The new engines are quite similar, but there are interesting differences

Highly powerful

Report: Marco Natoli

These are the new KF, there's more to them that meets the eye. There aren't many, but they're complete, perhaps too much for some. The traditional setting has been changed, reduced to the essential as for the 100cc that many manufacturers are beginning to send into early retirement despite the fact that we are used to seeing them (they've been on the market for about 50 years) apart from the more recent water-cooled made in 2001 We're living in an era of continuous innovation, where nothing must last longer than necessary, you can't afford to stay still, got to move on and let the imagination run free. This is perhaps just a summery of today's lifestyle, however practically speaking in karting, but more so in the development of new direct drive engines things are quite different.

The new technical regulations have established that the new KF has to have a series of devices that make them run smoother being more user friendly. At the same time, for many parameters, it gives limited intervals to choose from (stroke can only be from 54.00 to 54.50 mm?). The lines given are as though it were a railway track, it has invaded fields where it hasn't been able to move freely: why not, at last, allow variable advance throughout the working period as for the K4 version, perhaps they didn't want it to be completely free hence a stated, verifiable curve?

The result is that the finished product, the engines, are all similar and the single cycle structure certainly hasn't helped in this sense. However, there are lots of interesting ideas, and they are appreciated even more when you consider the limits set by regulations.

Not many manufacturers have accepted this new challenge that has been launched. Here we have seven, all Italian, two of which have escaped our analysis. As for foreign (non Italian) manufacturers, Dino is the only one who has accepted the challenge so far. This may be due to the details that the new engines require in terms of design, planning and manufacturing, not to mention the difficult times that karting is going through. A hard time indeed, where some have had to give up or, at least, for now look on to see how the situation evolves. However, they all use a modern and efficient solution; keep the lock between base and cylinder separate (with shorter stud bolt) from the one between cylinder and head. All except Vkr have done it and have relied on the already tested Rotax Max choke valve, the RAVE2 that derives from 2-stroke motorcycling engines, made by the Austrian firm. Also the number of ports, 4 lateral and 1 central (5 in all), is uniform and equal to what we see in the class with equal displacement, but as for gears, like the exhaust ports developed in a bigger oval, there are 2 boosters at the "top" to help expel burnt gasses.

MAXTER engines

>> www.maxterengines.com

The Twin Torpedo, which has the same features as all engines made by Maxter, is easily recognisable

Maxter Twin Torpedo

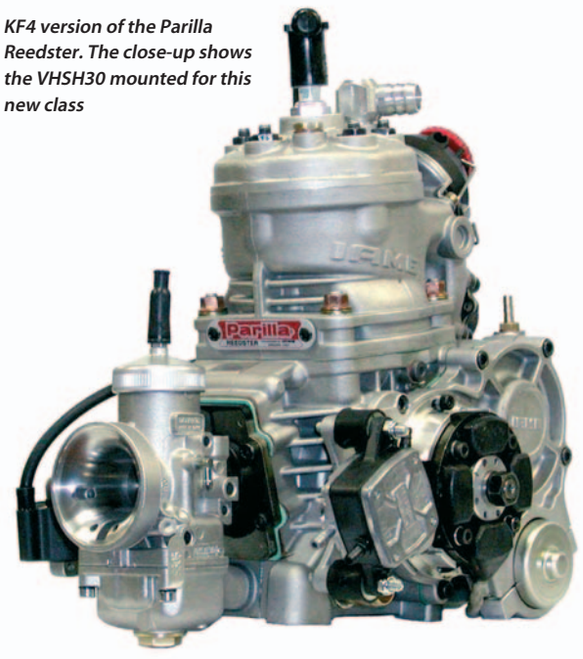
Right from the start, it is evident that we are in front of a Maxter. The new KF, named Twin Torpedo, seems to have the DNA of factory in Lonato, by its somatic characteristics, such as its aggressive black shiny anodised head, to its compact structure that houses harmoniously all the components. Among the details we underline the front part of the base, heavily finned, the bores on the edge of the clutch case, horizontal reed pack and the shapes of lateral transfer ducts underlined by close smelting, with very good surface finishing and a high quality thanks to a lost wax fusion process. Among the technical characteristics we see the Rotax RAVE2 valve with a exacting setting chosen by Maxter, the Vamec clutch with Maxter bell and horizontal reed pack.

