

Formula Race Car Association

Cup Class Eligibility

1. Statement of Purpose

- 1.1. The purpose of the Cup Class within the CAMS NSW Formula Race Car Championship is to provide a viable and competitive class within the Championship for older cars, with eligibility criteria that allows a wide range of configurations.

2. Outline

- 2.1. It is characteristic of formula racing cars – particularly Formula 3 as the predominant ‘formula’ racing within the Formula Race Cars class on the CAMS NSW Motor Race Championship – that:
 - Changes in technology occur relatively quickly and render older cars ‘uncompetitive’ in outright terms;
 - There is a relatively low volume of available cars at whatever is the ‘current’ lead technology;
 - The cost of upgrading to a new car is significant.
- 2.2. With this in mind, a viable and competitive class for older cars is essential in order to maintain sustainable numbers and meet the objectives of FRCA (enjoyable and affordable racing).
- 2.3. There are options available that are clearly defined (Formula 3, Australian Formula 2) within the CAMS framework. There should also be scope for alternative approaches as these have the benefit of:
 - A potentially lower cost alternative;
 - The opportunity to ‘re-birth’ cars that might not be competitive in their original configuration;
 - An engineering challenge for those so inclined.
- 2.4. Ultimately, by offering a wider number of options we can maximise the number of older cars competing in our championship.
- 2.5. Within that framework however there should be:
 - (1) clarity around rules;
 - (2) reasonably comparable performance.

Cars that might generally fit due to age but are engineered to a clearly different performance specification, e.g. BDA engined Formula Atlantic Cars, are not considered to be of comparable performance and are not eligible to compete within the Cup Class, however they may compete in other classes. Likewise, other cars with performance

specifications that are outside the Cup Class guidelines in the following sections are also welcome to compete in the Championship Class.

- 2.6. It is recognised that Formula R is an established approach to this issue and has been specifically incorporated in the Championship Rules since the inception of FRCA.
- 2.7. While the concept of comparable performance is an objective within these rules, this is not a parity class – we are not in the position to test and modify performance to achieve comparable results, and we accept that there will be some difference in the potential performance of the different configurations within the class. That is viewed to be acceptable within the objectives of FRCA (enjoyable and affordable racing) and to meet the needs of the majority of competitors. In this regard the performance capability of an early series Dallara F3 car (e.g. F396), as prepared and run in the State Championship, should be considered a reasonable benchmark.
- 2.8. Classes. Notwithstanding the above, there are some eligible cars within clearly definable bounds that will be at a distinct performance disadvantage to the Cup Class benchmark. These cars are unlikely to compete in sufficient number to justify their own championship. To address the disparity the Cup Class championship may be conducted with a split structure – points are awarded for performance relative only to other cars in the competitor’s sub-group but are part of a single pointscore for the Cup Class (see championship regulations for details).

3. General requirements

- 3.1. Cars must comply with the CAMS general requirements for racing cars:
 - General Requirements for Cars and Drivers; and
 - General Requirements for 1st Category Racing Cars.Refer CAMS Manual for details.
- 3.2. Minimum weight: Unless otherwise prescribed in the relevant technical rules pertaining to a class (e.g. 4A Australian Formula 2) the following minimum weights shall apply (measurable at the end of a race or qualifying session, inclusive of driver): Carbon fibre chassis construction: 550kg; Aluminium chassis construction: 525kg; Other construction: no minimum weight specified.
- 3.3. Wheels: Unless otherwise prescribed in the relevant technical regulations (e.g. Formula R), wheels shall be a maximum diameter of 13” and widths shall be free, noting that tyre sizes are subject to limits at 3.4 below.

Exception: cars with a Historic logbook and COD can run with wheels as described in their documentation if they choose not to comply with these rules.

