

TORC OFF ROAD RACING CLUB INC.

TECHNICAL REGULATIONS



2008

Technical Regulations

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GENERAL VEHICLE REQUIREMENTS

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FOR CLARIFICATION ON ANY POINT YOU SHOULD CONTACT A REPRESENTATIVE OF THE ORGANISING CLUB.

These General Requirements shall apply to every machine unless explicitly varied by specific class Requirements.

1. DEFINITION:

A Mini-Buggy is a small single seat off road vehicle with a wet weight excluding driver of no more than 500kg, intended for use in short course off road competition with speeds limited by the nature of the course to approximately 100km/h. The machine shall be of tubular space frame construction, powered by a motorcycle engine driving the rear wheels.

2. ENGINE/TRANSMISSION:

Subject to any additional requirements as may be otherwise specified:

- 2.1 Each machine shall have one engine only, which is to be mounted entirely to the rear of the driver.
- 2.2 Engines choice is unrestricted notwithstanding engines originally derived from registerable motor vehicles shall not be permitted.
- 2.3 Only the rear wheels may be driven.
- 2.4 Each machine shall have a manifold pressure less than atmospheric at all times during competition.
- 2.5 Carburettor/s and fuel injection are permitted.
- 2.6 Engine capacity shall not exceed 1340cc

3. FRAME:

Each machine shall be constructed as a space frame of steel tubes and shall incorporate a safety cage.

3.1 ODYSSEY FRAME

Odyssey Class vehicles shall use a factory produced Honda Odyssey (1981 or later model with full cage) or Pilot frame. Each such frame may be modified only by the addition of gussets to the junctions of frame members, or extra reinforcing members.

3.2 GUSSETING

Each gusset shall be either a U shaped piece of sheet metal, or a tube, each of minimum thickness 1.0mm. The length of the gusset shall be between 2 and 4 times the diameter of the tubes being joined

3.3 HOLES

Any hole made in a tube of the frame must be reinforced by a crush tube of at least the same wall thickness as the primary tube.

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3.4 BENDS

Each bend must be smooth, and free of kinks. The minimum bend radius shall be 3 times the diameter of the tube. Any distortion of the tube at bends shall result in a reduction of any dimension by not more than 10%.

3.5 WELDING

All welding shall be gas shielded electric arc welding to industrial standards, with full penetration, and around the complete circumference/perimeter of the tube.

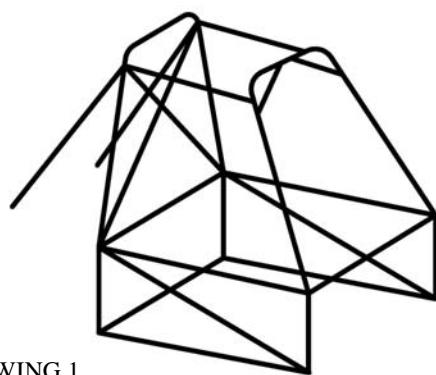
3.6 FREE CONSTRUCTION FRAME

The use of high tensile steels with a carbon content exceeding 0.3% is prohibited unless specifically authorised via a CAMS Certificate.

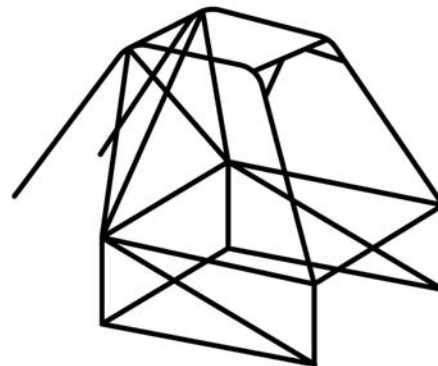
A frame of free construction shall meet the requirements specified in the following articles. Each such frame shall incorporate a safety cage structure as per Articles 3.6.1 to 3.17

3.6.1. SAFETY CAGE COMPONENTS

A safety cage is compulsory on each machine constructed using a free construction frame.

