

# Formula Shifter KZ IronMan

## Rules F-Series

KZ / ICC engines must be described in the

Manufacturer's catalogue and be the subject of a descriptive form

called "Homologation Form" from the model established by the CIKFIA.

Homologation forms must be supplied by competitor during technical inspections.

### **1. ENGINE GENERAL**

### **2. CYLINDERS**

### **3. WATER COOLING**

### **4. CARBURETOR AND INLET DUCT**

### **5. IGNITION**

### **6. SPARK PLUG**

### **7. INLET SILENCER**

### **8. EXHAUST**

### **9. AIR**

### **10. The following tolerances are allowed:**

**11. Without tolerance, at all times and whatever the conditions may be:**

**12. Method for measuring the opening angles of the inlet and exhaust ports:**

### **13. KZ / ICC ENGINE**

### **1. ENGINE**

General

By engine is meant the propelling unit of the vehicle in running order, including a cylinder block, sump and possible gearbox, ignition system, carburetor(s) and exhaust silencer.

All systems of injection are forbidden. The spraying of products other than fuel is forbidden.

The engine shall not comprise a compressor or any super-charging system. KZ / ICC engines must be described in the Manufacturer's catalogue and be the subject of a descriptive form called "Homologation Form" from the model established by the CIK/FIA.

This Homologation Form shall be stamped and signed by the ASN and the CIK-FIA (see the Homologation Regulations).

## **2. Cylinders**

Cylinder head: it is allowed to replace the spark plug thread by a heli-coil.

## **3. Water cooling**

Only water (H<sub>2</sub>O) is authorized for liquid cooling.

## **4. Carburetor and inlet duct**

Any injection system is forbidden. Any spraying of products other than fuel is forbidden.

For all categories without gearboxes, an extra manual mechanical adjustment device working with adjusting screws is allowed (without modifications to the carburetor, if the latter must be homologated).

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.

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.

Carburetors in KZ category must be as in technical drawing No. 7 appended.

## **5. Ignition**

The ignition system used must be homologated by the CIK-FIA.

For the KZ categories, the ignition system used must be of analogue type and any variable ignition system (system of progressive advance and delay) is forbidden.

For ignitions with an external and projecting rotor, a protection system covering the rotating parts must be mounted.

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

## **6. Spark plug**

In all categories, 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

## **7. INLET SILENCER**

In all categories, an inlet silencer homologated by the CIK-FIA is mandatory.

For the KZ categories: ducts of 30 mm maximum.

The obligatory homologated intake silencer must be used under strict observance of the following points:

- If the rubber bush is reversible, it may only be cut on one side, the unused one located in the body of the silencer.
- 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.

## **8. EXHAUST**

In all categories, it must be made with magnetic steel.

In KZ the exhaust must be homologated.

The exhaust system shall

discharge behind the Driver and shall not operate at a height of more than 45 cm from the ground.

The exhaust silencer outlet, the external diameter of which must be more than 3 cm.

It is forbidden for the exhaust in any way to pass forward and across the plane in which the Driver is seated in his normal driving position.

All systems of «power valve» are forbidden.

## **9. Air**

Only ambient air may be mixed with the fuel as a combustive

## **10. The following tolerances are allowed:**

- Connecting rod centre line: +/- 0.2 mm
- Piston stroke: - engine assembled: +/- 0.2 mm
- crankshaft alone: +/- 0.1 mm
- Ignition, engine: +/- 2°
- Homologated gearbox:

Value obtained after 3 engine rotations: +/- 3°

- Exhausts of all 125cc engines: +/- 1 mm

## **11. Without tolerance, at all times and whatever the conditions may be:**

- Cubic capacities.
- Diameter of the carburetor venturi.
- Mass measurement.
- Combustion chamber volume.

- Any minimum and maximum value

## **12. Method for measuring the opening angles of the inlet and exhaust ports**

In order to make the measurement more accurate, a 0.20 mm thick and 5 mm wide wedge 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.

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 200 mm or a digital display measuring device operated by a coder.

## **13. KZ / ICC**

Only reed-valve intakes are authorized.

