



# **hit below the belt**

*Report M. Voltini – Photos C. Avolio*

*No, I don't mean "not allowed", but rather a great "torque drive" given by TM mounted for the KF2 class gives to the entire set up with Birel chassis, the official couple for international races. But it's a propulsive drive supplied continuously at the usual corners.*



## INFO

### Addresses

**BIREL R31-SV (without front brakes)**

**TM 125 MF1: with muffler, battery, battery holder, electric system and supports**

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### TECNICAL FORM

	Birel R31-SV
Chassis	147/CH/08
Homologation	30/32 mm
Tube diameter	maximum
Camber	neutral
Caster	neutral
Axle	ø50x2x1040, type F on 3 bearings (central without grains)
Front/read hubs	50mm / 100mm
Front/rear height	low, + 1 thickness / chassis high
Front/rear tread	119.5 cm / 140.0 cm
Tyres	LeCont LH
Bars mounted	front further back
Engine	TM 125 MF1
Homologation	40/M/15
Exhaust valve opening	15 notches
Exhaust	one 10 mm thickness
Ratio	12/84
Spark plug	NGK BR10EG
Carburettor	Ibea 24
Mixture	4% oil



**W**e continue our column that looks into the new engines of the international KF125 class, the class raced with the one eighth of a litre direct drive having centrifugal clutch, electric start, rev limiter and balancing countershaft.

Last time we looked at a Maranello-lame at the track in Lonato; now it's the Birel-Tm's turn, which we tested in Lonato. This is the "official" couple for the racing team at the set up in Lisone that we tested on the Pista Azzurra in Jesolo.

In this case too, we "played our part on a track that has several slow corners; the sort of corner that allows you to get an idea of what seems to be the true cha-

racteristic of this type of engine, i.e. no thrust below a certain speed. Not a so slow though as to give problems round the slower corners.

#### Intermediate class

In this case too, the object in question is a kart from the new KF2 class, the class that has taken over from the 100 ICA. This is the most important class of international karting, seeing that the KF1 is a prerogative of top drivers in official teams, while the KF3 is reserved for under 15-year-olds. The official team, managed by Fumigalli, and kart were there on the track waiting for us. Unfortunately (joking of course), the official drivers are there too, among whom Cesetti: a difficult rival for others, let alone for anyone else... Luckily he drives in KF1 and no one really

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wants to compete with the likes of him. The kart we have this time is made up of a chassis, Birel R31-SV and a TM MF1. The first is a mixed structure 30 and 32 mm diameter tubes, and is very suitable for a track with much grip and for soft compound tyres. The engine, as we already said, is a KF2 version of the "single engine" for the three top classes. In this case we mounted a 24 mm carburettor and ignition with rev limit at 15,000 revs, as stated in regulations. With this set up, we hit the track, the same track that has hosted lots of champion drivers from all over the world who perhaps came to spend a bit of time near "Lido di Jesolo", a beautiful holiday resort. For this occasion, the track is not particularly rubbery (as it would be during a race, say like the Open), but it's not too bad, especially in the return corners, seeing the number of karts that are racing along on international racing tyres. We mounted Club class LeCont LH, a type of rubber that however enables you to stop good

lap time.

### Best foot forward

Very wary to start with, almost afraid: the engine that had been mounted was nearly brand new, and it seems that with this sort of engine the first laps (the ones with the first piston) are quite delicate, if not risky. Uncertainties that however lose their grounding as soon as you pass to the second piston; but the thing is that we won't have this chance. So, we start pressing progressively, and as the revs increase the engine and chassis start showing their true character. Especially engine delivery, it only confirms the known "characteristics" – but for anyone coming from the 100cc they seem "defects", already mentioned in the previous test: round slow corners you find it under-torque, almost without thrust, both due to the longer ratios (compared to the normal 100cc), which penalised, despite having bigger cubic volume. And round the bigger and more difficult cor-