- 3.4. Tyres: Unless otherwise prescribed in the relevant technical regulations, tyre brand and compound shall not be restricted beyond the general requirements set out in the CAMS Manual and the Championship regulations (regarding the number of tyres that can be used in an event).
- 3.5. Fuel: Unless otherwise prescribed in the relevant technical regulations, fuel is not restricted beyond the general requirements set out in the CAMS Manual.
- 3.6. Forced induction is not permitted.
- 3.7. Development Spec. Cars: The rules allow for limited development of the formula (in particular under technical specifications 5C and 5D) and other cars without specific technical requirements (4C Formula Libre) with a view to maximising the opportunity for potential competitors to make use of available older chassis. In the absence of any developed prototypes, whether these cars are likely to meet the objective of comparable performance within the Cup Class is difficult to determine. Eligibility of new, or newly configured, cars competing under these rules is, in the first 3 championship race meetings, subject to demonstration of a comparable current or historic benchmark of other cars within 102% of the achieved performance (i.e., car is not more than 2% quicker than other cars in its sub-class), as determined by the FRCA committee.
- 3.8. New Development Spec Cars (5C and 5D). Cars that do not have a verifiable competition record prior to 31 December 2015 will be subject to a review period of up to 3 completed race meetings (75% of available laps completed at each) during which the car will not be eligible for class points but will still be eligible for outright points (as an open class car). The FRCA committee will establish a review panel of 3 members, including at least 2 Cup Class competitors, to assess performance against benchmarks (see clause 3.7). This may be waived with the prior consent of all members with Cup Class cars. Once eligibility is determined, the car will be added to this document (Appendix 2 – Other Approved Cars) and the change process set out at clause 6.2 will apply.
- 3.9. Cars must comply with one of the Technical Specifications set out in sections 4 or 5 below, subject to the Approved Variations to Technical Specifications as listed in Appendix 1 and brought into effect in accordance with section 6, or have been approved and listed in Appendix 2.

4. Technical Specifications – Class A Cars

4A. Australian Formula 2

4A.1 Brief Description

| | |
|---------------------|-------------------------------------------|
| Engine capacity: | 1600cc, production based |
| Engine operation: | single cam, maximum 2 valves per cylinder |
| Fuel delivery: | carburettors |
| Engine restriction: | rev-limited 8500cc |
| Gearbox: | 5 speed max, manually operated |

Note: the above is a general description of a typical car only and not intended to restrict the eligibility of 1st Category Formula 3 cars with a build date prior to 31/12/94, fitted with an inlet air restrictor with a maximum diameter 24mm and issued with a Formula 2 log book.

- 4A.2 Technical regulations: Refer CAMS manual, Category 1 Racing Cars, Australian Formula 2

4B. Eligible historic cars

4A.1 Brief Description

| | |
|---------------------|-----------------------------------------------|
| Engine capacity: | 1600cc limit |
| Engine operation: | single cam, maximum 2 valves per cylinder |
| Fuel delivery: | free within historic eligibility requirements |
| Engine restriction: | free within historic eligibility requirements |
| Gearbox: | free within historic eligibility requirements |

4A.2 Technical regulations: None beyond general requirements in Section 3.

4C. Other Class A Cars

4C.1 Brief description: Cars complying with the following minimum specifications beyond the general requirements.

4C.2 General descriptions as outlined below:

4C.2.1 **Formula Libre**: maximum engine capacity 1600cc, maximum 2 valves per cylinder; or 1600cc multi-valve engines subject to the restrictions outlined in 5D (other than capacity).

4C.2.2 **Formula Libre motorcycle engine**: maximum engine capacity 1340cc and rev limited as per championship regulations; chassis is not built by a specialised manufacturer of motorcycle engine racing cars (such as Stohr, Speads, etc.) and contains no carbon fibre.

4C.2.3 **Formula Ford 2000**: maximum engine capacity 2000cc derived from a ford production engine, single cam, maximum 2 valves per cylinder; chassis is original production formula ford or formula ford 2000 as per documents or chassis identification plate.

5. Technical Specifications – Class B Cars

5A. Formula 3

5A.1 Brief Description

| | |
|---------------------|----------------------------------------------------------------------|
| Engine capacity: | 2000cc, production based |
| Engine operation: | twin cam, maximum 4 valves per cylinder |
| Fuel delivery: | electronic fuel injection |
| Engine restriction: | air restrictor 26mm |
| Gearbox: | 5 speed max, manually operated |
| Chassis: | Build date 31 December 1998 or prior (chassis series F398 and prior) |

5A.2 Relevant FIA Formula 3 regulations and relevant CAMS technical regulations for Formula 3.

5B. Formula R

5B.1 Brief Description

| | |
|---------------------|---------------------------------------------------------------------------------------------------------------------|
| Engine capacity: | 2000cc, production based |
| Engine operation: | twin cam, maximum 4 valves per cylinder |
| Fuel delivery: | carburettor |
| Engine restriction: | rev limited 7000 rpm |
| Gearbox: | 5 speed max, manually operated |
| Chassis: | Build date 31 December 1998 or prior (chassis series F398 and prior) for carbon fibre chassis cars, otherwise free. |

5A.2 Formula R Regulations as posted on the FRCA website.

5A.3 Tyres are free for the CAMS NSW Championship. Formula R regulations may require a control tyre for the purpose of any Formula R pointscore run in conjunction with the CAMS NSW Championship events.

