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RCRA

REMOTE CONTROL RACING AUSTRALIA

1/8th I.C Powered 4WD GT Technical Rules

(UPDATE NOTES)

Effective August 2021

**Created with IFMAR RULES (AARCMCC Fuel &
Engine Restrictions)**

1/8th I.C. Powered 4WD GT TECHNICAL RULES

First Version 25th February 2017

Amended 12th March 2017

Amended February 2018

Amended April 2018

Amended 4th August 2018, Due to GBS measurement correction

Amended July 2019, Due to several rule explanations

Amended August 2021, Due to postal vote changes

These first 4 pages are no rules, but guidelines and appointments between the blocs that have been used to make these rules.

This GT class has some limitations on bodies (must be recognisable cars, so we have GBS rules), tires and engine. It is not a standard class with a standard motor, still a racing class, but it has some limitations compared to 1/8th IC track for prototype cars.

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IFMAR rules: IC Powered 1/8th Class 4WD GT.

To be read in conjunction with the General Rules for IFMAR World Championships.

The GT class is getting more and more popular all around the World, however we must avoid that this class is compared with the oldest and fastest class, 1/8th IC track, Prototype. This is an alternative for 1/8th Prototype with some restrictions, meaning it will never be as fast and those restrictions must be protected. Any change must be carefully overviewed, because it can affect the class in general.

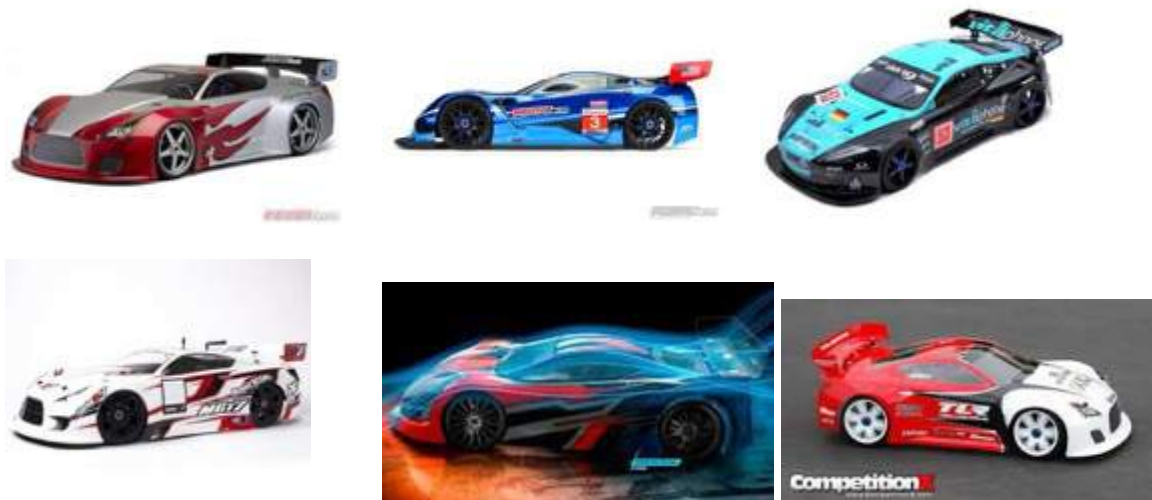
This class is based on a few primary agreements:

- Basic design comes from an off-road car with driving axles
- Motors are limited, due to number of ports and timing/minimum Qualifying time.
- Cars must be recognized as cars you see on the road, using GBS rules, which not always give the best performance.

This is the complete set of rules after the experience of Buenos Aires/Homestead.

In Buenos Aires 99% of the drivers were using the same body. I think there were approx. 5 or 6 different versions used, but it all was the same "Lambo". However, the way it is made does not reflect the class, so it is important to have bodies that are recognized. GBS need to be used as soon as possible to have a number of good-looking bodies available, but we also realize that a number of bodies will not be according to these measurements now. Our GBS rules also mean not every GT car can be used.

