Te Aroha Dirt Kart Engine Rules

Rotax Engine

Cover Note

These rules are in conjunction with all/any other rules laid down by the TADK Club and must be read/used in conjunction with those rules.

General

The Rotax 125 engine (displacement of 125.0cm3 maximum) raced should be of original manufacturer's specification unless otherwise stated in the following rulings:

Neither the engine nor any of its ancillaries may be modified in any way likely to improve performance, unless specifically authorised within these Rules of Racing. No polishing, no grinding. Only genuine Rotax components that are specifically designed and supplied for the FR125 engine are legal, unless otherwise specified. The engine must have the official Rotax stampings on the crankcase in two (2) places and also on the reed block face of the cylinder to be eligible to compete.

Internal and External Additions

1. No additional material may be added except in the case of engine repairs and shall only restore the engine or components to original specifications.

2. The use of thermal barrier coatings/ceramic coatings on or in the engine components and on or in the exhaust system is prohibited.
3. The use of anti-friction coatings in or on the engine/engine components is prohibited unless otherwise supplied OEM. The only exceptions to this are the gilnisil coating of the cylinder bore and the coating to the piston skirt.

Legal Additions

Chain guard, motor mount, radiator mount, temperature gauge and tachometer/hour meter, exhaust gas temperature fitting.

If the rules do not cover something that can or cannot be done, then it cannot be done!

Non-tech Items

Fuel Filter, Radiator and Radiator Hoses, clamps pulse line, switches, ancillary mounts, fasteners, circlips, washers, bearings, spark plugs, gaskets, o-rings, piston pin, springs, seals, clutch drum, drive sprocket, rings, starter motor, clutch flywheel, thermostats and housings, spark plug brand and heat range. No alteration from original manufactures specification is permitted to fit a non-tech item.

Cylinder Head

Volume

Minimum of 11.0cc.

Combustion Chamber Insert

Identification code has to be 223 389. 223 389 1 or 223 389 2. No material may be added except to repair the spark plug thread and or spark plug seal surface.
Machined surfaces may be re-machined if using cylinder 223997.
Cylinder head insert must retain both the squish band and visually spherical combustion chamber. O-Ring must be fitted. The combustion chamber/squish area shall not protrude beyond the sealing ceiling face of the head insert. “Rotax” and/or “Made in Austria” must be cast in the combustion insert.

Spark Plug

Any brand or heat range

Thread Length

Maximum spark plug thread length shall be 20mm.

Piston

Uncoated or coated, aluminium cast piston with one (1) 1.0mm rectangular piston ring. Machined areas are: top end of piston, outside diameter, one groove for the piston ring, bore for the piston pin, inside diameter at bottom end of piston. Piston must conform to original Elko piston dimensions.
All other surfaces are not machined and have a cast surface.

Gudgeon Pin

Gudgeon pin to be made of magnetic steel and same style as OEM.

Cylinder

1. Light alloy cylinder with GILNISIL plating, configuration with one main exhaust port and pneumatic adjust valve.
2. Any replating is not allowed.
3. Maximum bore: 54.035mm (measured 10mm above the exhaust port).
4. Cylinder has to be marked with the Rotax logo, identification code223 997 or 223996.
5. All ports and passages are cast finish except some pre-existing factory removal of flashing.
6. All ports have chamfered edges to prevent ring snagging.
7. Any additional machining is not permitted.
8. Cylinder must have the official Formula Rotax stamp on the inlet face.
9. Piston travel check using 5.0mm rod. Minimum 32.8mm, Maximum 33.8mm. I
10. f you are using cylinder 223996 or any future cylinder volution, the cylinder must remain as supplied by the manufacturer and cannot be remachined.
11. Height of cylinder must be 87mm with tolerance of -.05/+0.1 mm.
12. Due to manufacturing procedures some cylinders may have been machined on the exhaust flange

Cylinder Base Gaskets

1. Must be dimensionally the same size and shape as original and cannot be designed to decrease the size of the transfer ports.

2. Inlet System: Intake manifold is marked with the name Rotax and the identification code 267915.
3. No grinding or machining is permitted, however some factory flash removal may be present at the junction of the inside contour and the carburettor stop mounting face. This is a manual trimming operation consisting of a small corner break of less than 1mm in width.

4. Reed valve assembly is marked with the name Rotax and the identification code 22438 or 224389. The reed valve assembly is equipped with two (2) petal stops and two (2) reeds, each having three (3) petals. The maximum allowable width between the inside faces of the two (2) metal reed valve stops is 22.0mm. The thickness of the reeds is 0.6mm + - 0.08mm. Maximum reed block gasket thickness is 4.0mm.?? The addition of one Rotax reed block gasket, maximum of 1.0mm between the carburettor manifold and the reed block is permitted.

Exhaust Power Valve

1. As supplied by the manufacturer with no modifications allowed.
2. Maximum thickness of Power Valve gasket/s is 2.0mm.
3. Original spring must be fitted.
4. Any external adjustment or blocking to this once the engine is running is illegal.
5. Additional fasteners or securing devices may be fitted/added.
6. Length of exhaust valve is 36.5mm +0.2mm/-0.3mm,
7. Width of collar is 4.8mm +/-0.3mm.
8. Exhaust valve evolution is approved ID 230260.

