



# MSA NATIONAL ROK CUP KARTING TECHNICAL REGULATIONS

VERSION 4 - 7 MAY 2025

## REVIEW AND AMENDMENTS

Amendments and updates to the rules will be recorded in the Amendment Record, detailing the amendments, date applicable and a short summary of amendments.

### AMENDMENT RECORD

<i>Modified SSR / ART</i>	<i>Date applicable</i>	<i>Date of Publication</i>	<i>Clarifications</i>
ART 2.4.1	07.05.2025	07.05.2025	Regulation amendment
ART 22.2 (OK-N squish)	07.05.2025	07.05.2025	Regulation amendment
ART 19.2.10	30.03.2025	30.03.2025	Regulation amendment
ART 2.4	10.03.2025	10.03.2025	Regulation amendment

## SECTION A – GENERAL ROK TECHNICAL REGULATIONS APPLICABLE TO ALL CLASSES

### 1. DEFINITIONS AND GENERAL REGULATIONS

- 1.1 Chassis – means the complete kart as supplied by the registered importer/manufacture excluding the engine.
- 1.2 Engine – means the complete power unit as supplied by the importer/manufacture including exhaust, carburettor, air box, battery, battery box and wiring harness (as applicable).
- 1.3 Batteries - only sealed, leakproof, maintenance-free batteries are allowed. The user instructions prescribed by the manufacturer must be adhered to. The presence of «CE» and markings on lithium batteries shall be verified by officials.

- 1.4 Floor Tray - it is mandatory to have a floor tray made of rigid material stretching from the central strut to the front of the chassis frame. It must be laterally edged by a tube or a rim preventing the driver's feet from sliding off the floor tray. The floor tray may be perforated, but the holes must not have a diameter of more than 10mm and they must be separated by four times their diameter as a minimum. In addition, one hole with a maximum diameter of 35 mm is allowed for steering column access. The floor tray may be made of composite material.
- 1.5 Brake Disc - an efficient rear brake disc protective pad (in nylon, carbon fibre, Teflon, Kevlar, Delrin or equivalent hard plastic) is mandatory if the brake disc protrudes below or is level with the main chassis frame tubes nearest to the ground. This protection must be placed laterally in relation to the disc, in the longitudinal axis of the chassis or under the disc.
- 1.6 Brake Disc and Brake Calliper - the rear brake disk and calliper may be cooled with a professionally made brake cooling tube. It must be securely attached, not extend further than the seat and not extend under the chassis.

## 2. KART FUEL, OIL AND RADIATORS

- 2.1 Where the SRs for an event specify the fuel to be used the name of the filling station and the pump number will be the only permissible fuel for the event in question.
- 2.2 The organisers also have the right to direct competitors to make use of controlled fuel.
- 2.3 The organizers have the right to undertake fuel testing using a FT64 Digitron fuel meter.
- 2.4 The only brand of oil permitted is ~~ENI~~ Motul engine oil mixed at the specified ratios:
- 2.4.1 ~~Mini Rok (Under 10), Mini Rok, OKJ and OKN – 5% (20:1);~~ Mini Rok (Under 10), Mini Rok, OKJ, OKN & KZ2 – 4% (25:1)
- 2.5 Apart from the Cadet class, overflow bottles are mandatory for fuel tanks and radiators (if applicable).

- 2.6 The fuel tank must be securely fixed to the chassis and designed in such a way that neither the fuel tank nor the pipes (that must be flexible) present any danger of leakage during an event. The same applies to any receptacle containing fuel flowing to the engine.
- 2.7 A quick attachment of the fuel tank to the chassis is strongly recommended.
- 2.8 The fuel tank must in no way be shaped to act as an aerodynamic device.
- 2.9 The fuel tank must supply the engine with fuel only under normal atmospheric pressure. This means that, apart from the fuel pump located between the fuel tank and the carburettor, any system (mechanical or otherwise) that may have an influence on the internal pressure of the fuel tank is not permitted.
- 2.10 It is mandatory to place the fuel tank between the main tubes of the chassis frame, ahead of the seat and behind the rotation axis of the front wheels.
- 2.11 The requirements specified in these regulations are intended to ensure the use of fuels predominantly composed of compounds normally found in commercial fuel, and to prohibit the use of specific power-boosting chemical compounds. All competitors will only be permitted to use freely and commercially available 95 octane pump fuel.
- 2.12 Modification of the basic fuel composition by the addition of any compound is strictly forbidden. This restriction also applies to the lubricant, which must not change the composition of the fuel fraction when added to the fuel. Furthermore, as for the fuel, the lubricant must not contain any nitro-compounds, peroxides or any other engine power boosting additives.
- 2.13 Only ambient air may be mixed with the fuel as a combustive.

### 3. TYRES AND WHEELS

- 3.1 The use of wet weather tyres in practice, qualifying or during any of the races will not be permitted unless a wet race or practice is declared by the Clerk of the Course. Likewise, the Clerk of the Course can withdraw any authorization for the use of wet weather tyres.
- 3.2 The only brand of tyres allowed for Mini Rok (Under 10), Mini Rok, OKJ, OK-N and KZ2 are Levanto tyres (both dry and wet tyres).
- 3.3 The Tillotson Cadet class will utilize Maxxis tyres for dry and Levanto for wet.
- 3.4 Only 1 (one) set of dry and/or wet tyres (if applicable) are permitted from the start of qualifying.
- 3.5 Only tyres issued by the promoter/organiser to competitors will be permitted for use in qualifying and racing.
- 3.6 All competitors must start qualifying on new tyres save where it is declared wet or where the class specific regulations or event SRs permit otherwise.
- 3.7 Each competitor's tyres are to be marked with his/her racing number and class when exiting the circuit after qualifying where a barcode scanning system is not in place.
- 3.8 The marked (scanned) tyres and/or rims may be impounded by the organisers and re-issued on the day of the race if originally issued prior to race day.
- 3.9 Both dry and wet weather tyres must be identified prior to being used. Checks on identified tyres may be made at any time throughout an event and any competitor found using any tyre which has not been identified or marked for use during the event will be excluded from the prior races or qualifying.
- 3.10 Exchanging of tyres between competitors is forbidden and will result in exclusion.
- 3.11 It is prohibited to use any chemical treatment (or other means) to artificially enhance the performance of tyres used during official practice, qualifying or racing.