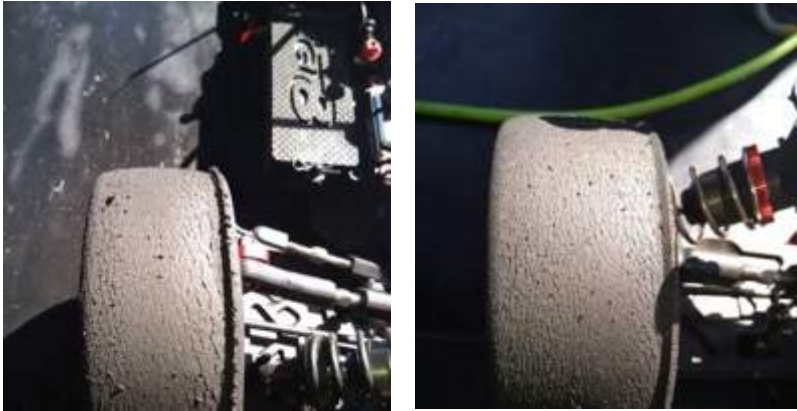
I have enclosed some pictures from Bodies which in my opinion do represent the class:



I do not know if they are within GBS limits, but at least they look like a real GT body and there are more like this. If current GBS proposal is excepted it will mean that a number of bodies cannot be used for IFMAR events, however the stock can be sold and used within a year for other kind of races. It could also mean that some exotic GT cars never will make GBS in the future. The main difference is measurement E in the GBS, which has gone from 6mm to 12mm and the wording for this measurement.

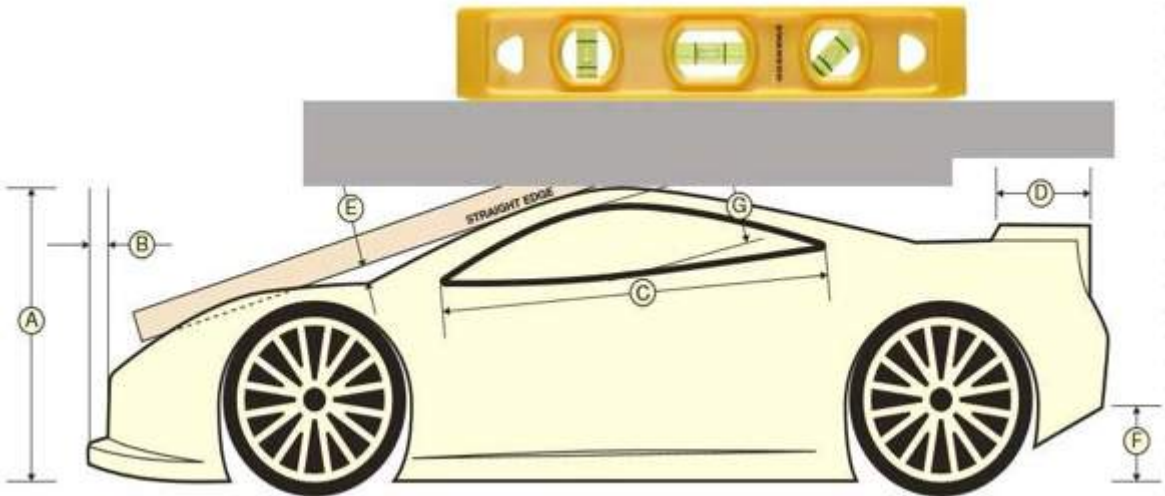
Currently there are a number of small rules for the engines. We want to control the RPM/running time, to avoid excessive tuning. We can do that by measuring exhaust port timing or we can just adapt the length of a heat to an acceptable time and forbid refueling. Measuring timing is not easy, it means at least taking out the engine etc. Buenos Aires has proved that a minimum heat length of 7 minutes without refueling helps to limit exhaust port timing. At the end 95% of the

drivers made the 7 minutes. We will investigate for a tool in the future for measuring the exhaust port timing but will stick to the 7-minute rule for the moment. With your starting lap and finishing lap this means the engine must do at least 7 minutes and approx. 35-40 seconds on 150cc. Controlling the RPM also means less drive shaft frictions and less wear. Do also not forget for the final 1 set of tires was available and used tires as replacement. This is only possible by controlling the engine power.



