



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJIRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 11, Issue 6, June 2022

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.118



9940 572 462



6381 907 438



ijirset@gmail.com



www.ijirset.com

Design and Fabrication of Go-Kart

C. Subhahan Basha ^{M Tech, (Ph. D),} M. Mohammad Ali , B. Vijay Kumar , K. Mahendra , J.P. Vinay ,
S.Md. Roshan Sani

Associate Professor, Department of Mechanical Engineering, Gates Institute of Technology, Gooty,
Andhra Pradesh, India

U.G. Students, Department of Mechanical Engineering, Gates Institute of Technology, Gooty, Andhra Pradesh, India

ABSTRACT: A Go Cart also spelled as Go-Kart is a four wheeled vehicle designed and meant for racing only (though in some countries it is used for fun personal transportation). It is a small four-wheeler run by I.C Engine. It is a miniature of a racing car. Go-Kart is not a factory-made product. It can be made by Automobile engineers. This report documents the process and methodology to produce a low-cost go-kart. Simple but innovative, we have made a simple, self-fabricated “Go-kart”, chassis formed by hollow rectangular bar, powered by Suzuki access 125 cc engine fitted with single disc brake. The chassis are made of rectangular iron bars. There is no suspension therefore chassis have to be flexible enough to work as a suspension and stiff enough not to break or give way on a turn. We are replacing hollow tubular shaft with universal joint shaft. The purposes of this replacement are; For the same length of tubular shaft, universal joint shaft weights are same, for visual improvement, for better mounting ability and the main thing is, it is found that universal joint shaft has more bending stress than the tubular shaft. The Designing of the Go-kart is carried out in the CREO. Fabrication of the go-kart is performed in our Institute mechanical workspace. And the test drive on the go-kart is performed to check the performance of the engine, application of brakes and if any required modifications to be made

KEYWORDS: Introduction, Literature Review, Design and Fabrication of Go-Kart, Steering System, Working of Go-Kart, Performance Study, Make or Buy Decision, Estimating and Costing, Conclusion, Reference.

I. INTRODUCTION

Go-karts may appear like little autos, yet there are some characterizing attributes that differ them from ATVs or other small auto-motives. Intelligibly, measure is a major factor, yet one noteworthy part of it is total absence of a customary suspension; here the hub is solidly appended to the edge, no differential, and keeping in mind that things like camber and caster might be customizable. Typically, a kart has a solitary brake circle on the back and nothing on the front, and the brake pedal is arranged to one side of the kart, with the throttle on the right, constraining the driver to either learn left-foot-braking or go plunging off base. A kart ought to have an exceptionally, perfectly sized seat and no belts of any sort, and considering that karts once in a while have move confines or genuine crash structures, that is starting to change. Be that as it may, regardless of conventional security highlights, karting is viewed as an extremely safe type of motorsport.

SCOPE OF THE PROJECT:

Go-Karting is a big craze to the Americans and Europeans. It is initially created in United States in 1950s and used as a way to pass spare time. Gradually it became a big hobby and other countries followed it. In India go-karting is getting ready to make waves. A racing track is ready in Nagpur for go-karting and Chennai is also trying to make one. Indian companies are also producing go-karts in small scale. MRF and Indus motors are the major bodies in karts and they are offering karts between 1 lakh and 3 lakhs. But to make go-karts popular, the price must come down. For that, many people are trying to build one under 1 lakh and we had also taken up the challenge and make us under 25,000/-. This is a dream come true. A go-kart just under Rs. 25,000/-. So, we are sure that our project will have a high demand in the industry and also, we are hoping to get orders from the racing guns.

Go-Karts in India: In addition to the well-known 24 Hours of Le Mans race for cars there's also a 24 hours event for karts that takes place at the kart circuit Alain Prost at Le Mans, France. This race existed since 1986 and its winners list include 4 times Champ Car champion Sebastian Bourdais (in 1996). The year 1964 saw the roll-out of the 100cc World

Fig –Go-Kart in India& Go-Kart in Foreign Countries

Championship, the very first of this type, and today you will find organized competitions all across the globe. The evolution has created an array of karts such as the 100cc air-cooled classes, 125cc two-stroke shifter karts (efficient at 115mph) and Super Karts (capable of 160mph). All contemporary F1 competitors were raised racing karts like Michael Schumacher, Kimi Raikkonen, Lewis Hamilton, Fernando Alonso, in addition to NASCAR's Jeff Gordon, Tony - Stewart and Juan Pablo Montoya.

