



## ROTAX MOJO MAX Challenge Technical Regulations 2014

(The Technical Regulations 2014 replace the Technical Regulations 2013)

### 1) Categories:

Karts used in the **ROTAX MOJO MAX Challenge (RMC)**, **ROTAX MOJO MAX Challenge GRAND FINAL (RMCGF)** and **International ROTAX MOJO MAX Challenge Events (IRMCE)** like the ROTAX MOJO MAX EURO Challenge are divided into the following groups:

- ROTAX 125 Junior MAX (cylinder capacity 125 cc)
- ROTAX 125 MAX/MASTERS (cylinder capacity 125 cc)
- ROTAX 125 MAX DD2/MASTERS (cylinder capacity 125 cc, 2 speed)

### 2) Amount of equipment:

For each race event (from non-qualifying practice to the final) maximum following amount of equipment is allowed:

- 1 chassis
- 2 sets of dry tires + 1 front + 1 rear spare tire
- 2 sets of wet tires + 1 front + 1 rear spare tire
- 2 engines

#### **For the United States:**



The equipment allowed is from the official sessions posted on the event schedule, to the final race. Tires and Chassis declarations may be specified in the sporting and supplemental regulations. The Engine declaration procedures are as follows:

-If you declare 2 engines during your declaration time period, you may switch between the two declared engines at your convenience. If one of these engines has a mechanical failure you may not rebuild the engine and you must use your second declared engine. If both engines fail, you must get permission from the technical director on how to proceed.

-If you declare 1 engine during your declaration time period, you must only use that engine for the remainder of the event. If this engine has a mechanical failure you may; replace the broken parts with no related penalty (under Technical Director Supervision), or you may declare a second engine with penalty.

-If you are late to declare your engine or engines, you will be penalized. If you are found using a non-declared engine during any official session you will be disqualified from that session with additional penalty or fine possible.

-A shared engine form will be available for drivers that need to share an engine between competitors. This form must be completed for both drivers during your time declarations. That engine may be shared between both competitors at their convenience. However, once you have shared an engine neither competitor may add another engine regardless of mechanical failures. If an engine has a mechanical failure you must get permission from the technical director on how to proceed.

### 3) Kart:

#### **3.1) Chassis:**

##### **3.1.1) 125 Junior MAX and 125 MAX classes**

For national RMC's any chassis sanctioned by an authorized ROTAX distributor is allowed.

- a) Chassis tubing : round tubing only.
- b) Maximum diameter of rear axle = 50 mm, minimum wall thickness according to CIK-FIA rules.
- c) At IRMCE and RMCGF chassis with a valid CIK-FIA homologation only are allowed.
- d) Any brake system must have a valid CIK-FIA homologation. Front brakes are not allowed In the 125 Junior MAX class.

- e) Front brakes will not be allowed in 125 MAX class as of 2015. In 2014 they may be forbidden by the authorized distributor or by a race promoter in accordance with the authorized distributor.

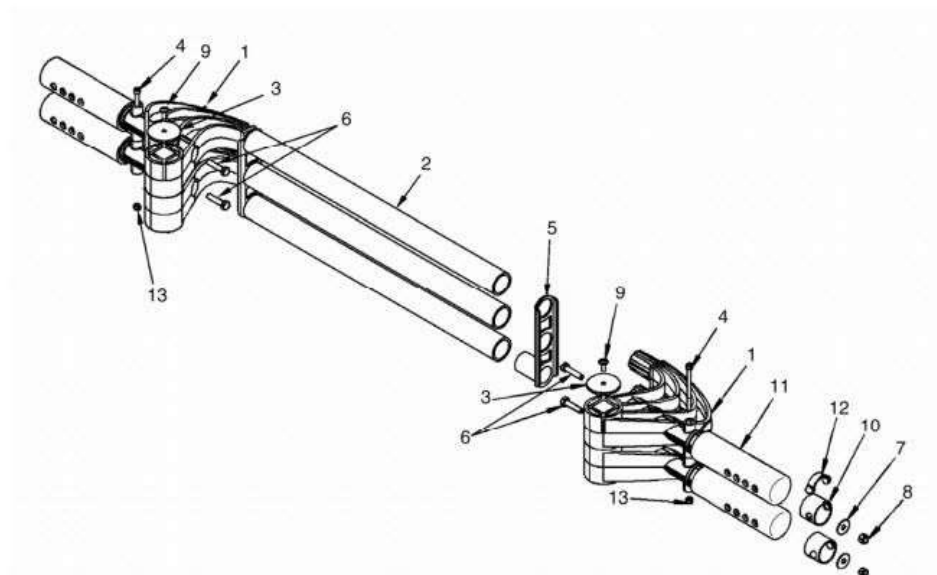
#### **For the United States:**

All braking systems must be operated by a single foot pedal unless necessitated by physical restrictions and with prior approval of the event race director and technical director.



### **3.1.2) 125 MAX DD2 / DD2 MASTERS**

- a) For all national RMC, IRMCE and the RMCGF 125 MAX DD2 / DD2 MASTERS classes, chassis approved by ROTAX only are allowed to be used (approved chassis will be listed at the web page: <http://www.rotax-kart.com/Max-Challenge/MAX-Challenge/Approved-Chassis-125-MAX-DD2>).
- b) Chassis must be designed according to CIK-FIA rules for shifter classes (front- and rear brakes mandatory).
- c) Any brake system must have a valid CIK-FIA homologation.
- d) ROTAX rear tire protection system is mandatory to be used. Either 2-tube version or 3-tube version, third tube might be mounted above or below the two main tubes. No part shall be added or removed from original content (except safety wire or bolt connection between pos. 1 and pos. 2 as well as number plate with support).  
Only orange or red ROTAX original tyre-protection rollers are allowed to be used.



## **3.2) Bodywork**

### **3.2.1) 125 Junior MAX and 125 MAX classes**

In accordance with regulations of national Federations or CIK-FIA.

At RMCGF and IRMCE bodywork with current CIK-FIA homologation validity only is allowed, including the rear wheel protection system.

### **3.2.2) 125 MAX DD2 / DD2 MASTERS**

In accordance with regulations of national Federations or CIK-FIA.  
At RMCGF and IRMCE bodywork with current CIK-FIA homologation validity only is allowed. Only the current ROTAX rear wheel protection system is allowed.

#### **For the United States:**

##### **All Classes:**

-CIK rule 2.5.3. Rear Wheel Protection: In all conditions, rear protection must at no time protrude beyond the external plane of the rear tires.

-It is permissible to use a zip tie (1) or cable wire (1) to wrap loosely around the rear bumper bracket to the chassis from to prevent the rear bumper from falling off the chassis. The new style L-Shaped bracket is also an acceptable application. Only one of these items is acceptable. These items however will not exclude the driver from penalty if the bumper becomes detached or broken.

##### **Junior Max, Senior Max, and Masters Max:**

-CIK rule 2.7.1.4: side pod protrusion rule outboard the quadrilateral formed by the four wheels is acceptable.

-“Wet conditions”: Side body work may not be located outside the plane passing through the outer edge of the rear tires. Side pod protrusion not allowed.

-CIK rule 2.5.3: Rear Wheel Protection: In all conditions, the rear protection must at no time protrude beyond the external plane of the rear wheels.

##### **-Rear Protection – Side Body Work:**

- CIK homologated plastic rear protection system is required. Anything else must be approved by the event technical director.
- No modifications to chassis in regards to mounting of the rear tire protection system.
- Minimum width of rear protection system under all conditions is 134 cm.
- Body work and bumpers must conform to specification for current homologation period (CIK – 02, 08-11).
- Side bumpers and side pods must match and front bumper and nose cone must match.
- Modification of body work is limited to right side of radiator for clearance only.
- Use of tape or other materials is allowed only for damage repair.
- No alteration of the front or side bumper is permitted. In this instance, bumper is defined as “steel tubing elements”.

##### **DD2 and DD2 Masters:**

- Body work and bumpers must conform to specification CIK 08-11 homologation periods only.
- Mixing of sets of any combination of components is permissible provided homologation numbers for side bumpers/side pods are matching, and front bumper/nose cone are matching.

#### 4) **Tires:**

At all RMC, IRMCE following tires only are allowed:

Dry (slick) tires:	MOJO	Type:	D1, D2 or D3		
		Front:	4.5 x 10.0 - 5	Rear:	7.1 x 11.0 - 5
Wet tires:	MOJO	Type:	W2		
		Front:	4.5 x 10.0 - 5	Rear:	6.0 x 11.0 - 5

At RMCGF following tires only are allowed

<b>125 Junior MAX</b>					
Dry (slick) tires:	MOJO	Type:	D1		
		Front:	4.5 x 10.0 - 5	Rear:	7.1 x 11.0 - 5
Wet tires:	MOJO	Type:	W2		
		Front:	4.5 x 10.0 - 5	Rear:	6.0 x 11.0 - 5
<b>125 MAX/Masters</b>					
Dry (slick) tires:	MOJO	Type:	D2		
		Front:	4.5 x 10.0 - 5	Rear:	7.1 x 11.0 - 5
Wet tires:	MOJO	Type:	W2		
		Front:	4.5 x 10.0 - 5	Rear:	6.0 x 11.0 - 5
<b>125 MAX DD2/Masters</b>					
Dry (slick) tires:	MOJO	Type:	D3		
		Front:	4.5 x 10.0 - 5	Rear:	7.1 x 11.0 - 5
Wet tires:	MOJO	Type:	W2		
		Front:	4.5 x 10.0 - 5	Rear:	6.0 x 11.0 - 5

Strictly no modifications or tire treatment allowed.

Marked direction of rotation must be adhered to for all tires.

If tires are checked for modification we recommend Mini-RAE-Lite equipment. A threshold value of max. 4ppm is recommended.

#### **For the United States:**

-Bead Locks (3) are required per CIK requirements with dry slicks

-Maximum mounted front tire width is 145mm.

-No tire warmers, tires must be of ambient temperature upon presentation to the pre-grid/grid, and are subject to verification at that time. Karts with tires not of ambient temperature are subject to penalty.

-Upon verification of tire treatment, competitor is subject to immediate exclusion and additional penalty.

#### 5) **Data acquisition:**

This system, with or without a memory, may permit only the reading/recording of the engine revs (by induction on the sparkplug HT cable), two indications of temperature, the speed of one wheel, an X/Y acceleration, lap times and position (via GPS system). Connection of this system to the original ROTAX battery is allowed.



## 6) **Composite materials:**

Composite materials (carbon fiber etc.) are banned except for the seat and the floor tray. Alloys from different metals/substances are not considered as composite materials (for example brake disks).

## 7) **Safety of equipment:**

For RMCGF and IRMCE article 3 of CIK-FIA technical regulations apply.

For RMC overalls, helmets, kart shoes, gloves and other kind of driver protection must comply with the regulations of the national Federation or CIK-FIA.

### **For the United States:**

#### **Helmets:**

-Full coverage (full face with shield) helmets designed for competitive motorsports use are mandatory, they must be in good condition and are subject to pre-technical inspection and must comply with one of the following:

-*Snell*: SA and M 2005, K 2005, CMS 2007 (Youth), CMR 2007 (Youth), M 2010, SA 2010

-*SFI Specifications*: 24.1 (Youth), 31.2a, 41.2a, 24.1 / 2005 (Youth), 31.1 / 2005, 41.1 / 2005, 24.1 / 2010 (Youth), 31.1 / 2010, 41.1 / 2010

-*British Standards Institution Specifications*: Helmets with BSI A-type and A/FR-type BS6658-85 certification manufactured within the past 10 years are approved.

