

# SINGLES SPOT

A DUCATI 250  
FOR RACING CONT....

not think that the original brass bushing would be up to the job. The bearing chosen is one with a seal on one side of the races, and this keeps the oil inside the timing case. The most difficult part of this whole conversion was in designing and machining a breaker cam right on the rotor shaft. There is not room to graft-in a breaker cam borrowed from something else.

Two reasons dictated this change. First we could not use the Ducati magneto because its generating coil does not move with its points, and the points must be set to match the moment of maximum flux in that coil, rather than to whatever moment the engine might prefer for ignition. Thus, it is not possible (or at least not conveniently) to experiment much with a spark-lead settings. Most "tuners" work around this by using a constant-loss battery/coil ignition, removing the Ducati generating coils and magnetic flywheel entirely. This works well, but at the expense of carrying a heavy battery - which is also a potential trouble-spot; & battery plates sometimes disintegrate due to vibration. Also, a battery/coil system does not match the high-revs performance of the Stefa magneto nor does it match the magneto's high rate of voltage rise, which makes for great resistance to plug fouling.

The only other modification made below the cylinder head was in the transmission shifter-mechanism. We installed a Sturtevant ratchet-fork, as the older Ducati forks will bend sometimes if the rider attempts to hurry shifts.

Before starting this project, we had the Ducati engine dynamometer-tested, and the results were a bit surprising. With megaphone in place, and after setting the spark and changing jets, to get maximum output, we found ourselves with an honest 22.2bhp at 8500 rpm. There must be something very special in the air around the Ducati factory's dyno room for they claim 28 bhp. net at 8000 rpm (at these revs our engine delivered 21.3 bhp). It becomes even more curious when one considers that the Ducati Diana is one of the fastest stock 250s, and virtually all of the Ducati's competitors claim much more than 22 bhp. Is it possible that somebody, or several somebodies, has been playing fast and loose with truth?

There is, at present, no way for us to know how much power we have obtained. The dynamometer facility originally used is currently being renovated, and we do not feel that it would be fair to use other facilities - where we are not certain of accuracy. But on the basis of such comparative tests as we have made (measuring the Cycle World-Ducati's performance against Technical Editor's Yamaha TD-1B), it would appear that we have that 30 bhp and perhaps a bit more. And, we have that wide spread of power. The engine is strong from 6500 rpm right to 10,000 rpm without separating, and without a trace of valve float. However, we do not expect that 11,000 rpm could be used very much without suffering a very nasty engine explosion.

Something we did not expect, but are delighted to have, is phenomenally easy starting. Most of our local racers are held under FIM rules, with push starts, and if the Ducati does nothing else, it will be first at the first turn. When warm, you take three steps, hit the saddle and drop the clutch. Invariably, this is followed by an explosion of exhaust noise and a rapidly disappearing motorcycle and rider.

Handling is good, though not outstanding, but the brakes work to perfection. Little pressure at the controls is needed to scrub off speed at a tremendous rate. With this, and the good low speed pulling qualities of the engine, we expect that our Ducati will be quite a good short-course motorcycle. To make it effective on fast cir-

cuits more sheer horsepower will be required, and we cannot, frankly, afford time for the prolonged development work needed to get that power. The amount of power needed would be in the order of 35-37 bhp, and to get that it will be necessary to direct efforts toward a power peak at probably 10,500 rpm, with the red-line up at 11,000. Reliability at that crank speed will not be good enough using a completely standard crank, rod and piston assembly. It can be done, however, by someone who can afford the time to find ways to keep the engine together while using 11,000 for long periods, and to develop a camshaft to give the horsepower.

At present, we have about 200 man hours of time invested in the Ducati, and at retail prices (we won't try to kid; we get a discount on most of this stuff) the Cycle World-Ducati road racing motorcycle would represent an expenditure of slightly more than \$1700. Before the bike reaches winning form (fast enough to compete on an equal basis with the Yamaha TD-1B, Harley Davidson Sprint CR, or the new 250cc Bultaco TSS) we can envision that price being doubled. Presumably the Ducati factory could afford this development cost; Cycle World magazine most definitely cannot afford the sheer number of hours involved - even though some individual enthusiasts can, and probably will.

What we hope we have done is to lay the groundwork for the above-mentioned enthusiasts. All modifications have been purposely held to things that individual can do, and we have given what we consider to be a good basis for further development. With this machine, we have demonstrated that a 1 3/8th" GP carburetor works fine; that the stock valve springs do likewise that you can get a good port carved into the head; and that the engine is quite safe up to 10,000 rpm without bearing, piston or valve-gear problems. From here on, it is every man for himself. It should be mentioned that the wet weight of the bike, complete with fairing, is 233-pounds, or 10-pounds less than the Yamaha TD-1B and probably 40-pounds less than a Sprint CR. Moreover, with a special frame (now possible under AMA's rules) the Ducati's weight could probably be trimmed another 15-pounds and the handling improved. There is hope, Ducati Lovers; stay with it.

## Cycle World-Ducati Engine Modifications

Compression ratio	9.5:1
Intake valve diameter	1.587"
Exhaust valve diameter	1.375"
Intake tuned length	13.25" (from valve)
Exhaust tuned length	26.5" (nominal)
Megaphone	31.5" x 3.25"/2.75" (reverse cone)
Intake port diameter	1.187"
Intake port angle	6-degree downdraft
Exhaust port	standard
Valve timing, intake	65°-75°
Valve timing, exhaust	75°-50°
Ignition	Stefa Magneto
Ignition lead	40°
Carburetor	Amal GP5
Main jet	410 (initially)

## DIOC Notes

As the Cycle World article mentions this is only a guide for creating a nifty little racer to race or just to have fun with. Since this article was printed in 1966 a lot of the parts mentioned are no longer available. But there is hope, Syd's Cycles who is the most successful Ducati singles racing organization that DIOC knows about has all the parts you could need to put together the above racer. He has everything including the ability to build you such a machine. For more info you can write to them Syd's Cycles, 6600 Haines Road, St. Pete, FL. 33702. We have other folks that probably race Ducati singles on a regular basis who are club members but we personally do not have any first hand experience as to what kind of work they do. We recommend Syd's because we at DIOC staff are very familiar with their work and consider it to be nothing less than excellent.