Go-Karts in Foreign Countries: Go-karts in foreign countries have much more performance than the Indians. One type is a single engine 160cc 4-stroke kart with a maximum speed of around 40 mph and second type, a twin-engine 320cc 4-stroke kart used in outdoor with a maximum speed of 70 mph. There are hundreds of racing tracks in US for karting and also they are much more professional than the Indians.

II. LITERATURE REVIEW

INTRODUCTION: Basically, chassis is considered as a framework to support the body, engine and other parts which make up the vehicle. Chassis lends the whole vehicle support and rigidity. Chassis usually includes a pair of longitudinally extending channels and multiple transverse cross members that intersect the channels. The transverse members have a reduced cross section in order to allow for a longitudinally extending storage space. The chassis has to contain the various components required for the race car as well as being based around a driver's cockpit. The safety of the chassis is a major aspect in the design, and should be considered through all stages. Generally, the basic chassis types consist of backbone, ladder, space frame. Different types of chassis design result the different performance.

TERMINOLOGY: The purpose of chassis is to maintain the shape of the vehicle and to support the various loads applied to it. The structure usually accounts for a large proportion of the development and manufacturing cost in new vehicle programmed and many different structural concepts are available to the designer. It is essential that the best one is chosen to ensure acceptable structural performance within other design constraints such as cost, volume and method of production, product application and many more. Assessments of the performance of a vehicle structure are related to its strength and stiffness. A design aim is to achieve sufficient levels of these with as little mass as possible.

STRENGTH: The strength requirement implies that no part of the shape will lose its function when it is subjected to road loads. Loss of function may be caused by instantaneous overloads due to extreme load cases, or by material fatigue. Instantaneous failure may be caused by either overstressing of components beyond the elastic limit, or by buckling of items in compression or shear stress, or by failure of the joints. The life to initiation of fatigue cracks is highly dependent on design detail, and can only be assessed when a detailed knowledge of the component is available. For this reason, assessment of fatigue strength is usually deferred until after the conceptual design stage.

STIFFNESS: The stiffness of the structure relates the deflection produced when load is applied. It applies only to structures in the elastic range and is the slope of the load versus deflection graph. The stiffness of a vehicle structure



has important influence on its handling and vibrational behaviour. It is important to ensure that deflection due to

extreme loads is not so large to impair the function of the vehicle, for an example so that the doors will not close, or suspension geometry is altered. Low stiffness is lead to unacceptable vibrations, such as 'scuttle shake'. Again, different load cases require different stiffness definitions, and some of these are often used as 'benchmarks' of vehicle structural performance. The two most commonly used in this way are a) Bending stiffness, which relates the symmetrical vertical deflection of a point near the centre of the wheelbase to multiples of the total static loads on the vehicle. A simplified version of this to relate the deflection to a single, symmetrically applied load near the centre of the wheelbase. b) Torsion stiffness, relates the torsional deflection of the structure to an applied pure torque T about the longitudinal axis of the vehicle. The vehicle is subjected to the 'pure torsion load case'. Twist angle is measured between the front and rear suspension mountings. Twist are intermediate points along the wheelbase is sometimes also measured in order to highlight regions of the structure needing stiffening. The two cases apply completely different local loads to individual components within the vehicle. It is usually found that the torsion case is the most difficult to design for, so that the torsion stiffness is often used as a benchmark to indicate the effectiveness of the vehicle structure.

VIBRATION BEHAVIOUR: The global vibrational characteristics of a vehicle are related to both its stiffness and mass distribution. The frequencies of the global bending and torsional vibration modes are commonly used as benchmarks for vehicle structural performance. These are not discussed in this book. However, bending and torsion stiffness influence the vibrational behaviour of the structure, particularly its first natural frequency.

III. DESIGN AND FABRICATION OF GO-KART

Technical Specifications of Go-Kart: Chassis Material, Suspension System & Go-Kart Dimensional Configuration, Braking System, Tire and Wheel, Engine & Transmission system, Safety Material

Roll Hoop: Roll hoop is placed between the engine compartment and the driver compartment. The Firewall sheets are attached to the roll hoop. The roll hoop should be placed at a distance of 2-3 inches from the seat and engine should be placed at a distance of 1-2 inch from the roll hoop. According to it the roll hoop should be adjusted on the chassis body with an inclination of 5-10° towards the engine. Height of the roll hoop should have a clearance of 3-5 inches from the top end of the driver helmet.