#### **Helmet Support:**

-Are mandatory in the Micro Max, Mini Max and Junior Max Classes. They must be unaltered.

-The event organizer or track officials may require any class to use unaltered helmet supports.

#### **Chest Protection:**

##### **-Micro Max and Mini Max**

-SFI 20.1 or 20.1 / 2 certified chest protectors are required and worn at all times while on track and must be presented upon request at any time during the event.



## 8) Petrol/Oil:

Petrol: unleaded commercial quality from petrol station, maximum 98 octane.  
Oil: XPS-KARTTEC 2-stroke oil (CIK homologation no. 112340/02, 112305/01, 112376/01)

### For the United States:

- Official Fuel, as per event supplemental.
- Mixture Ratio between 32:1 to 50:1
- Competitor's fuel will be verified by comparison with Digatron DT-15 or DT-47, to a controlled sample at 50:1 ratio. Competitors fuel must measure within +10/-5 points of control sample.
- Technical inspection of fuel is not limited to Digatron test.

## 9) Engines:

### For the United States:

-Ambient Temperatures: Fuel, Tires, Engines must be at ambient temperatures when presented to the pre-grid/grid during all official sessions.

### 9.1) Stickers:

No sponsor stickers or badge (except ROTAX, BRP, MOJO, XPS) allowed on the engine or at any other ROTAX engine accessories!



### 9.2) Technical specification:

At RMC, RMC GF and IRMCE races, engines which are confirmable to the following technical specification only, are legal to be used.

For national RMC's, engines which have been checked and sealed by the ROTAX Authorized Distributor of this territory or one of the Service Centers appointed by the Authorized Distributor, are allowed to be used only.

For national RMC's the ROTAX Authorized Distributor of this territory has to publish the lists of Service Centers which are legal to check and seal engines. For IRMCE all ROTAX Authorized Distributors and their Service Centers only are allowed to check and seal engines.

Authorized Distributors and Service Centers only listed at <http://www.rotax-kart.com/Find-a-Dealer> are legal to check and seal ROTAX engines for RMC events.

For RMC GF ROTAX only is allowed to check and seal engines.

By sealing an engine the ROTAX Authorized Distributors and their Service Centers take over the responsibility for the conformity of the engine with according to the valid Technical Specification. Also a brand new engine must be checked according to the Technical Specification before sealing. The engines have to be sealed with specific ROTAX engine seals (black anodized aluminum seal with "ROTAX "-logo and a 6 digit serial number and a barcode).

Further legal seals are:

- black anodized aluminum seals with "JAG"-logo and 6 digit serial number
- red anodized aluminum seals with "JAG"-logo and 6 digit serial number
- red anodized seals with "KORRIDAS" and 6 digit serial number
- blue anodized seals with 6 digit serial number (Kombikart)

#### **For the United States:**

-Dual Engine Seals are required on all FR125 engines (Top and Bottom)

-It is recommended/requested that all engine seals be installed correctly to accommodate scanning of barcodes, please install seals with barcodes facing outward.

-It is required to stamp the identity card with the Service Centers business name and location. The passport will not be accepted if it is hand written. If you do not have a business stamp available your engine(s) may be declared, however the passport must be presented to the technical director with a signed waiver from the service center stating that the engine has been serviced by them. Then the passport will be confiscated and the MAXSpeed Group will issue a penalty to the appropriate party.

-Under the Seal infractions must be reported to the Maxspeed Group. It will be the responsibility of the Maxspeed Group to issue an additional penalty the service center responsible for the declaration of an under the seal infraction.

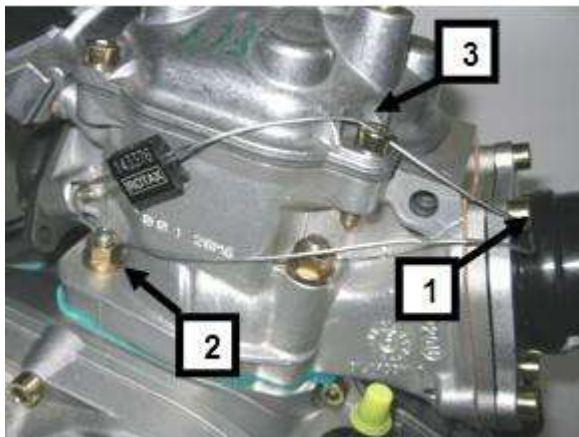




By means of the steel cable the engine must be sealed on one Allen screw (pos. 1) of the intake flange, on one stud screw (pos. 2) of cylinder and one Allen screw (pos. 3) of the cylinder head cover (see attached pictures). After sealing the engine seal thread must be squeezed using caliper ROTAX part no. 276 110 (see picture).



**ONLY SEALS WITH BARCODE ARE LEGAL TO BE USED !**



**It is not allowed to pass the end of the sealing wire through the seal a second time (only as in above picture).**

At every new sealing of an engine the authority (ROTAX Authorized Distributor or their Service Centers) that checks and seals an engine is responsible for following indications at the Engine Identity Card which belongs to the owner of the engine.

- Serial no. of the engine
- Serial no. of the engine seal
- Stamp and signature of the company to be able to detect at scrutineering which authority has checked and sealed the engine

At scrutineering the driver has to present:

- the engine(s) with the undamaged engine seal(s)
- the Engine Identity Card(s), showing the matching engine serial no.(s), the matching engine seal no.(s), the stamp(s) and signature(s) of the authority(ies) that has (have) checked and sealed the engine(s).



The ROTAX authorized Distributor organizing a national RMC may appoint before every RMC race a neutral Service Center which will be the only one allowed to re-seal an engine between scrutineering and the final in the case of an engine failure. During an IRMCE ROTAX Authorized Distributors and their Service centers are not allowed to re-seal an engine between scrutineering and the final.

The sealing of engines helps to reduce the times for scrutineering at races as during the race event just the accessories (carburetor, exhaust, radiator.....) must be checked.

Of course scrutineers can request to open and re-check an engine according to the Technical Specification, before or after a race or in case of a protest. If an engine seal has been broken (for which reason ever), the engine has to be checked completely according to the Technical Specification and must then be re-sealed by an ROTAX authorized Distributor or one of its Service Centers.

**All components outside the seal are part of the responsibility of the competitor to be in line with the technical regulations.**

### **9.3) Modification:**

Neither the engine nor any of its ancillaries may be modified in any way. "Modified" is defined as any change in form, content or function that represents a condition of difference from that originally designed. This is to include the addition and/or omission of parts and/or material from the engine package assembly unless specifically allowed within these rules. The adjustment of elements specifically designed for that purpose shall not be classified as modifications, i.e. carburetor and exhaust valve adjustment screws.

The repair of a thread on the crankcase (maximum of one threaded hole per engine) using a "heli-coil" or similar is allowed (except threads of the pick-up fixation).

The repair of a thread on the cylinder (maximum of one threaded hole per engine) using a "heli-coil" or similar is allowed.

Exception: the threads located under the crankcase to fix the crankcase on the engine mount may be repaired as needed.

**Genuine ROTAX components only, that are specifically designed and supplied for the 125 Junior MAX-, the 125 MAX- and the 125 MAX DD2 engine are legal, unless otherwise specified.**

**ANYTHING WHICH IS NOT EXPRESSILY ALLOWED IN THE TECHNICAL REGULATIONS IS FORBIDDEN.**

### **9.4) Internal additions:**

- a) No additional material may be added except in the case of engine repairs and shall only restore the engine or components to original specifications.
- b) The use of thermal barrier coatings/ceramic coatings on or in the engine and on or in the exhaust system is prohibited.  
The use of anti-friction coatings in or on the engine/engine components is prohibited.

- c) Customizing the cylinder head cover by painting is legal.

#### **9.5) Legal additions:**

- a) Chain guard, engine mount, temperature gauge and tachometer/hour meter, inline fuel filter, catch can mounting brackets and supplemental ignition coil mounting brackets, within the limits specified in this document.
- b) Non-tech items:  
Non-original fasteners, circlips, washers, throttle cable housing, zip-ties, fuel and pulse line (type and size) as well as length of coolant hoses are allowed unless otherwise specified.”
- b) When taking any dimensional reading, of the following technical regulation, in the order of accuracy of 0,1 mm or even more precise, the temperature of the part must be between +10°C and +30°C.
- d) Before taking any decision based on this regulation a check for available Bulletins is mandatory.  
They can be found under <http://www.rotax-kart.com/Max-Challenge/MAX-Challenge/Regulations>, and for the

#### **For the United States:**

-Bulletins can be found under [www.gorotax.com](http://www.gorotax.com)

- e) To avoid excessive noise and exhaust emissions revving the kart in the servicing park is not allowed (except a short function test).

#### **For the United States:**

-Please see Quiet Pit Rule in Sporting Regulations.

- f) It is the responsibility of the competitor to check his equipment (all components outside the engine seal and mentioned below), to assure that his equipment is in line with the technical specification below!

**9.6) Technical Specification (within the engine seal) for ROTAX kart engines 125 Junior MAX (15 kW) & 125 MAX (21 kW):**

<b><u>9.6.1) Squish gap:</u></b>	125 Junior MAX	1,20 – 1,80mm
	125 MAX	1,00 – 1,50mm

The squish gap must be measured with a certified slide gauge and by using a 2 mm tin wire. The crankshaft must be turned by hand slowly over TDC (top dead center) to squeeze the tin wire.

The squish gap must be measured on the left and right side in the direction of the piston pin.

The average value of the two measurements counts. Recommended 2mm tin wire: ROTAX part no. 580 130

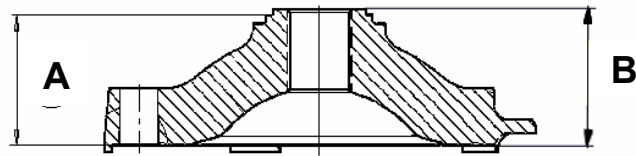
**9.6.2) Combustion chamber insert:**

- a) Cast identification (pos. 1) code has to be "223 389" or "223 389 1" or "223 389 2" or 223 389 2/1" or "223 389 2/2"
- b) Casted wording (pos. 2) "ROTAX" and/or (pos.3) "MADE IN AUSTRIA" must be shown.
- c) Heights of combustion chamber insert have to be 27,55 mm with a tolerance of +0,0/-0,1 mm (A) and 28,80 mm with a tolerance of +/- 0,2 mm (B).
- d) The profile of the combustion chamber insert has to be checked with a template (ROTAX part no. 277 390). The crack of light between the template

TYPICAL PICTURE



and the profile of the combustion chamber insert has to be the same over the whole profile.



**NOTE:** This check is just for reference. In case of doubt detailed measurements have to be performed to define conformity or non conformity.



#### **9.6.3) Piston with ring assembly:**

- Original, coated, aluminum, cast piston with one piston ring. The piston has to show on the inside the cast wording "ELKO" (1) and "MADE IN AUSTRIA" (2).
- Machined areas are: Top end of piston, outside diameter, groove for the piston ring, bore for the piston pin, inside diameter at bottom end of piston and some pre-existing factory removal (3) of flashing at the cut out of the piston skirt. All other surfaces are not machined and have cast surface.
- Original, magnetic, rectangular piston ring.  
Ring height :  $0,98 \pm 0,02$  mm. Piston ring is marked either with "ROTAX 215 547" or "ROTAX 215 548".