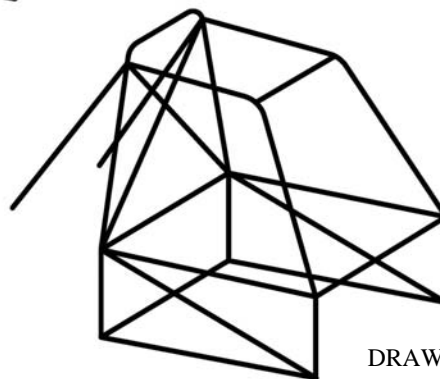


DRAWING 1



DRAWING 2

SAFETY CAGE



DRAWING 3

3.6.2 Each component of the frame considered as the safety cage is shown in Drawing 1, Drawing 2 and Drawing 3.

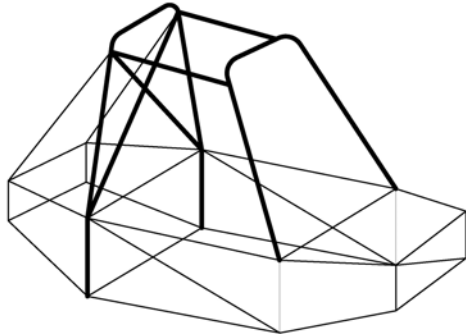
3.6.3 The safety cage shall consist of two main vertical transverse hoops and longitudinal struts, (Drawing 1), two lateral roll bars linked by transverse and vertical members (Drawing 2) or a transverse main hoop and two lateral half hoops (front legs – Drawing 3)

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3.6.4 The rear main roll hoop (Drawings 1 and 2) or the equivalent section created when using lateral roll bars (Drawing 3) must contain two diagonally opposed braces in the form of an "X" to extend from the top two corners to a point approximately halfway down the roll hoop, preferably to the Hip Rail.

3.7 PRIMARY FRAME COMPONENTS

Each member of the safety cage highlighted in drawing 4 shall be considered a primary frame component and shall be constructed from Circular Hollow Section

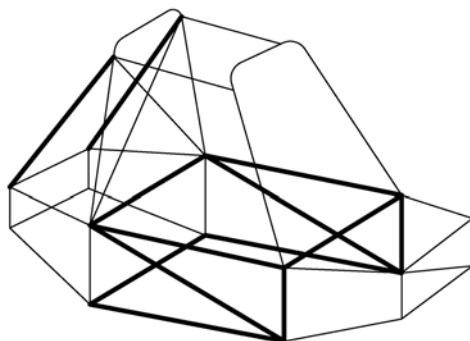


DRAWING 4

(CHS) tube. CHS steel tube used to construct the safety cage primary members shall have a minimum external diameter of 32mm and a minimum wall thickness of 2.6mm. The minimum yield strength of the material shall be 250 MPa. Each individual primary frame component shall be formed from a single piece of material with no joins.

3.8 SECONDARY FRAME COMPONENTS

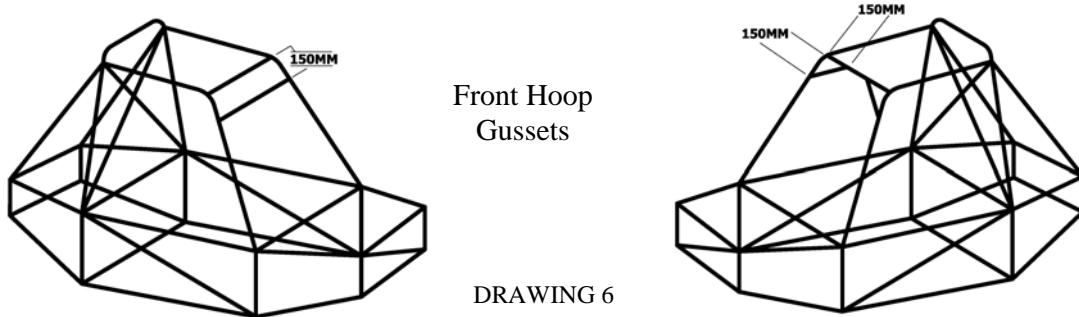
Each tube highlighted in Drawing 5 shall be regarded as a secondary frame component. Rectangular Hollow Section (RHS) tube used as a secondary frame component shall not be less than 31.8x2.6mm. Each CHS tube used as a secondary frame component shall be not less than 31.8x2.6mm.



