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PROPOSAL FOR THE STROTAX 125 ENGINE

At the moment, there are 4 main brands of engines used in the 125 TAG style classes, the Rotax Max, Leopard (RL & X30), Fireball and Cheetah. Of these, the Rotax Max has been subject to numerous component changes. Some of these changes, particularly under forced adherence to the Australian World Rules, have made a range of components redundant, requiring the competitor to purchase the "latest" necessary hardware. This, in conjunction with the Promoter Classes "no aftermarket" components philosophy, makes the engine less attractive to some karters due to cost and perceived lack of loyalty to the customer from the manufacturer.

This proposal, essentially takes the Rotax Max engine and, with certain changes, allow the use of aftermarket parts in many areas, much simpler technical rules and, importantly, a significant external component to readily identify the engine and to distinguish it from the Rotax Max engine. The performance of the engine would be the same as the Max engine.

This proposal is NOT to create a new class, but simply to allow another engine into its appropriate classes, namely, TAG 125 and other appropriate Sportsman 125 classes, Junior Performance and Restricted 125, the latter two with the AKA SR@ 24.5 restrictor. This proposal is NOT intended to introduce another engine into a single engine class.

The concept would be that karters could "convert" their old engine to a STROTAX spec, yet continue to race it as was, with the exception for formal Rotax &/or promoter class series.

There would be one or two main external identifiers:

1. The cylinder head water jacket would be a cast item, anodised black with a distinctive STROTAX logo cast in place
2. The Dell'Orto carburettor, while permitted, could be replaced with specific types of butterfly diaphragm carburettor. This would be adapted to the rubber reed block adapter with a black anodised carburettor adapter, again identified with the STROTAX logo.

To further explain the details of the engine proposal, we have included a draft set of rules. The focus of these is to create a simple set of rules that require the minimum of inspection and utilise existing AKA measuring practices in conjunction with the lower cost of the aftermarket parts approach.

It is further proposed that the AKA "own" the rules, just in the same way as they do for the current Yamaha and other non-promoter classes. This gives the AKA the right to make any necessary changes as they see fit.

There is a range of benefits to such an engine:

1. The rules are very simple, for the competitor, engine builder and the engine inspector. These will greatly reduce the time in technical inspection and minimizes the possibility of overzealous "pinging" for trivial and misinterpreted details. We have taken the opportunity to remove historical "myth" generated rules. A perfect example of this was the Clubman crankshaft dimension rule, where the minimum diameter was closely specified because lightening the crankshaft made the engines "really go". Years later, the AKA introduced clutches, typically weighing around 750 gm in rotating mass. These made no difference at all to the engine performance. There are many other similar examples where we have introduced rules, even to the point that people break the rules based on the fact that a certain min or max measurement in a rule implies some direction to improve performance.
2. By being able to use superceded componentry and aftermarket parts, the cost to the competitor will be reduced
3. STRIKE will benefit by supplying pistons (and to a limited degree the water jacket cover and inlet adapter) for the engine. This will help offset the application costs.
4. The intangible. Karting is more than just driving and chassis set-up. There are many technical types of people, shops, engine builders that like to have a "fiddle" or personalise. The current trend for "dumbed" down specification prevents anyone from fiddling. This can steer some away from the sport, those who might support and mentor karters. In some ways the sport suffers. In this case, the fiddling is very limited and controlled in the area of performance enhancement.

The simplicity of the rules can be seen by the size of the technical chapter, where not counting the cover page and update schedule page, the number of pages is three (3) compared to seventeen (17) of the world rules and, other than the existing PTG rod, no special gauges are required.

What we are seeking is some indication from the AKA that the STROTAX 125 would be accepted in principle by the AKA such that we could go forward with a formal application in conjunction with various aftermarket component suppliers.

Thank you

Ken Seeber

STROTAX 125

TECHNICAL SPECIFICATIONS

Preamble:

The aim of this engine is to provide an “aftermarket parts permissible” engine based on the Rotax Max engine that permits aftermarket parts where appropriate, allows a range of superseded (but functional components) to be used, has a minimum of extraneous rules and provides for an easy technical inspection.

The engine is approved for use in the following classes:

Junior Performance with AKA SR2 24.50 restrictor
TAG 125 & other appropriate Sportsman 125 classes
Restricted 125 with AKA SR2 24.50 restrictor

Note: The engine is ineligible to run in “Rotax only” events, such as Pro Tour and any type of Rotax warranty would most likely be null and void.

Legal additions:

Chain guard, engine mount, temperature gauge and tachometer/hour meter, inline fuel filter, catch can mounting brackets and supplemental ignition coil mounting brackets, exhaust probe mounting for temp and Oxygen.

Non-tech items:

Battery, Fuel Filter, Radiator, Radiator Hoses, Clamps, Pulse Line, Switches, Ancillary Mounts, Fasteners, Circlips, Washers, Bearings, Spark Plug, Spark Plug Cap, Gaskets, O-Rings, Piston Pin, Springs, Seals, All Clutch Components, Engine Sprocket, Piston ring, Starter Motor, Thermostats and Housings, unless otherwise specified. Rule 25.21.(a).1 applies for all non tech parts.

General:

The only modifications not permitted are those where it says you cannot make such modifications.

The use of thermal barrier, ceramic, paints, silicone or similar coatings on the piston crown, cylinder head insert and exhaust system is prohibited, however it is permissible for the exhaust system to be painted externally.

Any future Rotax hardware changes would be permissible unless it was considered by the AKA that these were performance enhancing.

The use of anti-friction coatings in or on the engine/engine components is prohibited. The only exceptions to this are the coating of the cylinder bore and the coating to the piston skirt.