Morganti's tires after final.

As for height of the spoiler for Buenos Aires we used 10 mm above the rooftop (see drawing for measurement). This works well and is a good alternative with GBS style bodies. We also have seen that the majority of cars are using 7 body rest posts, of which 5 come through the body and are clip.



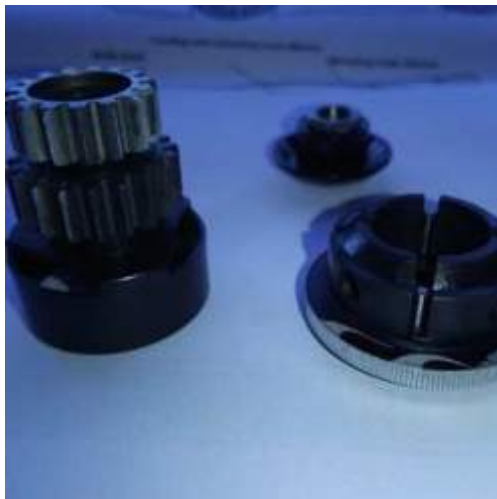
The use of an INS box is mandatory, with or without an extra angled tube. With a height of 155mm minimum most INS boxes will fit under the body.

Looking at the tailpipe of the muffler there are a few solutions. Bring the muffler outside, meaning a manifold with a different angle, the use of a Lexan "trumpet" or simply nothing. Most of the faster drivers in BA used nothing and the oil inside the body was not causing that many problems. It is not as with a foam tire.

Other solutions with a "rubber" tube on the exhaust seems to make more noise (noise changes but could only be the frequency) and have its effect on the adjustment. We will see some other solutions in the future, and they need to be verified.



The clutch design needs some better description. Centax type is forbidden, however a design where the spring adjustment part makes an axial movement, and the clutch shoes only move radial should be allowed. Standard 2, 3 or 4 shoes clutches like they use in off-road with aluminum clutch shoes are very vulnerable due to the weight of the car and need daily maintenance or replacement.



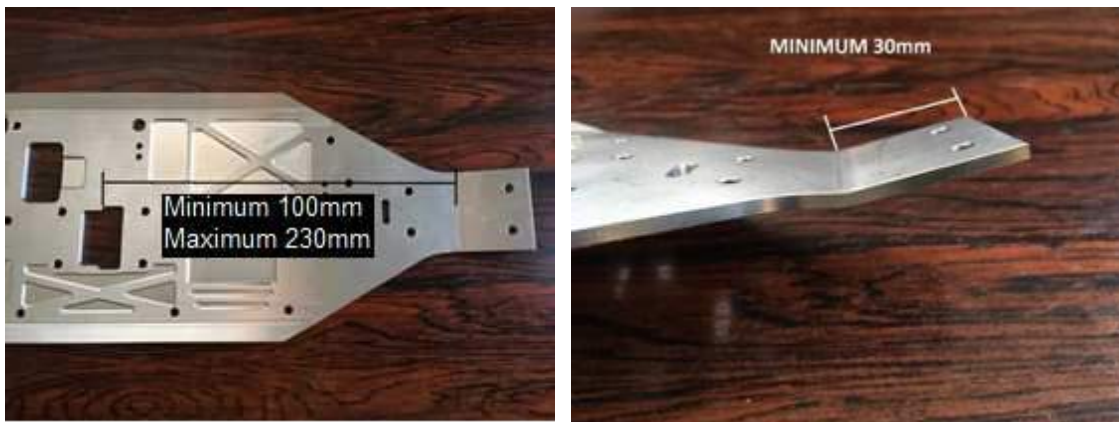
TECHNICAL RULES

1. TECHNICAL RULES

The basic principle for this class is the use of off-road cars and/or off-road parts, although we cannot prohibit the use of a single designed car for GT in the future.