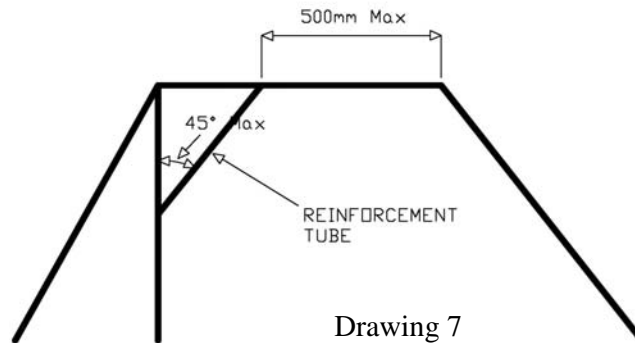
DRAWING 5

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- 3.9 Each Safety Cage shall incorporate either a pair of gussets or a 3mm "sun visor plate" 150mm in depth, fully welded in position between the front roll hoop members as per Drawing 6.



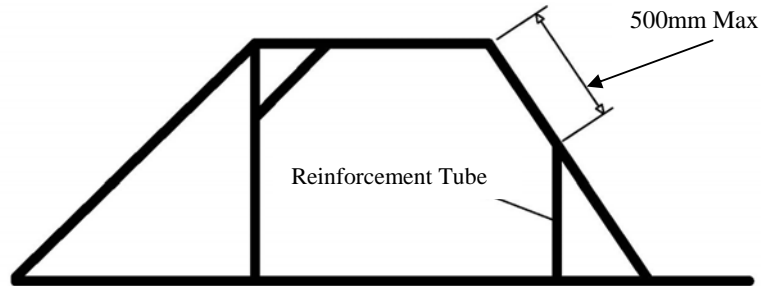
- 3.10 The safety cage must be designed so that it does not unduly restrict the driver from getting in or out of the machine. There must be a minimum of two points of exit on each machine (in the case of frames incorporating roof hatch access, three points of entry/exit shall be required) and the driver shall be able to exit within 9 seconds, starting in a ready to race condition.
- 3.11 Each component not comprising part of the safety cage may be constructed from either CHS or RHS steel tube.
- 3.12 The upper part of the hip rail extending from the front leg/hoop of the safety cage to the rear main hoop must be at least 500mm above the lower edge of the lower chassis rail.
- 3.13 The safety cage shall incorporate side impact protection. This must take the form of at least one diagonal tube running from the intersection of the rear roll hoop and the horizontal hip rail (approximately half way down the roll hoop) to the base of the front leg/front hoop.
- 3.14 Where any horizontal roof rail exceeds 500mm in length, it shall be provided with a reinforcement brace as per Drawing 7.



DRAWING 7

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- 3.15 Where any front roll hoop member exceeds 500mm, a reinforcement tube shall be fitted, positioned such that no member of the front roll hoop exceeds 500mm. (See Drawing 8).



DRAWING 8

- 3.16 When the driver is correctly seated in the restrained position there must be a minimum of 75mm clearance between the driver's helmet and the roof plate.
- 3.17 Any framework which can be contacted by the driver's helmet when the driver is correctly seated in the restrained from a restrained seated position shall be covered by high density padding to FIA 8857-2001 or SFI standard 45.1. Low density foam may be used to pad other areas of the frame that could contact the driver's body.
- 4. HEAD REST:**
- A head rest must be fitted to the safety cage behind the driver's helmet. The headrest shall be covered with high density foam, and shall be of minimum dimensions 150mm x 100mm.
- 5. GLASS:**
- For other than rear view mirrors, dust lights and stop lights, any glass and brittle plastic must be covered with adhesive film.
- 6. SUSPENSION:**
- Other than Minisprint, FL250 and Sidewinder, all four wheels must have independent suspension and at least one damper unit per wheel.
- 7. BATTERY/ELECTRICAL:**
- 7.1 Electric starters are permitted in all classes
- 7.2 If fitted, each battery must be of a spill proof type securely mounted and protected.
- 7.3 Each battery terminal must be protected by insulating material
- 7.4 Each battery shall be mounted in a compartment which is separate from that which contains the fuel tank.