Crankshaft

1. As supplied by the manufacturer with no modifications permissible.
2. Stroke 54.5mm +/- 0.02mm.

Balance Shaft

1. No modification allowed.
2. Must be installed and operational.
3. Minimum weight of the dry balance shaft must be not less than 355 grams for balance shaft, Rotax part number 237 945 and 255grams for balance shaft, Rotax part number 237 949.
4. Balance gears must be installed and must be correctly aligned according to the instruction in the repair manual.

Conrod

1. As supplied by the manufacturer.
2. Any grinding/ polishing or modification is not permitted.
3. Conrod has to be marked with number “213” or “365” or “367” on shaft, 11.5.18

Crankcase

1. As supplied by the manufacturer.
2. Zero grinding/polishing in the two main transfer passages.
3. Must have the official Formula Rotax stamp on the crankcase deck, either part no. 211870 or 211871 is permitted.

Ignition

1. DENSO digital ignition only, no adjustment permitted or possible.
2. Ignition coil has the following marks close to the outlet of the high-tension cable, cast in the case. DENSO and 129000.
3. The ignition coil must have 3 pins at the terminal.
4. The only allowable spark plug cap is NGK Type TB05EMA.
5. Any modification to any part of the ignition system and/or crank-shaft to alter ignition timing or rev limiter is illegal.
6. The ignition pickup must be marked with the numbers 029600-0710, followed by a variable production code in the second line.
7. Battery must be a total of 12 volts only

Carburettor

DELLORTO VHSB 34

1. The carburettor body, slide, needle, atomiser tube and atomiser insert (either spec 1 or spec 2 is permissible) to remain as originally supplied and cannot be subject to any modification.
2. No additions or additional machining filing, drilling or polishing etc is permitted to these items; this includes the bore/throat. “VHSB 34” cast in the housing of the carburettor. “QD” or “QS” stamped in the housing of the carburettor.
3. Atomiser tube stamped with “266 FN”.
4. Needle stamped with "K 54" or "K 27" or "K98" or others as nominated in the future.
5. Slide marked #40 only.
6. The size of any hole or any of the following is unregulated: main jet, needle and seat, pilot jet, pilot jet emulsion insert choke jet.
7. The position of the float/float arms and the weight of the floats are unregulated.
8. All items (jets, needles etc) referred too must be present and operational.
9. With the exception of the choke, no changes or adjustments can be made to the carburettor once the engine is running.

Fuel Pump

1. Original MIKUNI diaphragm pump only.
2. Place of fixing is non-tech.

Intake Silencer

1. An original Rotax intake silencer must be fitted.
2. The original foam air filter may be replaced with either a flat style or cylindrical style filter providing all air to the engine passes through the original Rotax air box intake tubes.

Radiator

1. Alternative radiators other than genuine supplied radiators are acceptable and may be mounted remotely from the motor. (Hopefully allowing cost reductions here)!
2. Additional cooling devices are not permitted. The removal of the thermostat from The cylinder head cover is acceptable.

Clutch

1. Dry Centrifugal Clutch – multi shoe aluminium or one-piece steel allowed using original design format components only.
2. Whilst on level ground the kart (with Driver in kart) must start to move under its own power, when the engine speed reaches 3000 rpm or less.
3. The use of a PRD clutch drum and Rotax sprocket as supplied by manufacturer. (Optional).

Exhaust System

1. Must be supplied by Rotax and cannot be modified except for,

a) the replacement of the silence absorption material and/or

b) the addition of an exhaust gas temperature sensor fitting.

2. Standard engine/pipe coupling must be used.

Exhaust pipe with after muffler

1. Length of inlet cone: type a and type b: 592mm +/- 5mm (measured along the body of the exhaust pipe, (not the seam) from the beginning of the exhaust to the start of the cylindrical part).
2. Length of the cylindrical part of the exhaust pipe: type a and type b: 125mm +/- 5mm. Length of end cone: type a: 250mm +/- 5mm type b: 225mm +/- 5mm. Outside diameter of 180 bent tube: type a: 30mm +/- 3mm type b: 41mm + 1.5mm - 1.0mm (measured at beginning end of bend).
3. Hole diameter of end cap of silencer 21mm +0.2mm –0.5mm.
4. Painting/plating of the exhaust muffler is permitted with the exception of thermal barriers/coatings/paint.
5. NOTE: Any accidental damage to the unit will not incur a technical breach of these TADK Club Rules of Racing, however any attempt to modify or alter the exhaust system by cutting, or fabrication will automatically remove eligibility of the exhaust system.
6. Welding of the exhaust system to repair a crack, hole or to fit a patch etc. is permitted.
7. Only one exhaust/barrel gasket is permitted, maximum thickness of 2mm.

Exhaust Muffler

1. Noise isolating mat can only be replaced by an original Rotax spare part.
2. End cap rivets may be replaced with bolts/cap-screws etc.