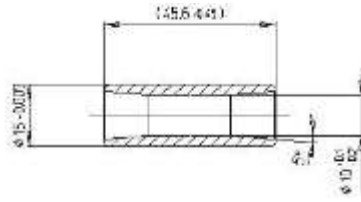


TYPICAL PICTURE

- "Window" type piston as delivered in the early days of production is no longer legal to be used.
- Any mechanical treatment or overwork is forbidden, changing the original surface is illegal (e.g. removal of carbon deposits). Cleaning without disturbing the original surface is allowed.

#### **9.6.4) Gudgeon pin:**

- Gudgeon pin is made out of magnetic steel.
- Dimensions must be according to the drawing.
- The minimum weight of the gudgeon pin must not be lower than 32,10 grams.



#### **9.6.5) Cylinder:**

- a) Light-alloy-cylinder with GILNISIL-plating. Any re-plating of cylinder is not allowed.
- b) Cylinder with one main exhaust port.
- c) Maximum bore of cylinder = 54,035 mm (measured 10 mm above the exhaust port).
- d) Cylinder has to be marked with the "ROTAX" logo (see pictures below).
- e) **125 Junior MAX:**  
Cylinder without pneumatic timed exhaust valve. Cylinder has to be marked either with identification code 223 999, 223 998 or 223 994



- f) **125 MAX:**  
Cylinder with pneumatic timed exhaust valve. Cylinder has to be marked either identification code 223 997, 223 996 or 223 993



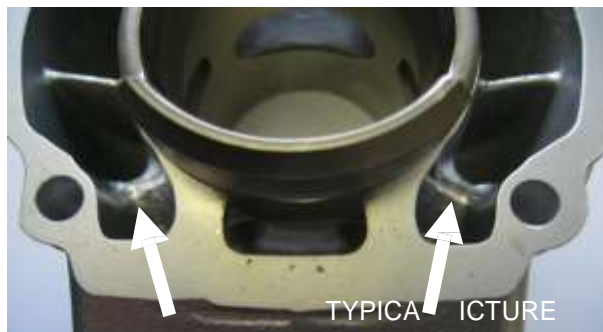
- g) Height of cylinder has to be 87 mm  $-0,05/+0,1$  mm (measured with a digital caliper min. length 200mm).



- h) Cylinder surface:

All transfer ports and passages have cast finish surface except some removal (done by the manufacturer) of cast burr at the inlet passage, exhaust port and passages. All ports have chamfered edges to prevent ring snagging. Any additional machining is not permitted.

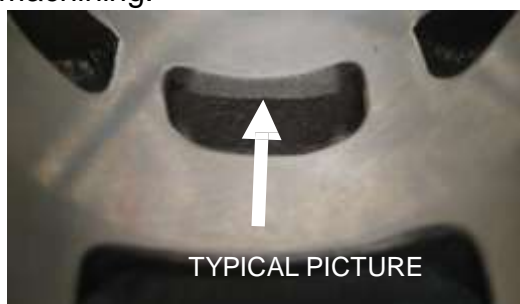
The top edge of exhaust port may show some pre-existing machining from the manufacturer. The sealing flange for the exhaust socket may show signs of machining from the manufacturer.



All ports have chamfered edges.  
Any additional machining is not permitted.



On cylinders marked 223 993 and 223 994 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.



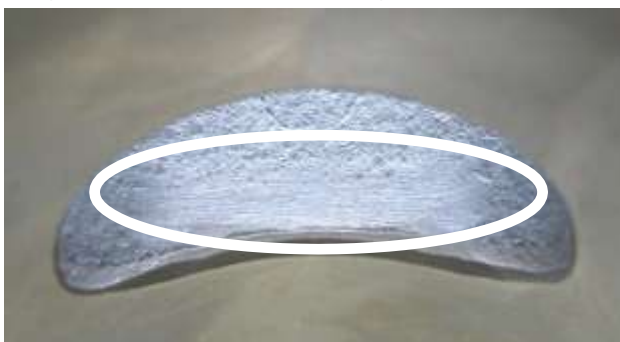
The top edge of the exhaust port may show either just a cast finish surface...



or signs of a CNC machining ...



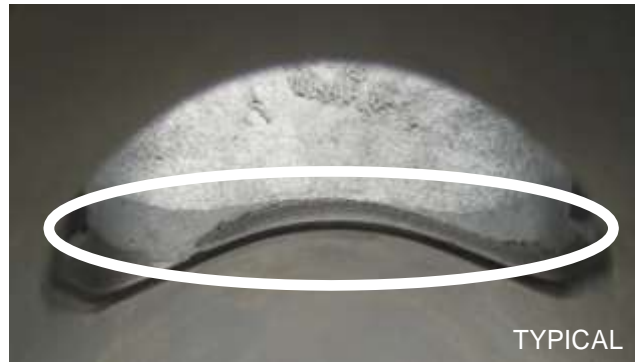
... or signs of CNC machining in combination with signs of manual grinding.



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.

At cylinders 223 993 and 223 994 exhaust port may show factory machining all around.





i) Exhaust port timing:

The "exhaust port timing" (distance from the top of the cylinder to the top of the exhaust port) has to be checked by means of the template (ROTAX part no. 277 397).

Insert the template into the cylinder, that the template is touching the cylinder wall and that the finger of the template is located in the middle of the exhaust port (highest point).

Move the template upwards, until the finger is touching the top edge of the exhaust port. Insert a filler gauge between the top of the cylinder and the template. It must not be possible to fit the feeler gauge specified below.

**125 Junior MAX: 0,90 mm for cylinder 223 999 / 998**

**1,10 mm for cylinder 223 994**

**125 MAX: 0,75 mm**

At cylinders 223 993 (125 MAX) it is also legal if the template doesn't fit in at all.

NOTE: Take care to use the corresponding gauge (JUN or MAX) of the template for the respective cylinder!



j) Exhaust valve (125 MAX only):

If the piston is moved in direction top of cylinder and first time covering completely the exhaust port, it must be possible to insert the exhaust valve gauge (ROTAX part no. 277 030) until it stops at the surface of the cylinder (a feeler gauge of 0,05 mm must not be possible to fit in at any area around).



- k) Modifying the exhaust valve gasket (ROTAX part no. 250 231) is illegal.

#### **9.6.6) Inlet system:**

- a) Inlet manifold is marked with the name "ROTAX" and the identification code "267 915".



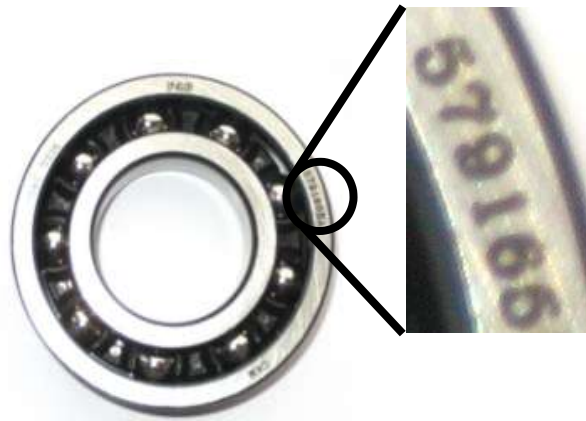
- b) Some factory flash removal may be present at the conjunction of the inside contour and the carburetor stop mounting face. This is a manual trimming operation consisting of a small corner break of less than 3 mm in width. No additional grinding or machining is permitted.
- c) The reed valve assy. is equipped with 2 petal stops and 2 reeds, each having 3 petals.
- d) The thickness of the reeds is 0,6 mm +/- 0,10 mm.

#### **9.6.7) Crankshaft:**

- a) Stroke 54,5 mm +/- 0,1 mm
- b) Con rod has to show forged numbers "213", "365" or "367" on shaft.

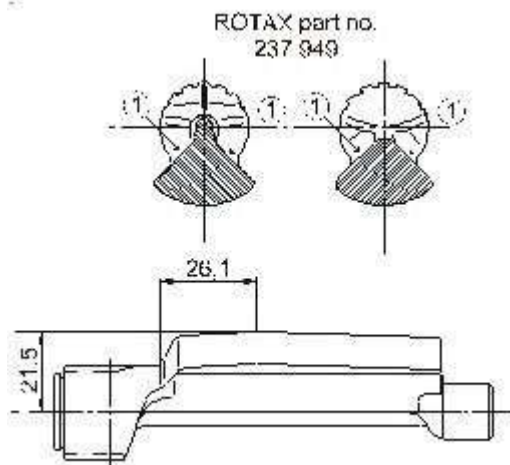


- c) Shaft of con rod is not machined (copper plated). Grinding or polishing of shaft of con rod is not permitted.
- d) Crankshaft main bearing 6206 from FAG only is allowed.  
(must be marked with code **579165BA** or **Z-579165.11.KL**)



#### **9.6.8) Balance shaft:**

- Balance shaft and balance gears must be installed.
- Configurations of part no. 237 949 (equal with 237 948) only is legal.
- Surface (1) is not machined and must show cast surface.
- Measurement from center of balance shaft to outer diameter of fly weight of balance shaft at defined length must not be lower than specified.
- The minimum weight of the dry balance shaft must not be lower than: 255 grams for balance shaft ROTAX part no. 237 949 (equal with 237 948).



#### **9.6.9) Crankcase:**

As supplied by the manufacturer. No grinding/polishing is permitted in the two main transfer passages as well as in the crank area.

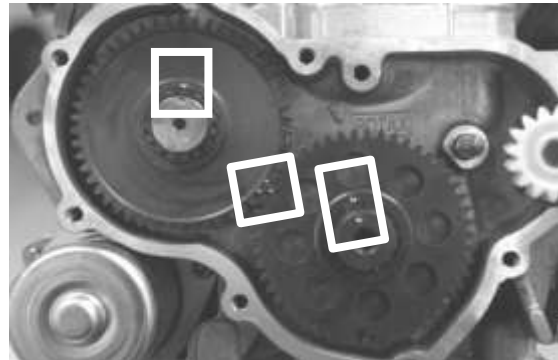
### **9.7) Technical Specification (outside the engine seal) for ROTAX kart engines 125 Junior MAX (15 kW) & 125 MAX (21 kW):**

It is the responsibility of the competitor to check his equipment (all components outside the engine seal and mentioned below), to assure that his equipment is in line with the technical specification below!

#### **9.7.1) Balance drive:**

- a) Only steel balance gears are legal to be used.
- b) Balance gears must be installed and must be aligned according to the instruction in the repair manual.

Mixing of steel balance gears of different width (6,0 and 9,0 mm) is strictly forbidden.



#### **9.7.2) Ignition system:**

- a) DENSO digital battery ignition, variable ignition timing, no adjustment necessary and possible. Race officials may request at any time that the competitor replaces the ignition coil with another unit provided by the race administration.
- b) The casting of the ignition coil has to show the following in casting "129000-" and "DENSO".
- c) Ignition coil must show 3 pins at the terminal.
- d) Connector housing of ignition coil must have either black or green color. Version as in attached picture with an extension wire (number 265571 engraved as in picture) is **not** legal to be used any more as of 01.03.2012



- e) The ignition coil has to be fixed by means of 2 original silent blocks to the gearbox cover. Only in case of chassis component interference with the original mounting location of the ignition coil, a supplementary extension bracket, rigidly constructed and fabricated of solid metal, of minimum dimensions and attached to the original case mounting holes, is permitted for mounting of the coil.
- f) Minimum length of ignition wire (high tension wire) is 210 mm from outlet of cable at ignition coil to outlet of cable at spark plug connector (=the visible length of wire). Ignition coil must be in working condition (to be tested in case of doubt).
- g) The pick-up must be marked with the numbers 029600-0710, followed by a variable production code in the 2nd line.