- 3.12 The organisers reserve the right to replace one or more of any competitor's tyres with a substitute tyre of similar wear should they believe such action to be warranted.
- 3.13 Should a tyre be worn to the extent that it is no longer safe for use, the Clerk of the Course in consultation with the Technical Consultant may require such a competitor to withdraw from further participation in the event so affected or require the tyre to be replaced under supervision and appropriately marked.
- 3.14 It is prohibited to inflate any tyre with any substance other than normal air. The organisers and/or officials have the right to request a competitor to deflate his/her tyres and reinflate them with normal air. Any failure to comply with a request to deflate/re-inflate tyres shall be deemed a contravention of the technical regulations and shall be penalizable accordingly.
- 3.15 Tyres may not be deflated after the completion of qualifying or racing until the kart has left Parc fermé.
- 3.16 The use of any form of artificial heating device to pre-heat tyres or treat the tyres (including the use of heat guns) is strictly forbidden save in the Cadet class where the use of heat guns for the removal of excess rubber is permitted.
- 3.17 A wheel consists of a rim that is fitted with a pneumatic tyre with or without an inner tube.
- 3.18 A "set of wheels" means two front and two rear wheels.
- 3.19 Only the tyres may come into contact with the ground when the driver is sitting in the kart. Any system or valve to adjust, limit or monitor the tyre pressure(s) when the wheel is in use is forbidden.
- 3.20 Only tyres of the same make and type are allowed to be used at any one time.
- 3.21 The attachment of the wheels to the hubs and axles must be done with M8 self-locking nuts and bolts.

3.22 The maximum pressure that may be used in tyres is 4 (four) bar.

3.23 Wheel dimensions:

3.23.1	<u>Senior Karts: 5-inch wheel</u>	<u>Front</u>	<u>Rear</u>
	Maximum outer diameter	280 mm	300 mm
	Maximum width	135 mm	215 mm

3.23.2	<u>Junior Karts: 5-inch wheel</u>	<u>Front</u>	<u>Rear</u>
	Maximum outer diameter	260 mm	290 mm
	Maximum width	120 mm	150 mm

3.24 The above figures are the maximum wheel dimensions with a matching tyre fitted on the rim and a tyre pressure of 1 (one) bar.

3.25 Tyres allowed per class:

Class	Slick	Wet
Tillotson Cadet	Maxxis (10x4.00-5) (11x5.00-5)	LeVanto KRT MINI
Mini Rok (Under 10)	LeVanto KRT MINI	LeVanto KRT MINI
Mini Rok	LeVanto KRT MINI	LeVanto KRT MINI
OKJ/ OK-N	LeVanto KRT	LeVanto KRT
KZ2	LeVanto KRT	LeVanto KRT

3.26 The promoter/organiser is not responsible for supplying wet weather tyres at events. Competitors are encouraged to purchase one set of wet weather tyres at the first national event of the season. It is the competitor's responsibility to ensure that they have wet tyres available at each event.

#### 4. MINIMUM WEIGHTS PERMITTED – PER CLASS

Tillotson Cadet	86kg		Mini Rok Under 10	105kg
Mini Rok	110kg		OKJ	145kg
KZ2	180kg		OK-N	155kg

#### 5. AXLES, RIMS AND REAR TRACK WIDTH

- 5.1 The rear axle as well as the rims used on the chassis do not have to come from the same manufacturer as the chassis itself. The minimum axle wall thickness applies except where keys are fitted.
- 5.2 Apart from the KZ class, the maximum diameter of rims shall not exceed 5 inches (126mm).
- 5.3 It is permitted to have a rear axle insert so as to strengthen the keyway area where the axle sprocket is located.
- 5.4 The maximum rear axle width from outside rim to outside rim is 1400mm.
- 5.5 The maximum rear width is measured to the outer-most face of the rims or tyres, whichever is the greater.
- 5.6 In respect of Senior and Junior karts, only 5-inch rims complying with FIA Karting technical drawing No. 1.1 are allowed.
- 5.7 Coupling diameter of the tyre for the rim: 126.2 mm with a +0/-1 mm tolerance for the diameter. Width of tyre housing: min. 10 mm. External diameter for 5-inch rims: 136.2 mm minimum. Radius to facilitate the balance of the tyre in its housing: 8 mm.
- 5.8 The following is applicable to the various classes:



Parameter	Tillotson Cadet	Mini Rok Under 10/ Mini Rok	OKJ/OK-N	KZ2
Axle Outer Diameter	30mm	30mm MAX	50mm MAX	50mm MAX
Axle wall	N/A	4.9mm MIN	2.0mm MIN	2.0mm MIN
Axle length	N/A	960 ± 10mm	N/A	N/A
Axle mass	N/A	2900 ± 100g	N/A	N/A
Front rim width	11.5cm MAX	11.5cm MAX	13.5cm MAX	
Rear rim width	13.0cm MIN 15.0cm MAX	13.0cm MIN 15.0cm MAX	21.5cm MAX	
Rear track	Mounting face of rear hub not extended past the axle end point	1100mm MAX	1400mm MAX	1400mm MAX

5.9 The rear axle diameter must comply with the category in which the kart is entered. In all categories, the rear axle must be made of magnetic steel.

5.10 Each rear axle must have on the inside and outside a rounded edge or a chamfer with a maximum diameter corresponding to the axle thickness. The chamfer must not have sharp edges.

5.11 The axle wall thickness depends on the outside diameter of the axle. It must comply with the following criteria at all points (except the keyways):

Max. external diameter (mm)Min. wall thickness (mm)

50 (OKJ/OK-N) 1.9

30 (Mini and Tillotson) 4.9

## 6. SEATS AND SEAT SUPPORTS

- 6.1 The kart seat must be rigidly located and fixed on the chassis.
- 6.2 It must be designed and fitted so that the driver is securely located to resist movement when cornering or braking. It must be secure, provide the driver with adequate protection and not be cracked or damaged in such a way as to pinch or lacerate or endanger the driver in any way.
- 6.3 Seats supports must be mounted by using nuts, bolts, and a metal or aluminum washer with a minimum diameter of 40mm and 1,5mm thickness to eliminate breakthrough. The lower seat bolts may be loosened in the event of rain.
- 6.4 All seat supports and stays must be bolted or welded at each end. If they are not used, these seat supports and stays must be removed from the chassis frame and the seat.
- 6.5 The driver's seat must be designed to prevent him from moving towards the sides or front when cornering or braking.
- 6.6 The seat may be made of composite material.
- 6.7 **Reinforcement plates**
- 6.7.1 Reinforcement plates are required to support the upper part of the seat. They must have a minimum thickness of 1.5 mm and a minimum diameter of 40 mm.
- 6.8 **Seat stays**
- 6.8.1 All seat stays must be bolted at each end. If they are not used, these seat stays must be removed from the chassis frame and the seat.

## 7. CHAIN GUARDS

- 7.1 A chain guard is compulsory in all classes and must be an effective protection over the top and both sides of the exposed chain and sprocket and extend at least to the lower plane of

the rear axle down a line at least level with the centre of both front and rear sprockets. Where engines are fitted with side-mounted carburetors adjoining the front sprocket, a guard must be fitted to prevent the driver's fingers becoming entrapped in the chain.