The chassis must have a minimum kick-off of 5 degrees in front. No carbon fiber chassis allowed

The kick-off needs to have a minimum length of 30mm, and lower suspension arms must be mounted on the kick-off. Kick off must start at a reference point from the middle point of the gearbox (or main gear), min 100mm / max 230mm.



Drive shafts must be used all around. **All driveshafts must be made of steel (no lightweight materials like Aluminum or Titanium).**

Brake System: Maximum 2 brake system in Central Drive Shaft / Central braking only on crown wheel (spur gear). Only standard mechanical brakes are permitted. Up to two brake discs are permitted anywhere on the centre driveshaft's. Brakes may not be located on the outboard axles.

One-ways, spools, locking "Torsion-type," or externally adjustable differentials are not permitted. Front & Rear geared Differentials can only be tuned with the use of silicone-based oils. No center differential allowed. Ball differentials not allowed/only gear differentials. Front and Rear differential gear ratios must be identical. Front or rear underdrive or overdrive is not permitted.

The rear differential must be "finger proof", so it must be at least partly covered in case of an open differential.

The final drive ratio front and rear must be the same.

Overall dimensions of the chassis:

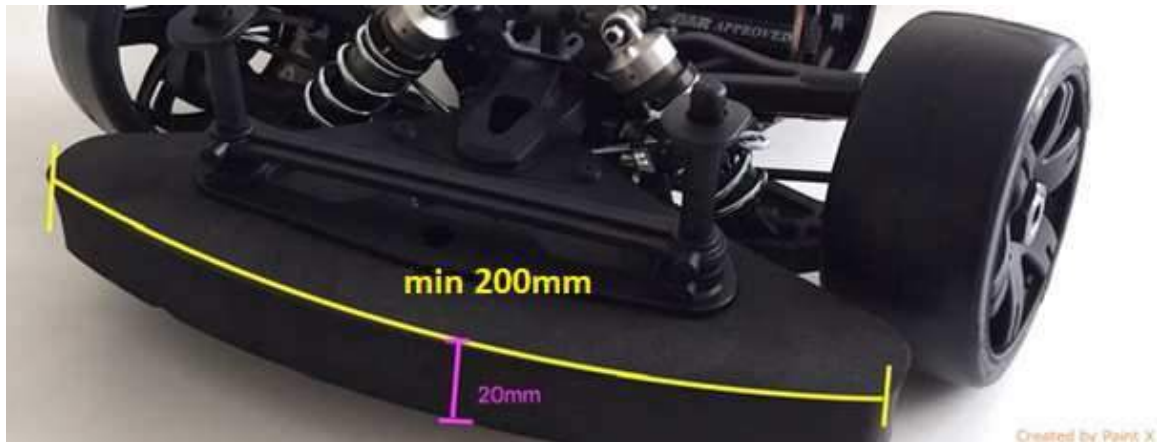
Height: minimum height 155,0mm with chassis plate on 20mm blocks.

Wheelbase between 320-379mm

Length Maximum: 590mm

Width max 310,0mm, including wheels, axles and wheel-nuts.

The front of the car must be equipped with a bumper made from flexible “foam” material with all corners and edges rounded off. The contour of the bumper will follow the contour of the body. The bumper may not protrude in front of the body. Minimum dimensions 200 x 20mm (height). There should be minimum 20mm foam material available to absorb any impact.



The maximum capacity for the fuel tank is 150cc max, including all internal tubing. The Clutch must be a centrifugal type with a maximum of 4 shoes. No axial engagement of the shoes (No “Centax” Type clutches). Clutch must use radial centrifugal shoes only in conjunction with Std parallel sided cylindrical clutch bell similar design to the unit shown.



Direct Drive, i.e. Single speed or maximum two speed gear box
Minimum weight in order to run with empty tank is 3500 grams.

