Yamaha Motocross Effort

TEXT AND PHOTOS BY LARS-ERIK JOHANSSON

CONTRARY TO MOST expectations, Yamaha could put on a very competitive showing in international motocross for 1972. All they seem to need in order to walk away with the 125cc FIM Cup, blast away from everything else in the 500cc class and provide very tough 250cc opposition is some good riders. Unfortunately, they are hard to come by.

Following much the same initial procedure established by Suzuki in 1968, the machines have been developed in competition. The difference this time is the Swede behind the new bikes: Torsten Hallman.

When Torsten's troublesome back began feeling better, he decided on a comeback. Husqvarna, his previous employer, offered him a free bike, but not much more. For a recent world champion that wasn't much, so Hallman began thinking of alternatives. Sweden's road racer Kent Andersson informed him of an interesting possibility, that of Yamaha's serious interest in motocross competition. Hallman got in touch with Yamaha, and a month later had agreed to carry out a development program for producing competitive motocross bikes for the 1972 season. By way of informing Hallman that Yamaha thinks in terms of quick action, they sent him a few crates of bikes before he'd even signed a contract.

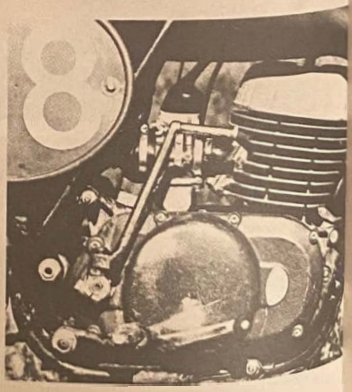
From the beginning, Yamaha made it clear that their primary concern was not of whether or not Hallman would win any GPs during the first season, but whether or not he could sort the bikes out, period. During the season, the Hallman-managed Yamahas took part in several international motocross events in Europe, many of which did not count for the championship, but which were attractive nonetheless because of an interesting circuit. The competition also served as good experience for Arne Lindfors, an aggressive and talented Swede whom Hallman regards as championship material. At 23, he has the necessary youth to pursue and capture a championship title.

Even more impressive are the machines themselves. The 125 may well be one of the most superior competition motorcycles in the world today. The engine is based on the AT-1 unit, but has a new light-alloy cylinder with chromium bore, titanium side casings, and a reed valve. Although, with its claimed 21 bhp, the Yamaha is not superior to what Europeans can offer on power, it does have the advantage of being far lighter. Add also a light frame with a dry weight of 139 lb., ample ground clearance and suberb handling and you have a potential winner. By the way, the weight figure is Hallman's; when lifting it, I thought it was even lighter! A peculiar feature is the return spring of the throttle twistgrip, which is so light that it seems to have been picked from a wristwatch, but which nevertheless seems to work like it should.

BELOW
Torsten Hallman is the man responsible for development of Yamaha's new motocrossers. The final '72 250 will be quite similar to the one pictured except for a slightly shorter frame, more angled rear springs, a new rear brake plate, and a redesigned gas tank.

RIGHT
An example of good exhaust design is the tip, fixed by means of a rubber block on the 250.

BELOW RIGHT
The 250 Yamaha engine uses titanium side casings, a hard chrome cylinder bore, reed valve, and Mikuni carburetor.



The only thing on the 30-bhp 250 motocross machine that is similar to current models is some DT-1-looking engine castings. Innovations include a reed valve arrangement, which Yamaha has patented. Although it does not improve top-end performance, it does give a considerable increase in power at low and moderate revs, offering a very desirable power curve for motocross. Side covers are again titanium, the cylinder is light alloy with a chromium bore, and the weight is low at 194-196 lb., just over the Suzuki's. Several modifications were made after the '71 season, among them a shorter wheelbase, new footrests, more angled rear suspension units and new fork crowns.

Yamaha used their own front forks, which are much lighter than Ceriani's and are very good. New rear shock absorbers are being prepared to replace the Konis presently used. The Konis are good but are heavy. The original shocks did not work properly, maybe due to foaming.

Japanese Dunlop tires are standard equipment for the machines, although Trelleborgs are used on Hallman's bike, because he has a contract with Trelleborg as their U.S. distributor.

Two prototypes are competing in the 500cc class. The first, a 360 Yamaha, looks almost identical to the 250, with an engine based on the familiar RT-1, but reworked in the same way as the 250. It was first tested with conventional induction, but a reed-valve unit is being fitted for testing. There is no substantial weight difference between the 250 and the 360, and both the 250 and 360 motocross machines, as well as the 125, are equipped with close-ratio, five-speed gearing.

The other prototype 500-class machine, which is 500cc, is something hotter. Too hot, so far. Hallman discovered the first time he rode it that he could not control all its sudden power. He let Lindfors ride it in the race, which turned out well; he placed 3rd against good opposition. Lindfors' temperament is more suited to that particular machine: Hallman rides with style; Lindfors is more the "tiger."

The 500-cc prototype has no production heritage. It was built as a motocross bike from the beginning, with a superlight, four-speed engine unit. The weight of the engine, carburetor and exhaust pipe is 59.5 lb! The Husqvarna engine alone weighs 84 lb. The consequence of this is that Yamaha would be able to field a 50-bhp, full 500-cc motocross machine weighing 184-187 lb., if they could only find a human being capable of handling it! More probably, though, the 500 will be reduced to 420 or 450cc to make it more controllable. In motocross, sudden bursts of power offer no advantage whatsoever, especially when they are as sudden and powerful as the 500 motocross. It is also equipped with a reed valve, which doesn't help.

Lubrication of the Yamaha motocross machines is not by Autolube systems. Instead, oil is mixed in the gas at 15:1 proportions. Although it is quite a lot of oil, it does offer a safety margin for the vulnerable chromium bore.

Hallman is enjoying full factory support for his organizational efforts. Earlier in the season, Yamaha answered Hallman's request by providing a completely new, very satisfactory cylinder that was designed, made, tested and sent in two months' time! Another request for new brake hubs saw results in less than two weeks. Although such immediate attention might not apply to the 500, Hallman's visit to Japan after the motocross season will tell. At that time Yamaha will change the bikes according to Hallman's suggestions, and he will test ride them to see if further modifications will be necessary. The finishing touches will be made by February, when the Grand Prix machines for 1972 shall be ready.

Hallman's only complaint about the factory support is that they seem almost too enthusiastic and optimistic about the project. Hallman has great difficulty in making the point that in motocross, the rider counts for 90 percent of the victory, and only the other 10 percent is the result of the machine's effort. KTM has the fastest 250-cc motocross bike in the world, but without an absolutely top-class rider, they can't win.

Torsten Hallman's greatest headache today is to sign on a few potential champions for Yamaha. Lindfors will most likely be in the team next year, but not with the intention of winning the championship of 1972. Maybe the year after. The current Suzuki and Husqvarna teams will remain intact because of long-term contracts, and Husqvarna may attract Ake Jonsson by offering him a position as competition manager. Not much left, and it will be very difficult for Hallman to buy the talent he needs. For taking part in two classes, you need four riders, preferably more. Just one capable rider in a class will be the victim of the team tactics of others. And Hallman himself will not be able to ride the GP circus next year because of his painful back. Motocross riding will be more of a hobby for him in the future.

RIGHT
The 125 looks light and innocent. Weight is 139 lb.

BELOW
The 125 engine is a highly modified AT-1 two-stroke Single producing 21 bhp. It also features titanium side casings, a reed valve, and a hard chrome cylinder bore.