- 7.2 If a complete chain guard covering the chain and sprockets is used, the chain guard homologated with the engine may be removed.
- 7.3 In gearbox classes, the chain guard must cover the sprocket and the crown wheel down to the centre of the crown wheel axis.
- 7.4 Cadet competitors may use the chain guard and supports provided by the Original Equipment Manufacturer, but it is recommended that the cover be lowered to fully cover the sides and the top of the chain.
- 7.5 Chain guards may be made of composite material.

## 8. PEDALS

- 8.1 With the exception of the Cadet class, the brake pedal must have a double linkage to the master cylinder.
- 8.2 The accelerator pedal must be equipped with a return spring.
- 8.3 Pedal extenders and footrest are allowed.
- 8.4 **Pedals/Pedal Kits**
  - 8.4.1 Whatever their position, pedals must never protrude in front of the chassis, including the bumper. The brake pedal must be placed in front of the master cylinder. The accelerator pedal must be equipped with a return spring. A mechanical link between the accelerator pedal and the carburetor is mandatory. Pedal kits to relocate the driver's feet may only be used if supplied by the chassis manufacturer.

## 8.5 **Brake control**

- 8.5.1 The brake control, i.e. the link between the pedal and the pump(s), must be doubled for safety and always be in conformity with the relevant homologation documents. If a cable is homologated, it must have a minimum diameter of 1.8 mm.

## 9. **AIR BOXES**

- 9.1 Only FIA Karting homologated air boxes must be fitted and used.
- 9.2 In the event of rain, to protect the motor from water damage, a protective device may be fitted. This device must be securely fitted.
- 9.3 Duct tape is permitted to help secure the device.

## 10. **GEAR SHIFT (FOR SHIFTER KARTS)**

- 10.1 Only hand operated gear shifting is allowed.
- 10.2 A paddle shift with a push pull cable is permitted.
- 10.3 An electronic paddle shift is also permitted.
- 10.4 Any form of ignition cutting is strictly forbidden.

## 11. **MASS**

- 11.1 Mass – means the minimum mass permitted at all times, including during qualifying and includes the mass of the driver equipped for racing with helmet, visor or goggles, shoes, gloves and all protective clothing.
- 11.2 Any ballast carried in order to meet the minimum mass prescribed must be firmly fixed to the satisfaction of the Scrutineers and/or Technical Consultant only to the chassis or seat.

- 11.3 For any ballast weight of up to 2kg, attachment must be by a minimum of one bolt with a minimum size of M6 with an additional bolt or fixing for every 4kg or part thereof.
- 11.4 Cable ties to secure ballast weight are not allowed.
- 11.5 **Ballast**
- 11.5.1 The mass of a kart may be adjusted with one or more solid blocks of lead attached to the chassis frame, to a chassis auxiliary part (except bumpers) or the seat.
- 11.5.2 Maximum mass of a single ballast: 5 kg. Combined ballasts on the same attachment count as a single ballast.
- 11.5.3 Ballast must be securely attached by means of tools and washers with at least two bolts:
- 11.5.3.1 0-2.5 kg of a minimum diameter of 6 mm; and
- 11.5.3.2 >2.5-5 kg of a minimum diameter of 8 mm.
- 11.5.4 If the ballast is attached to a chassis auxiliary part, all bolts linking the auxiliary part to the chassis frame must be of the same minimum diameter as that used to attach the ballast itself.
- 11.5.5 Reinforcement plates are mandatory for the attachment of the ballast to the seat. These plates must have a minimum thickness of 1 mm and a minimum diameter of 20 mm.
- 11.5.6 The Technical Consultant and/or Scrutineers retain the discretion to determine whether any ballast that is fitted to a kart is safe or not and may direct any alterations to be made thereto.

## 12. CHASSIS

- 12.1 The only chassis permitted in all classes are those that are listed in the MSA Appendix 1 Chassis Homologation List.
- 12.2 Only the Tillotson T-CHS-BB1 chassis is eligible in the Cadet class.

## 13. FUEL TESTING

- 13.1 The following testing method will apply to all karting events and classes at Club, Regional and National events:
  - 13.1.1 The test instrument will be the Digatron FT64 which must be clearly identified by a serial number or identifying mark and will be the only instrument of the day to be used.
  - 13.1.2 Only MSA approved fuel Technical Consultants may perform fuel testing.
  - 13.1.3 The only calibration on the instrument of the day will be the reading from the mixed reference sample fuel that is kept by the fuel Technical Consultant.
  - 13.1.4 A clearly marked reference sample of every mix ratio (fuel: oil) will be kept by the fuel Technical Consultant or the Clerk of the Course.
  - 13.1.5 The difference in reading between the reference sample that is applicable for each class and competitor fuel reading may not be more or less than 2. This value may be changed by the fuel Technical Consultant of the event before qualifying.
  - 13.1.6 Fuel testing can be done at any time during the event.
  - 13.1.7 The temperature difference may not be more than 2 degrees Fahrenheit. If the temperature is not within the limits, the fuel tank of the competitor must be impounded and sealed and the competitor's fuel temperature will be allowed to equalize to the reference sample and a new reading obtained no later than 30 minutes before publication of final results.

- 13.1.8 The minimum amount of fuel in the tank at any time may not be less than 300ml.
- 13.1.9 The fuel may be decanted into a suitable container for the necessary testing to be done.
- 13.1.10 It is the responsibility of the competitor to be present at all times when readings of the fuel are done and to check with the fuel Technical Consultant that the fuel used by the competitor is within the set parameters.
- 13.1.11 The Clerk of the Course or fuel Technical Consultant may at any time have competitor's fuel replaced with the organisers fuel.
- 13.1.12 Any contravention of the fuel regulations will result in exclusion.

#### **14. OTHER TESTING AND CHECKS BY THE TECHNICAL CONSULTANT**

##### **14.1 Method for measuring the opening angles of the exhaust ports**

- 14.1.1 All motors: Exhaust 199 degrees Max. In order to make the measurement more accurate, a 0.20mm thick x 5mm wide wedge (according to technical drawing No. 18) will be used to establish the start and finish of the measurement. This wedge will be gripped at the chord axis of each port, between the edge of the upper part of the piston ring or of the piston and its intersection with the edge of the inlet or exhaust port. The position by which the gripping of the wedge will permit the measurement of the largest possible angle will be considered as the beginning and the end of the measurement of the angle.
- 14.1.2 This wedge may be set in position through the inside of the cylinder or through the duct of the exhaust port to be checked. It will not be mandatory on any account for the wedge to be placed in a horizontal or vertical position. The reading will be carried out using a graduated disc with a minimum diameter of 200mm or a digital display measuring device operated by a coder.

