# PARILLA SS20

The Parilla name is perhaps the most important of all in the world of 100 c.c. rotary valve kart motors. Their success has been consistent and the clear victory in this year's World Championship of the latest model, the SS20, shows that they have lost nothing by being long-established.

When faced with the problem of introducing a new model to replace the HF17, Parilla were not solely concerned with additional performance. In fact examination of the SS20 shows that the prime consideration was to simplify manufacture thus keeping a check on escalating wages and material costs which are, of course, rising in Italy just like everywhere else. Next in importance was the avoidance of new tooling and when these two considerations had been dealt with they were then faced with the problem of providing an increased performance over the HF17.

The dilemma facing the designer is probably best illustrated with the crankshaft. The GP15, GP15L, MK16 and HF17 all featured a most expensive type of crankshaft both as regards initial cost and subsequent repair. It consisted of only two major components with the drive-side shaft with its associated crankwheel and the big-end pin all as a one-piece forging. Apart from the sturdiness of such construction, this enabled a very large chamfer to be provided on the crankwheel to match the inlet tract fed through the rotary valve housing. Such forgings are much more expensive than the traditional crankwheel/shaft plus a separate pressed in big-end pin and any scoring of the latter meant the whole assembly required changing. The SS20 has reverted to the normal three-piece style crank and thus closely resembles that of the S13, TG14 and BA15.

The crank has almost equal chamfers on both crank wheels and cannot be made larger because there would be too little support where the big-end pin penetrates the crank wheel. Alloy segments of equal size are fitted to the inner faces of the crankwheels and the big-end pin is plugged depending on the individual balance requirements of a particular crankshaft assembly. It is considered that it is somewhat easier to balance a three-piece assembly although there are two joints to get out of misalignment rather than one should the engine flip a chain or seize.

Parilla have at last dropped the use of a pin to locate the flywheel and have come into line with everyone else by using a small key. No doubt this has rationalised production on the machine tools as Komet, Parilla, Vega and B Bomb engines are all made in the same factory. Different batches of cranks made up at the same time are identified by numbers on the alloy stuffing plugs. The rod is identical to the HF17 model and has a needle roller small end bearing as did all models after the GP15.

At the moment the magneto side half of the crankcase is die-cast (as before) but the drive-side half is sand cast, presumably to provide the extra metal to allow for the different crankshaft chamfers. Inevitably the bottom edge of the inlet tract has to be higher than on the HF17 because of the three-piece crankshaft chamfers. Inevitably the bottom edge of the inlet tract achieved what appears to be a very good shape for smooth flow.

The barrel has the same finning characteristics as the HF17 but adopts the same stud spacing of the TG14, GP15 and GP15L models. This means that the studs are closer together and makes interchangability between the SS20 and the HF17 a difficult proposition.

The main characteristic of the cylinder is the existence of 5th ports by means of long slots, the entrances to which at the bottom ends are at rightangles to the cylinder with the top edges nicely angled. The bottom edge of these ports is halfway down the lower booster port and the top is about $\frac{1}{2}$ m.m. above the top edge of the upper booster port. All the conventional ports have their usual width and height but the transfers are approximately 1 m.m. higher than before.

There is no change to the cylinder head except it naturally has the early close type spacing of the studs. The valve is conventional Parilla with about an extra 2° opening.

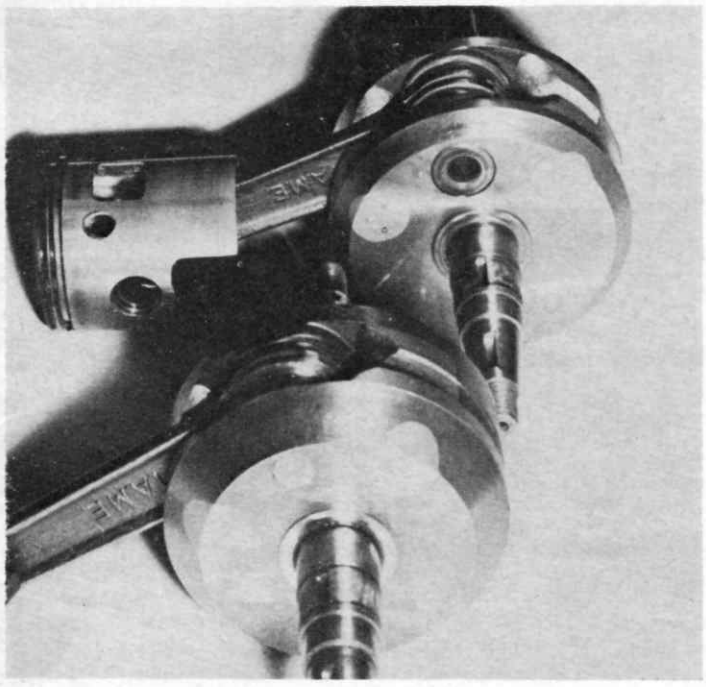
The piston has the pinning on the exhaust side and two drillings for the 5th ports each side of the 3rd port window of about 6 m.m. in width with the top edge angled at around 45° and approximately $\frac{1}{4}$ in. below the bottom piston ring.