Maxter Twin Torpedo	
Manufacturers	**Maxter**
Model	Win Torpedo
Homologation	2007-20015 46/M/15
Induction	6-flap carbon fibre reed
Coolimg	Liquid
Diameter x stroke - mm	54.00 x 54.40
Displacement vol. – cm^3	124.58
Conrod (length) - mm	104
Piston (N.of segments/seg.height/pin ø) - mm	1/Not available/15
Piston/cylinder allowance 1/100 mm	9-10
Clutch	Vamec with Maxter bell
Balancing shaft - % balance, Number of cams	26, 2
Ignition	Selettra R10429 or Pvl 682
Spark plug	Ngk B10EG
Fuel mixture - %	4

Parilla

>> www.iame.it

KF4 version of the Parilla Reedster. The close-up shows the VHSH30 mounted for this new class

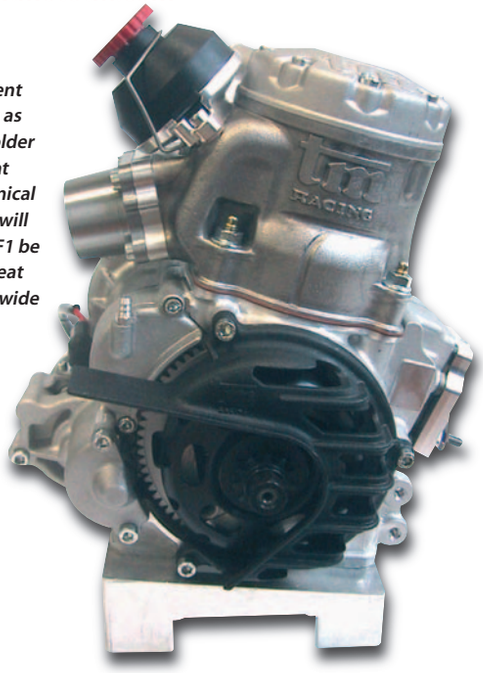


Parilla Reedster

Iame, big kart engine manufacturer, couldn't miss this meeting, an opportunity for launching another Parilla challenge, the new Reedster that's rich both in history and contents. In its various set ups will also bear initials F1, F2, F3 and F4 – see photo. Diameter and stroke are 53.89x54.40mm, conrod is 104mm long and the piston has one segment, which is 1.7mm long. While at the exhaust there's the commonly used RAVE2, and the clutch is an automatic dry clutch made on site. The countershaft has just one eccentric mass that, in this first version, balances 25% of 1st level inertia forces, which is minimum value allowed by regulation. It can house homologated ignitions and for the time being it mounts the new Selettra R10429. The head is in a single piece, therefore the central dome cannot be removed, the reed pack is 85mm long, 73 of which look into the carter. Together with the engine, F4 version, it is supplied with a number of accessories, such as radiator, tubes and thermostat, battery, key block starter, electric cables and support, exhaust system and induction silencer, a VHSH30 Dell'Orto carburettor (regulation norm) and "on board" petrol pump.

Parilla Reedster	
Manufacturer	Iame
Model	Parilla Reedster
Homologation	2007-2015 13/M/15
Induction	Reed 2 carbon fibre flaps l=85mm
Cooling	Liquid
Diameter/stroke - mm	53.89x54x40 (max.ø = 54.04 mm)
Displacement vol. – cm^3	124.58
Conrod (length) - mm	104
Piston (N. of segments/pin ø) - mm	1/1.7/1.5
Pistion/cylinder allowance 1/100 mm	7.8
Clutch	Vamec
Balancing shaft - % of balance, N. of cams	25.2
Ignition	Selettra R10429 or Pvl 682
Spark plug	Ngk B10EG
Fuel mixyure - %	4

>> www.mototm.com



Displacement is the same as that of its older brother that has mechanical gear lever: will the new MF1 be able to repeat Tm's worldwide success?

TM MF1

The imprinting is that of the firm in Pesaro, underlined by cylinders bearing the Tm racing logo in relief on the simple, roundish cast shaped of the cylinder, but characterised by a particularly lively area at the exhaust. What strikes you, is a sort of double "handle", cast as usual, inside which the choke valve RAVE2 runs and directly below there's the exhaust duct.
The left hand side is characterised by a compact water pump, that is quite easy to get to, ignition (in the picture Selettra), the countershaft gear lubrication induction cap, there are 2 cams and starter. Then on the opposite side you have a Vamec centrifugal clutch, which is protected by a small abundantly windowed casing with chain protection. Diameter and stroke are 54.00x54.40 while the conrod is 104 mm long.