HINT: In case of doubt an easy check is to place a steel ball (3-5 mm in diameter) on the pickup (engine side), the steel ball must stay in the center of the pickup surface.



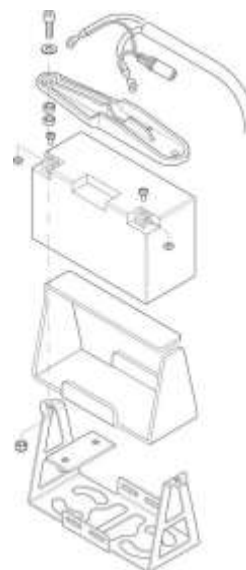
- h) Spark plug: DENSO Iridium IW 24 or 27 or 29 or 31 or 34

**For the United States:**

-NGK\_EG, or NGK BR\_EIX with any heat range is also legal.

-Spark Plug washer must be in place.

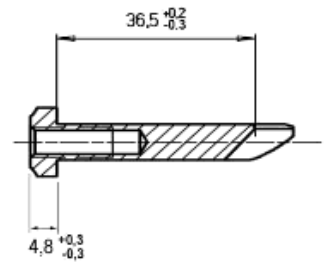
- i) Spark plug cap must be marked with "NGK TB05EMA".
- j) Original battery must be used,  
**YUASA YT7B-BS**  
**ROTAX RX7-12B or RX7-12L** (lithium iron phosphate type)
- k) Battery must be fitted with the original battery clamp and battery cover (see illustration below) and must be fixed to the chassis with both clamps (at least 4 screws).  
 Position of the battery is free.
- l) Battery must be mounted with all components as shown in the illustration below.



- m) To fit a second original mass cable (ROTAX part no. 264 910) is an allowed option.

#### **9.7.3) Exhaust valve:**

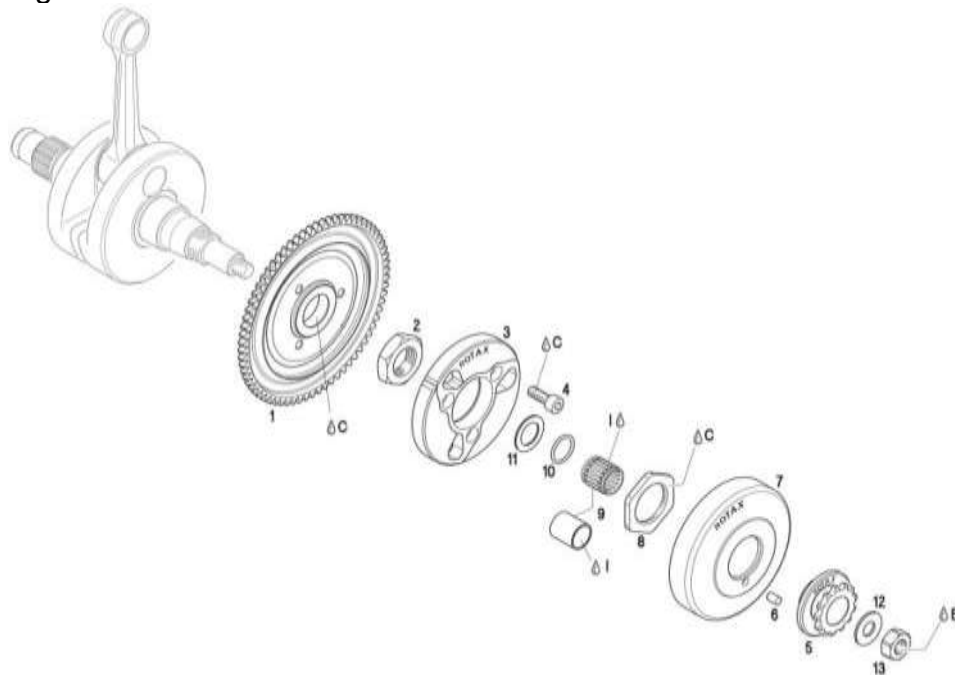
- a) Configuration 125 MAX only!  
As supplied by the manufacturer with no modification allowed. Compression spring must be fitted.
- b) Length of the exhaust valve is 36,5 mm  $+0,20$  mm /  $-0,30$  mm.
- c) Width of collar is 4,8 mm  $\pm 0,3$  mm



- d) Exhaust valve bellow  
Only the green colored exhaust valve bellow is legal to be used (ROTAX part no. 260 723).

#### **9.7.4) Centrifugal clutch:**

- a) Dry centrifugal clutch, engagement maximum at 4.000 rpm.  
That means, that the kart (without driver) must start to move latest at an engine speed of maximum 4.000 rpm. There are two versions of the clutch shoe (element part # 3 on the diagram) and both are legal to be used. The older version of the clutch shoe can be either untreated or nitrated configuration.



- b) Engines must be fitted the needle cage bearing (item 9) or plain bearing (for 11 teeth sprocket) as well as O-Ring (item 10) only.  
No extra lubrication or additional substance allowed inside the clutch drum additional to the grease that originates from lubrication of the needle cage bearing and enters the clutch area.

## TYPICAL PICTURES



Picture shows worst case scenario in case grease exits the bearing area even O-Ring is installed.

Only fixation nut as well as inside of drum show signs of grease, running surface of clutch is completely dry.

- c) Steel clutch (both versions) and clutch drum must be within following specifications.

- Height of clutch



Minimum: 11,45 mm

- Thickness of clutch shoe





Measurement has to be done at the 3 open ends of the clutch shoes, 5 - 10 mm from the machined groove (all clutch shoes must be completely closed at measurement - no gap).

No measurement may be below 24,10 mm

- Outer diameter of clutch drum



Diameter has to be measured with a sliding caliper just beside the radius from the shoulder (not at the open end of the clutch drum).

Minimum diameter: 89,50 mm

- Inner diameter of clutch drum



The inner diameter has to be measured with a sliding caliper. The measurement has to be done in the middle of the clutch drum (in the contact area of the clutch drum).

Maximum diameter: 84,90 mm



- Height of sprocket with clutch drum assembly

Minimum height: 33,90 mm

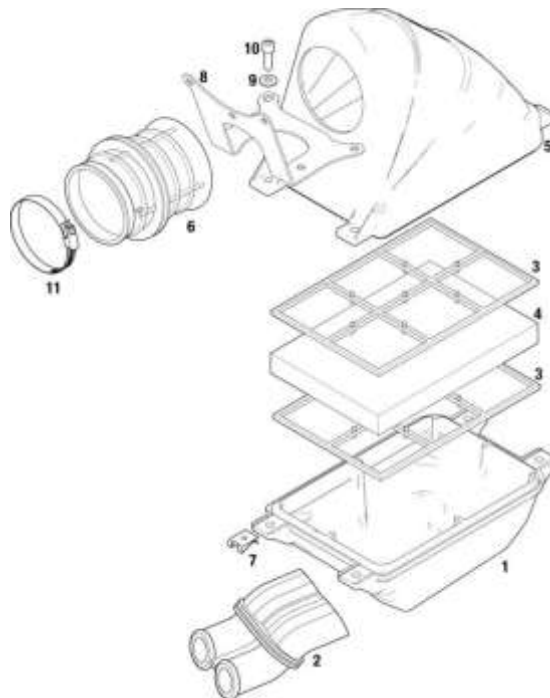


#### **9.7.5) Intake silencer:**

- Intake silencer with integrated, washable air filter has to be used with all parts as shown at illustration and has to be mounted on the support bracket with two screws (in dry and wet race condition).

Intake silencer tube (pos 2) as well as carburetor socket (pos 6) are only legal if marked with "ROTAX".

Parts marked with "APRILIA" are no longer legal to be used.



- Intake silencer case bottom is marked on the inside with the ROTAX part no. 225 015.
- Intake silencer case, top is marked on the inside with the ROTAX part no. 225 025.

- d) Air filter must be installed as shown in illustrations above.

#### **9.7.6) Carburetor:**

- a) DELL'ORTHO carburetor VHSB 34" cast in the housing of the carburetor.
- b) "QD" or "QS" stamped in the housing of the carburetor.
- c) The complete inlet bore in the casting of the carburetor must show cast surface.
- d) The carburetor slide must show with size "40" in casting and the bottom end of the slide must show cast surface.
- e) Jet needle stamped with "K98" only.
- f) Settings of the carburetor adjustment screws are free.
- g) Only two floats marked "3,6 gr" or "5,2 gr" are legal to be used. *Floats must be used in matched pairs.*
- h) All jets must be correctly seated and securely fitted at any time (tightened)!
- i) A minimum required size of main jet may be determined for each race event by a "Supplementary Regulation".
- j) The height of the two arms of the float lever must be within the slot of the carburetor gauge (ROTAX part no. 277 400) by their normal weight measured at carburetor housing without gasket in reverse upright position.



- k) Needle valve assembly stamped "150"
- l) Needle of needle valve marked with diamond symbol "INC" only.



- m) Start jet is stamped with the digits "60"
- n) Needle jet:
  - stamped with "FN 266"
  - Total length: 54,00 +/- 0,3 mm



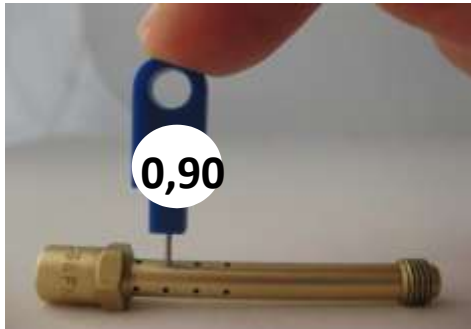
- Length of bottom section: 11,50 +/- 0,2 mm



- Top bore diameter 2,60 +/- 0,15 mm (measured 2mm inside)



- 4 x4 cross holes diameter:  
Plug gauge 0,90 mm may not enter one of the 16 cross holes (use jet gauge set ROTAX part no. 281 920).



o) Idle jets:

- Idle jets stamped 30, 35, 40, 45, 50, 55 and 60 only are legal to be used. It is **not** mandatory that idle jet and idle emulsion tube show the same size.
- Plug gauge 0,65 mm may **not** enter the bore of the idle jet 60 (use jet gauge set ROTAX part no. 281 920).



p) Idle emulsion tube:

- Idle emulsion tube stamped 30, 35, 40, 45, 50, 55 and 60 are legal to be used.  
It is **not** mandatory that idle emulsion tube and idle jet show the same size.
- Plug gauge 0,65 mm may **not** enter the bore (use jet gauge set ROTAX part no. 281 920).



- Plug gauge 0,65 mm may **not** enter one of the 4 cross bores (use jet gauge set ROTAX part no. 281 920).



q) Carburetor insert:

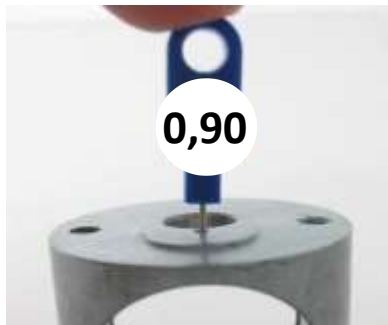
- Carburetor insert must show stamping "8.5"



- Angular bore: Plug gauge **0,60** may not fit (use jet gauge set ROTAX part no. 281 920).