2. FUEL:

Fuel or fuels must be commercially available.
Fuel may only contain methanol (methyl alcohol) CAS number 67-56-1, and/or Ethanol (Ethyl Alcohol) CAS number 64-17-5, lubricating oil, a small content of anti-corrosion chemicals and maximum 25% of nitro methane (Cas number 75-52-5) in volume. The specific gravity of the mixture may not be heavier than 0.91 grams/cc at 20°C and standard atmospheric pressure. Measurement will be done with a nitromax 25% in the pit lane and/or anywhere inside the venue. Any fuel detected heavier than 0.91 or containing more nitro as specified will mean that the driver will have the result deleted from the heat or final where the fuel was found to be illegal. The following additives are strictly prohibited; Hydrazine, Hydrogen Peroxide, Toluene, Propylene Oxide, but not restricted to other harmful/dangerous products.

3. MOTOR RULES

Engines allowed will be .21 or 3.5cc engines.

Maximum carburetor diameter is 7mm.

The motor shall be air cooled. Conical plugs allowed

Number of Ports. For IFMAR World Championships we propose the following number of ports: 3 Outlet ports, consisting of 1 (one) main Outlet port and 2 outlet booster ports, regardless the name and dimensions, every hole is to be considered as one of the 3 allowed.

A maximum of 5 inlet ports or booster ports. Any hole will be considered as one of the 5 allowed. (Needs some extra clarification to avoid 9 ports engines converted to 5 ports, waiting for EFRA proposal)

The INS box is mandatory.

Engines must be capable of running a heat of minimum 7 minutes on one tank of 150cc fuel to avoid excessive tuning. Exhaust port height max opening to be determined in the future.

Approved / registered or homologated 3 chamber mufflers according to the IFMAR list, including INS box list.

A pipe extension on the muffler tailpipe is allowed with the provision below. **It is not allowed to use some kind of trumpet to direct the exhaust fumes outside for muffler outlet pipe, they make too much noise. Using a rubber stinger on the outlet pipe is OK, provided the noise is not higher. Definition of Trumpet in this instance: Any addition to the pipe or body that increases the DB level as determined by race management.**

4. BODY RULES

Bodies must be commercially available 1/8th scale GT1, GT2, Super GT, DTM, or V8 Supercar cars, 2 door GT bodies.

At least a body with a separate wing like in touring cars. Height of wing max. 10mm higher as rooftop. Measurement taken with chassis plate on the ground. The roof cannot be designed in such a way that ribs or fins are used to manipulate the height. **The measurement of the height of the car is done on the highest point of the rooftop. Excluding any air intake scoops, ridges or any other extension from the actual true rooftop.** Maximum width body 317mm. Wing compared to body and wing overhang, same as sedan 1/10th class, max **20mm**. Wing can be unpainted/clear.

Wing width max 310 mm, including side plates, but never wider as the rear of the body.

Wing chord max 80 mm. Wing endplates maximum 40 x 80mm.

The "body must be mounted to the sprung mass of the car at front and rear". So, no mounting on the suspension uprights.

The body must have visible windows, body panel and trim markings, and the windows must be mostly clear. Some intrusion for creative painting purposes and tinting is permitted, but the windows must be transparent. Bodies must have headlights and grill details. **To avoid the use of lightweight bodies there is a minimum weight for a body including wing and paint/stickers). That minimum weight is 235-250 grams (final decision beginning of 2022, after checking approved bodies on the new list). Adding weight to the bottom perimeter of the body is not allowed.**