## 14.2 **Volume test for combustion chamber**

- 14.2.1 On KZ2 engines, the volume then measured minus the plug insert (2cc) must not be less than 11cc using the plug insert as per FIA Karting technical drawing 1.3B.

## 14.3 **General method for measuring the volume of the combustion chamber**

- 14.3.1 Remove the engine from the chassis. Wait until the engine is at ambient temperature. Have the cylinder head removed to check the protrusion of the spark plug. Have the spark plug removed (check the 18.5mm dimension). Screw the plug insert in place of the spark plug (the plug insert, tightened on the cylinder head, must not extend beyond the upper part of the dome of the combustion chamber. It must be fixed to the cylinder in exactly the same way as the spark plug measuring 18.5mm long).
- 14.3.2 Make the top part of the piston and the periphery of the cylinder waterproof using grease. Place the piston at top dead centre and block the crankshaft. Carefully remove the excess grease. Place the cylinder head back and screw it in at the torque recommended by the manufacturer.
- 14.3.3 With a laboratory graduated burette (mechanical or electronic), fill the combustion chamber (with DEXTRON VI type oil) to the uppermost part of the top edge of the plug insert (wetting the plane of the head gasket).

## 14.4 **Alternative method for measuring the volume of the combustion chamber**

- 14.4.1 Remove the engine from the chassis. Wait until the engine is at ambient temperature. Have the spark plug removed (check the 18.5mm dimension). Screw in the plug insert in place of the spark plug (the plug insert, tightened on the cylinder head, must not extend beyond the upper part of the dome of the combustion chamber. It must be fixed to the cylinder in exactly the same way as the spark plug measuring 18.5mm long). Place the piston at top dead centre and block the crankshaft. With a laboratory graduated burette (mechanical or electronic), fill



the combustion chamber (with DEXTRON VI type oil) to the uppermost part of the top edge of the plug insert (wetting the plane of the head gasket). In case of discrepancy of the measured value, the complete procedure must be carried out according to the “General Method” of Appendix 2 of the FIA Karting Technical Regulations.

#### **14.5 Squish test and procedure**

14.5.1 This can be used as an alternative for volume test on race day between races. A minimum squish of 1mm is permitted and measurement will be done with a digital Vernier at the smallest point of the wire up against the shoulder created by the piston. The Vernier will be owned by the organiser and/or promoter and will be present on race days for any competitor to check squish prior to the sealing of the motor. The solder wire to be used is a 1.6mm solid wire. The solder wire will have a tolerance of  $\pm 0.1$ mm. The squish will be checked on both the left and the right side of the piston parallel to the gudgeon pin, and the smaller of the two measurements will be the measurement used for legality.

14.5.2 Remove the spark plug. Insert solder to touch cylinder wall directly above the gudgeon pin. With the solder wire in place the motor will be turned through top dead centre once. The step on the solder will not be cut off. The smallest point on the solder against the shoulder measured with the point of the Vernier will be the final measurement.

#### **15. TITANIUM**

The use of titanium for any part of a kart is forbidden.

#### **16. BODYWORK – GENERAL**

16.1 Nose cones may not have additional fastenings (for example, plastic zip ties) other than as stated below.

16.2 In the interests of safety, it is permitted to secure the nose cone clamps with a single loose cable tie as pictured below to the upper bumper bar.



- 16.3 All kart bodywork must be homologated by FIA Karting together with the accompanying bumpers and attachments. Combining homologated bodywork elements is allowed. However, the two side pods must be used together as a set (i.e., no mismatching is allowed).

## 17. IMPOUNDED PARTS AND SUBSTITUTION OF PARTS

- 17.1 From qualifying each driver will be allowed to use a maximum of two sealed engines.
- 17.2 Should a competitor subsequently wish to change or repair an engine or component thereof, which will necessitate the breaking of a seal or removing any identification, this may only be done under the supervision of the Scrutineers or Technical Consultant.
- 17.3 Once the change of engine or component is complete, the engine or component will again be sealed or identified. The changed component or engine must be impounded by the Scrutineers and/or the Technical Consultant.
- 17.4 When a competitor elects to use his/her second engine during competition the first engine used must be handed in at Parc fermé to the Technical Consultant/Scrutineer prior to the start of the competitor's next race.
- 17.5 The Technical Consultant in consultation with the Clerk of the Course, shall have the right to inspect any engine or any part of any engine at any time during an event without providing any reason for doing so.
- 17.6 The Technical Consultant and/or the Clerk of the Course and/or the organisers and/or promoter shall have the right to require, at any time during an event and without any reason, to have a competitor exchange any part or component of the engine (including, but not limited to, the clutch, exhaust, carburettor, coil, wiring loom, ignition, fuel) with an identical

part to be provided free of charge to the competitor by the organisers and/or the promoter of the event.

## 18. MEASUREMENTS AND TOLERANCES

- 18.1 The provisions of Appendix 1 to the Technical Regulations of FIA Karting and the principles therein when taking measurements and considering tolerances will be applicable.
- 18.2 The units of measure (including derived units) will be those of the international system: unit of length in meters, unit of mass in kg, unit of time in s, and unit of noise level in decibels. However, the following will be used for the unit of angle - the ° (degree) instead of the radian and, for the unit of temperature - the °C instead of the Kelvin.

## 19. GENERAL REGULATIONS IN RELATION TO ENGINES

- 19.1 The engine means the propelling unit of the kart in running order, including a cylinder block, sump and gearbox, ignition system, carburetor(s) and exhaust silencer.
- 19.2 **Pool engines**
- 19.2.1 A pool engine system will be used at Rok National Championship events.
- 19.2.2 Pool engines are not protestable.
- 19.2.3 Competitors not satisfied with their engine may request a different engine in consultation with the Technical Consultant, designated engine supplier and/or the Clerk of Course. A request may only be made once per racing season.
- 19.2.4 A bulletin will be issued on costs of engine rentals alternatively this will be addressed in the event SRs or the entry form.
- 19.2.5 If a competitor is found at any time during an event to have tampered with the pool engine or any of its components issued to him/her, they will be excluded from the entire event and fined an amount of R10 000.00.