- Vertical bore: Plug gauge **0,90** may not fit (use jet gauge set ROTAX part no. 281 920).



r) Atomizer:

- Remove atomizer from carburetor body by means of venturi tool set (ROTAX part no. 676 034); Atomizer, total length: 23,75 +/- 0,45 mm



- Atomizer, length of cylindrical part: 15,75 +/- 0,25 mm



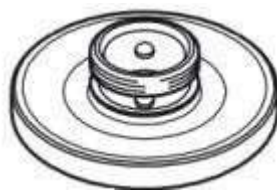
- Atomizer, dimension of cutaway: 6,00 +/- 0,15 mm



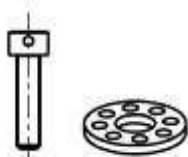
- Atomizer, diameter of cross bore: 4,05 +/- 0,15 mm



- s) Optional carburetor plug screw marked "ROTAX" (ROTAX part no. 261 030) is legal to be used.



- t) Optional items ROTAX part no. 240 184 (allen screw, 2pcs.) and ROTAX part no. 261 552 (main jet cup, 1pcs.) are legal to be used. These parts optionally replace the parts 262 020 and 261 550 in the case of sealing a carburetor.



- u) The two vent fittings must be connected with the original air vent hose min 155 mm (ROTAX part no. 260 260). The location of the opening has to be placed at the rear side of the carburetor.

#### **9.7.7) Fuel pump:**

MIKUNI diaphragm pump, must be mounted on the support bracket (on the bottom or sideways) for the intake silencer.

#### **9.7.8) Fuel filter:**

The 2 original fuel filter versions only (see attached pictures) are allowed to be fitted between the fuel tank and the fuel pump.



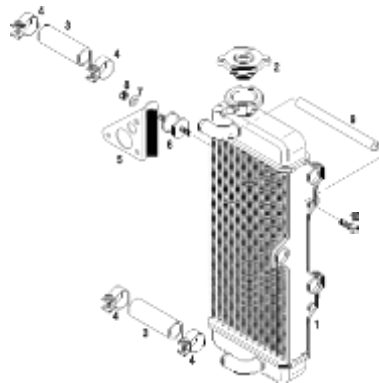
No additional parts except the fuel line, the fuel pump as well as the original fuel filter are legal to be mounted between fuel tank and carburetor.

#### **9.7.9) Radiator:**

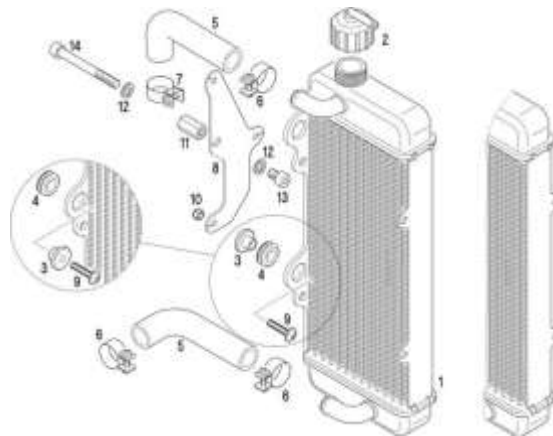
- Single aluminum radiator as shown in illustrations. Name "ROTAX" stamped in the side of version 3.
- Version 1 & 2: Cooling area: height: 290 mm, width: 133 mm  
Version 3: Cooling area: height: 290 mm, width: 138 mm
- Version 1 & 2: thickness of radiator = 32 mm  
Version 3: thickness of radiator = 34 mm
- Place of fixing the radiator is on right side of engine.
- Radiator must be mounted with all components as shown in the illustration either like version 1 & 2 or like version 3.

- f) At version 2 there are 2 legal options to mount the radiator to the retaining plate (see drawing for details). At version 2 there are 2 different radiators with 2 different positions of the retaining plates (either pointing forward or backwards).
- g) No additional non original cooling device is allowed.  
For version 1, 2 and 3 tape applied around the radiator is the only allowed air flow control. Tape may not be removed from the radiator during operation on the track. All other means of air flow control through the radiator are prohibited (except of the original plastic flap for version 3). Only none-printed tape (no advertising) is allowed. Removal of the original flap is an acceptable configuration.
- h) The removal of the thermostat from the cylinder head cover is an acceptable configuration.

#### Version 1



#### Version 2







**9.7.10) Radiator coolant:**

As glycol coolants are prohibited, plain water without any additives has to be used.

**9.7.11) Exhaust system:**

- a) Must be as supplied by ROTAX and cannot be modified except for the replacement of the silencer absorption material and the use of threaded fasteners in place of the rivets for securing the silencer end cap.
- b) Standard exhaust socket must be used.
- c) Exhaust pipe with after muffler as shown in illustrations.  
Both versions (version welded on after muffler and version with after muffler fixed by 2 springs) are legal to be used.

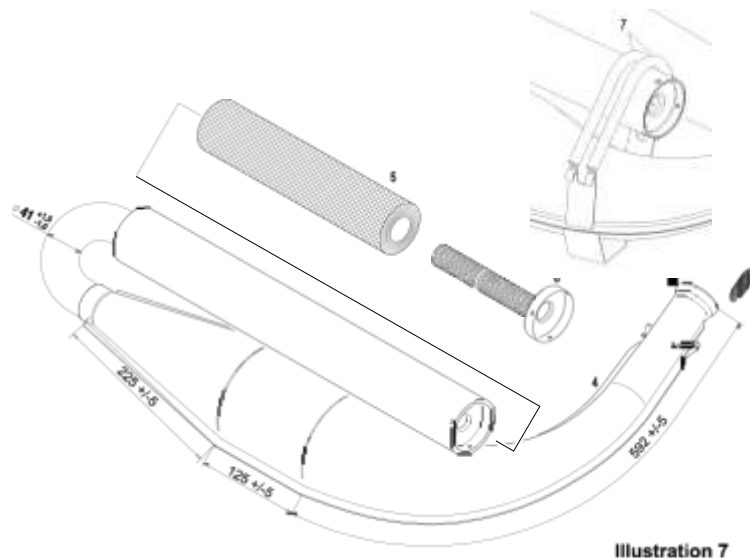
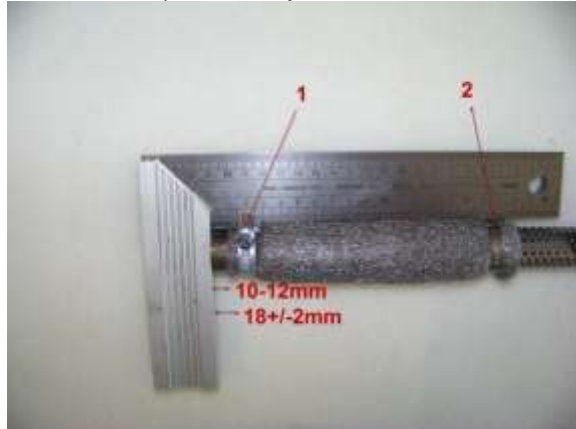


Illustration 7

- d) Diameter of hole of end cap of (pos. 6, illustration above): max. 21,0mm
- e) Length of inlet cone: 592 mm +/-5 mm (measured on outside from beginning of exhaust pipe until beginning of cylindrical part).
- f) Length of cylindrical part of exhaust pipe:  
125 mm +/-5 mm.
- g) Length of end cone: 225 mm, +/-5 mm.

- h) Outside diameter of 180° bent tube:  
41mm +1,5 mm/–1,0 mm (measured at beginning and end of bend).
- i) Just one piece of original isolating mat is allowed to be used.  
The original exhaust system (tuned pipe and silencer) may not be modified, except for the addition of extra elements for further noise reduction.
- j) Welding at the exhaust system is only allowed in the case of a repair.
- k) Additional to the standard isolation mat a special steel isolation mat of the square dimension of 165 +10 mm is legal (not mandatory) to be assembled underneath the standard isolation mat as in following illustration (ROTAX part no. of kit 297 983).



Clamp (1) must be fitted at a distance of 18+/-2mm, measured from the end of the tube.

Clamp (2) must be fitted at the end area of the steel isolation mat.  
10-12mm is a specification for assembly purpose only!  
Both clamps are mandatory.

- l) For measuring the exhaust gas temperature, it is allowed to weld on top a socket on the exhaust, 50 - 80 mm from the ball joint.
- m) Usage of maximum 4 pieces of original ROTAX exhaust springs to fix the exhaust to the cylinder are allowed. (no safety wire allowed in exhaust flange area).
- n) Unpainted exhaust system as delivered in the first years of production is not legal to be used.

#### **9.7.12) Noise emissions:**

- a) Noise isolating mat (see illustration exhaust system) has to be replaced by an original ROTAX spare part, if the noise emission is exceeding 92 dB (A).
- b) Noise emission measuring procedure: the measuring place has to be at section of the track where the engine is operated under full load and at a rpm range of 11.000 to 12.000 rpm. The microphone has to be installed 1 meter above the level of the track in a rectangular angle to the track. The distance between the microphone and the kart on the ideal line on the track has to be 7,5 meters. The kart has to be operated under full load at the ideal line on the track.

**9.8) Technical Specification (within the engine seal) for ROTAX kart engine 125 MAX DD2 (24 kW):**

**9.8.1) Squish gap:** 125 MAX DD2                      1,10 mm - 1,50 mm

The squish gap must be measured with a certified slide gauge and by using a 2 mm tin wire. The crankshaft must be turned by hand slowly over TDC (top dead center) to squeeze the tin wire.

The squish gap must be measured on the left and right side in the direction of the piston pin.

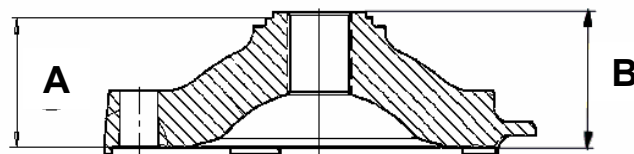
The average value of the two measurements counts. Recommended 2mm tin wire: part no. 580 130

**9.8.2) Combustion chamber insert:**

- a) Cast identification (pos. 1) code has to be "223 389" or "223 389 1" or "223 389 2" or 223 389 2/1" or "223 389 2/2"
- b) Casted wording (pos. 2) "ROTAX" and/or (pos.3) "MADE IN AUSTRIA" must be shown.



- c) Heights of combustion chamber insert have to be 27,55 mm with a tolerance of +0,0/-0,1 mm (A) and 28,80 mm with a tolerance of +/- 0,2 mm (B).
- d) The profile of the combustion chamber insert has to be checked with a template (ROTAX part no. 277 390). The crack of light between the template and the profile of the combustion chamber insert has to be the same over the whole profile.

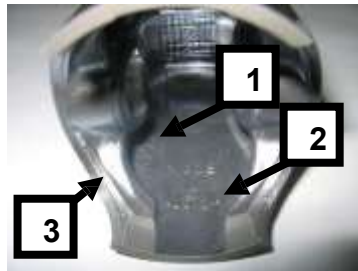


**NOTE:** This check is just for reference, in case of doubt detailed measurements have to be performed to define conformity or non conformity.

**9.8.3) Piston with ring assembly:**

- a) Original, coated, aluminum, cast piston with one piston ring. The piston has to show on the inside the cast wording "ELKO" (1) and "MADE IN AUSTRIA" (2).

- b) Machined areas are: Top end of piston, outside diameter, groove for the piston ring, bore for the piston pin, inside diameter at bottom end of piston and some pre-existing factory removal (3) of flashing at the cut out of the piston skirt. All other surfaces are not machined and have cast surface.



- c) Original, magnetic, rectangular piston ring.  
Ring height : 0,98 +/- 0,02 mm  
Piston ring is marked either with "ROTAX 215 547" or "ROTAX 215 548".