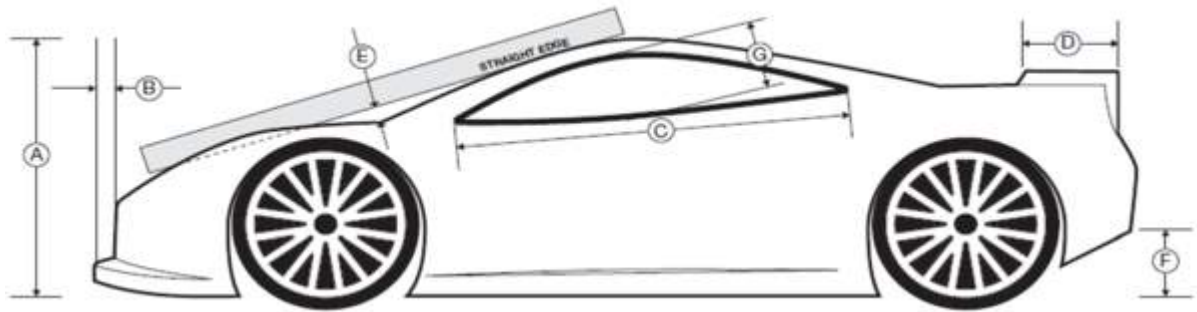
1 piece body molding to avoid internal aerodynamics. A diffuser mounted on the rear of the chassis is allowed. **It must be not wider as the inner measurement of the wheels and may stick out of the body at the rear with a maximum of 20mm (same as wing overhang).** The diffuser must be made of flexible material without any sharp edges

No internal body supports / stiffeners / braces allowed to avoid lightweight bodies with internal modifications and add-ons, excluding reinforcement of the wheel arches and back boot lit is allowed. The body must rest on a maximum of 7 posts, of which 5 can protrude outside the

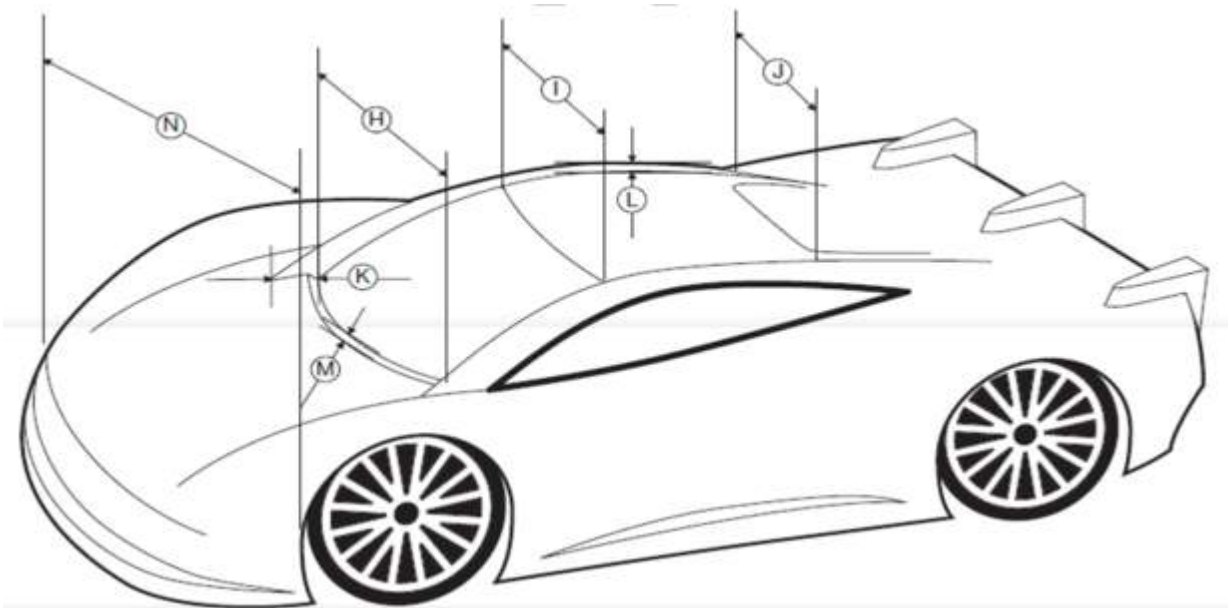
bodies. Bodies must be made from Lexan with a minimum thickness of **1mm**. The wing must rest on maximum 3 body posts which are not wider than 50 x 20 mm each.

