

# HC115

## Inland Racing Competition Regulations



[www.hovercraft.org.uk](http://www.hovercraft.org.uk)

Hovercraft Club of Great Britain

18 January 2017

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2012-1	14 December 2011	
2013-1	05 February 2013	Removal of F1X. Changed body armour specifications. Engine overbore requirements changed.
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Hovercraft Club of Great Britain  
PO Box 328, Bolton, Lancs. BL6 4FP. United Kingdom  
01204 841248  
info@hovercraft.org.uk

**www.hovercraft.org.uk**

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## FOREWORD

Hovercraft racing is essentially a non-contact sport and these regulations have been put together with this concept in mind.

The interpretation of these regulations and any supplementary regulations issued to drivers at race meetings will be according to the sporting spirit of Hovercraft racing.

National Race Meetings will be run according to the regulations in this document. Combined National/European Meetings can, if officially notified, be run according to the EHF regulations. Where there is a conflict between the two sets of rules, the Competitions Committee will publish the specific rules in advance of the event.

By entering or being entered in a Hovercraft race every driver, from the Novice to the fully qualified National Formula racing driver, thereby acknowledges that he/she will be bound by this spirit and by the standing racing regulations together with any supplementary regulations and any final instructions of the Race Director.

These regulations are reviewed annually at the end of the racing season by the Hovercraft Club Competitions Committee and any changes deemed necessary are incorporated for the following season's racing. If you have any comments regarding the racing regulations, please address them to the Chairman of the Competitions Committee or a member of that committee. The deadline for submission of rule changes to be considered for the following season is one week after the last Race Meeting of the season.

To assist drivers in identifying recent amendments and/or additions to these regulations, the changes are shown in ***bold and italic print***.

The Council of the Hovercraft Club and the Competitions Committee wish all drivers a safe and successful Hovercraft racing season.

If you are a new driver to Hovercraft racing we would suggest that you read the associated Club publication "New Racing Driver Guidelines" (HC135). This will take you through all the procedures you need to know about and comply with to enter Club racing.

For the latest information on any of the annual Hovercraft racing events reference can be made to the Club Internet Web site.

**<http://www.hovercraft.org.uk>**

## ASSOCIATED PUBLICATIONS

Ref No.	Title	Issuing Organisation
HC135	New Racing Driver Guidelines	Hovercraft Club of Great Britain
HC152	Construction Requirements for Racing Hovercraft	Hovercraft Club of Great Britain
HC113	Hovercraft: The Constructors Guide	Hovercraft Club of Great Britain
HC129	Rules and Guidance for the Running of National Inland Race Meetings	Hovercraft Club of Great Britain
HC148	HCGB Appeals Procedure	Hovercraft Club of Great Britain
HC156	Officials Handbook	Hovercraft Club of Great Britain

**For further information please contact the Club Information Officer**

**Tel: 01204 841248**

**[info@hovercraft.org.uk](mailto:info@hovercraft.org.uk)**

## 1. DRIVER REGULATIONS

### 1.1 General

- A. The driver must be a current member of the Hovercraft Club of Great Britain and hold a current Hovercraft Club Hovercraft Operating Licence for the event he/she wishes to enter, *and have paid the relevant fees.*
- B. Drivers must abide by the competition regulations as laid down by the Hovercraft Club in this publication.
- C. At all times whilst practising or racing the driver must:
  - a) Wear a crash helmet to the specification of BS 6658:1985 (it will be marked with a British Standard 'kitemark'); or UN ECE Regulation 22.05 (it will be marked with a UN 'E' mark – the first two digits of the approval number will be '05'), or equivalent specification. The user must ensure the helmet fits properly, is fastened securely and is in a serviceable condition. *It is NOT recommended to fit "Go Pros" or similar cameras to helmets since they can exacerbate head and neck injuries in the event of an accident.*
  - b) Have a working engine cut-off switch attached to his/her person by a lanyard.
  - c) Wear suitable protective clothing covering hands and arms, legs, feet and torso. It is recommended that drivers wear eye protection.
  - d) It is recommended that drivers wear body armour (tested i.a.w BS EN 1621-1) and a back protector (tested i.a.w BS EN 1621-2).
  - e) Wear a buoyancy aid to BMIF standards or a lifejacket (with at least inherent buoyancy to the above standard) if the course includes water. The buoyancy aid/lifejacket will be worn on the outside of racing clothing such that it is obvious to the marshals that a driver is wearing a buoyancy aid/lifejacket. Self-inflatable lifejackets on their own are not acceptable.
- D. When driving in the paddock a fastened crash helmet must be worn in addition to suitable protective clothing as defined at 1.1C.c).
- E. All persons in the engine test area shall wear a crash helmet and eye protection whilst engines are being run, in addition to suitable protective clothing as defined in 1.1C.c).
- F. The driver must be 16 years of age or over unless a competition is especially designated otherwise.
- G. Not Used.
- H. A driver may be required to take a breathalyser test (or similar) and be below the level stated in the current Road Traffic Act. The Race Director will have suitable equipment available for such testing at the race meeting. A driver failing the test will be disqualified for the remainder of that day.

