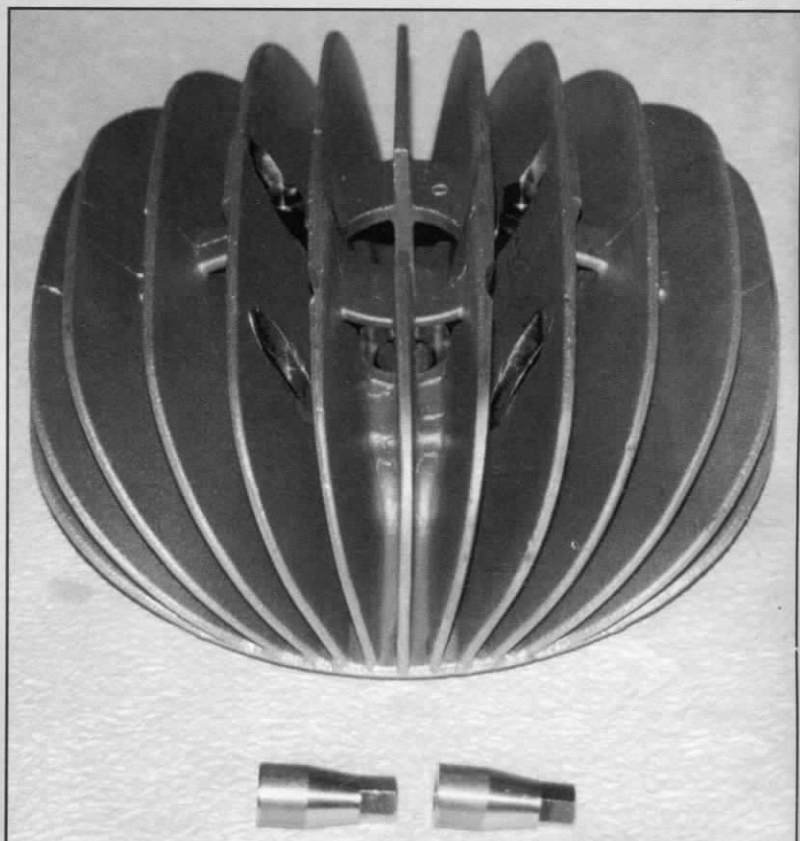
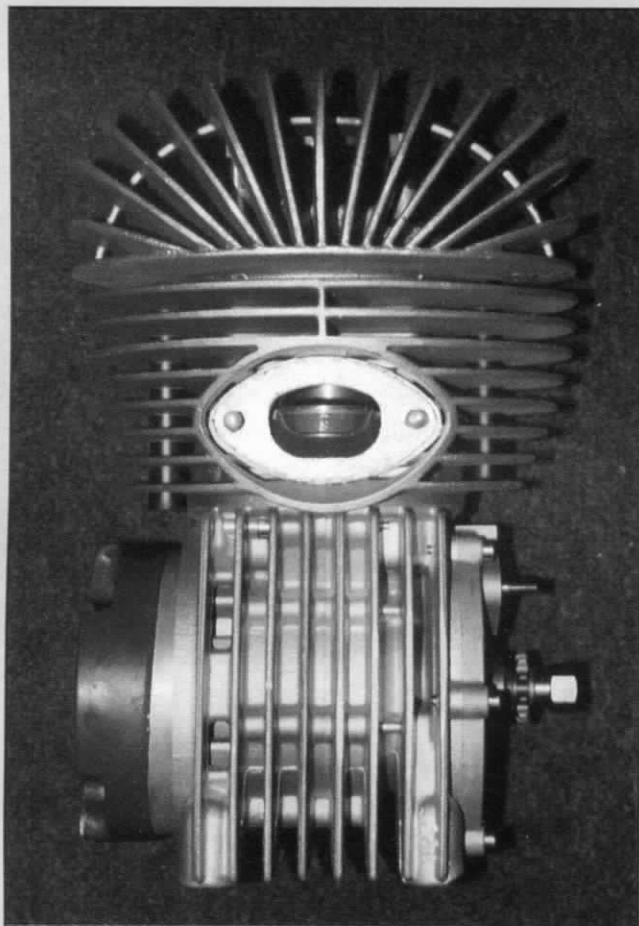
victory at the World Championships courtesy of Orsini and Fraguas.