The body must be made from an existing car design, for which the name must be mentioned on the request for homologation. After been approved the name of the body is free to avoid license fees etc.

Bodies must be within the GBS dimensions by IFMAR. See drawings enclosed.



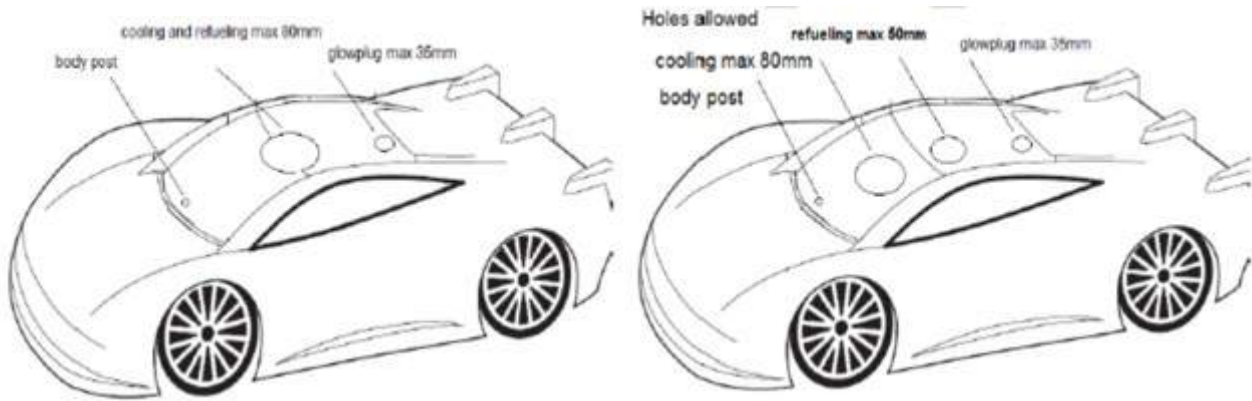
- A) Minimum 155,0mm (with chassis on 20mm blocs),
- B) Maximum 15 mm depth
- C) Minimum 170mm
- D) Maximum 3 posts 50mm x 20 mm
- E) Minimum 12,0mm, gap between straight edge bottom and hood plane where it meets windshield.
- F) Maximum 75,0mm (with chassis on 20mm blocs) Minimum 36mm



- H) Minimum 200mm
- I) Minimum 145mm
- J) Minimum 130mm (top inside edge of C-pillar)
- K) Maximum 8mm depth of A-pillar above the windshield surface plane
- L) Maximum 5mm height of outer roof rail above the roof surface plane
- M) Maximum 4mm stagger between hood and windshield
- Maximum 317mm, minimum 300mm overall width

5. HOLES IN THE BODY:

Holes in the body for fuel-gun, fuel tank opener, aerial, glow-plug, carburetor access and exhaust. Rear and side windows may be removed. Maximum height of 75mm cut-out at rear on 20mm blocks. One opening may be made in the front windscreen with a maximum dimension of 80.0mm in any direction for refueling and/or engine cooling. An additional hole for refueling in the roof of 50mm is allowed and 35mm for the glow plug. Minimum distance between holes is 5mm. See drawings



6. TYRES AND WHEELS

- 6.1. Tires must be "production" tires commercially available. Hand cut tires or those not available to the general public are not permitted. "Available" is defined as having been sold to consumers a minimum of 30 days prior to the official start of the event. Tires must be molded rubber - no foam tires are permitted in any class.
- 6.2. A controlled tire is advised, a limit of 2 sets (4 per set) per driver/ competitor per AARCMCC sanctioned event. An optional set will be made available for those that have qualified for the event final. All races must be completed on the same tires used to start each race (qualifying and finals). Tire changes are not permitted except when a wheel and/or tire are determined by the race director or an AARCMCC official, to be damaged. Excessive tire wear does not constitute damage.
- 6.3. Tires must be black, except for writing on sidewalls.
- 6.4. Wheels must use a 17mm hex hub consistent with the dimensions and function of the hubs used in 1/8 off road racing. The wheel must be affixed by a 17mm wheel nut, threaded on to the hex hub. Quick change mechanisms are not permitted.
- 6.5. Any materials used in, or on, the tyres must not damage the racing surface.