Bumpers: The bumpers should be placed at the front, rear and sides of the kart. The bumper material should be seamless pipes or fibre materials to cover the chassis body from all the angles. The bumpers should not allow the chassis body to deform during the accidents. The bumpers should take the max load during the accidents.

Driver's leg compartment: The Driver leg compartment should be adjusted according to the driver comfortability of seating and his leg space for throttling and during application of brakes. Foot guard must be placed to protect the foot of the driver during accident or during collision with another kart.

Driver's Seat compartment: Driver seat must be rigidly fixed to the chassis body. The driver seat must be positioned in an inclination according to the comfortability of the driver, so that the driver will not have back pain during riding of the go-kart. The driver seat must be bucket seat and there will be no seat belts present. Driver compartment should be arranged in a way that the driver should come out of the kart within 5 seconds during egress test.

Engine Compartment: The engine must be placed in the engine compartment in a way that it should be in diagonal to the driver seat arrangement to reduce the roll over effect of the vehicle. Engine compartment will have the engine, battery, transmission system, transmission shaft, sprocket and disc brake connected to the transmission shaft. Taking consideration of all the parts we should design the engine compartment.

Suspension system: There is no suspension system because the ground clearance of the go-kart is max 2 inches.

Wheel base: Wheel base of the go-kart is defined as the distance between the Centres of the front and rear axle tire. As per the rulebook of 3rd IKR, go-kart should have wheelbase of min 44 inches.

Track width: Track width of the go-kart vehicle should be min 75% of the wheelbase. Track width is the distance

Chain Transmission: Chains are used for high transmission number. They are mostly used when Distance between centre is short but the centre distance is as much as 8 m. They are now generally used. Used for transmission of power in cycle, motor vehicle, and agriculture machinery gearing in two workshops. It is general requirement for any machines that they should provision for regulating the speed of travel. The regulation may be available in discrete steps or it may be steeples i.e., continuous the format are known as stepped drives Ex. Lathe machine, milling machine, printing machine etc.