The normal exhaust length is between 78 and 82 c.m. measured from the exhaust face and around the outside curve of the expansion box to the tip of the cone (but not following the final curve near the cone). At the moment the Swedish silencer is recommended but they will shortly be producing a tailor-made factory article. Factory selected engines will have a 24 m.m. Dell 'Orto carburettor whilst the race prepared version a 25 m.m. The ignition timing of the version examined was 3.4 m.m. btdc but it is normally expected to be 3.7 m.m. The factory have been using 8.8 c.c. combustion chamber volumes but this particular one was 9.2 c.c. At the moment SS20s can be identified by a yellow flywheel cover but no doubt owners of earlier models will soon start painting this component to match the prestige version.

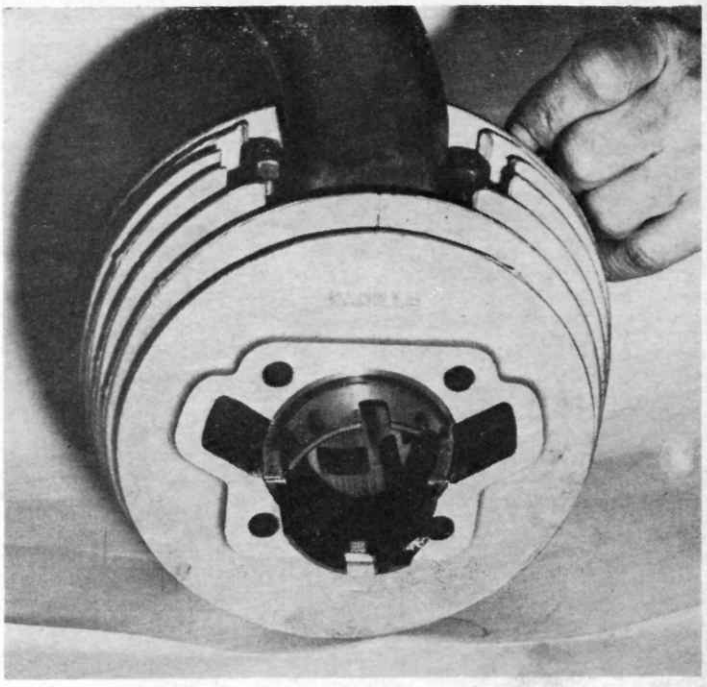
At the moment SS20s cannot be supplied in a normal out-of-the-box version and one can only purchase it in factory selected form at around £130 or in race prepared form at £150. Theoretically it is hard to see where Parilla can find any additional performance over the HF17 to justify these sort of prices but putting up the three fastest practice times and winning the World championship show that one cannot judge a two-stroke by eye. The version we examined will be raced by Paul Burgess and in its very first trial at Rye House achieved a 39.5 secs. against the record of 39.2—a most auspicious debut.

It was expected that drivers would buy the SS20 for fast tracks and use a HF17 for normal kart-type circuits but so far the SS appears to have more steam in the middle range rather than the top but that's two-strokes for you!