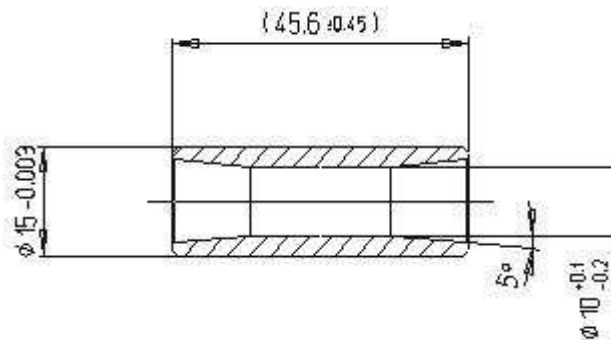


TYPICAL PICTURE

- d) "Window" type piston as delivered in the early days of production is no longer legal to be used.  
e) Any mechanical treatment or overwork is forbidden, changing the original surface is illegal (e.g. removal of carbon deposits).

#### **9.8.4) Gudgeon pin:**

- a) Gudgeon pin is made out of magnetic steel.  
b) Dimensions must be according to the drawing.  
c) The minimum weight of the gudgeon pin must not be lower than 32,10 grams.



#### **9.8.5) Cylinder:**

- a) Light-alloy-cylinder with GILNISIL-plating.  
Any re-plating of cylinder is not allowed.  
b) Cylinder with one main exhaust port and two side exhaust ports. Maximum bore of cylinder = 54,035 mm (measured 10 mm above the exhaust port).  
c) Cylinder has to be marked with the "ROTAX" logo (see picture below).  
d) Cylinder with pneumatic timed exhaust valve.  
e) Cylinder has to be marked with the identification code 613 930, 613 931 or 613 933

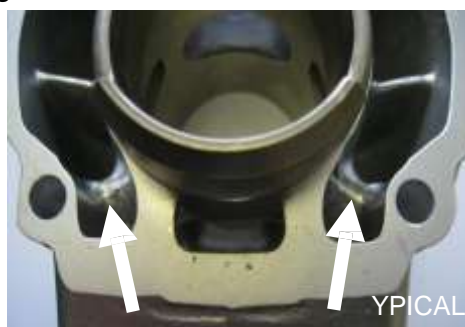


- f) Height of cylinder has to be 86,7 mm  $-0,05/+0,1$  mm (measured with a digital caliper min. length 200mm).



- g) Cylinder surface:

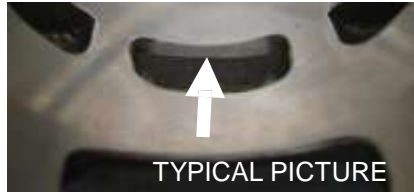
All transfer ports and passages have cast finish surface except some removal (done by the manufacturer) of cast burr at the inlet passage and exhaust port and passages. All ports have chamfered edges to prevent ring snagging. Any additional machining is not permitted. The top edge of exhaust port may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



All ports have chamfered edges.  
Any additional machining is not permitted.



On cylinders marked 613 933 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...

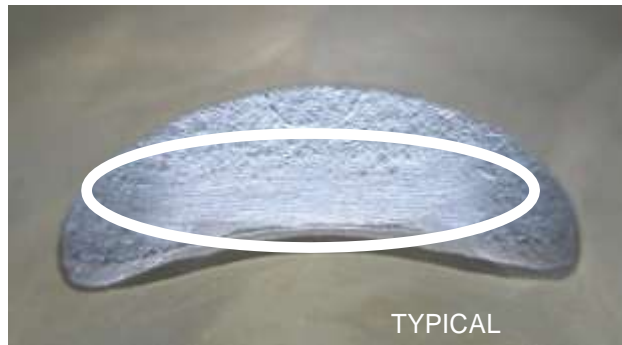


or signs of a CNC machining ...



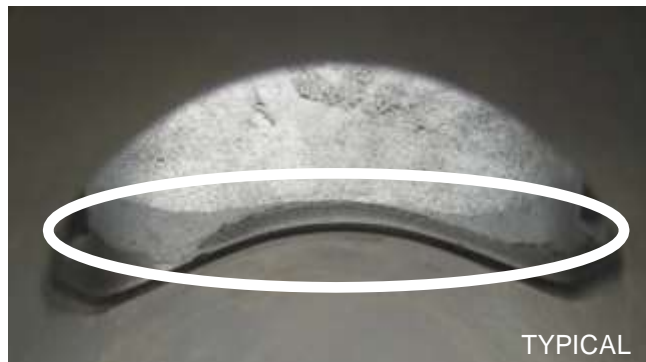


or signs of CNC machining in combination with signs of manual grinding.



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.

At cylinder 613 933 exhaust port may show factory machining all around.



h) Exhaust port timing:

The "exhaust port timing" (distance from the top of the cylinder to the top of the exhaust port) has to be checked by means of the template (ROTAX part no. 277 397).

Insert the template into the cylinder, that the template is touching the cylinder wall and that the finger of the template is located in the middle of the exhaust port (highest point).

Move the template upwards, until the finger is touching the top edge of the exhaust port. Insert a filler gauge between the top of the cylinder and the template. It must not be possible to fit the feeler gauge specified (125 MAX DD2: 0,75 mm).

At cylinders 613 933 (125 MAX DD2) it is also legal if the template doesn't fit in at all.

**NOTE:** Take care to use the corresponding gauge of the template (DD2) for the respective cylinder!



- i) Exhaust valve:  
If the piston is moved in direction top of cylinder and first time covering completely the exhaust port, it must be possible to insert the exhaust valve gauge (ROTAX part no. 277 030) until it stops at the surface of the cylinder (a feeler gauge of 0,05 mm must not be possible to fit in at any area around).



- j) Modifying the exhaust valve gasket (ROTAX part no. 250 231) is illegal.

#### **9.8.6) Inlet system:**

- a) Inlet manifold is marked with the name "ROTAX" and the identification code "267 410".



- b) 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.



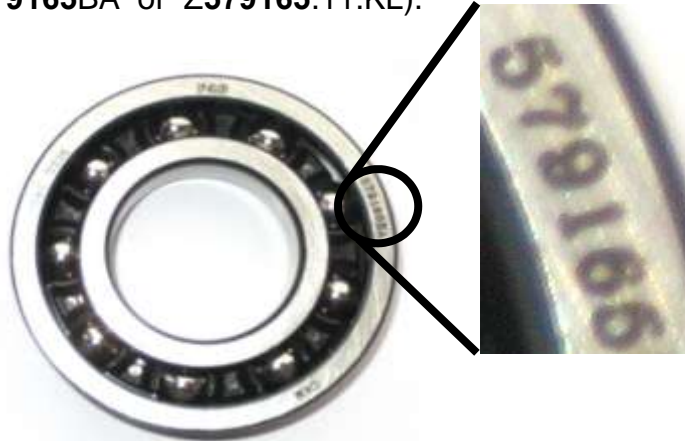
- c) The reed valve assy. is equipped with 2 petal stops and 2 reeds, each having 3 petals.
- d) The thickness of the reeds is 0,6 mm +/- 0,10 mm.

#### **9.8.7) Crankshaft:**

- a) Stroke 54,5 mm +/-0,1 mm
- b) Con rod has to show forged numbers "213", "365" or "367" on shaft.



- c) Shaft of con rod is not machined (copper plated). Grinding and polishing of shaft of con rod is not permitted.
- d) Crankshaft main bearing 6206 from FAG only is allowed (must be marked with code **579165BA** or **Z579165.11.KL**).



#### **9.8.8) 2-speed gearbox:**

- a) Primary shaft with 19 teeth for 1st gear and 24 teeth for 2nd gear.
- b) Idle gear for 1st gear has to have 81 teeth.
- c) Idle gear for 2nd gear has to have 77 teeth.

#### **9.8.9) Crankcase:**

As supplied by the manufacturer. No grinding/polishing is permitted in the two main transfer passages as well as in the crank-area.

**9.9) Technical Specification (outside the engine seal) for ROTAX kart engines 125 MAX DD2 (24 kW):**

**9.9.1) Ignition system:**

- a) DENSO digital battery ignition, variable ignition timing, no adjustment necessary and possible. Race officials may request at any time that the competitor replace the ignition coil with another unit provided by the race administration.
- b) The casting of the ignition coil has to show the following in casting "129000" and "DENSO".
- c) Ignition coil must show 4 or 6 pins at the terminal.
- d) Connector housing of ignition coil must have either white or grey color.

There is also a legal version with number "266 750" (see below picture).



- e) The ignition coil has to be fixed by means of 2 original silent blocks to the crankcase. Only in case of chassis component interference with the original mounting location of the ignition coil, a supplementary extension bracket, rigidly constructed and fabricated of solid metal, of minimum dimensions and attached to the original case mounting holes, is permitted for mounting of the coil.
- f) Minimum length of ignition wire (high tension wire) is 210 mm from outlet of cable at ignition coil to outlet of cable at spark plug connector ( = the visible length of wire )  
Ignition coil must be in working condition (to be tested in case of doubt).
- g) The pick-up must be marked with the numbers 029600-0710, followed by a variable production code in the 2nd line.

HINT: In case of doubt an easy check is to place a steel ball (3-5 mm in diameter) on the pickup (engine side), the steel ball must stay in the center of the pickup surface.



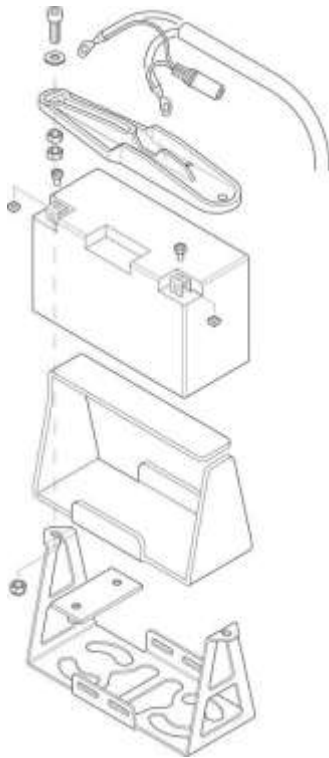
- h) Spark plug: DENSO Iridium IW 24 or 27 or 29 or 31 or 34  
Spark plug cap must be marked with "NGK TB05EMA".

**For the United States:**

- NGK\_EG, or NGK BR\_EIX with any heat range is also legal.
- Spark Plug washer must be in place.



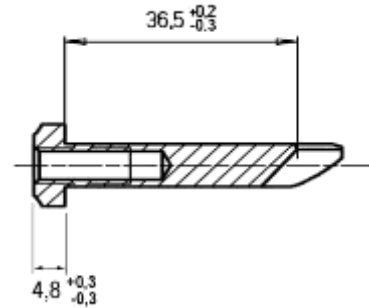
- i) Original battery must be used,  
**YUASA YT7B-BS**  
**ROTAX RX7-12B or RX7-12L** (lithium iron phosphate type)
- j) Battery must be fitted with the original battery clamp and battery cover (see illustration below) and must be fixed to the chassis with both clamps (at least 4 screws).  
Position of the battery is free.
- k) Battery must be mounted with all components as shown in the illustration below.



- l) To fit a second original mass cable (ROTAX part no. 264 910) is an allowed option.

### **9.9.2) Exhaust valve:**

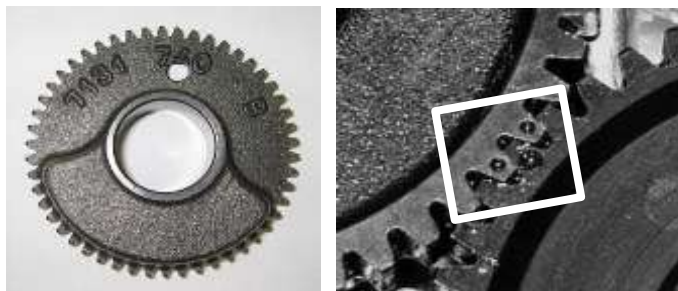
- a) As supplied by the manufacturer with no modification allowed.  
Compression spring must be fitted.
- b) Length of the exhaust valve is 36,5 mm  $+0,20$  mm /  $-0,30$  mm.
- c) Width of collar is 4,8 mm  $\pm 0,3$  mm



- d) Exhaust valve bellow: only the green colored exhaust valve bellow is legal to be used (ROTAX part no. 260 723).

### **9.9.3) Balance drive:**

- a) Balance drive gear must be fitted on crank shaft.
- b) Balance gear must be fitted on primary shaft and must be aligned with the balance drive gear according to the instruction in the repair manual.
- c) Fly weight of balance gear must show cast surface (old version only).



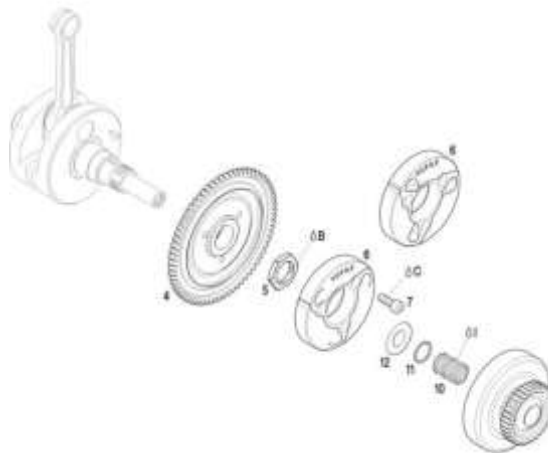
d) New version:



- e) Fly weight of balance gear can show machined surface (new version only).  
Dimension A (widest part of balance weight) must be either 53 mm +/- 0,5  
or 57 mm +/- 0,5  
The minimum weight of a dry balance gear including bearing (new version  
only) must not be lower than 240 grams.

#### **9.9.4) Centrifugal clutch:**

- a) Dry centrifugal clutch, engagement rpm maximum at 4.000 rpm.  
This means that the kart (without driver) must start to move latest at an  
engine speed of maximum 4.000 rpm.  
Both clutch element versions as in illustration are legal to be used.  
Old version clutch element can be either untreated or nitrated  
configuration.



- b) Steel clutch and clutch drum of new clutch version must be within following  
specifications.

- Height of clutch:



Minimum: 14,45 mm

- Thickness of clutch shoe



Measurement has to be done at the 3 open ends of the clutch shoes, 5 - 10 mm from the machined groove (all clutch shoes must be completely closed at measurement - no gap). No measurement may be below 24,10 mm.

- Outer diameter of clutch drum



Diameter has to be measured with a sliding caliper just beside the radius from the shoulder (not at the open end of the clutch drum).  
Minimum diameter: 89,50 mm.

- Inner diameter of clutch drum



The inner diameter has to be measured with a sliding caliper. The measurement has to be done in the middle of the clutch drum (in the contact area of the clutch drum).  
Maximum diameter: 84,90 mm.

- Height of sprocket with clutch drum assembly



Minimum height: 39,50 mm

#### **9.9.5) Primary drive:**

- Original primary drive gears of following gear ratio options must be used.  
Only mentioned pairs are legal to be used.

Drive gear	Driven gear
32	65
33	64
34	63
35	62
36	61
37	60
38	59



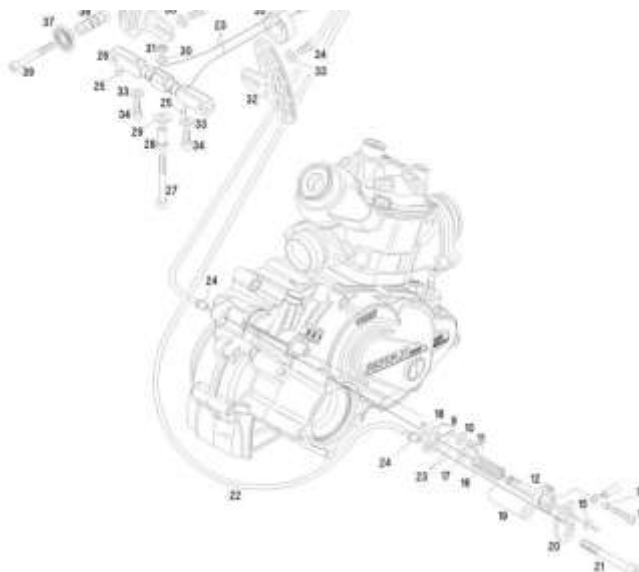
- A specific primary gear ratio may be determined for each race event by a "Supplementary Regulation".

#### **9.9.6) Gear shifting:**

- a) The 2-speed gearbox has to be operated with the one of the 2 available original supplied shift paddle configurations on the steering wheel via the two bowden cables.
- b) Cutting of the original shift paddle or adding of pads to the shift paddle is allowed to adjust the paddle to specific steering wheels (for plastic paddle only). For aluminum paddle version no cutting or adding of non original parts or material is allowed.
- c) Original hub for steering wheel must be used (for plastic paddle only).



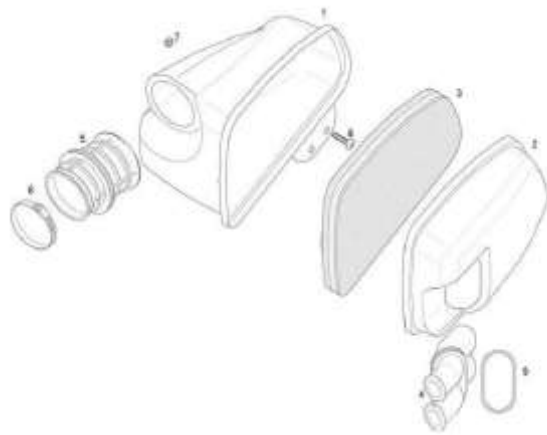
Version 2  
(aluminium paddles)





### **9.9.7) Intake silencer:**

- a) Intake silencer with integrated washable air filter as shown in illustration below.
- b) The intake silencer case is marked on the inside with the ROTAX part no. 225 012.
- c) The intake silencer cover is marked on the inside with the ROTAX part no. 225 022.
- d) The air filter is marked with the ROTAX part no. 225 052.
- e) The air filter must be assembled between the intake silencer case and the intake silencer cover that the whole area of the intake silencer case is covered.
- f) It's allowed to seal the top of the airbox using adhesive tape.
- g) It is mandatory that the O-ring (pos. 9) is fitted on the intake silencer tube (pos. 4).



- h) Intake silencer tube (pos. 1) as well as the carburetor socket (pos. 5) are only legal if marked with "ROTAX".  
Parts marked with "APRILIA" are no longer legal to be used.

### **9.9.8) Carburetor:**

- a) DELL'ORTO carburetor: VHSB 34" cast in the housing of the carburetor.
- b) "QD" or "QS" stamped in the housing of the carburetor.
- c) The complete inlet bore in the casting of the carburetor must show cast surface.
- d) The carburetor slide must show with size "40" in casting and the bottom end of the slide must show cast surface.
- e) Jet needle stamped with "K98" only.
- f) Settings of the carburetor adjustment screws are free.
- g) Only two floats marked "3,6 gr" or "5,2 gr" are legal to be used. *Floats must be used in matched pairs.*
- h) All jets must be correctly seated and securely fitted at any time (tightened)!
- i) A minimum required size of main jet may be determined for each race event by a "Supplementary Regulation".
- j) The height of the two arms of the float lever must be within the slot of the carburetor gauge (ROTAX part no. 277 400) by their normal weight measured at carburetor housing without gasket in reverse upright position.



- k) Needle valve assembly stamped "150" or "200".
- l) Needle of needle valve marked with diamond symbol "INC" only.



- m) Start jet is stamped with the digits "60".
- n) Needle jet:
  - stamped with "FN 266".
  - Total length: 54,00 +/- 0,3 mm.



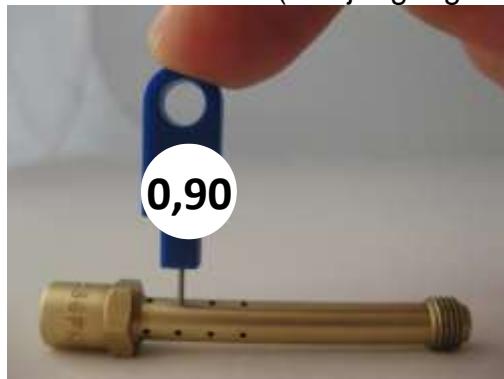
- Length of bottom section: 11,50 +/- 0,2 mm.



- Top bore diameter 2,60 +/- 0,15 mm (measured 2mm inside)



- 4 x4 cross holes diameter: plug gauge 0,90 mm may not enter one of the 16 cross holes (use jet gauge set ROTAX part no. 281 920).



o) Idle jet:

- Idle jets stamped 30, 35, 40, 45, 50, 55 and 60 only are legal to be used. It is **not** mandatory that idle jet and idle emulsion tube show the same size.
- Plug gauge 0,65 mm may **not** enter the bore of the idle jet 60 (use jet gauge set ROTAX part no. 281 920).



- Idle emulsion tube stamped 30, 35, 40, 45, 50, 55 and 60 are legal to be used It is **not** mandatory that idle emulsion tube and idle jet show the same size.
- Plug gauge 0,65 mm may **not** enter the bore (use jet gauge set ROTAX part no. 281 920).

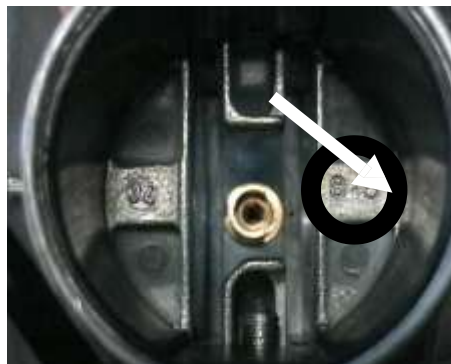


- Plug gauge 0,65 mm may **not** enter one of the 4 cross bores (use jet gauge set ROTAX part no. 281 920).



p) Carburetor insert:

- Carburetor insert must show stamping "8.5"



- Angular bore: Plug gauge **0,60** may not fit (use jet gauge set ROTAX part no. 281 920).



- Vertical bore: Plug gauge **0,90** may not fit (use jet gauge set ROTAX part no. 281 920).



q) Atomizer:

- Remove atomizer from carburetor body by means of venturi tool set (ROTAX part no. 676 034).  
Atomizer, total length: 23,75 +/- 0,45 mm



- Atomizer, length of cylindrical part: 15,75 +/- 0,25 mm



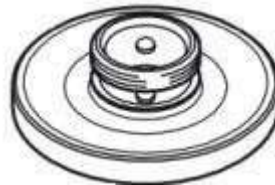
- Atomizer, dimension of cutaway: 6,00 +/- 0,15 mm



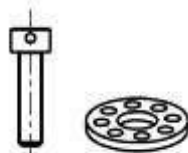
- Atomizer, diameter of cross bore: 4,05 +/- 0,15 mm



- r) Optional carburetor plug screw marked "ROTAX" (ROTAX part no. 261 030) is legal to be used.



- s) Optional items ROTAX part no. 240 184 (allen screw, 2pcs.) and ROTAX part no. 261 552 (main jet cup, 1pcs.) are legal to be used. These parts optionally replace the parts 262 020 and 261 550 in the case of sealing a carburetor.



- t) The two vent fittings must be connected with the original air vent hose min 155 mm (ROTAX part no. 260 260). The location of the opening has to be placed at the rear side of the carburetor.

#### **9.9.9) Fuel pump:**

- a) Original MIKUNI diaphragm pump must be fitted by means of two original silent blocks to the chassis or the engine.  
Original MIKUNI diaphragm pump.



- b) Center line of fuel pump may not be higher than the center line of the carburetor.

#### **9.9.10) Fuel filter:**

The 2 original fuel filter versions only (see attached pictures) are allowed to be fitted between the fuel tank and the fuel pump.

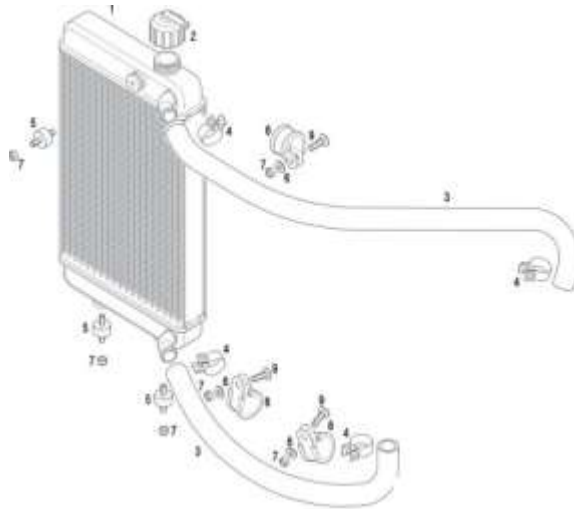


No additional parts except the fuel line, the fuel pump as well as the original fuel filter are legal to be mounted between fuel tank and carburetor.

#### **9.9.11) Radiator:**

- a) Single aluminum radiator (see illustration below).
- b) Name "ROTAX" is stamped in the top/side of the radiator.
- c) Version 1: Cooling area: Height: 284 mm, width: 202 mm  
Version 2: Cooling area: Height: 290 mm, width: 196 mm
- d) Version 1: Thickness of radiator = 32 mm  
Version 2: Thickness of radiator = 34 mm
- e) The radiator must be mounted on the left side of the kart beside the seat.
- f) The highest point of the radiator with cap may not be higher than 400 mm above the main tube of the kart chassis.
- g) No additional non original cooling device is allowed  
For version 1 and 2 tape applied around the radiator is the only allowed air flow control. Tape may not be removed from the radiator during operation on the track. All other means of air flow control through the radiator are prohibited (except of the original plastic flap for version 2). Only none-printed tape (no advertising) is allowed. Removal of the original flap is an acceptable configuration.
- h) The removal of the thermostat from the cylinder head cover is an acceptable configuration.

Version 1



Version 2



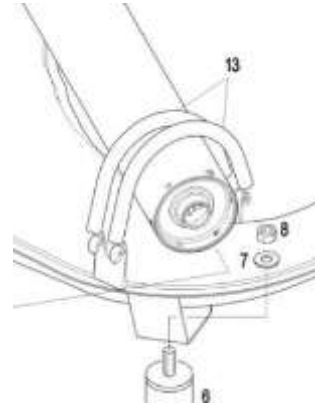
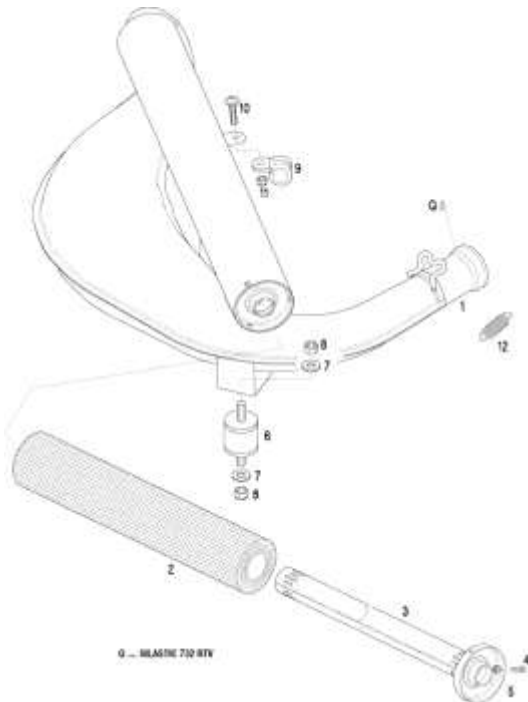
**9.9.12) Radiator coolant:**

As glycol coolants are prohibited, plain water without any additives has to be used.

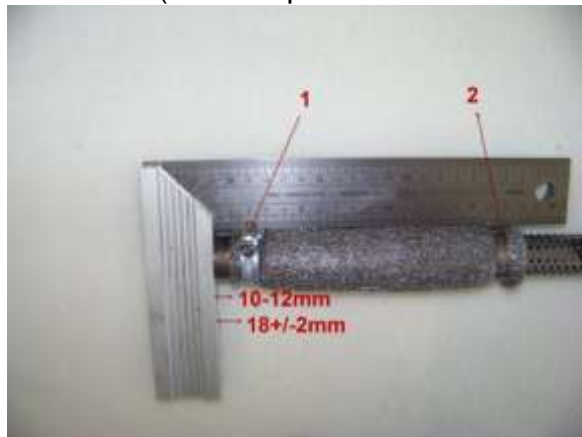
**9.9.13) Exhaust system:**

- a) Must be as supplied by ROTAX and cannot be modified except for the replacement of the silencer absorption material and the use of threaded fasteners in place of the rivets for securing the silencer end cap.
- b) Standard exhaust socket must be used.
- c) Exhaust pipe with after muffler (see illustration below). Both versions (version welded on after muffler and version with after muffler fixed by 2 springs) are legal to be used.





- d) Diameter of hole of end cap of (pos 3, illustration above):  $19,6 \pm 0,2$  mm.
- e) Just one piece of original isolating mat is allowed to be used.  
The original exhaust system (tuned pipe and silencer) may not be modified, except for the addition of extra elements for further noise reduction.
- f) Additional to the standard isolation mat a special steel isolation mat of the square dimension of  $165 \pm 10$  mm is legal (not mandatory) to be assembled underneath the standard isolation mat as in following illustration (ROTAX part no. of kit 297 983).



Clamp (1) must be fitted at a distance of  $18 \pm 2$  mm, measured from the end of the tube.

Clamp (2) must be fitted at the end area of the steel isolation mat.  
10-12mm is a specification for assembly purpose only!

Both clamps are mandatory.

- g) The original exhaust system (tuned pipe and silencer) may not be modified, except for the addition of extra elements for further noise reduction.
- h) Welding at the exhaust system is only allowed to repair eventual leakage.

- i) For measuring the exhaust gas temperature, it is allowed to weld on top a socket of the exhaust in an area of 50 - 80 mm from the ball joint.
- j) The use of maximum 4 pieces of original ROTAX exhaust springs to fix the exhaust to the cylinder is allowed (no safety wire allowed in exhaust flange area).

#### **9.9.14) Noise emissions:**

- a) Noise isolating mat (see illustration exhaust system) has to be replaced by an original ROTAX spare part, if the noise emission is exceeding 94 dB (A).
- b) Noise emission measuring procedure: The measuring place has to be at section of the track where the engine is operated under full load and at a rpm range of 11.000 to 12.000 rpm. The microphone has to be installed 1 meter above the level of the track in a rectangular angle to the track. The distance between the microphone and the kart on the ideal line on the track has to be 7,5 meters. The kart has to be operated under full load at the ideal line on the track.

#### **9.9.15) Seat strut:**

Only one seat strut on the engine side of the kart is authorized to be attached. The seat strut end must only be fastened to the engine using the threaded bolt hole designed for this purpose. This is shown in the illustration below. The seat strut may be installed on either side of the threaded bolt hole.



# Supplemental Technical Regulations



## Data acquisition:

-Gauges must be mounted such that protrusion above the plane of the steering wheel is kept to a minimum, specific control of this dimension per CIK regulations does not apply.

## Scoring Transponder:

-Transponder may not be located forward of the tangent point defined by the radius transitioning to side of the seat and seat back. Every effort should be made not to mount the transponder directly above any solid material between transponder and track surface.

## Cameras:

-Cameras may or may not be allowed during official sessions, as per the event regulation supplemental.  
-Cameras mounted on chassis, will not be permitted without prior written permission of Race Director.

***-Mounting Procedures – Only after use of cameras has been allowed, mounting procedures must be followed.***

*Only one (1) camera per kart is permitted; all camera mounting shall be subject to Inspection and shall be subject to removal by technical personnel at any time during event.*



*-“Go-Pro” type cameras, only approved mounting location is on front number panel directly below numbers, and be fixed in a horizontal forward facing position.*

*-“Smarty Cam Mounting” or similar type may be mounted on welded main frame rail seat strut only. Camera mounted in this position must be level or below highest portion of seat. Only mounting hardware supplied with “Smarty Cam” are permitted. Camera must be facing forward. Images of these mounting kits are available at [http://www.smartycam.com/on-board-camera/installation-kart-no-](http://www.smartycam.com/on-board-camera/installation-kart-no-radiator.htm)*

*[radiator.htm](http://www.smartycam.com/on-board-camera/installation-kart-no-radiator.htm)*

-All cameras should have a tether retention system.

-Cameras may never be mounted on driver's helmet or driver's person. Violation may result in position penalty and or fines.

## Ballast:

-Individual Weights equal to or greater than 7 pounds: minimum 2 bolts, of minimum 6mm diameter/double ny-lock or metal lock nuts or single nut drilled and keyed.

-Individual Weights less than 7 pounds: minimum 1 bolt, of minimum 8mm diameter/double ny-lock or metal lock nuts or single nut drilled and keyed.

-Stacked Weights: minimum 2 bolts, of minimum 6mm diameter/double ny-lock or metal lock nuts or single nut drilled and keyed.

## Chain Guards:

-The guard must be constructed of metal or plastic material, and securely mounted, so as to not fall out of line with the chain. -The guard must extend around the axle drive sprocket to at least below the centerline of the sprocket, and must cover the chain as viewed from directly above. Loosely mounted, flimsy guards tied to the chassis will not be accepted.

-It is highly encouraged to use full coverage clutch/chain guard coverage such as, OTK, KG, Tillet or similar chain clutch guards.

**Wet Conditions:**

- Intake silencer must be run in upright position as supplied from Rotax
- Water protection may not be attached or supported by engine components or side body work.
- Water protection may only be attached to unaltered side bars or chassis frame tubes.
- Brake rotor shields may be attached to seat struts in front of brake rotor under declared wet conditions

**Pulse Line:**

- All Classes – Pulse line must be single one single unit. No restrictors or reducers allowed. Pulse line must be connected to the pulse fitting as a single unit.

**Gear Case Vent:**

- Must be vented and not capped off

**Ignition Coils:**

- All ignition coils will be verified using the speed concept coil tester. Any competitor found with a coil outside of the Maxspeed's Parameters will be subject to disqualification, fine and exclusion from the event and or series.

**Racing Numbers:**

- Class numbers will be 3 digits according to published series requirements.
- We recommend solid black numbers minimum 15 cm high with a 2cm thick stroke with a yellow background (CIK 2.24).

Micro Max:	1 - 99
Mini Max:	100 - 199
Junior Max:	200 – 299
Senior Max:	300 – 399
DD2 Max:	400 – 499
DD2 Max Masters:	500 – 599
Masters Max:	600 - 699