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7.5 **ISOLATING SWITCH**

Each machine shall be fitted with an externally operated circuit breaker which shall isolate the negative/earth circuit of the electrical system. It shall be located in a prominent position and easily accessible in case of an emergency. The circuit breaker must be located within the vicinity of the rear roll hoop close to the hip rail on the right hand side, and be marked by a white edged blue triangle, with a red flash, with sides of length 100mm minimum. Clear markings showing On/Off must indicate the switch position. The circuit breaker must disconnect each electrically operated device from the battery and stop the running engine. Each lead from the battery to the isolation switch must be double insulated.

7.6 **KILL SWITCH**

Each machine shall be fitted with a manually operated kill switch capable of stopping the running engine. This must be capable of operation by the driver whilst seated and restrained.

8. **LOCKING DEVICES:**

Split pins, 'R' clips or self locking nuts must be fitted to the bearing retaining nut on each axle and tie rod end.

9. **BUMPER BARS:**

Where any part of the front or rear complete wheels extends longitudinally beyond the frame, a bumper bar must be fitted. The bumper shall be at least the same width as the frame and extend longitudinally at least 50mm beyond of the extremity of the wheel. Bumpers must be constructed from a minimum of 25mm x1.6mm ERW steel or 25mm x 2mm aluminium round tube, and have no open ends or sharp corners.

10. **FIREWALL:**

A firewall must be fitted between the engine and the driver compartment, extending the full width of the frame, and in height to the top of the engine. The firewall must be constructed from 2mm aluminium or 1.6mm steel sheet.

11. **SHARP EDGES:**

No exposed edge or component on the exterior of the machine nor within the driver compartment shall have a radius less than 10mm. All tube ends shall be capped.

12. **LIGHTENING:**

Drilling of bolts, pins or fixtures other than for locking devices is prohibited.

13. **FUEL AND FUEL SYSTEM:**

13.1 Each fuel tank must be mounted entirely within the confines of the frame.

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- 13.2 Each fuel tank must be constructed of a minimum of 1.6mm steel or 2mm aluminium. It must have a leak-proof filler cap.
- 13.3 The fuel system must be fitted with a fuel tap enabling the flow of fuel from the tank to be stopped. Each fuel tap shall be easily accessible and clearly marked by a label or sticker with an arrow clearly indicating the direction of shut off. Each fuel injected engine using a fuel pump mounted within the tank and where fuel can not pass through the pump while electrical current is removed, is exempt from this requirement.
- 13.4 The fuel tank must be separated from the driver by a firewall in other than Odyssey Class automobiles.
- 13.5 Each fuel line between the fuel tank and fuel shut off tap must be made of metal. Each other fuel line shall be of a material specifically designed for the carriage of fuel. The fuel line must be fastened at each point of connection by hose clamps, and be entirely contained within the confines of the frame.
- 13.6 Each tank breather must contain at least one loop to minimise the risk of spillage in an inverted position.
- 13.7 Each machine fitted with an electrically operated fuel pump shall be configured so that the fuel pump shall be shut off within 5 seconds of the absence of crankshaft rotation.
- 13.8 Fuel must be Commercial or FIA fuel as specified in Schedule G of the CAMS manual. Methanol fuels and additives are not permitted.

14. BRAKES:

Each machine, other than 250 Stock and 350 Stock and 400 Modified, shall be equipped with a braking system operated by a foot operated pedal with separate braking unit acting on all four wheels.

A hand operated braking system independent of the primary system is compulsory on each machine that does not have a dual braking system.

15. NERF BARS:

- 15.1 Each machine must be fitted with nerf bars between the front and rear wheels to minimise the possibility of wheel entanglement. Each nerf bar must extend in width from the main chassis to a point not less than the centre of the rear tyre, and not beyond the outside of the rear rim.
- 15.2 Each nerf bar must be constructed from circular section tube. The minimum tube size is 25mm x 1.6mm steel or 25mm x 2mm aluminium.
- 15.3 Nerf bars are not considered part of the frame and must not assume any structural load.
- 15.4 Each nerf bar shall be securely mounted to the chassis and should preferably be removable.
- 15.5 Each nerf bar shall be attached to the frame at three points in a triangular fashion. (eg attached front and rear to the lower frame/chassis and braced upward to the rear roll hoop). No tube end shall be exposed.