- 19.2.6 In events where pool engines are not used, all engines must be registered with organiser and/or promoter. The organiser and/or promoter retains the sole discretion to permit the registration of any engine. Any engine not registered will not be permitted to be used in Rok Cup events.
- 19.2.7 The engine supplier and/or the Technical Consultant will decide which components are to be swapped during an engine exchange. When engines are swapped, this may include any or all of the following: engine, exhaust, carburetor, airbox, and throttle inner cable.
- 19.2.8 For National Championship competitions, the only engine permitted will be as supplied by the promoter and/or organiser's approved engine service provider as from official practice that is pre-sealed by the engine service provider.
- 19.2.9 No type or form of modifications/adjustments is allowed to the engine or any other parts which include the fuel supply, carburetor, ignition etc.
- 19.2.10 During National Championship events, competitors may be requested to swap engines from the start of official practice. Competitors will generally use a minimum of two (2) pool engines during a race weekend. The number of engine swaps or changes for an event is not limited to two (2) and may vary at the sole discretion of the organiser and/or promoter. Competitors may also request one (1) engine change during the event at their own discretion. A charge of R3,000 will apply for Mini Rok and R5,000 for OKJ/OKN categories. If, upon inspection by the technical team, the engine is found to be problematic or faulty, this fee will be refunded in full. Only one such competitor-initiated engine change is permitted per event. A maximum of three (3) spare engines per category will be reserved and kept on standby for such changes. Availability is on a first-come, first-served basis, and once all standby engines have been allocated, no further changes will be allowed unless approved by the organiser and/or promoter under exceptional circumstances.
- 19.2.11 Engine draws will be conducted via a shaker.

### 19.3 **General provisions**

- 19.3.1 No break is allowed in the fuel line between the fuel tank to the fuel pump and fuel pump to the carburetor other than for the fitting of a fuel filter.
- 19.3.2 OKJ & OK-N: Exhaust gas and water temperature sensors are compulsory.
- 19.3.3 All systems of injection are forbidden.
- 19.3.4 The engine shall not comprise a compressor or any super-charging system.
- 19.3.5 Any modifications inside the engine may only be carried out by the removal of material.
- 19.3.6 All engines must be described in the manufacturer's catalogue and be the subject of a descriptive form called a "Homologation Form" or an identification sheet for the model established by FIA Karting.

### 19.4 **Cylinders**

- 19.4.1 For un-sleeved engines, repairing cylinders is allowed by addition of material but not of parts.
- 19.4.2 Cylinder head: it is allowed to replace the spark plug thread by a Heli-coil, but it must remain within manufacturer specifications.

### 19.5 **Water cooling**

- 19.5.1 Only water (H<sub>2</sub>O) is authorized for liquid cooling.
- 19.5.2 No glycol-based antifreeze is allowed.
- 19.5.3 For all categories using water cooling, radiators must be placed above the chassis frame, at a maximum height of 50cm from the ground, at a maximum distance of 55cm ahead of the rear wheels axle and they must not interfere with the seat. All the tubing must be of a material designed to withstand the heat (150°C) and pressure (10bar). To

control the temperature, it is only allowed to place at the front or at the rear of the radiator a system of masks. This device may be mobile (adjustable), but it must not be detachable when the kart is in motion, and it must not comprise dangerous elements. Mechanical by-pass (thermostat type) systems, including by-pass lines, are allowed. In line heat exchangers are allowed in the water pipes.

## **19.6 Water pump**

The water pump must be mechanically controlled either by the engine or by the rear axle.

## **19.7 Carburettors and inlet duct**

19.7.1 Any injection system is forbidden. Any spraying of products other than fuel is forbidden. The inlet duct (mechanical assembly between the homologated inlet silencer and the reed box) must comprise the inlet silencer, the carburetor and the reed box cover, as well as a possible adaptor, spacer and/or gaskets. No additional component is authorized.

19.7.2 The adaptor (spacer) must have a transversal conical cylinder cross-section, be mechanically attached with tools and present neither any connections fitting together nor parts which overlap each other. Furthermore, it is forbidden to have any connection resulting in an extra volume (including any groove, hollow space or other such spaces) at the level of the inlet duct.

## **19.8 Ignition**

19.8.1 In all categories the ignition system used must be homologated by FIA Karting.

19.8.2 For KZ2 the ignition system used must be (as per the engines Homologation Form) of analogue type and any variable ignition system (system of progressive advance and delay) is forbidden.

19.8.3 Any electronic system allowing an auto-control of the parameters of functioning of the engine while the kart is in motion is forbidden.

## 19.9 Spark plug

- 19.9.1 The ignition spark plug must be mass-produced and remain strictly original. The spark plug barrel and the electrode insulation (electrodes not included) tightened on the cylinder head must not extend beyond the upper part of the combustion chamber dome (see Appendix No. 5 to the Technical Regulations of FIA Karting).
- 19.9.2 The spark plug must be installed with its gasket.
- 19.9.3 A spark plug temperature probe is permitted and if it is min 1.2mm thick, after being fitted and/or used it can act as a spark plug gasket. The insulator must not exceed the spark plug body and the length of the spark plug body itself must be a max of 18.5mm
- 19.9.4 The spark plug gap for Mini Rok (Under 10), Mini Rok, OKJ, and OKN engines must be set to 0.8 mm, with an allowable tolerance of  $\pm 0.02$  mm.

## 19.10 Inlet Silencer (Air Box)

- 19.10.1 An inlet silencer homologated by FIA Karting is mandatory.
- 19.10.2 Variable volume air boxes are forbidden.
- 19.10.3 The obligatory homologated intake silencer must be used under strict observance of the following points:
- 19.10.3.1 If the rubber bush is reversible, it may only be cut on one side, the unused one located in the body of the silencer.
- 19.10.3.2 The part of the bush linking the silencer to the carburetor must be visible at all times and must be on the outside of the silencer. It allows the rear face of the silencer to be connected to the cylindrical shoulder of the carburetor.

## 19.11 Exhaust

- 19.11.1 In KZ2 the exhaust must be the engine specifically homologated exhaust.

- 19.11.2 In all categories the exhaust system shall discharge behind the driver and shall not operate at a height of more than 45cm from the ground. The exhaust silencer outlet, the external diameter of which must be more than 3cm, must not exceed the limits of the body or bumper.
- 19.11.3 Competitors in consultation with the Technical Consultant and/or the Clerk of Course may be authorized to change exhaust systems for the system supplied or homologated by FIA Karting.
- 19.12 **Silencer**
- 19.12.1 The exhaust silencer must be FIA Karting homologated. See the FIA Karting exhaust silencer homologation list.

## **SECTION B – ENGINE AND CHASSIS SPECIFICATIONS PER CLASS**

### **20. TILLOTSON CADET**

- 20.1 The Tillotson T-CHS-BB1 chassis is the only permitted chassis.
- 20.2 The Tillotson TPP-105R engine is the only permitted engine.
- 20.3 The chassis together with the engine is to be raced as supplied without expensive accessories or replacement parts.
- 20.4 A rev-counter / lap timer is permitted. No additional sensors (CHT, throttle position etc.) are permitted during an event.
- 20.5 Maximum rear width is controlled by the mounting face of the rear hub and may not be extended further than the axle end point.
- 20.6 No modifications are permitted, and any variations must be approved **in writing** by the KMG prior to any modification being made.
- 20.7 The Cadet Tillotson User Manual may be downloaded at:



## **21. MINI ROK UNDER 10 AND MINI ROK**

### **21.1 ENGINE AND OTHER SPECIFICATIONS**

- 21.1.1 The only engines permitted are those as homologated and depicted in the Vortex/Rok Mini Rok Identification Sheet published on the MSA website.
- 21.1.2 All Mini Rok engines and their serial numbers must be registered with the organiser and/or promoter. The organiser and/or promoter has the sole discretion to permit or refuse the registration of any engine. Any engine not registered will not be permitted to be used in Rok karting events.
- 21.1.3 All engines must be sealed by the engine builder, Technical Consultant and/or Scrutineer. It is the responsibility of the competitor to ensure that the engine builder, Technical Consultant/Scrutineer has sealed his/her engine(s) before taking part in qualifying/race(s).
- 21.1.4 All competitors need to ensure that the cylinder head and cylinder have cross-drilled nuts/bolts to facilitate the fitting of wire seals. Seals must have a barcode and a number.
- 21.1.5 No type or form of modifications is allowed to the engine or any other parts except those detailed in the Vortex/Rok Mini Rok Identification Sheet. This includes fuel supply, carburettor, ignition, etc.
- 21.1.6 No break is allowed in the fuel line between the fuel tank to fuel pump except for the fitting of a fuel filter.
- 21.1.7 A fuel return pipe may be fitted on the pump side of the fuel line between the pump and the carburettor fuel inlet.

- 21.1.8 No exhaust or cylinder temperature measuring devices or lambda sensors are allowed to be used during qualifying/race(s).
- 21.1.9 Competitors must ensure that clutches and clutch drums are free from oil, grease or any other lubricants.
- 21.1.10 Refer to the relevant engine and carburettor specification sheets (054-CA-55) for technical specifications and carburation, which can be found on the MSA website [www.motorsport.co.za](http://www.motorsport.co.za)
- 21.1.11 The wiring harness must be used as supplied from the factory without any modifications. It is the competitor's responsibility to ensure they provide a compliant wiring harness, battery, and battery box.
- 21.1.12 The engine kill switch is mandatory.
- 21.1.13 Other specifications:

Item	Mini Rok Under 10 & Mini Rok
Spark plug cap	W420/2 (ROK) or TB05EM (NGK)
Spark plug	NGK B10EG / (NGK B9EG Rain)
Squish	0.8mm Min measured with 1.6 mm (+/- 0.1mm) resin core solder.  NOTE: the lead used at the event concerned will be regarded as the

	<i>"Lead of the Day"</i> and may not be protested.
Cylinder head shape and volume	6.8 cc Min, and ROK profile gauge
Head Spacer Thickness	As required to achieve volume
Head Spacer OD	NA

Head Spacer ID	NA
Shims	As required
Port durations (measured with 5mm wide ROK feeler gauge)	Exhaust 154° Max Transfer 116° ± 1.5° Inlet 143° ± 1.5° Overlap 31° Min
Ignition timing	Free
Exhaust manifold	As per Mini ROK Identification Sheet published on MSA website
Carburetor	Dellorto PHBG 18BS
Main jet	Free
Emulsion tube	Dellorto AN266
Needle	Dellorto W23
Needle clip position	Free
Needle and seat	As per current Mini ROK carburetor specification sheet published on MSA website
Choke jet	Dellorto 60
Pilot jet (idle jet)	Dellorto 50
Slide	Dellorto 40
Floats	Dellorto 4.0 grams
Rear sprocket	Free
Engine sprocket	T10 or T11 with Vortex Logo
All other specifications	As per current Mini ROK Identification Sheet published on MSA website

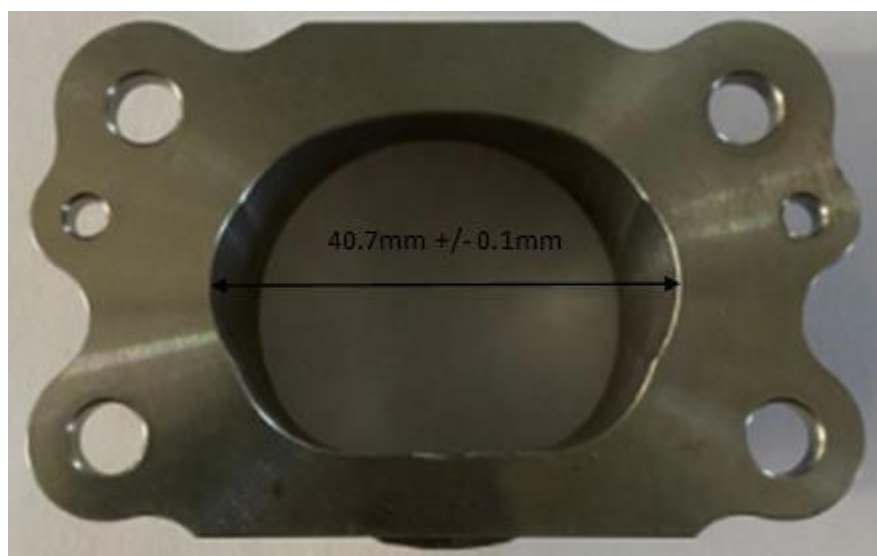
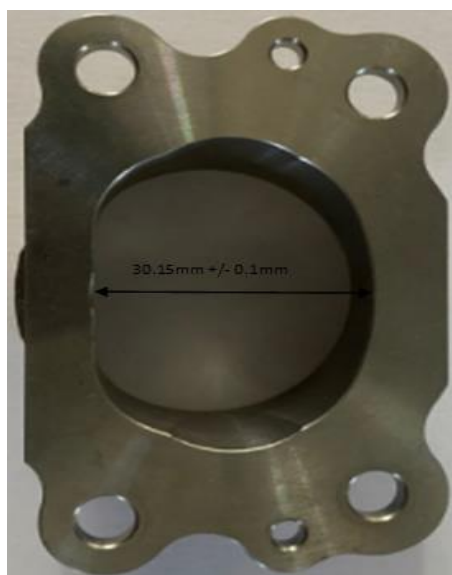
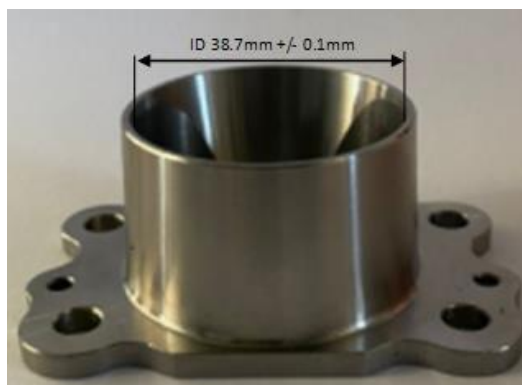
## 22. OKJ & OK-N

## 22.1 ENGINE AND OTHER SPECIFICATIONS - OKJ

- 22.1.1 All competitors need to ensure that the cylinder head and cylinder have cross-drilled nuts/bolts to facilitate the fitting of wire seals. Seals must have a barcode and a number.
- 22.1.2 It is the responsibility of the competitor to ensure that the engine builder, Technical Consultant/Scrutineer has sealed his/her engine(s) before taking part in qualifying/race(s).
- 22.1.3 No type or form of modifications/adjustments are allowed to the engine or any other parts except those detailed in the engine specification sheet as published on MSA's website. This includes the fuel supply, carburettor, ignition, etc.
- 22.1.4 No break is allowed in fuel line between the fuel tank to fuel pump and fuel pump to carburettor other than for the fitting of a fuel filter.
- 22.1.5 Exhaust gas and water temperature sensors are compulsory.
- 22.1.6 DDJ Inlet Manifold: The only inlet manifold permitted is as per the photos below. No material may be added or removed:



22.1.7 DDJ engine Exhaust Manifold: The only exhaust manifold permitted is as per the photos and dimensions below. No material may be added or removed. The exhaust manifold gasket as supplied must be fitted at all times:



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## 22.2 OKJ AND OK-N ENGINE SPECIFICATIONS

Item	OKJ DDJ Engine	OKJ DJT Engine	OK-N VTS-N Engine
Airbox	KG Nitro airbox	KG Nitro airbox	KG Nitro airbox
Spark plug cap	W420/2 (ROK) or TB05EM (NGK)	W420/2 (ROK) or TB05EM (NGK)	W420/2 (ROK) or TB05EM (NGK)
Spark plugs	NGK B9EG or NGK B10EG	NGK B9EG or NGK B10EG	NGK B9EG or NGK B10EG
Squish	0.85mm Min Measured with 1.6mm(+/-0.1mm) resin core solder	0.85mm Min Measured with 1.6mm(+/-0.1mm) resin core solder	0.75-0.85mm Min measured with 1.6mm(+/-0.1mm) resin core solder
	Note: The lead used at the event concerned will be regarded as the Lead of the Day	Note: The lead used at the event concerned will be regarded as the Lead of the Day	Note: The lead used at the event concerned will be regarded as the Lead of the Day
Cc's Cylinder head only	14.0cc Min	As per template	12.0cc Min
Head Gasket	As required	As required	As required
Shims	As required	As required	As required
Exhaust port duration	171° Max measured with 5mm wide & 0,2mm thick ROK feeler gauge	189,8° Max measured with 5mm wide & 0,2mm thick ROK feeler gauge	194° Max measured with 5mm wide & 0,2mm thick ROK feeler gauge

All ports and passages	All ports and passages have cast surface finish. The only exception allowed will be the removal (by the manufacturer) of aluminium cast burr/s at the inlet, exhaust and transfer ports and passages next to the cast iron sleeve to a maximum depth of 15mm. It must be noted that any additional machining not provided for above is strictly prohibited	All ports and passages have cast surface finish. The only exception allowed will be the removal (by the manufacturer) of aluminium cast burr/s at the inlet, exhaust and transfer ports and passages next to the cast iron sleeve to a maximum depth of 15mm. It must be noted that any additional machining not provided for above is strictly prohibited	All ports and passages have cast surface finish. The only exception allowed will be the removal (by the manufacturer) of aluminium cast burr/s at the inlet, exhaust and transfer ports and passages next to the cast iron sleeve to a maximum depth of 15mm. It must be noted that any additional machining not provided for above is strictly prohibited
Inlet system	As per FIA karting Specification	As per FIA karting Specification	As per FIA karting Specification
Ignition timing	Free	Free	Free
Ram Tubes for airbox	Must have 2 and have a maximum internal diameter of 23mm	Must have 2 and have a maximum internal diameter of 23mm	Must have 2 and have a maximum internal diameter of 23mm
Max RPM	14000	14000	15000
Exhaust manifold	As per FIA karting Specification	As per FIA karting Specification	As per FIA karting Specification
Carburettor	Dellorto VHST24BS	Tillotson HW-38A	Tillotson HW-49A
Main jet holder	Dellorto 18.0 +/- 0.1	N/A	N/A
Emulsion tube	Dellorto AQ270 - 2.70mm +/- 0.2	N/A	N/A
Needle	Dellorto D55	N/A	N/A



Needle clip position	Free	N/A	N/A
Needle and seat	Dellorto 270. NO GO 2.71mm	Pressure adjustable and to be raced as supplied by the promoter / organiser	Pressure adjustable. As per FIA Karting homologation form.
Choke jet	Dellorto 60 - GO 0.60mm / NO GO 0.62mm	N/A	N/A
Pilot jet (idle jet)	Dellorto U43. Through holed GO 0.42mm / NO GO 0.44mm. Jet size GO 0.98 / NO GO 1.01mm	N/A	N/A
Slide	Dellorto 50	N/A	N/A
Floats	Dellorto 4.0 grams	N/A	N/A
Sprockets rear	Free	Free	Free
Engine Sprocket	T12	T12	T12
All other specifications	As per FIA karting Specification Form	As per FIA karting Specification Form	As per FIA karting Specification Form

## 22.3 OK-N – ADDITIONAL ENGINE SPECIFICATIONS

22.3.1 For all competitions competitors will use a FIA Karting specified VTS-N VORTEX engine which must be sealed by the engine builder, Technical Consultant and/or Scrutineer.

22.3.2 All competitors need to ensure that the cylinder head and cylinder have cross-drilled nuts/bolts to facilitate the fitting of wire seals. Seals must have a barcode and a number.

- 22.3.3 It is the responsibility of the competitor to ensure that the engine builder, Technical Consultant/Scrutineer has sealed his/her engine(s) before taking part in qualifying/race(s).
- 22.3.4 No type or form of modifications/adjustments are allowed to the engine or any other parts except those detailed in the engine specification sheet as published by MSA. This includes the fuel supply, carburettor, ignition, etc.
- 22.3.5 No break is allowed in fuel line between tank to fuel pump and pump to carburettor other than for the fitting of a fuel filter.

## 23. KZ2

### 23.1 Tyres

- 23.1.1 Tyres may be rotated on the rims between races.

### 23.2 Chassis

- 23.2.1 The chassis must comply with the following regulations:
- 23.2.1.1 Rear protection, bodyworks, front panel and spoiler – FIA Karting homologated only.
- 23.2.1.2 Rear and front homologated brakes of the same type acting on both front and rear wheels.
- 23.2.1.3 Two or three rear axle ball bearings to be operational at all times (no ceramic type ball bearings are permitted).
- 23.2.1.4 Ceramic type disc rotors are not permitted.
- 23.2.1.5 One chassis per driver.
- 23.2.1.6 Hollow magnetic steel rear axle. Maximum diameter 50mm.