*Above, spindles are hollow and diameter is 25 mm.*

*Left, a close up of the front brakes, which are linked to the spindles by a blue support.*





*Above, under the Unipro device you can see details of the front brake pump, which is controlled by a lever on the steering wheel.*

*Right, ignition group with key start and green rev limiter module, set at 15,000.*



## TECHNICAL BOX

### Some 30, some 32

Marco Natoli has dealt with details concerning the technical construction of the TM 125 MF1 engines in our technical column here in this same issue. So, here we just want to concentrate on the characteristics of the structure of the chassis, a Birel R31-SV distinguished by homologation initials 147/CH/08. It has a "double curve", that is, the longitudinal members become parallel near the tank. Another feature is that tubes are mixed 30 mm diameter for the longitudinal members and 30 mm for the cross members. The "fourth tube" on the left of the seat is fixed, so that the supplementary bars are simply the front and rear bars; however, we must underline that there are two ways of mounting the added section on the fore-carriage: one is perfectly aligned with the steering spindle joint and the other slightly further back and centred on the longitudinal tubes. For the rest, wheelbase is normal 1040 mm: after a series of tests with a unit that gave us the chance to change this important

ners that are found at the Pista Azzurra there's nothing you can do: torque entry occurs when you have already passed the corner, so it's pointless trying to find a better path to gain a few revs more, that might do the trick in a race, hoping to have solved the problem. With all the limits regarding the track difference and ratios, you can still risk a comparison with the Parilla that we tried before. This TM seems to have a higher torque peak, so much so that the sudden thrust you get when you reach a certain rev (about 6800) can catch you unaware and create some difficulty. But there seems to be less constancy in acceleration, at high revs, at the end of the short straight at Jesolo. Such things condition drive: round corners, you can "press on gas pedal" without being afraid while in the second part of the track, where the faster corners are, it is better to stay shorter. Here the engine is in full working speed, and when you press on gas pedal again it roars out its power, so much as to make you cut across track. Obviously, track conditions and mounting tyres with different tread from the "chewing gum" one are factors that underline this behaviour, and also that of the chassis.



parameter, changing the rear bearings, in the end we found that this was the ideal size for most cases. Rather, the latest frames made by the firm in Lisone were re-enforced at the rear, between the final part of the tube and bearing binder, so as to avoid breaking the chassis due to the latest bumpers enforced by regulations. Only a detail, but an important one.

*The one with Tm engine is the official couple for Birel team in international events.*

*Below, a detail of the latest chassis made by the factory in Lisone is that the front bar can be fixed in two different places.*

#### **You just brake once at the front**

Let's look at the chassis: the one they gave us for our test also had front brakes controlled by a lever on the driving wheel. You only have to use them once on this track, at the braking point before the corner, and then you let it rest throughout the lap. This in fact, only ought to be used for hard braking when wheels are straight, also because; on this kart they tend to straighten the steering wheel. So, the use of the rear brake only is much more interesting: in this case we found that, even without reducing power, it is less "aggressive" respect to the other engines. It is less "violent" when the time comes to brake. This could be annoying if you must brake sharply, short, sharp braking, but we found it very useful round corners: in fact, it makes it possible for you to continue braking into the corner without increasing the risk of cutting across the track, when this happens it almost literally blocks the kart on the spot. This happens also due to the lack of drive power already mentioned. So, it is possible not only to delay braking a bit, but it also helps the internal rear wheel lift before the corner starts and improves kart flow. Due to its intrinsic construction, the kart follows drive wheel very well. Sometimes too well, for any

driver who isn't used to steering to the millimetre. Instead, rear carriage is very light, as usual for chassis aimed for international races, however this is felt more round slow-average corners, because in slow corners drive torque is lacking. Also in this situation we found remarkable difference in delivery compared to the old karts used for the 100cc class. In this, we find that these aren't particularly adapt for "all" drivers, they even cause some difficulty in finding best set up, but we hope that further development softens some "sharp corners" within the character of the new KF engines.