Fabrication process involved in go-kart

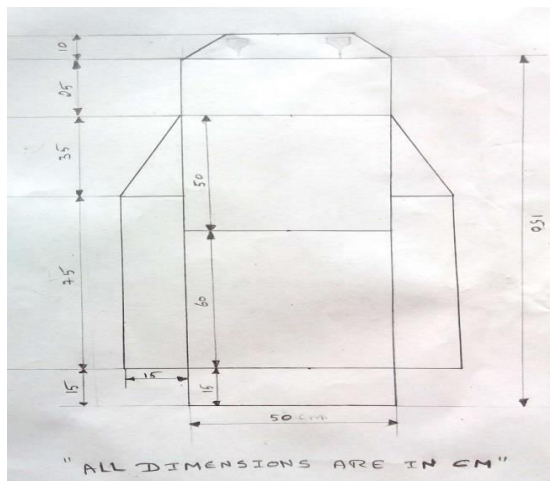


Fig – Dimensions of Chassis

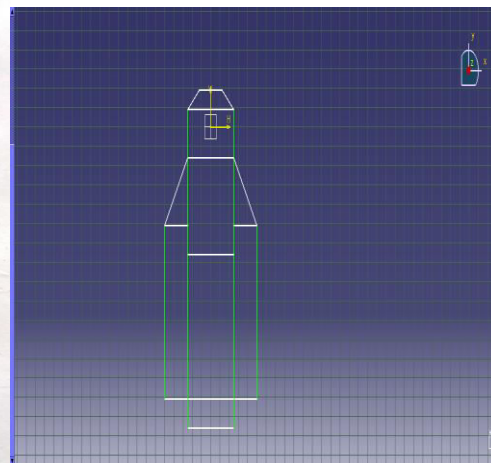


Fig – Design of Chassis

CREO model of chassis

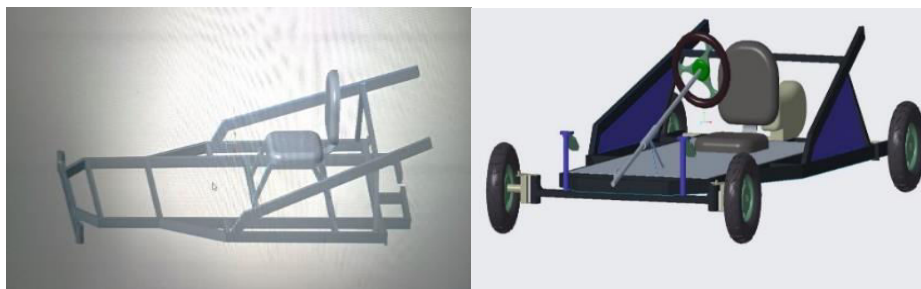
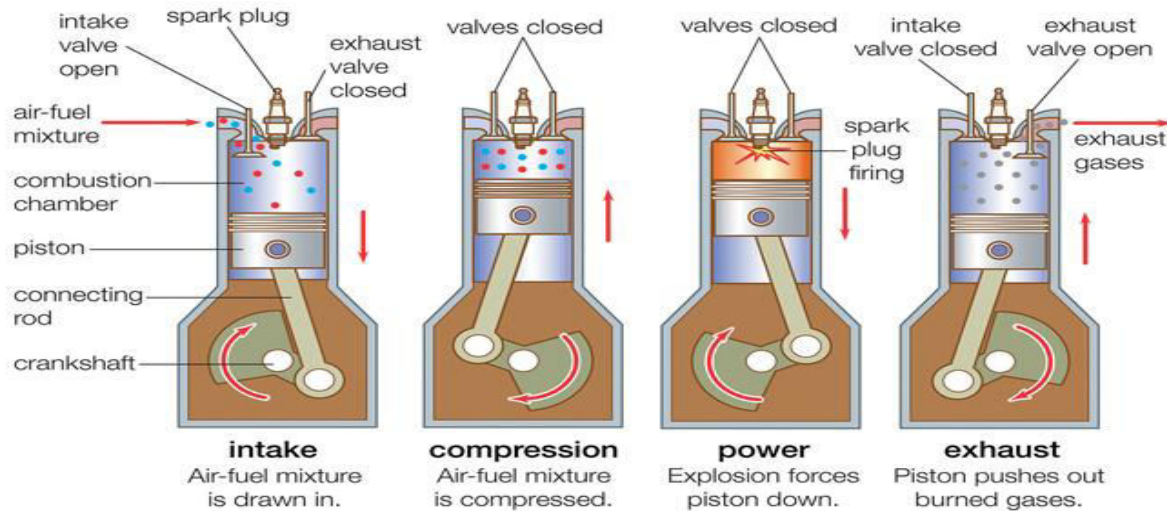


Fig – Assembly of Go-Kart

Working of Go-Kart

INTRODUCTION: A four-stroke engine (also known as four cycle) is an internal combustion (IC) engine in which the piston completes four separate strokes while turning a crankshaft. A stroke refers to the full travel of the piston along the cylinder, in either direction. The four separate strokes are termed 1. Intake Stroke 2. Compression Stroke 3. Power Stroke 4. Exhaust Stroke

Working of Four Stroke Petrol Engine: The engine we used in this kart is a 4-stroke petrol engine. The 4-stroke engine has no valves. Ports serve the purpose of admitting and exhausting the charge. These parts open into the cylinder; they are covered and opened by the sliding piston.



Four-Stroke Engine Components

Step 1: Intake Stroke: Air and fuel enter the small engine through the carburettor. It's the job of the carburettor to supply a mixture of air and fuel that will allow for proper combustion. During the intake stroke, the intake valve between the carburettor and combustion chamber opens. This allows atmospheric pressure to force the air-fuel mixture into the cylinder bore as the piston moves downward.

Step 2: Compression Stroke: Just after the piston moves to the bottom of its travel (bottom dead centre), the cylinder bore contains the maximum air-fuel mixture possible. The intake valve closes and the piston returns back up the cylinder bore. This is called the **compression stroke** of the 4-cycle engine process. The air-fuel mixture is compressed between the piston and cylinder head.

Step 3: Power Stroke: When the piston reaches the top of its travel (top dead center), it will be at its optimum point to ignite the fuel to get maximize power to your outdoor power equipment. A very high voltage is created in the ignition coil. The spark plug enables this high voltage to be discharged into the combustion chamber. The heat created by the spark ignites the gases, creating rapidly expanding, super-heated gases that force the piston back down the cylinder bore. This is called the power stroke.