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16. FLOOR PAN/BASH PLATE:

- 16.1 Floor pans and bash plates must be constructed from 2mm steel or 3mm aluminium sheet.
- 16.2 Each Odyssey Class machine must have a floor pan/bash plate mounted beneath the seat. It is highly recommended that a full floorpan be fitted.
- 16.3 Each machine of any other class must have a floorpan from the back of the seat to the front of the machine, encompassing the full width of the chassis and be securely bolted or welded in place.

17. ROOF PLATES:

A roof plate is compulsory. The roof plate may be made from either 2mm steel or 3mm aluminium. The roof plate shall extend in length from the front hoop to the rear hoop and in width to span the roof bars. The roof plate must be securely mounted using a minimum of four 8mm bolts.

17.1 ROOF ACCESS/HATCHES:

The plate shall be attached at its front edge by a continuous hinge which extends across the width of the roof to within 20mm of the side tubes.

Both side and rear edges must overlap and be supported by the roll cage structure.

Attachment of the hinge to the roof panel and mounting plate must be at intervals no greater than 30mm. Minimum acceptable fixing device is a 3mm diameter steel or Monel rivet.

At least two latches (self locking or rubber bonnet catch type) suitable for securing the roof panel closed are required. Catches must be free of any sharp or protruding edges.

18. TRANSMISSIONS:

Each machine fitted with a gearbox must have a functioning neutral position.

19. BODY PANELS:

- 19.1 The driver compartment must be protected from the direct entry of debris. Body panels shall be fitted to each side of the frame up to the height of the hip rail from the rear of the driver compartment to the front of the foot well. A bonnet panel shall enclose the area from the front roll hoop to the front of the foot well.
- 19.2 Each body panel shall be securely mounted at a minimum of three points
- 19.3 Drilling of any frame members to affix panels is prohibited
- 19.4 Driver access must not be hampered in any way

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21. RADIATORS:

Each radiator, if fitted, must be mounted securely within the confines of the frame and be as far away from the driver as practical. Each radiator cap must be securely fixed.

22. DUST LIGHT:

A rear amber dust light is compulsory. It must have a lens of at least 50mm x 50mm. The dust light must be operational whenever the isolation switch is on.

23. BRAKE LIGHT:

- 23.1 A rear red brake light is compulsory except in Odyssey classes.
- 23.2 Each brake light must have a lens of at least 50mm x 50mm

24. DRIVE GUARDS:

- 24.1 Each chain driven machine shall have a chain guard over the top and rear of the chain.
- 24.2 Each belt driven machine shall have a belt guard around the front and top of the drive clutch.

25. NOISE LEVELS:

Each machine shall not exceed a maximum noise emission of 95 dB(A) when measured 30 metres from the edge of the track under competition conditions. Any machine exceeding the noise level limit shall be excluded from that competition.

26. MIRRORS:

One or more mirrors is permitted provided it is made from a shatter resistant material *or* covered with a clear adhesive film.

27. WARNING DEVICE:

Each automobile shall be equipped with an acoustic warning device (horn, siren) capable of generating a sound level of 100dB(A) at 1.0m from the device. This requirement may be waived by event regulations.

28. WHEELS AND TYRES:

The maximum permitted overall tyre diameter is 685mm. Tyre choice and wheel size are otherwise unrestricted.

29. SEATS:

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Each seat not integrated into the frame shall be mounted using a minimum of four Grade 8.8 (or greater) fasteners of not less than 8mm diameter.

30. EXHAUST:

Each exhaust pipe shall be inside a line from the top of the safety cage to the top of the rear tyre and be securely attached.

31. OVERALL WIDTH:

The width of the machine shall be determined by a measurement across the outer most points of the front or rear wheels, whichever is the greater.

32. WHEELBASE:

The wheelbase is defined by a distance measured longitudinally between two parallel vertical planes through the front and rear wheel hubs.

