

DESIGN OF A GO - KART

Project Report Submitted by :

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1.1 Survey into the various types of Go-karts

There are many variations in the design and construction of go - karts. Many constructors of go - karts construct satisfactory enough products in safety, handling performance etc.

But those products have been built with primary purpose the profit of selling a batch of them to a person having a track of a random shape in order to make pseudo-races between anybody who wants to spend some money in order to drive a go - kart and enjoy himself.

Other manufactrures produce go-karts for only racing purposes. These races are separated in groups of go-karts driven by professionals. The races take place in specified tracks (length, shape, flatness, safety barriers etc.).

The types of go - karts are separated in classes and groups according to standards and must be checked and pass a series of tests, again according to standards (weight, noise, capacity of the cylinders). These types of go - karts are best termed karts.

The most important types are given by the RAC standards and are:

Without bodywork

With bodywork

Cadet

125 National

Junior Britain

210 National

100 Britain

250 National

100 National

250 International (Formula E)

100 Super

Formula K

Basic requirments for karts according to RAC standards:

- Wheelbase- mimimum 101cm, maximum 127cm.
- The track must be a minimum of two thirds of the wheelbase.
- Maximum overall width, all classes, 140cm.
- No part may protrude outside the quadrilateral formed by the bumpers and outer face of the wheels.
- Maximum overall height of any part of the kart from the ground - 60cm.
- There must be a floor made from rigid material that stretches from the seat to the front of the kart. It must be edged on each side by a tube or a rim to prevent the driver's feet from sliding off the floor.
- Any method of suspension, either by elastic material or by pivots is prohibited.
- The wheels must be equipped with pneumatic tyres and the front wheels must have bearings.
- The attachment of the wheels to the axles must incorporate safety locking devices such as Split Pins or Self-Locking

Nuts.

- Tyres, when inflated on the wheel rims must not exceed a maximum external diameter of 44.4cm. Minimum external diameter must not be less than 22.2cm.
- Classes using mandatory tyres and the eligible tyres are listed in Table 1 and Table 2 respectively.
- Remould tyres are prohibited. Heating of tyres, by any method, is prohibited.
- The brakes, of disc type, must be effective and act on both rear wheels simultaneously.
- Steering: flexible steering control by cable or chain are prohibited. Steering wheel must be of circular shape and closed.
- Seat: must be of non-inflamable material and must be rigidly located on the chassis.
- Pedals: must not protrude forward of the chassis.
- Exhaust: must be behind the driver.
- Fuel: non gear-box classes - max. capacity 5 lt.
gear-box classes - max. capacity 10 lt.
Formula E - max. capacity 15 lt.
- Bumpers: the kart must have protection (bumpers) at the front and the rear, which shall have a strength and construction appropriate to their function.
- No bumpers, whether front, rear or side may project sideways beyond a line drawn horizontally along both front and rear tyre, at the level of axle centres (front wheels in the straight ahead position).
- Weight: see table 3
- Transmission: 100cc classes must not be fitted with a variable ratio transmission. However, they may be fitted with a clutch if desired. Karts competing in the 125, 210 and 250cc classes must be equipped with a variable ratio transmission providing a minimum of three speeds and be capable of making an unassisted standing start. A guard above the transmission must exist and the drive must be always to the rear wheels, by any method, provided no differential is incorporated.

1.2 Technical specifications for the 100cc Super

This project deals with the design of the 100cc Super. From the restrictions and regulations mentioned, this type has the following specifications:

Width : maximum 140cm

Length : not more than 182 cm

Wheelbase : 101 - 127 cm

Track : must be minimum $\frac{2}{3}$ of the wheelbase

Maximum overall height : 60 cm from ground

Tyres: When inflated on the wheel rims must not exceed a maximum external diameter of 44.4 cm. Minimum external diameter must not be less than 22.2 cm.

Brakes: Must be of the disc type and mounted on the rear axle. Master cylinder must be at least 15 cm from the front bumper.

Fuel: maximum 5 lt

Bumpers: Compulsory

Bodywork : None

Side panels: Compulsory

Weight: minimum 125 kg

Engine: 100 cc

Transmission: Fixed ratio, no differential.

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