Internal additions:

No additional material may be added except in the case of engine repairs and shall only restore the engine or components to original supplied state, however R STX1.01 must be met where this is specified in any rule pertaining to the area of repair, whether required due to wear or accidental damage.

STX 1.01 Alteration to cast surfaces and machined surfaces (where specified).

Sandblasting, glass bead blasting, polishing, peening, acid etching, spark eroding and/or any other method of metal removal, addition or displacement is not allowed in areas where this rule is referred to, unless exceptions are specifically indicated.

STX 1.02 Cylinder

Cylinders marked with 223 996, 223 993 &/or 223 997 can be used.

Reboring and replating is permissible, however note that a maximum piston size is specified. Overall length is free.

Port timing to be subject to checking using the Piston Travel procedure and rod as per 2011 rulebook.

All cylinder ports and passages are subject to Rule STX 1.01, with the following exceptions:

All transfer ports and passages have cast finish surface except some removal (done by the manufacturer) of cast burr at the inlet passage and exhaust port and passages. All ports have chamfered edges to prevent ring snagging. Any additional machining is not permitted. The top edge of exhaust port may show some pre-existing machining from the manufacturer. The sealing flange for the exhaust socket may show signs of machining from the manufacture.

On cylinders marked 223 993 the upper edge of the central boost port may show factory machining.

The sealing flange for the exhaust socket may show either cast finish surface or signs of machining from the manufacturer.

The top edge of the exhaust port may show either just a cast finish surface... or signs of CNC machining in combination with signs of manual grinding.

The exhaust port may show partial manual grinding done by the manufacturer to eliminate minor casting defects and to eliminate the NIKASIL burr at the end of the NIKASIL plating

STX 1.03 Inlet system

Reed valves to be as original with 2 petal stop plated and 2 reeds, each having 3 petals that are steel with a thickness of 0.6 +/- 0.08

Inlet manifold is marked with the name "ROTAX" and the identification code "267 915"

Some factory flash removal may be present at the conjunction of the inside contour and the carburetor stop mounting face. This is a manual trimming operation consisting of a small corner break of less than 3 mm in width. No additional grinding or machining is permitted.

STX 1.04 Airbox

Permissible airboxes are any style OEM Rotax Max unit or AKA 43 conforming to R 25.24. If the AKA 43 airbox is used, it must be mounted to the carburetor using an adapter that conforms to R25.25 unless carburetor incorporates an integral adapter. In all cases a filter must be used.

STX 1.05 Exhaust valve

Must be as supplied with a top collar thickness of 4.8 +/- 0.3. Length of valve from underside of collar to the top side of valve curvature apex to be 36.5 +0.2/-0.3.

STX 1.06 Exhaust system

Must be as supplied by Rotax with either versions acceptable.

STX 1.07 Cylinder head

The cylinder head water jacket must be black in colour and bear the STROTAX logo cast in, and must remain as cast as per STX 1.01

The combustion chamber insert must bear the cast identification numbers of 223 389, 223 389 1 or 223 389 2. The combustion chamber volume cannot be less than 11 cc using the procedure in R26.01. The coolant side of the insert must remain as cast as per STX 1.01. The squish gap is non tech. Combustion chamber shape and spark plug position including squareness to be visually concentric with the cylinder bore, otherwise it is free.

STX 1.08 Piston, ring and pin

Coated or uncoated, aluminium cast piston with one piston ring. Permissible types are STRIKE, METEOR, KSI & ELKO with a maximum diameter size of 54.05 Machined crown cannot be scalloped or reshaped in any manner. Must be stock appearing. Skirt can be coated.

STX 1.10 Crankshaft

Stroke 54.5 mm +/- 0.1 mm, checked with PTG rod.

Must remain stock appearing

STX 1.11 Connecting rod

To have a centre distance length of 100 +/- 0.05 mm and to weigh no less than XXX gms. Otherwise free.

STX 1.12 Crankcase

The machined crankshaft and cylinder spigot cavities and the transfer passages are subject to R STX 1.01. Otherwise free with the exception of the location hole for the ignition pick up.

STX 1.13 Balance shaft and drive

Rotax balance shaft and balance gears must be installed. Minimum weight of 255 gms, otherwise free. Alignment is free. All types of Rotax plastic or steel gears permissible. Balance drive gear compartment must be vented and connected to an overflow bottle of no less than 100 ml

STX 1.14 Carburettor Two different types of carburettors may be used:

Type A. Dell'Orto

Must have VHSB 34 cast in and QD or QS stamped in the carburettor housing. The total inlet bore of the carburettor body must retain the cast surface as per STX 1.01. The carburettor throttle slide must show size 40 and the bottom of the slide must remain as cast as per STX 1.01
Any jet, float and needle combination is permissible
Any type of crankcase pressure actuated pulse fuel pump is permissible

Type B. Butterfly Diaphragm style

All butterfly carburettors to use STRIKE carburettor adapter part #
Eligible carburettors are: Tillotson HL334A, HL334AB, 360 A or ENZO or Tryton HB27
No modifications permitted to venturi/throttle bores. Otherwise free.

STX 1.15 Cooling system

Radiator type, size and its position is free.

STX 1.16 Ignition

No alteration to timing is permissible. Ignition coil and pick up to have markings "129000-" and "029600-0710" respectively and be visually stock appearing. Wiring loom may be modified in any way that doesn't affect performance.

STX 1.17 Clutch

Any clutch can be used as long that it commences kart movement (without driver) by no more than 4000 rpm. Note that a clutch retaining device must be fitted and conform to R25.17.5 (b). Starter ring gear must be functional.