23.2.1.7 The regulations prescribed by FIA Karting (Group 2) are strictly applicable for any detail not mentioned concerning the chassis.

23.2.1.8 Only chassis homologated for use in South Africa may be used.

### 23.3 **Engines - General**

23.3.1 Water cooled single-cylinder engine with reed-valve intake homologated by FIA Karting.

23.3.2 Maximum cylinder cubic capacity: 125cc.

23.3.3 Reed-valve box (dimensions and drawing) according to the homologation documents. Reed-valve box cover is free.

23.3.4 Float chamber carburettor made of aluminum, with a venturi type diffuser with a maximum diameter of 30mm.

23.3.5 The carburettor must remain strictly original. The only changes allowed may be made to: the slide, the needle, the floaters, the float chamber, the needle shaft (spray), the jets and the needle kit, subject to all the interchanged parts being of Dellorto origin. The incorporated petrol filter and the plate (part No. 28 on the Technical Drawing No. 5 appended of the Technical Regulations published by FIA Karting) may be removed, but if they are kept, they must be original.

23.3.6 Gearbox: homologated by the FIA Karting (including the primary torque). With a minimum of three (3) ratios and a maximum six (6) ratios allowed. Check of the ratios using a graduated disc with a minimum diameter of 200mm or a digital coder; the degree decimals given on the Homologation Form must be mentioned in tenths of degrees and not in minutes. For the homologation of the gearbox, the manufacturer(s) and the model and type must appear on the Homologation Form.

23.3.7 A hand-operated and exclusively mechanical gearbox control without a servo system must be used. Any system of ignition cutting is forbidden.

- 23.3.8 Total exhaust opening angle of 199° maximum, irrespective of the value indicated on the homologation form (to be read with a graduated circle of a minimum diameter of 200mm or with a digital device).
- 23.3.9 Volume of the combustion chamber is 11cc minimum, measured in accordance with the method described in Appendix No. 2 to the Technical Regulations of FIA Karting.
- 23.3.10 Spark plug is a free make (mass-produced and strictly original). The body of the spark plug (electrodes not included), tightened on the cylinder head and must not extend beyond the upper part of the dome of the combustion chamber.
- 23.3.11 Dimensions of the threaded spark-plug housing: length 18.5 mm; pitch: M 14 x 1.25.
- 23.3.12 Identifications: Machined flat spaces of 30mm x 20mm for the attachment of the specified identification stickers at two locations viz. the front of the cylinder, and the upper part of the reed box housing for the half sumps.
- 23.3.13 It is allowed to add a mass to the ignition rotor; it shall be fixed by at least 2 screws, without any modification to the homologated rotor.
- 23.3.14 Exhaust: Homologated and the magnetic steel sheet metal thickness of which must be 0.75mm minimum.
- 23.3.15 Exhaust silencer: Homologated, and mandatory for use. The exhaust and silencer must be fitted according to the Technical Drawing No. 2.7 of the FIA Karting Technical Regulations.

#### 23.4 **Permitted Engines**

- 23.4.1 TM KZ10 Homologation Form No. 49/M/18 VERSION 1.3 – 13/12/2012
- 23.4.2 TM KZ10C Homologation Form No. 32/M/24 VERSION 1.2 – 22/09/2016
- 23.4.3 TM KZ-R1 Homologation Form No. 041-EZ-75 VERSION – 09/2020

- 23.4.4 VORTEX RSZ Homologation Form No. 012-EZ-76 VERSION 1 - 15/02/2019
- 23.4.5 All engine models to be raced complete with carburettor, exhaust and ignition as supplied by the manufacturer and specified on the engine homologation form and must comply with the FIA Karting Technical Regulations for KZ2 engines.
- 23.4.6 Only original TM components may be used as per TM spare parts lists of each Homologated TM engine.
- 23.4.7 Only original Vortex components may be used as per the Vortex spare parts list of the Homologated Vortex engine.
- 23.4.8 No modifications of these engines or any components including the exhaust and carburettor are permitted unless specifically noted. Any modification or adjunction on these engines and its accessories, if not expressly authorized in these regulations, is forbidden. Drivers are responsible for the conformity of their equipment.
- 23.4.9 All engines will be sealed after qualifying and will remain sealed for the entire race day. The seal is to be secured between the cylinder head bolt and the reed cover manifold and to be made as tight as possible. Should there be a technical reason for breaking the seal, the kart must be taken to Parc fermé and in consultation with the Scrutineer and/or the Technical Consultant carry out the breaking of the seal and necessary repair. The engine will then be resealed. Failure to follow procedure will result in exclusion.
- 23.4.10 Should a motor be replaced then the damaged motor is to remain in the care of the Scrutineers and/or the Technical Consultant until released.

Note: the FIA homologation sheets and homologated parts catalogue been used for the engine rules are available on the MSA website. The full FIA Karting regulations can be found on: <https://www.fiakarting.com/>

23.5 **Permitted modifications – to the engine**

23.5.1 Reed manifold can be modified e.g. polishing, grinding, sand blasting. Strictly no material may be added. A maximum of 31.5mm throat diameter is permitted. Crankcase may be cleaned and polished and sand blasted. Strictly no material may be added. As per homologation sheet and only original TM Racing parts as per the homologated motors to be used. Crankshaft may only be statically balanced. Standard conrods as per homologated spares list may be polished but not lightened. Carburettors can be polished but the venturi must be a maximum of 30mm and the profile has to remain as per the original Dellorto VHS 30 CS profile.

23.5.2 External water flow U-tube from the barrel to crankcase can be removed and sealed due to seat positioning for the taller or larger competitor.

## 23.6 Impermissible modifications – to the engine

23.6.1 The stroke, the bore (outside the maximum limits), the connecting rod centreline, the number of transfer ducts and inlet ports in the cylinder and crankcase, the number of exhaust ports and ducts. The crankshaft may not be DYNAMICALLY BALANCED (grinding or removal of material is prohibited). The Reed Valve must be as supplied with strictly no machining permitted.

23.6.2 Outside the engine - diameter of choke, all the clutch components must be original as per the engine homologation document without any modifications.

23.6.3 External appearance of the fitted engine

The following are not considered to be modifications to the external appearance of the engine:

23.6.3.1 Modification of the colour of the parts, the trimming of cooling connections and modification of the fixations (including but not limited to fixations of the carburettor, of the ignition, of the exhaust, of the clutch or of the engine itself), provided that their homologated position is not modified.

## 24. DOCUMENTATION SPECIFICATION SHEETS

24.1 Available for download on <https://www.motorsport.co.za/regulations-karts/>