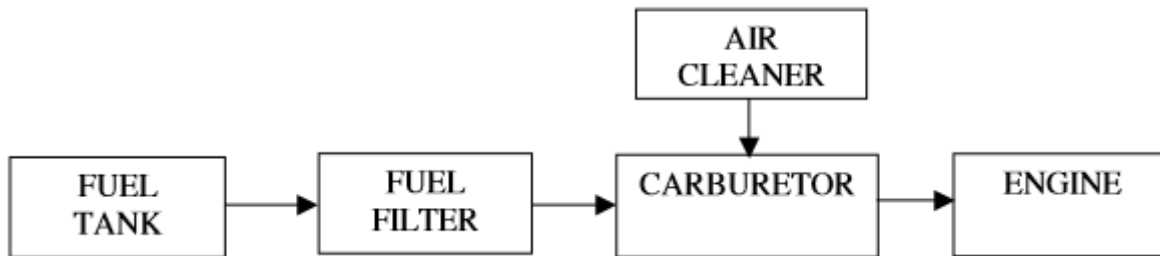
Step 4: Exhaust Stroke: When the piston reaches bottom dead center again, the exhaust valve opens. As the piston travels back up the cylinder bore, it forces the spent combustion gases through the exhaust valve and out of the exhaust systems. As the piston returns to top dead center, the exhaust valve closes and the intake valve opens and the 4-cycle engine process repeat. Ever repetition of the cycle requires two full rotations of the crankshaft, while the engine only creates power during one of the four strokes. To keep the machine running, it needs the small engine flywheel. The power stroke creates momentum that pushes the flywheel's inertia keeps it and the crankshaft turning during the exhaust, intake and compression strokes.

Four-Stroke Engine Components

Systems used in a go-kart: Like every automobile, go-karts also have various systems. Mainly There are 4 systems in this kart. 1. Fuel system 2. Ignition system 3. Lubrication system 4. Cooling system

1. Fuel system:

The purpose of fuel system in SI engines is to store and supply fuel and then to pump to carburettors. The fuel supply system also prepares the air-fuel mixture for combustion in the cylinder and carries the exhaust gas to the rear of the vehicle. The basic fuel supply system used in the vehicle consists of the following.: a) Fuel tank b) Fuel strainer or Fuel filter c) Air cleaner d) Carburettor



Flow Diagram for Combustion

Fuel Tank: It is reservoir of fuel oil for an engine. It is kept in an elevated position so that the fuel will flow to the carburettor through the filter by gravity. Our fuel tank has a capacity of 5litre.

Fuel Filter: Dust, particles of dirt or other unwanted particles might be present in the petrol. This petrol should be free from these particles. Therefore, the petrol filter is used.

Air Cleaner: Since the atmospheric air is highly corrosive and contains dust and dirt particles, it is allowed to enter the engine intake manifold only through an air cleaner.

Carburettor: The mixture of petrol and air burns in the combustion chamber of the engine. The carburettor is a device to mix the petrol with air in the proper ratio for the purpose of combustion. The quantity of petrol and air can be in indifferent ratios. The quantity of petrol can sometimes be more and sometimes less. The speed of the engine changes according to the richness of the petrol in the mixture. Function of a carburettor is: a) Meter the quantity of charge to give correct air-fuel mixture) Atomize petrol into fine particles so that it burns quickly.

2. Ignition system:

The ignition system used for small two-stroke engine is flywheel magneto type. The advantage of this system is that it is self-contained. The flywheel magneto is basically used only for a single cylinder engine though ones suitable for multi-cylinder engine have also been developed. The principles of this type of ignition can be easily understood with following description.

Magneto Generator: The ignition magnet of a magneto generator, which produces alternating electrical impulses in a low-tension armature winding or coil. At an appropriate moment the circuit through the winding is broken by means of an interrupter, which forms an integral part of the magneto. A condenser connected across the breaker assures rapid cessation of the primary current, and this results in the induction of a high-tension impulse in a fine wire secondary winding, which either surrounds the primary winding or is surrounded by it, both being wound on a magnetic coil. Advantage of the magneto is its self-contained character. All the demands of the system are in one compact unit from which it is necessary only to run a low-tension cable to the lighting system and high-tension cable to the spark plug.

1. Ignition Coil 2. Spark Plug 3. Ignition Switch 4. Flywheel Magnet

A small magnet is provided with laminated pole pieces and the assemblies cast in the engine flywheel, which also acts as a cooling fan. In addition to the magnet, the magneto consists of a coil with a w-shaped or three pole laminated core, an interrupter and a condenser, all of these parts being mounted on a base plate or starter plate. The two curved slots in the stator plate permit of adjusting the spark timing. As the poles of the core pass those of the magnet, the magnetic flux passes through the coil first in one and then in the opposite direction and alternating electric impulses are induced in it. When the flux has been well established the primary circuit is closed and a moment later when the primary current is at its maximum, the circuit is broken by the interrupter, which is actuated by a cam on the crankshaft. Magnetos also have a device coupled to it so that the timing is advanced as the engine speed increases. This helps in ignition of the charge in the cylinder. The magnetos are either fitted with built-in type of two coils – one ignition coil and the other lighting coil or alternately they have separate ignition coil. These are attached to a starter or fixed plate and terminate in soft-iron pole-pieces closely matching the shape of the flywheel which rotates around them.

IGNITION COIL: The coil consists, in fact, of two coils which may be considered as separated electrically, although they are both wound on the same iron core and share a common terminal. One coil, known as the primary, is fed from the battery, and the principle of operation depends upon the fact that, if the supply to this coil is suddenly interrupted, then the voltage is created or induced in the other coil known as the secondary. The voltage in the two coils can be considered for our purpose to be in the same ratio as the number of turns of wire on the two coils, so that by providing relatively few turns on the primary winding, and a very large number on the secondary the necessary, high

voltage is obtained. The voltage required to cause a spark between the sparking plug points depends upon both the pressure of the mixture with the cylinder and the gap between the points under average conditions a voltage of the order of 10,000 volts is needed. Earlier it has been stated that the development of the higher voltage in the secondary winding of the ignition coil only occurs when the electricity supplied to the primary winding is suddenly interrupted. This interruption is arranged to take place at the correct time by the contact breaker points.

Spark Plug: An essential part of the ignition system is the provision of electrodes within the engine cylinder, across which the ignition spark can discharge. It is desirable to arrange that these electrodes shall be easily accessible and they are, therefore, mounted on a screwed-in plug. A sparking plug consists essentially of a steel body which bears the earthed electrode, an insulator, and a central rod which forms the other electrode, fed from the distributor. The lower part of the body is threaded to suit a screwed hole provided in the engine, the length of the threaded portion known as the reach and varying with the plug design. The body of the plug seats on to a soft steel washer when it is screwed into the engine. The insulator operates under particularly arduous conditions since not only must it withstand the high ignition voltage, but it's lower and is subjected to the full heat of combustion and it is also liable to mechanical shock. At one time, the insulator was made from porcelain but modern plugs use ceramics based on sintered aluminium. The central electrode is seated into the insulator and is provided with a screwed terminal at the upper exposed end, often shaped on a connector. The tip of the electrode, at which the spark occurs, usually has an insert of heat-resisting metal such as nickel. The ignition voltage is about 25,000 volts and the distance between the central and earthed electrodes is about 0.02 inch and is adjusted by bending the outer electrode.

3. Lubrication system:

It is a commonly known fact that if two rough surfaces are rubbed together, there is a resistance to the motion and heat is generated. In an IC engine surface, which rubs together are not tough by normal standards, yet if they are allowed to run in direct contact get one another, the temperature more rises to so high a degree that local melting will occur and the surfaces will slide and seize. It has been shown that even if the surfaces are super finished, seizing will occur unless lubrication is provided. The primary objective of lubrication is to reduce the friction and wear between bearing surfaces. Lubrication accomplishes this requirement by interposing a film of oil between the sliding surfaces. Other functions of lubricating oil in internal combustion engines are, such as the pistons by packing up heat and dissipating it through the crank case and reducing compression losses by acting as a seal between the cylinder walls and piston rings. A lubricant must be able to perform certain tasks in order to accomplish its purpose satisfactorily. It must possess sufficient viscosity and oiliness to protect mechanical devices of the necessary speeds, pressures and temperatures.

Types of Lubricants: Lubricants are classified in three forms - fluid, semisolid and solid. Fluid oils are used in automobile engine lubrication systems, semi solid oils are used in chassis lubrication. Solid lubrication is done by using graphite and mica. Graphite often with oil to lubricate automobile springs. The use of these types depends upon the work required and the surface to be lubricated.

4. Cooling system:

A lot of energy is produced due to the combustion of fuel inside the engine cylinder. Only 30% of heat energy is converted into mechanical work. Out of the remaining heat (about 70%) about 40% is carried away by exhaust gases into the atmosphere. The remaining part of heat energy (about 30%) is absorbed by engine cylinder, cylinder head, piston and engine valves. It causes thermal stress in the engine parts, reduces strength of the piston, decomposition of lubrication oil, burning of valves and it also reduces the volumetric efficiency of the engine. In order to avoid the harmful effects of overheating, it is essential to provide some cooling system for IC Engines. Generally, there are two main types of cooling system. Water cooling and air-cooling. In two stroke petrol engine, air-cooling system is employed.