TM MF1	
Manufacturer	**Tm Racing S.p.A.**
Model	MF1
Homologation	2007-20015 40/M/15
Induction	Carbon fibre reeds
Coolimg	Liquid
Diameter x stroke - mm	54.00 x 54.40
Displacement vol. – cm^3	124.08
Conrod (length) – mm	104
Piston (N.of segments/seg.height/pin ø) - mm	1/1.5/15
Piston/cylinder allowance 1/100 mm	7-8
Clutch	Vamec
Balancing shaft - % balance, Number of cams	25.2
Ignition	Selettra R10429 or Pvl 682
Spark plug	Ngk B10EG
Fuel mixture - %	4

>> www.villakart.it

The VKF is debuting, but it has all the winning qualities, fine, original techinal solutions

VKR K125A

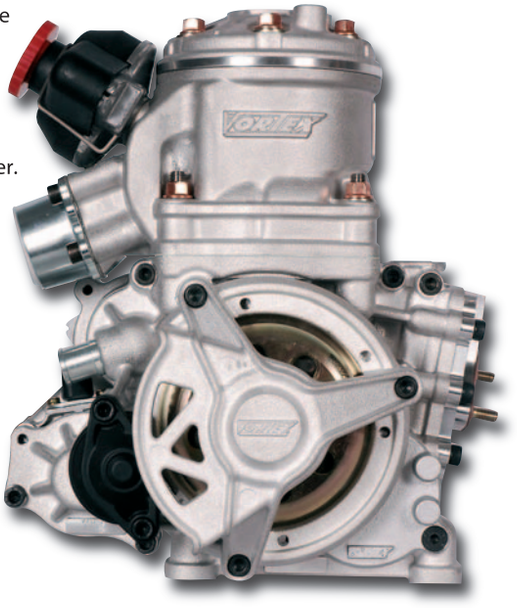
Let's hope the competition, all important names as the number of titles gained prove, doesn't hold it against us, but this debuting firm, Vdr belonging to the well-known tuner Mauro Villa, who was once himself a world champion and has worked technical manager for several factories, and has now applied all his technical knowledge in the development of his K125A. Starting from the cylinder, tilted backwards so as to leave more room for the driver's right arm. And you don't have the RAVE2 "bulk" on the exhaust, Villa and his highly qualified technical team have developed, almost new) the throttle valve, based on the same metal material used for piston that has sealing segment and cylinder. So as reduce dirt and encrustations, the housing has inlet for allowing any oil that may seep through.
To reduce loss caused by friction of various moving elements to the minimum, the K125 has a pressure drive lubricating system, which is based on an oil pump with gears (making the most of torque

VKR K125A	
Manufacturer	**Villa Kart Racing.**
Model	MF1K125A
Homologation	2007-20015 14/M/15
Induction	6 flap carbon fibre reeds (s=0.30 mm
Coolimg	Liquid
Diameter x stroke - mm	54.00 x 54.50
Displacement vol. – cm^3	124.81
Conrod (length) – mm	104
Piston (N.of segments/seg.height/pin ø) - mm	1/1.5/15
Piston/cylinder allowance 1/100 mm	7-8
Clutch	Vamec
Balancing shaft - % balance, Number of cams	25.1
Ignition	Homologated
Spark plug	Ngk B10EG
Fuel mixture - %	4

>> www.vortex-engines.com

VORTEX RVA

In this era of new TaG engines it's only natural that you'd see a Vortex, always a leader in any sort of racing event. The new RVA has softer curves and flow, this is given due to casting, now closer to the internal elements and articulated in a very compact piece. The cylinder is practically vertical, on the left hand side of the timing case, just behind the automatic clutch, made by Vortex, and protected by a nice lighter casing, you find the water pump and the flange of the starter that gears with the clutch crown. On the opposite side of the counter shaft and ignition there's a very practical porthole, under the reed pack, which is very handy for checking the presence of a countershaft. Diameter and stroke are 54x0.7x54.00, values that are different to those usually found, 54.40x54.50 and diameters are slightly smaller. Special attention has been paid to making the overall weight of the new Vortex lighter.



Here we see the new RVA, you can see the clutch made by the same Vortex with a nice, lighter protection cap. The engine weighs about 11 kg.