5C. Other Cars Development Spec. 1

5C.1 Brief Description

| | |
|---------------------|---------------------------------------------------------------------------------------------------------------------|
| Engine capacity: | 2000cc, production based |
| Engine operation: | twin cam, maximum 4 valves per cylinder |
| Fuel delivery: | carburettor |
| Engine restriction: | rev limited 7000 rpm |
| Gearbox: | 5 speed max, manually operated |
| Chassis: | Build date 31 December 1998 or prior (chassis series F398 and prior) for carbon fibre chassis cars, otherwise free. |

5C.2 Further Specifications for 5C:

Development objective: based on Formula R principles but allowing for alternative engine options.

Engine – Any commercially available make of 4 cylinder inline engine. Capacity is limited to 2000cc with allowance for a maximum overbore of 1mm.

Pistons – Any brand producing a compression ratio of no more than 12.5:1.

Crankshaft – Any commercially available crankshaft compatible with the make of engine and a stroke equal to the original engine.

Cylinder Head – Number of valves to be free. Cam follower type to be free. Intake/exhaust porting is allowed.

Valves – Inlet and exhaust valve diameters to be consistent with standard specification as well as valve stem diameter. Valve make shall be free.

Camshaft – Any make may be used. Maximum duration at .050" lift to be no more than 235° Lift to be no more than 110% of standard for that engine. Dynamically variable valve timing is not permitted.

Inlet Manifold & Airbox – To be free.

Exhaust Manifold – To be free.

Fuel delivery – Side draught carburettors only to be used.

Fuel – Low lead AvGas.

Ignition – Free.

Rev limiter – must be MSD part no. 8728 with a 7000rpm pill fitted or Racetronics as supplied by Triple R Racing also limited to 7000rpm, or equivalent approved by the FRCA Technical Officer.

Chassis – Minimum weight as per Formula R (550kg carbon fibre chassis; 525kg aluminium chassis)

5C.3 Tyres are free for the CAMS NSW Championship.

5D. Other Cars Development Spec. 2

5D.1 Brief Description

Engine capacity: 2000cc, production based
Engine operation: as per manufacturer specification
Fuel delivery: free
Engine restriction: as per manufacturer ECU specification
Gearbox: 5 speed max, manually operated
Chassis: Build date 31 December 1998 or prior (chassis series F398 and prior) for carbon fibre chassis cars, otherwise free.

5D.2 Further Specifications for 5D

Development objective: low cost low development 2 litre EFI engine.

All engine internals including camshaft drive to the manufacturer's original specifications.

Engine – Any commercially available make of 4 cylinder inline engine. Capacity is limited to 2000cc with allowance with allowance for a maximum overbore of 1mm.

Pistons – Any brand producing a compression ratio of no more than 12.5:1.

Crankshaft – Any commercially available crankshaft compatible with the make of engine and a stroke equal to the original engine.

Cylinder Head – To the manufacturer's original specifications. Inlet and exhaust porting is allowed, Removal of metal is not permitted except that the cylinder head and block may be decked reconditioning purposes so long as the permitted compression ratio is not exceeded.

Valves – To the manufacturer's original specifications. Valve make shall be free.

Camshaft – To the manufacturer's original specifications.

Inlet Manifold & Airbox – Free.

Exhaust Manifold – Free.

Fuel delivery – Free

ECU – the original specification or an equivalent may be used.

Fuel – Free / Any fuel of 100 Octane or below.

Rev limiter – ECU controlled, to the manufacturer's original specifications as per the standard ECU.

5D.3 Tyres are free for the CAMS NSW Championship.

6. Management of eligibility rules

- 6.1. The rules shall be subject to annual review and endorsement of the FRCA Committee, and a current version of the rules posted on the FRCA website.
- 6.2. Changes to the rules: Where the rules need to be changed outside the annual review process for clarification or technical developments, a notice to that effect will be posted on the FRCA website and circulated to FRCA members and other registered State Championship competitors, advertising the proposed change and allowing a 14 day period for comment prior to the rule change coming into effect. Any comments will be considered by the FRCA Committee and addressed in writing.
- 6.3. Changes under 6.2 shall not have the effect of altering the eligibility or classification of a car during the course of the current championship season. i.e. if a car was compliant with section 5C at the start of the championship season it will maintain that classification so long as it continues to comply with the original specifications (other than for reasons of reclassification under clause 3.7).

Version control:

- 3.0 TBC (Draft 12 October 2015)
- 2.1 23 March 2015
- 2.0 13 December 2014
- 1.0 1 November 2013

Appendix 1 – Approved Variations to Technical Specifications

1. For Cars otherwise compliant with Formula 3 technical specifications (section 5A), engines with 5 valves per cylinder are permissible.

Appendix 2 – Other Approved Cars

1. Mygale Formula BMW, manufactured prior to 31 December 2007, powered by 1200cc engine conforming to the Formula BMW specifications.