33. VEHICLE LOG BOOKS:

Each machine shall be subject of a CAMS Log Book. Vehicles with a competition history prior to 31/12/2009 may be issued with a Log Book notwithstanding non compliance with certain aspects of the above Technical Regulations. Such a machine may continue to compete in its existing specification.

34. COMPETITION NUMBER:

Each machine shall carry a competition number visible from each side. Numbers shall be a minimum of 150mm high in a colour and background as detailed in specific class requirements.

<p style="text-align: center;">SPECIFIC REQUIREMENTS 250 ODYSSEY CLASS</p>

1. GENERAL PRINCIPLES:

In principle this class will respect the manufacturer's original specifications. The only modifications permitted are those which are detailed hereunder. This class is designed for members who wish to compete in a Honda Odyssey FL250

2. FRAME:

Each frame shall be a standard FL250 Odyssey frame modified only as per Chapter 1, Article 2.1

3. COMPETITION NUMBER:

Competition numbers shall be white on a green background.

4. ENGINE:

Machines must retain the FL250 air cooled engine

5. TRANSMISSION:

The transmission shall be the standard FL250 unit.

6. FUEL SYSTEM:

Any modifications to the fuel system must meet the safety requirements detailed in General Requirement 13.

7. SUSPENSION:

Each front swing arm may be gusseted for strength. The rear axle may have axle support bearings added for increased strength.

8. BRAKES:

The original braking system shall be retained. A park brake shall be fitted to the machine.

9. WHEELBASE:

Wheelbase shall remain standard.

10. WIDTH:

Each machine shall have a maximum width of 1300mm.

11. COOLING:

Additional air ducts, fins and cooling fans may be added.

SPECIFIC REQUIREMENTS MINI SPRINT CLASS

GENERAL PRINCIPLES:

A Mini Sprint is a FL250 prepared and set up for racing on smooth dirt surfaces. Modification is permitted subject to the following.

COMPETITION NUMBERS:

Competition numbers may be painted on the body, but must be at least 300mm high and clearly visible from both sides of the vehicle.

Numbers should be a strong contrast to the body. It is highly recommended to run a number plate mounted on the roof.

MOTOR:

Type A: Modifications to the cylinder head and barrel are free including replacement by a cylinder and/or barrel from another manufacturer (pre 1995, excluding 1995) provided that at all times the capacity of the engine does not exceed 250cc and the original stroke dimensions are unchanged. A maximum overbore of 2 mm is permitted.

Type B: Replacement of the complete engine with a complete pre 1995 (excluding 1995) manufactured engine and gearbox as specified.

- 1 Engines permitted are up to 1995
- 2 The engine must be single cylinder and the capacity must not exceed 250cc.
- 3 A maximum overbore of 2 mm is permitted. The stroke of the engine must not be changed from the original manufacturers' specifications. The original gearbox must be retained. Ratios must remain standard.

SUSPENSION:

- 1 Modifications and improvements are permitted to front suspension. The mode of the front suspension (swing arm) must be retained.
- 2 Maximum toe in and/or out from parallels is 20mm.
- 3 Modification to the rear suspension is permitted with a maximum travel of 75mm.

BRAKES:

Braking may be changed but must be proven to be more efficient to Chief Scrutineer. There shall be some form of hand brake system fitted to machine or neutral gear.

ROLL CAGES:

- 1 Stock FL250 frame dimensions must be retained. Chassis and/or roll cage plans and materials specifications must be submitted to the Chief Scrutineer for approval.
- 2 Roll cages must have two main hoops, the rear hoop, or equivalent, on home built chassis, must contain a metal firewall, at least the height of the engine, to separate the engine compartment from the driver's cockpit.
The Scrutineer must inspect all new machines at the tack-welded stage.

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ROOF PLATES:

Roof plates are highly recommended.

TRANSMISSIONS:

Type A: The Honda FL250 transfer box must be retained in its original location if the FL250 crankcases are used. Ratio changes are not permitted. The FL250 transfer case may be removed but must be replaced by a motor incorporating a belt drive assembly.