Air cooling: For this cylinder is cast with a number of fins around the cylinder. This type of cylinder is used by motorcycles and scooters and also in Go-Karts. The air from the atmosphere dashes against these fins and removes the heat from the cylinder.

V. STEERING SYSTEM

Steering system: Mechanical steering mechanism of any type can be used (Rack and pinion/steer-by-wire is excluded). The steering wheel must be mechanically connected to the wheels. All parts of the steering system (steering column, tie rods, spindles (stub axles)) must be of metal. Steering is the assortment of elements, linkages, and so on. That allows any car to follow the required course of direction. The mechanism needs to have an effect on at least 2 wheels and should have agreeable steering stops placed either on the uprights or at the rack.

Manual steering structures: Steering wheel and steer column; Linkages, steering knuckles and ball joints; Wheel spindle assemblages.

Steering wheel: The steering wheel can be taken of any diameter of different shapes. As per our IKR 3.0 rule book, the organizer needed a circle or oval shaped steering wheel with outer diameter 10 inches. For elliptical steering wheel: Major axis diameter of 10 inches and minor axis diameter of 8 inches

Ackermann steering: Ackermann guiding geometry is a geometric plan of linkages in the controlling of a go-kart intended to take care of the issue of wheels within and outside of a swing expecting to follow out circles of various radii. A basic estimate to consummate Ackermann controlling geometry might be created by moving the guiding turn indicates internal so as lie on a line drawn between the directing bosses and the focal point of the back pivot. The directing turn focuses are joined by an inflexible bar called the tie pole. With consummate Ackermann, at any edge of directing, the inside purpose of the majority of the circles followed by all wheels will lie at a typical point.

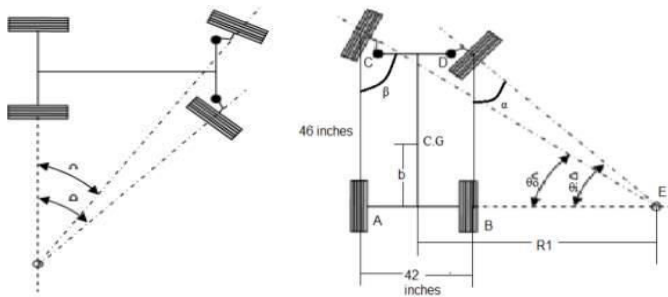


Fig – Ackermann Steering Diagrams



Fig – Steering Wheel

FABRICATION: Metal fabrication is the building of metal structures by cutting, bending, and assembling processes. It is a value-added process that involves the construction of machines and structures from various raw materials. For this we have used the arc welding process for fabrication of metals.

Arc welding: Arc welding is a type of welding that uses a [welding power supply](#) to create an [electric arc](#) between an electrode and the base material to melt the metals at the welding point. They can use either [direct](#) (DC) or [alternating](#) (AC) current, and consumable or non-consumable electrodes. The welding region is usually protected by some type of [shielding gas](#), vapour, or slag. It remains an important process for the fabrication of steel structures and vehicles. In arc welding, the intense heat needed to melt metal is produced by an electric arc. The arc is formed between the actual work and an electrode (stick or wire) that is manually or mechanically guided along the joint. The electrode can either be a rod with the purpose of simply carrying the current between the tip and the work. Or, it may be a specially prepared rod or wire that not only conducts the current but also melts and supplies filler metal to the joint. Most welding in the manufacture of steel products uses the second type of electrode. An arc is an electric current flowing between two electrodes through an ionized column of gas. A negatively charged cathode and a positively charged anode create the intense heat of the welding arc. Negative and positive ions are bounced off of each other in the plasma column at an accelerated rate. In welding, the arc not only provides the heat needed to melt the electrode and the base metal, but under certain conditions must also supply the means to transport the molten metal from the tip of the electrode to the work.

Fabrication:

- Chassis: First of all, the chassis is constructed. The MS angular is taken as per dimensions and bends in required places using bending machine. Then the pipes are welded.
- Axle: The required shaft is taken as per the dimensions and turned on the lathe.
- Sprocket: The sprocket is welded on the axle at required place of rear axle.
- Rolling bearing: This is a bearing which carries a load by placing rolling elements (such as balls or rollers) between two bearing rings called races. These are welded where we require rotation.
- Brake: The brake is also placed in the axle near to the tyre. The bore is connected to it and is connected to middle pedal in front of car.

- Accelerator: The accelerator pedal is placed in the right side and is connected to the engine.
 - Clutch: The clutch pedal is placed in the left side of the car and is connected to clutch placed in the engine.
 - Engine: The engine is mounted in the chassis and the chain is connected to the sprocket and engine.
 - Fuel tank: The fuel tank is placed in the upper position of the engine level using welding technology.
 - Rear wheels and tires: The 2 wheels are connected to the both ends of the axle and welded together. Then the assembly is connected to the chassis using 2bushed bearing.
 - Steering: The steering spindle and steering are made as per the dimensions and bolted together. This is connected to the bearing and the bearing is fixed. The tyres are connected to bearing with the help of two rods.
- Seat: First the seat is cushioned and then mounted on chassis using bolts.



Fig– Front View of Go-Kart



Fig – Side View of Go-Kart

8.1 Estimation and costing: Costing may be defined as systematic procedure for recording accurately every item of expenditure, incurred on the manufacture of a product by different departments of any manufacturing concern.

8.1 Objectives of Cost Estimation:

Main objectives of costing are as follows:

- To help the producer in deciding the manufacturing and selling policies.
- To help in filling up tender enquiries.
- To decide the amount of overheads, this helps in comparing and checking the actual overheads of the factory.
- To decide the wage rates of the workers after carrying out a time study.
- It helps to decide whether a particular material should be purchased from the market or to be manufactured.
- It helps in improving the designs, which may reduce the cost of production) To submit estimates to the sales department for selling.

Sl. No	Description	Quantity	Cost in Rs.
1	Chassis	1	5000/-
2	Engine (Suzuki access)	1	10000/-
3	Steering System	1	2000/-
4	Wheels and Tyres	4	2000/-
5	Brake (Disc)	1	1500/-
6	Rear Axle	1	1000/-

7	Transmission System	1	800/-
8	Fuel Tank	1	500/-
9	Seat	1	800/-
10	Engine Service	-	700/-
11	Extra Fittings	-	1500/-
12	Painting	-	1200/-
13	Labour Cost	-	4000/-
14	Indirect Material Cost	-	500/-
TOTAL			31,500/-

TABLE:-ESTIMATING AND COSTING**VI. CONCLUSION**

The 125cc, 4 stroke, 4 wheeled go-karts finally made in low cost that is below Rs 28,000. But it is just a prototype of that performance machine. The materials used are not up to the mark of automotive standard. Big companies will design one car at a minimum of 2 years. But it is completed in two months. Finally, the homemade and low-cost Go-Kart.

The Go-Kart is the project report is prepared in such a manner that every layman can understand the details pertaining to the project. The report is prepared in simple language with neat description

REFERENCES

- [1] AbhinayNilawar, Harmeet Singh Nannade, AmeyPohankar, Nikhil Selokar, "DESIGN OF GO-KART", Maharashtra,India, IJFEAT, ISSN: 2321-8134.
- [2] Baja 09 design report: Paper Number-TTTITM2 Uploaded by Midhun Davis
- [3] Kanaad Bhardwaj, Mahesh Kumawat, Abhinav Pamecha , Aryan Sharma, Hemant Choudhary , Dhruv Rana , Ajit Singh Gour, Atul Katara "Design and Performance Evaluation of an Electric Go-Kart "IJARIIE-ISSN(O)-2395-4396 Vol-6 Issue-3 2020
- [4] "Electric Vehicle Technology Explained" by James Larminie and John Lowry published 2012 by John Wiley and sons limited.
- [5] http://en.wikipedia.org/wiki/Euro_NCAP
- [6] Ravindra Laxman Gaikwad, Prathmesh Vishwas Waghmare,LalitDaulatrao Deo, Akshay Mukesh Mutake , Matoshri College of Engg& Research Centre, Nashik, Maharashtra, (India) "DESIGN OF GO-KART VEHICLE SYSTEM", ISSN: 978-81-932074-7-5
- [7] "Practical Finite Element Analysis" by Nitin S Gokhale, Sanjay S Deshpande, Sanjeev V Bedekar, Anand N Thite published 2002 by Finite to Infinite.
- [8] "Design and Simulation of 4 Wheel Steering System" ISO 9001:2008 Certified International Journal of Engineering and Innovative Technology (IJEIT) Volume 3, Issue 12, June 2014



INNO SPACE
SJIF Scientific Journal Impact Factor
Impact Factor: 8.118



ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 **9940 572 462**  **6381 907 438**  **ijirset@gmail.com**



www.ijirset.com

Scan to save the contact details