Thanks to the UK importer, John Mills Racing, we were able to examine a standard example of this double World Championship winning motor. The MV21's 50.0mm bore and 50.5mm stroke are identical to that of its predecessor, the MV1, with the whole motor being pressure die cast in heat treated aluminium to a very high finish. The major visual difference between the MV21 and the old model is that the



Above: Double World Champion in 1995 - the MV21

Below: The radial finned head is retained by brass fixing bolts





Ital Sistem's unique exhaust bend

cylinder head is now of the popular radial finned type which reputedly has considerable advantages in terms of heat rejection. Retained by thrust washers and four 10mm mixing bolts of a unique design, said to have been used to avoid breaking through fins, the head is fully machined as standard and has a conventional domed combustion chamber with a head volume as standard of around 8.48.5cc. The combustion chamber itself is of the spigoted design pioneered by Rotax and now also adopted by IAME, Vortex and PCR across their model ranges.

Visually the cylinder bears close resemblance to that of the previous homologation but has been improved in a number of detailed ways. The ports are very accurately matched with the transfers being particularly clean with sharp edged angles and come as standard with a useful 128 degrees of opening. The exhaust configuration is the Ital

Sistem styled oval port which was widely imitated by others during the last homologation period set at around 178.5 degrees total opening. Large eared bleed ports are standard, considerably reshaped and enlarged since the last time the motor was homologated. The exhaust bend is of a unique style reflecting the unusual exhaust passage of the motor which, unlike the Vortex, Rotax and Sirio, is radiused at the top and is held on by some very substantial 11mm studs.

The crankcase is superficially unchanged from the previous model although the fins are now radiused all around, and is very well finished and matched. It is located by pegs. The underneath is heavily finned, incorporating fashionable cooling slots around the ignition. The offset crank, which has conventional small journals, looks extremely well made and is supported by a 6304 C4 bearing on the ignition side and a 6204 C4 bearing on



Anti-friction grooves on the valve cover

the power take-off side with high quality double lipped Teflon seals. Ital Sistem like their motors to have plenty of end float as standard so shims are not used unless it becomes excessive. The 15 roller Thomson big end carries the lightweight 100mm 'Super-fi' rod assembly which tapers down to a small end consisting of a Thomson cage with INA rollers.

The piston is unique in that although it has a single dykes type ring sitting in a standard depth groove on a conventional land, the ring itself is thinner than on other motors at just 1.4mm compared to the usual 2mm. This 'micra' ring has been available for much of the year and is claimed to create less friction, particularly in motors with a 34mm oval exhaust channel.

The rotary valve is also a major departure from the old engine, having increased in size from 104mm to 109mm. This represents something of a challenge technically since the bigger the valve gets the more likely it is to fly apart as the extreme edges are travelling so much faster. It is a testimony to Ital Sistem's thorough development and testing that this valve has proved very reliable. The valve itself is made of high quality blued material, spring steel with a high carbon content, and in fact is widely used by tuners in other makes of motors. Location is by a large but conventional style hexagonal locator which is keyed with a woodruff key onto the crank and retained by a circlip. The valve cover is heavily machined with anti friction grooves and the angle of the inlet tract is fashionably square to the line of the crank, instead of as in the past being angled to accommodate a slide carb.

The ignition on the engine we examined bears the legend Ital Sistem and is a clone of the much missed Motoplat ignition and as such bears a very close resemblance to it. The static timing of this motor was approximately 2.2 degrees. The 'coil' is mounted on metalastic mounts at the front outside of the engine.

So that is the MV21. Even a standard motor such as this one is very well finished and with the minimum of attention would produce an effective and reliable race engine. 1995 saw an increased number of motor manufacturers vying for top honours with new developments coming on stream all the time. In Achille Parrilla's own words . . . "This year has been very hard. New people come with new engines, they try very hard, they don't want to wait. So we had to do a very careful job." A careful job they certainly did, combining speed with reliability while undoubtedly quick Rotax users were too often frustrated by component failure. Inevitably Rotax will bounce back, and with stiff competition from other quarters, Vortex in particular, 1996 will see the manufacturers battle even harder. Ital Sistem, with new ideas already well down the line, will be doing their best to stay on top.

Mark Burgess
& Don Parker