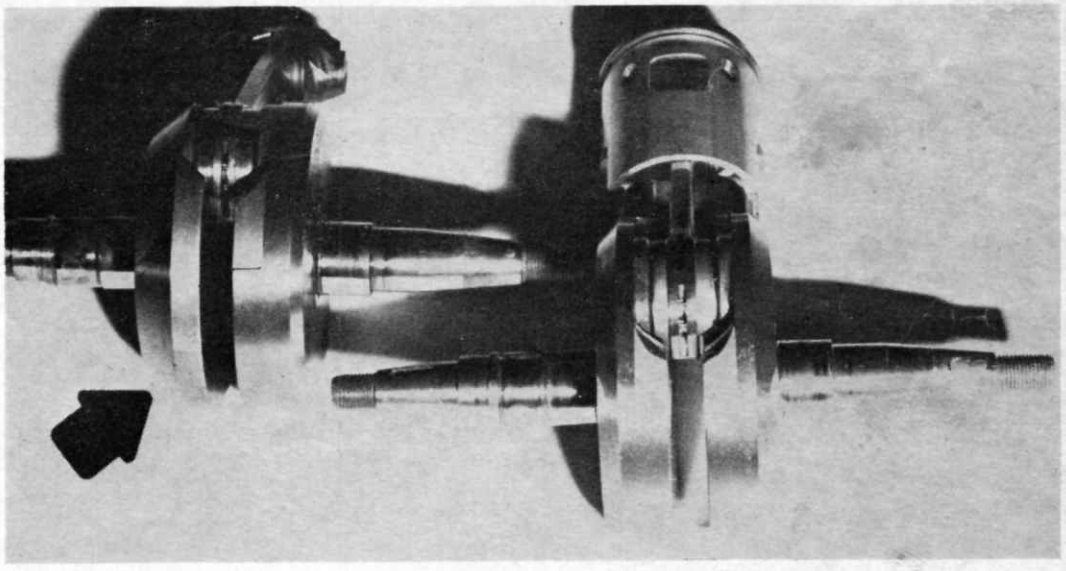
Whilst we discussed the new engine with Bruno Ferrari, we asked him if there were any points that should be mentioned on general Parilla preparation. He stressed that experimentation with rotary valves was not worthwhile unless it was to reduce the opening time and that main bearings are not changed frequently enough. As soon as the slightest vertical movement can be detected by the crank in the bearings they they should be changed. Bearings are cheap enough for drivers to buy a quantity and choose the best for fit by selection. A close watch should be kept out for "blueing" of the big-end pin which gives early warning of the big-end bearing tending to screw along the pin. Frequent inspections can catch this before a major engine disaster.



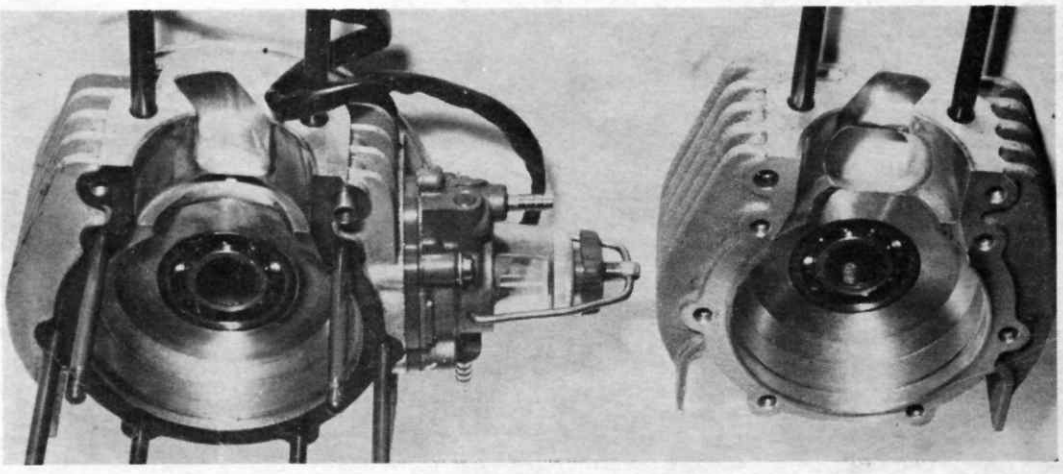
Th[illegible]F17 crank is in the foreground and the SS20 in the background. Note difference in chamfers on two-piece and three-piece crankshafts. One of the fifth port drillings is visible on the piston.



Barrel of the SS20. One of the long fifth port slots can be seen in the cylinder wall. Hand finishing was evident throughout engine.



Arrow indicates big chamfer of earlier two-piece cranks such as on HF17 Mk. 16, etc. Pin location for flywheel is visible as is new keyway on SS crank (right).



SS20 crankcase halves are die-cast (left) and sand-cast (right). Neat shaping provides smooth flow at the bottom of the transfer passages.