Competitors found to be using additives will be disqualified from the event. AARCMCC's decision for inspecting tyres is final.

7. PROHIBITED / NOT ALLOWED:

Use of one-way bearings, except for the 1st gear of a 2-speed transmission. Belts.
Extra Body support struts for lightweight bodies, except those mentioned in the rules.
The use of traction control devices, active suspension devices and any steering control aided by gyroscopes/"G"-force sensors is strictly forbidden.
4-wheel brakes. Independent controlled braking on the front wheels is not allowed. Hydraulic braking systems.
More than 2-speed transmissions.
Quick change wheel systems are not allowed, or the use of electric, spring or flywheel-based tools to change wheels.
Body extenders or wheel flares. Tire-Warmers.

It is not allowed to use any electronic devices with the exception of:

Two radio channels of the receiver which will be used to operate steering, throttle, and brakes.
No more than two (2) servos.
A transponder for official counting.
An electronic failsafe.
Voltage regulator and/or battery level indicator.

8. Technical Checklist - 1/8th On Road (IFMAR November 2020)

8. Technical Checklist

Championship:	Date:	
Driver's Name:	Heat:	Car:
Checklist contains technical requirement per rules as published November 2022		

Rule #	Item	Pre-Race	Qualifying				Finals					
			Q1	Q2	Q3	Q4	Q5	Q6	1/16	1/8	1/4	1/2
Body On												
1.	Weight (Empty Tank) Min 3500g (including body, battery and body clips)											
2.	Homologated Body											
Body												
1.	Body Width max – 310mm (including wheels, axles and nuts)											
2.	Rear Wing Overhang											
3.	Wing Height (10mm Max above roof)											
4.	Wing width – max 310mm											
4a.	Wing chord – max 80mm											
4b.	Wing end plates – max 40mm x 80mm											
5.	Body Weight min - 235g (including wing)											
6.	Holes In Body											
7.	Body height min 155mm with chassis on 20mm blocks											
8.	Wheel base min 320mm – 379mm											
9.	Maximum body length – 590mm											
10.	Body must have visible windows. (Must be able to easily see through them)											
11.	Bodies must have headlight and grill details											
12.	No internal body supports or stiffeners permitted (excluding support to wheel arches)											
13.	Body must rest on max 7 post of which 5 can protrude the body											
14.	Minimum body thickness is 1mm											
15.	Front spoiler – min 15mm deep											
16.	Cooling hole – max 80mm											
17.	Re-fueling hole – max 50mm											
18.	Glow plug hole – max 35mm											
Body Removed												
1.	Fuel Tank (150cc) - max											
2.	Fuel 25%											
3.	Chassis must have a min 5 degree kick up that is min 30mm long											
4.	Front lower suspension arms must mount on the kick up (.3 above)											
5.	Driveshafts are steel (no alternatives)											

6.	Brakes mounted in centre of driveshafts and must be mechanically operated													
7.	Standard non adjustable diffs only. Adjustment via oils used only permitted. Only gear differentials allowed													
8.	Front and Rear diff gear ratios must be identical													
9.	Final drive between front and rear must be the same (front and rear wheels spin the same)													
10.	Rear diff must be 'finger proof' (at least partly covered)													
11.	Bumper foam – min 200mm wide and 20mm thick													
12.	Centrifugal clutch only permitted with max 4 shoes													
13.	Wheel nuts must be 17mm hex. No quick-change systems permitted													

Engine / Exhaust System

1.	.21 or 3.5cc													
2.	Carburetor Dia 7mm													
3.	Exhaust IFMAR approved													
4.	Ins box fitted													
5.	Maximum 5 inlet ports (checked at finals only)													

Comments: