F1 National Rules
Submission to Clubs

RC Formula1 is an independent organisation dedicated to promoting RC F1 racing in Australia. We do not sell any products or services.

Over the past 3 months we have guided the debate over a national set of F1 rules designed to encourage participation and new entrants to grow the class. These rules are being used in the F1 demo class at the AARCMCC Nationals at Logan, Queensland in November 2011 which we are sponsoring.

We are now approaching all clubs in Australia that run F1 and asking each to consider adopting the rules enclosed in this document. Clubs being approached include:

NSW	VIC	QLD	WA	SA / TAS
SMA (Tempe)	BRCCC (Boronia)	Logan	WCMRC (Perth)	AERCC (Adelaide)
Castle Hill	TFTR (Templestowe)	FCRCCC (Hervey Bay)	Rockingham	STMCC (Hobart)
WERC (Windsor)	MPRCCC (Mornington Peninsula)			

We have followed a robust process in formulating these rules which included:

1. A draft set of chassis rules was published on RC Tech in July 2012 (on the existing thread ñRegs for F1 racing in Ozò)
2. Feedback was incorporated into a proposed chassis rule set
3. A survey of F1 racers was undertaken in August 2012 (results provided on p.3 and p.10)
4. A draft set of motor rules was published on RC Tech
5. Feedback was incorporated into a revised motor rule set
6. The Draft Rule Set version 1.0 was published on 18 Sept 2012 on www.rcformula1.com.au
7. A call was made (via RC Tech) for one or more volunteers from each club to present the draft rules to their clubs committee

Action we ask your clubs committee to take. While we have provided a great deal of information in this document the only steps needed by you are to please:

1. consider the proposed rules on page 2;
2. vote on adopting these rules for your F1 class preferably as is, but modified to your clubs requirements if needed; and
3. send the Club Voting Form (p.7) back to us (Contact Details p.16).

Thank you for your time in considering this submission

Ozzie Rules

RC Formula1 National F1 Rule Set version 1.1 (11 October 2012)

1. Chassis - Any commercially available 1:10 scale rear wheel drive F1 or Indy Car chassis with a T-bar, Pivot Ball Link or independent rear suspension. 4WDôs must have drive to the front wheels disabled. Any hop ups specifically available for that chassis are allowed.

2. Tyres - Rubber or Foam F1 tyres. No wheels or tyres manufactured for a class other than F1 may be used unless the manufacturer lists it as the primary wheel/tyre for that chassis eg; Corally.

3. Body Shell - Any F1 body shell. Painting your shell in past or current full scale F1 team colours is encouraged but any paint scheme is allowed. Driver head / helmet must be fitted. Painting of the drivers helmet and overalls is encouraged.

4. Wings - Any wing designed for the chassis or body shell in use is allowed. Custom built wings are not allowed.

5. Width - Maximum width 205mm.

6. Minimum Weight - Minimum weight 1000g (with transponder).

7. Batteries - Any 2S hard case lipo that has ROAR or BRCA approval as stated in AARCMRCC rules or 6 cell Nimh or Nicd battery.

8. ESC Rule: Brushless - Any ESC that does not have dynamic timing ie; boost or turbo timing options, or any ESC that has a Blinky mode ie; a flashing light denotes that no dynamic timing is enabled, is allowed. Brushed ESC for silver can: Any.

9. Motor Rule: Brushless ï any 21.5* turn brushless motor with any rotor. Any end bell timing is allowed. Brushed ï any 540 size 27 turn Johnson or Mabuchi silver can motor which may not be modified or tampered with in any way.

* see the note on the following page regarding 21.5 versus 17.5 motors

No future changes will be made to the rules without consulting clubs who have adopted the rules.

Optional Event Rules:

We recognise that there is a conflict between allowing the widest range of ESCôs and motors to grow the class at club level and to keep the playing field as level as practical at events. Therefore for 2012-13 there are Optional Event Rules which can be used **at the option of event organisers**. If used rules 8 and 9 above are replaced with rules 8 and 9 to the right. It is intended, at the end of 2013, to replace the current rule 8 and rule 9 (above) with the Optional Event Rules 8 and 9 (right). However, this will be reviewed closer to the time.	**8. ESC Rule for events:** Brushless - Any ESC from the ROAR Approved Non-Timing ESC list or the AARCMCC EP Off Road Stock Spec ESC List. These ESCôs do not have dynamic timing ie; boost or turbo timing options. Brushed ESC for silver can: Any. ***Scrutineers note:*** *at time of writing the ROAR list showed every ESC on the AARCMCC list except 2 x Nosram and 1 x Venom (28/8/2012).* **9. Motor Rule for Events:** Brushless ï any 21.5 turn brushless motor from the ROAR Approved Brushless Motors list with any rotor on the ROAR Approved Brushless Motors list. Any end bell timing is allowed. Brushed ï any 540 size 27 turn Johnson or Mabuchi silver can motor which may not be modified or tampered with in any way.

For explanatory notes on each of the above rules please refer to p.11

21.5 versus 17.5 Brushless Motors

Following the Survey conducted in August 2012 it became clear that the two preferred options for motors were 21.5 and 17.5 brushless.

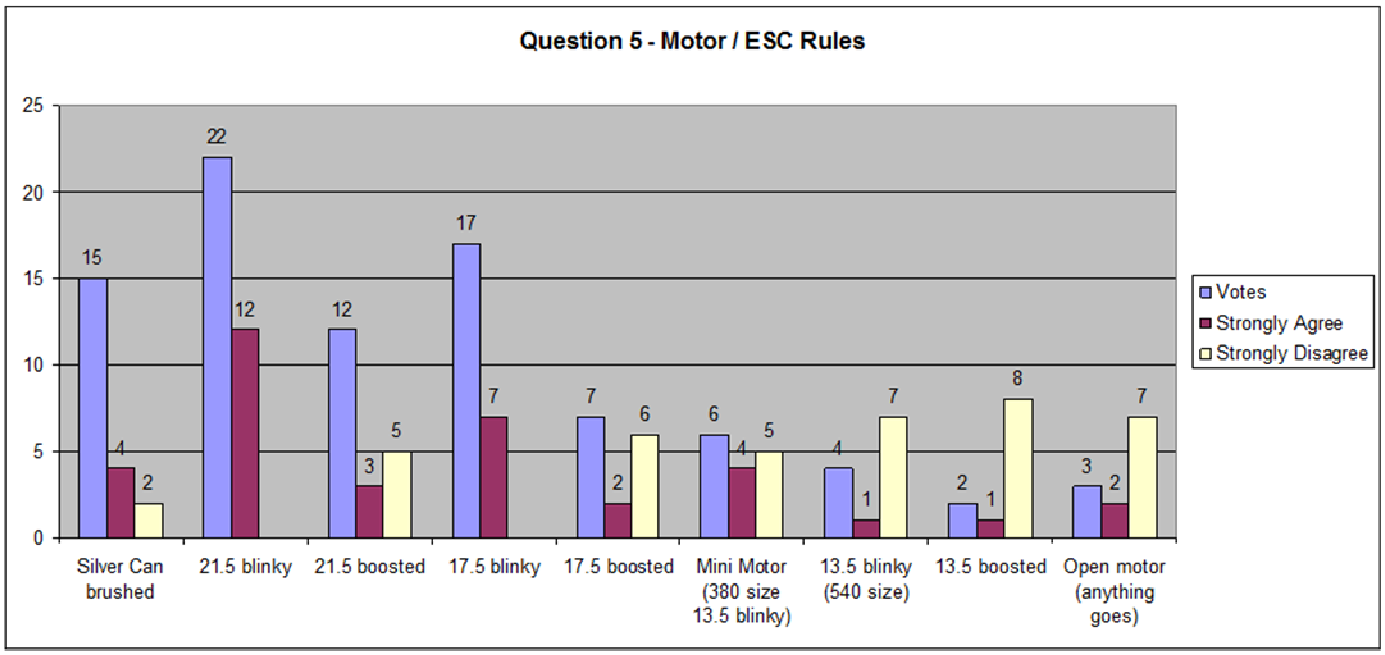
We recommend 21.5 for the reasons stated later in this section.

A number of clubs which currently run 17.5 motors in F1 may wish to stay with this motor.

When your club votes on these rules (p.7) you will be asked to choose a motor format.

Survey

The following graph shows the results of the surveys motor preference question. 22 racers responded to the survey and each of them could vote once for each motor type (ie; a respondent could vote for multiple motor types).



Explanation example: 17.5 boosted - the graph above shows that 7 people voted that they would be comfortable to run 17.5 boosted, of those 2 Strongly Agree that 17.5 boosted should be run, of those who stated they were not comfortable to run 17.5 boosted (which is 22 - 7 = 15) 6 stated they Strongly Disagreed with 17.5 boosted.

From the answers received we believe the following:

a. that 21.5 blinky is the most popular motor class with all of the 22 respondents stating they would be comfortable to run it and with 12 of those Strongly Agreeing that 21.5 blinky should be run and no Strong Disagreement;
b. that 17.5 blinky is the second most popular motor class with 17 respondents stating they would be comfortable to run it and with 7 of those Strongly Agreeing that 17.5 blinky should be run and no Strong Disagreement;
c. that silver can is the third most popular motor class;
d. that 21.5 boosted has some support but 5 that Strongly Disagree with this class;
e. that 17.5 boosted has some support but 6 that Strongly Disagree with this class; and
f. it is clear that anything faster than 17.5 blinky has limited support and as many people who Strongly Disagree with it as are comfortable to run it.

Why 21.5?

RC Formula1 consulted widely on this issue. We spoke to racers and club officers in Australia. We spoke to event series organisers that have already made this decision in the Philippines and USA including the organiser of the USA Tamiya TCS, and prominent participants in the UF1 series in California ï the most successful RC F1 series in the world currently).

1. 21.5 has the right mix of power. It is slow enough to encourage new entrants (critical to growing the class) while being fast enough to keep more experienced drivers interested.
2. The recent Victorian F1 Series allowed open motors with a handicap system and the motor split from 21 entrants was 57% 21.5 blinky, 29% silver can, 10% 21.5 open, 5% Mini combo. Participants included 3 experienced Modified drivers and a number of Super Stock drivers.
3. 21.5 has recently become more widely used in the entry level classes at club level and is also emerging as the motor for VTA (Vintage Trans Am).

While our recommendation is 21.5, clubs may decide that 17.5 is more appropriate to their situation. The voting form on p.7 provides for this and all clubs votes will be counted towards determining the national motor choice.

But isn't my club's track too big for a 21.5?

This may be a valid argument for WCMRC in Perth and Logan in Queensland where the straight is around 60m (50% longer than our benchmark track).

The following measurements were taken using Google Maps on 28 Sept 2012 using the longest straight from the centre of the corner leading into the straight to the centre of the corner exiting the straight:

TFTR (Melbourne) - a track we race 21.5 blinky on every month and therefore our benchmark ï 42m

All tracks in Australia currently running faster than 21.5 blinky in F1:

- WCMRC (Perth) ï 62m
- SMA (Sydney) ï 27m
- Castle Hill (Sydney) - indoor so canôt use Google Maps however a member of their committee advised the straight is 42m
- WSRC (Sydney) ï indoor so canôt use Google Maps
- Logan (Queensland) ï 59m
- STMCC (Hobart) ï 41m

Some track layouts allow for shortening of the track for slower classes and this might be an option for larger tracks instead of using a 17.5 motor.

Club Member Input (optional)

Clubs may wish to seek input from club members who run F1 before submitting this proposal to the clubs committee. In our experience a submission that includes the signatures of a number of members carries more weight with the committee.

The following members support these rules being adopted at our club:

Name	Signature	Preferred Motor (tick one)		I would like to see the following modification(s) to the proposed rules before adopting
		21.5 Blinky	17.5 Blinky	

The following members oppose these rules being adopted at our club:

Name	Signature	Reason

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Club Voting Form

Name of Club	
Date	
Outcome of vote to adopt **RC Formula1 National F1 Rule Set version 1.1 (11 October 2012)** for use by the club	Passed / Failed (cross out one)
If Failed then please advise the reason(s)	
If Passed then please specify any changes that were made to the core rules for use at club level eg; Tamiya only chassis, rubber tyres only, or whatever (while the preference is for clubs to adopt the rules ñas isò it is recognised that this may not be practical for all clubs)	
If Passed then what date will the rules come into effect (we recommend 1 January 2013)	

If Passed then please specify one (1) of the following as your clubs vote for the motor for National Events:

Vote for motor to be used at National Events	**Please tick One (1) only**
(a) 21.5 blinky to be adopted at our club and for national events	
(b) 17.5 blinky to be adopted at our club and for national events	
(c) 21.5 blinky for national events but at our club 17.5 blinky will be run	
(d) 17.5 blinky for national events but at our club 21.5 blinky will be run	

Note: Votes for the motor to be used at National Events will be counted with one vote per club. The motor option with the most votes will be adopted in RC Formula1 rules for National Events. Minimum Votes needed is Five (5). Votes must be received by 10 December 2012. In the event of a tie RC Formula1 will cast a deciding vote. As club votes are received they will be published on RC Tech and on the RC Formula1 web site (Main Menu: Racing > Rules).

Please specify a committee member as a contact person for RC Formula1:

Name:	**Email:**	**Phone:**

Signed by two committee members:

Signed:	**Signed:**
Name:	**Name:**

Please return completed Club Voting Form (Contact details on p.16)

Any comments or feedback for RC Formula1 can be provided on the reverse of this page

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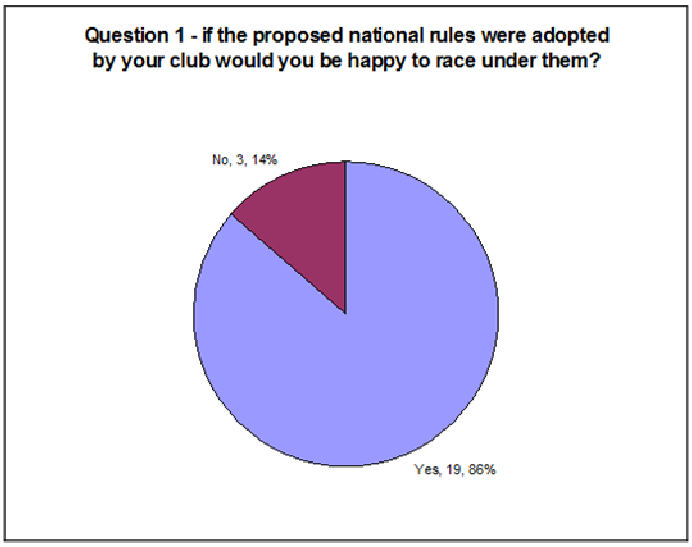
Explanatory Background

Survey Results - Rules / Motors

Survey date - 20 August 2012

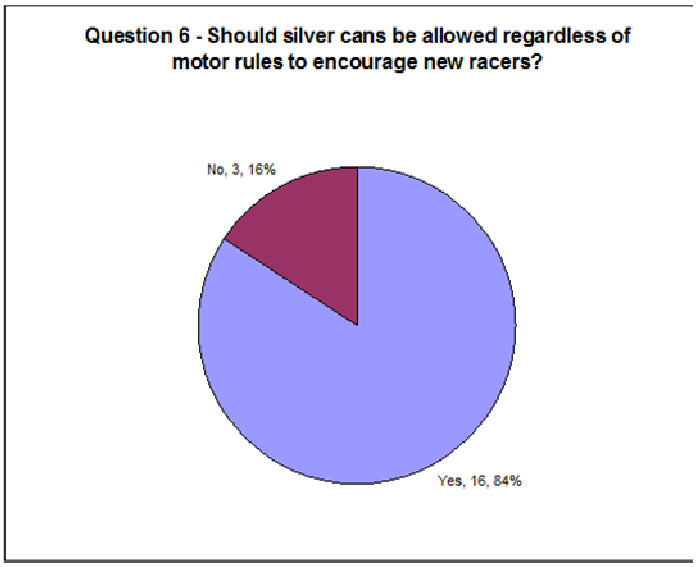
22 Racers from around the country responded to the RC Formula1 Rules / Motors Survey. Here are the results. Not all respondents answered all questions.

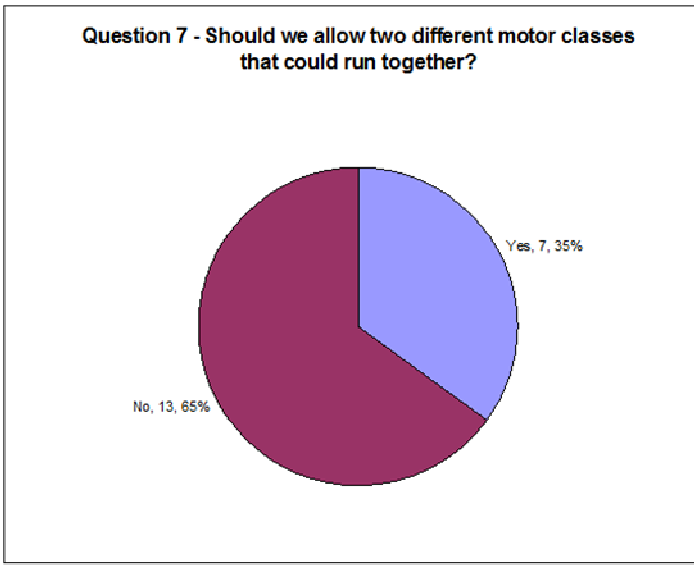


Question 1 - Of the three respondents that answered No the reasons given were:

- 1 x Has an F201 and running it as 2WD "makes it non-competitive"
- 2 x would like to see rubber tyres only. 1 of these wants "control rubber tyres"

RC Formula1 Opinion: An 86% approval rating for the draft rules is extremely positive. They are a starting point and can be refined over time and tyres will be something re-examined down the track. However, we do not see *control* rubber tyres being used for club racing.





Question 7 - 13 respondents voted No to running two different motor classes together (being 65% of the 20 that answered this question).

From the 7 that voted Yes there was no consensus on which 2 motors to run together and opinions varied from silver can / 21.5 blinky, to 21.5 blinky / 17.5 blinky, to 21.5 blinky / open.

Of those who voted No there were multiple strong views which are paraphrased as follows: that the different car speeds running together would cause racing incidents, whereas a single motor class will increase the number of cars running together which was seen as a good thing. RC Formula1 agrees with this.

Questions 2-4 asked about a racers experience in F1. Question 5 results are on p.3.

Frequently Asked Questions on National Rules

Fundamental Principle

The fundamental principle of this F1 national rule set, at this early stage, is to encourage consistency at club and event level while not being too restrictive on what can be run. We all want to see the class grow and reach its maximum potential.

1. Chassis Rule – explanatory notes

1. Chassis - Any commercially available 1:10 scale rear wheel drive F1 or Indy Car chassis with a T-bar, Pivot Ball Link or independent rear suspension. 4WDôs must have drive to the front wheels disabled. Any hop ups specifically available for that chassis are allowed.

We allow FGXôs, F109ôs, Topôs, Corrallyôs and any other dedicated F1 chassis to run. Even the old 4WD F201 chassis can run if drive to the front wheels is disabled. 1:10 or 1:12 pan cars may not run, only chassis designed for F1 by the manufacturer are allowed.

In the UK on the BRCA website they state ***"It was felt by the organising committee that the main objective ... is to encourage participation. If you have an F1 car of any kind then we want you to come and race!"*** We feel that this is exactly where we are at in Australia right now.

Indy Car is the USA open wheel racing class. UK, NZ and QLD rules all specify allowing ñIndy Carò chassis to run so it has been included. We can see no difference between an Indy Car and an F1 car for RC use, except the body.

The section on hop ups is designed to prevent people mixing and matching parts from F1 cars where the original manufacturer or aftermarket manufacturer does not specifically state itôs designed for it. Also prevented is using pan car parts unless the F1 manufacturer specifies it. Eg; an Exotek chassis may be used on any car that the Exotek manufacturer states itôs been designed for. Similarly Top states that the Top Rebel is designed to accept an F104 front end so thatôs ok. As is using an F103 front end on an F104 as Tamiya says this is ok and makes it an F104W. Some F1 cars share parts with that manufacturers pan car range, this is ok. It is not expected that scrutineers will proactively check this rule but it exists to empower the scrutineer where a racer has taken pan car parts and installed them on an F1 chassis where it wasnôt designed by the manufacturer to take them.

Discussion around inboard front suspension / pan car front ends / scale looks:

A great deal of discussion occurred around whether cars with pan car front ends should be allowed such as the Top Rebel and the Corally New Generation and Link models.

Pan car type front ends with A-Armôs might, or might not, provide a performance advantage.

We support the idea that F1 cars should be scale looking and having front suspension mounting points outside the body and/or using A-Armôs violates this.

The idea of keeping the front end looking scale has significant merit but at this stage we felt rules on these aspects needed to be excluded for the sake of the Fundamental Principle of not excluding existing F1 cars and to grow the class.

The possible future rule might state ñThe front arm pivot points (where the front arms attach to the chassis) must be within the bodyò. The BRCA have a similar rule at time of writing. If this were to occur it may be

reasonable to grant an exception for existing F1 models, that are no longer in production, providing there is no significant performance advantage. NB: cars such as the Top Rebel allow the Tamiya F103/104 front end to be used which would keep this car looking scale.

Discussion around front shock absorber:

Should shock absorbers be allowed on the front of the car ie; Tamiya F201 and planned at time of writing as an upgrade for the 3Racing FGX and as standard on the proposed 3Racing F113.

Given most cars do not have this option should they be allowed given they presumably allow additional flexibility / tuneability for front grip. Note: they may not provide any significant advantage and testing will be required.

Again the decision was to not exclude cars with front shock absorbers for the sake of the Fundamental Principle of allowing any F1 car to run in order to grow the class.

This will be revisited as the rules mature.

2. Tyre Rule – explanatory notes

2. Tyres - Rubber or Foam F1 tyres. No wheels or tyres manufactured for a class other than F1 may be used unless the manufacturer lists it as the primary wheel/tyre for that chassis eg; Corally.

There appears to be those who swear by rubber and others that love their foam. Both certainly have merits and disadvantages. We allow either. For major events the organisers may decide on a control tyre, and some clubs may decide not to allow foam, but at a national level we recommend allowing either at this stage. Ideally we donôt want any F1 car currently running in Australia to not be able to run because of a restrictive tyre rule.

Corally F1 Tyres

There was significant debate about whether to allow Corally cars with their extra wide foam tyres. After considering all of the arguments put forward we decided to allow them.

Corallyôs can not run rubber tyres, they only have foam available.

Corally F1ôs use tyres designed for the Corally Pan car which are wider than normal F1 tyres. Because of this some felt that the Corally has an unfair rear grip advantage.

If this turns out to be a significant issue then it was suggested by those who have Corallyôs that they could cut down the width of the rear tyres to the same as those used by other F1ôs. It was pointed out that if this were to be required that the part of the tyre closest to the chassis should be cut because cutting the outside of the tyre will reduce the rear track width which will adversely affect handling.

This rule will be reviewed at an appropriate time in the future once weôve collected further data on tyre performance and club /driver preferences.

So the Corally's (original and Next Generation) are able to run. They were designed for the F1 class and there are people that own them and appear keen to run them. The wider foam tyres may well be an advantage, time will tell.

3. Body Shell Rule – explanatory notes

3. Body Shell - Any F1 body shell. Painting your shell in past or current full scale F1 team colours is encouraged but any paint scheme is allowed. Driver head / helmet must be fitted. Painting of the drivers helmet and overalls is encouraged.

Part of the appeal of this class is the scale realism.

Scale Realism

There was significant debate about the scale realism of the class and whether a minimum standard of painting should be part of the rules.

We strongly feel that it is not the place of these rules to impose painting standards on racers. However, it was clear that unlike touring car racing, F1 provides a real opportunity for modelling and either painting cars to a realistic team paint scheme or stamping your personality on your car. Many said that this is part of the attraction of F1 for them.

We all love the look of the cars. There will always be those that put more effort into their shells than others. Rather than putting it in the rules we will leave it to peer pressure to minimise any one colour paint jobs.

4. Wing Rule – explanatory notes

4. Wings - Any wing designed for the chassis or body shell in use is allowed. Custom built wings are not allowed.

There was no debate on the wing rule.

5. Width Rule – explanatory notes

5. Width - Maximum width 205mm.

The proposed rule allows all known F1 cars (at time of writing) to run.

Below is our understanding of car widths. Width measured at the widest point:

F104 Pro 182mm (rubber)
F104 Pro X1 185mm (rubber)
F104W 200mm
F104 Pro v2 182mm (rubber)
F103 200mm
3 Racing FGX 195mm
3 Racing F109 203mm on rubber with TRG rims, 200mm on foam
Corally F1 202mm
Top Rebel 200mm

FORCDA had a 210mm max
ROAR has a 213mm max
NZRCA has a 205mm max
BRCA (UK) uses 190mm for ñmodernò chassis and 210mm for ñretroò chassis (F103 and F109)
UF1 (series in the USA) have 2 classes 190mm and 200mm

Again we want to allow any F1 car to run and the minimum width that achieves this has been adopted.

6. Minimum Weight Rule – explanatory notes

6. Minimum Weight - Minimum weight 1000g (with transponder).

1000g was already a common weight restriction in Australia at club level, although not the only minimum weight in use. In the UK they use 1050g, ROAR uses 1020g, but 1000g is certainly common. Imposing a minimum weight prevents unforeseen issues and assists to maintain a level playing field. Box stock cars are all heavier than 1000g. It is possible, but difficult, to achieve 1000g and that feels right for a minimum weight rule.

There was no debate on the minimum weight rule.

7. Battery Rule - explanatory notes

7. Batteries - Any 2S hard case lipo that has ROAR or BRCA approval as stated in AARCMRCC rules or 6 cell Nimh or Nicd battery.

There was no significant debate on the battery rule.

8 & 9. Motor / ESC Rules – explanatory notes

Why 21.5?

This is covered in the earlier section of this document ñ21.5 versus 17.5ò on p.3.

Definition of blinky

Background: As the use of brushless motors and electronic speed controllers (ESC) became widespread in Australia, around 2009-2010, the manufacturers looked for ways to make their ESC faster and therefore more popular. They developed dynamic timing software for the ESC which could advance or retard the motor timing based on motor RPM and other factors. ESCôs with dynamic timing (sometimes referred to as ñboostò or ñturboò) offer a significant performance advantage but also adds another level of complication to setting up the car to be as fast as possible. It is also easy to over heat a motor which then needs replacing.

Definition: ñBlinkyò denotes a mode of the ESC with no dynamic timing. This is often indicated by a blinking light on the ESC ï hence ñBlinkyò. Also referred to as ñnon-timing modeò.

Why blinky?

To paraphrase some of the comments received: For many, F1 will not be the primary class and so blinky removes ESC setup from the equation. Blinky also makes it easier for new entrants to get started. Blinky was widely supported by participants in the survey.

Why have an optional rule for events?

The benefit of an optional event rule is that everyone who wants to travel to an event, or who needs to buy new equipment, should buy equipment that conforms to the event rule. Therefore over time the optional event rule will become part of the main rules (propose 1 Jan 2014). Yes, we could go straight to the event rule but that would mean a lot of club racers might need to purchase new motors / ESCôs for 2013 and that is not the best way to grow the class.

Why have a list of ESC's for events?

- Ease of scrutineering. Referral to a list of approved ESCôs means that everyone has the same understanding and knows how Blinky is indicated on a particular ESC. At Round 1 of the Vic F1 series there were 11 different ESCôs from 15 entrants and much was taken on trust that a flashing light really did mean the ESC was set to no timing or that an ESC wasnôt capable of boost.
- Manufacturers will always attempt to push rules boundaries. If their product is perceived to be faster then they will make more sales. New ESCôs must be tested before adding to the list and this keeps the ESCôs that violate the spirit or rule of Blinky off the list, maintaining a playing field that is as fair as practical.

Why have a list of Motors for events?

The same argument that makes an ESC list a good idea applies to the motors. There are a number of motors that are not on the ROAR list and from reading the threads on RC Tech it would appear that some motors are believed to violate the spirit of blinky racing by having additional ñsmartsò built into the motor. It would be detrimental if we implement Blinky only to have a motor war erupt where you need the latest motor to be competitive.

When 21.5 motors first started to become popular 2-3 years ago a Novak 21.5 had a KV of approximately 1,800 and this was widely accepted as being approximately the ñnormalò KV for a 21.5. KV = RPM per volt, so an 1,800 KV motor at 8 volts will produce 14,600 RPM flat out. While not the whole story on motor power, it is useful as a comparison as it is often published data.

Here is a list of 21.5 motors currently available along with their KV rating (taken from internet sources including manufacturers websites at time of writing):

ROAR approved 21.5 motors:

- Viper R/C VST 1500 KV
- Speed Passion Competition V3 ñ1 cellò 1700 KV
- Team Orion Vortex VST Pro Stock 1750 KV
- Novak Ballistic 1800 KV
- Reedy Sonic Stock Spec 1851 KV
- Speed Passion Competition MMM 2000 KV
- Team Epic D3 ñMonster Horsepowerò ROAR Spec 2000 KV
- Tekin Redline 2100 KV

Non-ROAR approved motors:

- LRP X12 1700 KV
- Team Epic REVTECH ROAR Spec 2500 KV
- Trinity D3.5 2800 KV

(as a comparison the Novak Ballistic 17.5 is 2200 KV)

Thanks to rccartips for compiling parts of this list.

We couldn't locate ROAR's technical criteria for inclusion in their list but BRCA tech criteria are here (under Section 6).

Other Notes

Race Format

There was a lot of discussion around racing format. Many would like to see race formats closer to the real thing with fastest lap qualifiers and a single long main with all cars in together. This has merit but is not the focus of the proposed rules. Clubs may choose any race format which fits in with their existing program.

When F1 was an AARCMCC Class

We are told that it was officially removed from the regulations in 2005 as there had been no demand for running F1 at sanctioned events for some time. Last time F1 was run at the Nationals was ACT in 2002.

We understand the fast 19T brushed motor used (approximately equivalent to a 10.5 blinky brushless motor) was a significant reason for the class dying out.

Contact Us

Feel free to contact us about this proposal or about anything related to RC F1:

Email: info@rcformula1.com.au
RC Tech: RCformula1 (www.rctech.net)
Web: www.rcformula1.com.au
Postal: Please email us for our postal address

Direct link to Rules page on our web site:

www.rcformula1.com.au/rules