The original parts of the homologated engine must always comply with and be similar to the photographs, drawings and physical dimensions described on the Homologation Form.

Modifications allowed: All modifications to the homologated engine are allowed except:

a) Inside the engine:

- stroke,
- bore (outside the maximum limits),
- connecting rod centerline,
- number of transfer ducts and inlet ports in the cylinder and crankcase,
- number of exhaust ports and ducts.

The creation of new exhaust ducts or ports is forbidden.

- Adding of inserts in the ducts.
- Restrictions according to the specific regulations.

b) Outside the engine:

- number of carburetors and diameter of choke,
- external characteristics of the fitted engine, except for machining necessary for the application of bar code stickers.

Modification of the external appearance of the engine does not include the fixations of the carburetor, of the ignition, of the exhaust, of the clutch or of the engine itself, provided that their homologated position is not modified.

\* Power unit: it must not be possible to dissociate the engine from the gearbox. Engine case must be made of only 2 parts (vertical or horizontal). Only inserts for crankshaft bearings and fixing elements (drilled holes, dowels) are authorized.

\* Water cooled single-cylinder engine with reed-valve intake, one circuit only, homologated by the CIK-FIA.

\* Maximum cylinder cubic capacity: 125 cc.

\* Reed-valve box (dimensions and drawing) according to the Homologation Form. Reed-valve box cover: free.

\* Carburetor made of aluminum, with a venturi type diffuser with a maximum diameter of 30 mm round.

The carburetor must remain strictly original. The only settings 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 Dell'Orto origin. The incorporated petrol filter and the plate may be removed; if they are kept, they must be original.

\* Gearbox: homologated by the CIK-FIA (including the primary torque). Minimum 3 and maximum 6 ratios. Check of the ratios using a graduated disc with a minimum diameter of 200 mm 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.

\* In KZ hand-operated and exclusively mechanical gearbox control without a servo system. Any system of ignition cutting is forbidden.

\* Volume of the combustion chamber: 11 cc minimum, measured in accordance with the method described. Appendix No. 1

\* Spark plug: free make (mass-produced and strictly original). The body of the spark plug (electrodes not included), tightened on the cylinder head, must not extend beyond the upper part of the dome



of the combustion chamber.

\* Dimensions of the threaded spark-plug housing- length: 18.5 mm;  
pitch: M 14 x 1.25.

\* Identifications: machined flat spaces of 30 mm x 20 mm for the  
attachment of the specified identification stickers:

- at the front of the cylinder,

- on the upper part of the reed box housing for the half sumps.

\* 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.

\* Exhaust: homologated and the magnetic steel sheet metal thickness  
of which must be 0.75 mm minimum.

#### **14. KZ / ICC Class Specifics**

\* Exhaust silencer: homologated and mandatory.

\* Tires: 5'' Dry LeCont White / Red - WET Lecont White

#### **Appendix No. 1**

a) In KZ1 and KZ2, the volume then measured minus the plug insert  
(2 cc) must not be less than 11 cc.

General method for measuring the volume of the combustion  
chamber

\* 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 18.5 mm dimension).
- \* Screw the plug insert in place of the spark plug (the plug inserts, 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).
- \* Make the top part of the piston and the periphery of the cylinder waterproof using grease.
- \* Place the piston at top dead center 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.
- \* With a laboratory graduated burette (mechanical or electronic), fill combustion chamber (with "RED" DEXTRON ATF D type oil) to the uppermost part of the top edge of the plug insert (wetting the plane of the head gasket).

Alternative method for measuring the volume of the combustion chamber

- \* Remove the engine from the chassis.
- \* Wait until the engine is at ambient temperature.
- \* Have the spark plug removed (check the 18.5 mm dimension).
- \* Screw in the plug insert in place of the spark plug (the plug inserts, 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 center and block the crankshaft.

\* With a laboratory graduated burette (mechanical or electronic), fill combustion chamber (with "RED" DEXTRON ATF D type oil) to the uppermost part of the top edge of the plug inserts (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 No. 1.