Type B: Gearbox engines must use chain drive and have the ability to engage neutral gear. Ratios in the gearbox may not be changed from the manufacturer's specifications. The original Honda transfer case may be removed but external gearing must replace the transfer case. The ratio between the engine to the rear tyre shall be limited to the potentially fastest type B machine built to this date.

WHEELS & TYRES:

- 1) The maximum rim diameter is 10 inches, wheels are otherwise free.
- 2) The maximum permitted tyre size for the front is 18 inches diameter.
- 3) Rear maximum diameter 20 inches and the tyres are free but must be designed for flat track use, nobby tyres are not permitted

WHEELBASE:

Wheelbase shall not exceed 1560mm

TRACK:

Track shall not exceed 1570mm

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SPECIFIC REQUIREMENTS 350 ODYSSEY CLASS

1. GENERAL PRINCIPLES:

In principle this class will respect the manufacturer's original specifications. The only modifications permitted are those which are detailed hereunder. This class is designed for members who wish to compete in a Honda Odyssey.

2. FRAME:

Each frame shall be a standard FL350 Odyssey frame modified only as per Chapter 1, Article 3.1

3. COMPETITION NUMBER:

Competition numbers shall be white on a red background.

4. ENGINE:

Machines shall retain the FL350 air cooled engine. The bore may be increased to a maximum of 82.0mm.

5. TRANSMISSION:

The transmission shall be the standard FL350 unit.

6. FUEL SYSTEM:

Any modifications to the fuel system must meet the safety requirements detailed in General Requirements section 13.

7. SUSPENSION:

The standard suspension principal shall be retained

8. BRAKES:

The original braking system shall be retained. A park brake shall be fitted to the machine.

9. WHEELBASE:

Wheelbase shall remain standard.

10. WIDTH:

Each machine shall have a maximum width of 1525mm.

11. COOLING:

Additional air ducts or fins may be added. Cooling fans may be added.

<p style="text-align: center;">SPECIFIC REQUIREMENTS SUPER MODIFIED CLASS</p>
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1. GENERAL PRINCIPLES:

The Super Modified class is for modified FL350 and FL400 machines as well as small capacity self constructed machines. Each machine is restricted to a maximum wheelbase dimension of 1740mm and a maximum overall width of 1575mm.

2. FRAME:

Each frame shall be either a standard FL350 or FL400 Odyssey frame as per Chapter 1, Article 3.1, or a Free Construction frame as per article 3.6.

3. COMPETITION NUMBER:

Competition numbers shall be white on a blue background

4. ENGINE:

4.1 Odyssey Frame:

Shall be either a 350cc or 400cc Odyssey or Pilot engine.

4.2 Free Construction Frame:

Each engine is free save that it shall have a maximum capacity as follows:

- | | |
|--|-------|
| a) 4 stroke with a chain drive | 500cc |
| b) 2 stroke with a chain drive | 400cc |
| c) 2 stroke with a variable vee belt drive | 420cc |

5. TRANSMISSION

The transmission shall be either an FL 350 or FL400 unit, or as fitted to the engine used by the motorcycle manufacturer.

<p style="text-align: center;">SPECIFIC REQUIREMENTS PRO-SPORT CLASS</p>

1. GENERAL PRINCIPLES:

Pro Sport Buggies are conceived as machines constructed specifically for use in competition. They are subject to relatively few restrictions, as set out in this Chapter. Pro-Sport dimensions shall not exceed 2000mm wheelbase x 1700mm width.

2. FRAME

Each frame shall be a Free Construction frame as per Chapter 1, Article 3.6

3. COMPETITION NUMBERS:

Competition number shall be black on a yellow background and must be visible from both sides of the machine.

<p style="text-align: center;">SPECIFIC REQUIREMENTS PRO-MAX CLASS</p>

1. GENERAL PRINCIPLES:

The Pro-Max class buggy is a self constructed machine to larger dimensions than other classes. Pro-Max dimensions shall not exceed 2370m wheelbase x 1940mm width.

2. FRAME

Each frame shall be a Free Construction frame as per Chapter 1, Art 3.6

3. COMPETITION NUMBERS:

Competition numbers shall be white on a red background and must be visible from both sides of the machine.