VORTEX RVA	
Manufacturers	**Vortex S.r.l.**
Model	RVA
Homologation	2007-20015 22/M/15
Induction	Reed
Coolimg	Liquid
Diameter x stroke - mm	54.07 x 54.00
Displacement vol. – cm^3	123.99
Conrod (length) - mm	102
Piston (N.of segments/seg.height/pin ø) - mm	1/1.15/15 at C or at L
Piston/cylinder allowance 1/100 mm	12
Clutch	Vortex
Balancing shaft - % balance, Number of cams	25, 2
Ignition	Selettra
Spark plug	Ngk B10EG
Fuel mixture - %	4

Regulations in brief

The new KF must have a balancing shaft that balances at least 25% of the 1st level inertial forces (it turns at the same speed as the driving shaft) and has to be extractable from the outside. The clutch is dry automatic centrifugal clutch, minimum weight being 800 g and minimum diameter of the mass is 80 mm completing coupling within 5000 rpm. There is reed induction and timing case is water-cooled too. Stroke is contained between 54.00 and 54.50 mm. You must have variable advanced ignition for the KF4 class and constant from 3000 revs/min at 500 rev/min before the rev reducer for the other 3 classes, among which we have the KF3 (ex-Junior) that must not mount a shutter valve at the exhaust, it must have pneumatic function and mechanical return without any electrical or electronic connections. The radiator, exhaust, ignition, carburettor, induction silencer and valve on the exhaust must all be homologated. Homologation lasts 9 years, from 2007 to the end of 2015. The homologation number contains a series of progressive numbers, an M and the last 2 numbers refer to expiry date.

windfire

>> www.pcrnews.com

A new era starts for Pcr with its new Windfire brand. We've already had a chance of trying it on a bench test where its true potential was really outstanding.

Windfire KF

The new brand name used by Pcr to re-launch the factory image. In our last issue, we actually reported on the test carried out on a pre-series version of the KF2. Now you can see it in its final outfit, with the new name "Windfire" cast on the cylinder. It is very compact and at the same time it also has a good layout of accessories. The cylinder is slightly tilted forward. Under the exhaust duct, and rightly so, you have the starter, and above the choke valve, the typical and most commonly used RAVE2. On the left hand side , you don't only find ignition but also the balancing counter-shaft of part of the 1st level inertial forces (25% minimum according to regulations), which you can reach once you've removed ignition. On the opposite side there's the centrifugal clutch made by Vamec. The one we used for the test on the pre-series model of the KF2 delivered more than 38 hp at 12000 rev/min.

WINDFIRE KF	
Manufacturer	**Pcr.**
Model	Windfire KF
Homologation	2007-20015 16/M/15
Induction	Reed
Coolimg	Liquid
Diameter x stroke - mm	53.88 x 54.40
Displacement vol. – cm^3	124.03
Conrod (length) – mm	110
Piston (N.of segments/seg.height/pin ø) - mm	1/1.5/15
Piston/cylinder allowance 1/100 mm	12
Clutch	Vamec
Balancing shaft - % balance, Number of cams	25
Ignition	Selettra R10429 or Pvl 682
Spark plug	Ngk B10EG
Fuel mixture - %	4

XTR

>> www.merlinkart.com

XTR X1

This is a new brand made by the Mrc group that already made 100 Atomik and Atk engines. Diameter and stroke are 53.90 and 54.40 mm respectively.

The XTR takes over from Atk engines in the hearts of enthusiasts who like this undoubtedly reliable brand made in Lombardy

The conrod is 102 mm, while piston pin diameter is 14 mm. An automatic clutch made by Iame is on the left hand side, and there's a04 flap carbon fibre0.27 vertical reed pack on the front. In this case too, cylinder lock is independent respect to head lock. From the left hand side you can get to the countershaft and water pump. Exhaust is controlled by a RAVE2 valve

XTR X1	
Manufacturer	**Mrc**
Model	XTR X1
Homologation	2007-20015 15/M/15
Induction	Reed 4-carbon-fibre flaps s=0.27 mm
Coolimg	Liquid
Diameter x stroke - mm	53.90 x 54.40 (max.ø = 54.04 mm)
Displacement vol. – cm^3	124.08
Conrod (length) – mm	102
Piston (N.of segments/seg.height/pin ø) - mm	1/1.5/14
Piston/cylinder allowance 1/100 mm	9-10
Clutch	Iame
Balancing shaft - % balance, Number of cams	25.1
Ignition	Selettra R10429 or Pvl
Spark plug	Ngk B10EG 0.6-0.7
Fuel mixture - %	4