### 1.2 Qualified National Drivers

- A. Any driver who has not completed a minimum of five (5) National, International or Opens races during the last two racing seasons, *(2015, 2016)* will be required to re-qualify. (See Section 1.8.).
- B. A Driver who has not completed any National, International or Open races in the last five racing seasons *(2012, 2013, 2014, 2015, 2016)* is considered a new novice and is subject to Section 1.3.

### 1.3 Novice Drivers

- A. New drivers must qualify before racing in National Championship races. New novice drivers must pass a manoeuvrability and oral test before operation on the course. Any driver who has not completed one race within two months from the date of the Test

Certificate will be required to take a further test.

- B. Formula 1 specification craft cannot be used by new Novice drivers.
- C. Novices must complete fifteen novice races to qualify for Formulas 2, 3, F50 and F35 (see 3.7G) All these qualifying races must be completed within two consecutive racing seasons.
- D. Not used.
- E. All Novice drivers, upon completing their tenth Novice race, must inform the Race Director of their imminent qualification and have their licence endorsed by the Race Director to this effect.
- F. Novice drivers must have their Operating Licence endorsed by the Race Director after completing their final qualifying race prior to competing in National races.
- G. Before qualifying Novice drivers will be required to marshal ten races during the period as a Novice driver. The Chief Marshal will endorse their Operating Licence to confirm that this has been complied with.
- H. Novice drivers must hand in their operating licence (endorsed by the Race Director and the Chief Marshal) at Race Control or to the Records Officer before they will be allowed to compete in National Races.
- I. Not used.
- J. At the Race Director's discretion, any Novice Driver who does not feel confident to progress to National Status may opt to continue in the Novice Formula. However he/she will not be eligible for Novice trophies.
- K. Newly qualified drivers shall carry on the rearward facing surface of their craft an orange diagonal cross on a black background of not less than 23cm square, for a minimum of ten races. This cross shall also be shown on the front of the craft so that the Start Marshal can see it. During this period, newly qualified drivers will not be allowed to enter Open races.
- L. Novices will not be permitted to enter races other than Novice races.
- M. Where less than ten craft are competing in a Novice race, experienced drivers may be asked to compete in order to give improved training to Novices.
- N. All Novices should complete three laps of practice per day before taking part in Novice races.
- O. If a Novice driver feels that they are competent, earlier than the specified number of races above, they may approach the Race Director for early qualification. Early qualification is subject to the completion of relevant marshalling duties and at the Race Directors discretion. In addition they may also approach the Race Director for early qualification to Open and F1 races.

#### **1.4 Formula Junior Drivers**

- A. Drivers who are aged 11 but not over 16 years are eligible for Formula Junior. For the year that the junior turns 16 years of age they can elect either to retain Junior status or to progress to National/Novice status. He/she will not be eligible for both categories.
- B. Hovercraft used by a Junior must be classified as an F35, F3, F50 or powered by a Polaris EC34 or Polaris EC44 PM/2PM and must be suited to the ability of the driver. No driver will be allowed to compete in a craft where it is considered that there might be an unacceptable risk of danger to the driver and/or others. The parent/legal guardian is responsible for making sure the child is suitably competent to drive the craft they are in.
- C. Before being allowed on the race course the driver must pass a manoeuvrability and oral test using the craft they will be racing. Any driver who has not completed one race within two months from the date of the Test Certificate will be required to take a further test. If subsequently the driver wants to use an alternative craft then a retest in that craft

- will be required. After completing 15 races, a change to another craft may be permitted without a retest, at the Race Director's discretion.
- D. The parent, legal guardian or other responsible adult shall supervise each driver, have read the rules, be present during briefing and shall countersign the driver's signature on the signing on sheet.
- E. Refer to Appendix B for guidance notes and recommendations on junior craft selection.

## 1.5 Team Racing

- A. Team racing will be allowed subject to the following:
- a) A team in Formulas 1, 2, 3, and F50 will consist of up to two National drivers who must be nominated when applying for a team number. Individual drivers will be considered as a team of one. Drivers cannot be in more than one two person team per formula.
  - b) Junior and Formula 35 teams may have unlimited team members (subject to Rule 1.1A). Members can be added as they qualify. Individual drivers will be considered as a team of one. Drivers cannot be in more than one multiple person team per formula.
  - c) Not Used.
  - d) Should a team be dissolved during the season, one member may elect to continue with the team number and retain the team points gained, provided there is written consent from all other members of the team. In this instance the name of the team shall revert to that of the individual. Where there is no such agreement, those team points will be frozen.
  - e) Newly qualified drivers may be added to teams during the season without loss of points.
  - f) Novice drivers may not be in a team of more than one person.

## 1.6 Driver Numbers

- A. Driver numbers will be allocated by the Records Officer on a first come, first served basis in accordance with the following:
- Formula 1 No's - 1 - 30
  - Formula 2/50 No's - 31 – 120
  - Formula 3 No's - 121 - 170
  - Formula 35 No's - 171 - 199
  - Junior - 1 -199

The first five numbers of each Formula are reserved for the first five placed drivers from the previous season.

- B. Numbers not used in any one racing season will become available for re-allocation for the following racing season. Reserved numbers will only be released if they are not taken up by the first National race meeting of the season. Other driver numbers will be allocated on a first come - first served basis ONLY when the driver Operating Licence is bought or renewed.
- C. Novice drivers will be allocated a number appropriate to the formula of his/her craft, prefixed by the letter 'N'. Once qualified, the driver will retain this number for the remainder of that season.
- D. The Hovercraft Club reserves the right to issue craft number plates carrying sponsor names which must be used in lieu of the normal number plates.
- E. If previously individual drivers wish to combine as a team, they can elect which of their numbers they retain when forming the team at the beginning of the season.



## **1.7 Junior Qualification at Age 16**

- A. A junior driver wishing to compete in F3 or F35 at age 16 must complete 15 Novice races. Formula Junior races will count as Novice races for F3 or F35. F3/F35 races will count as novice races for any other formula (see 1.7B).
- B. A junior driver wishing to compete in any formula other than F3/F35 at age 16 must complete 15 Novice races. Up to 5 junior races will count as Novice races.
- C. All these qualifying races must be completed within two consecutive racing seasons.
- D. If a Junior Driver feels they are competent, earlier than the specified number of races above, they may approach the Race Director for early qualification. Early qualification is subject to the completion of relevant marshalling duties and at the Race Director's discretion.
- E. To qualify into adult National Racing, a junior must marshal at least 10 races. Marshalling is only allowed for those aged over 14.

## **1.8 National Re-qualification**

- A. To re-qualify as a Qualified National Driver as a result of the situation described in section 1.2A, a driver must complete three Novice races monitored by the Race Director.
- B. On completion of their final re-qualification race, the driver must have their licence endorsed by the Race Director and ensure that the appropriate Race Officials are informed, prior to competing in National races.
- C. Re-qualifying driver may opt not to receive trophies when competing in Novice races.
- D. Re-qualified drivers are immediately eligible for open races at the Race Director's discretion subject to rule 3.1L.



## 2. CRAFT REGULATIONS

### 2.1 General

- A. Craft will conform to the construction regulations as laid down by the Hovercraft Club in the publication "Construction Regulations for Racing Hovercraft" (HC152).
- B. F35 craft must comply with the additional requirements given in Appendix C.

### 2.2 Scrutineering

- A. Before operating at any meeting, a craft must be passed by the designated Scrutineer for that meeting, to ensure it complies with the current Hovercraft Club regulations. A current Craft Registration Document must be presented to the Scrutineer. If the Craft Registration Document is not available, a full scrutiny may be called for and the appropriate fee charged.
- B. Any damage, defects or modifications (including ballast) to craft which occur during a race meeting, must be reported to the Chief Scrutineer for the meeting for inspection prior to further operation.
- C. The craft registration number must be displayed in accordance with: Construction Requirements for Racing Hovercraft (HC 152).
- D. The fact of obtaining a Scrutineer's approval at pre-event scrutiny does not indicate that the Scrutineer is accepting any responsibility for the safety or raceworthiness of the craft, nor does it indicate that the craft complies in all respects with the Regulations. Please note that pre-event scrutineering or logbook inspection by a scrutineer is only a spot check of a limited number of key safety and eligibility features of the crafts condition. Alone it will not guarantee the craft meets all applicable regulations or standards.
- E. The main purpose of pre-event scrutineering is to check as far as is possible under the prevailing conditions the safety of the craft and safety equipment for compliance with Technical Regulations and to superficially check its eligibility for a particular class or category.
- F. The act of presenting a craft and safety equipment for official scrutiny shall be deemed a declaration of its fitness and eligibility for the event and an acceptance of the consequence of such a declaration not being valid. *A craft may not be presented for scrutiny by a junior driver.*
- G. An entrant shall, before the event, satisfy himself as to the eligibility and safety of the craft and safety equipment and competence of the driver.
- H. *An entrant may be required to conduct a float test. A craft that fails the float test may be prevented from operating, until remedial work is completed, and the craft retested.*

### 2.3 Displaying Numbers

- A. Driver numbers will be displayed on both sides of the craft on ducts (to be as near vertical as possible) or on vertical boards fixed to the ducts. Driver numbers shall be in either solid black on a white background or solid white on a black background and have a MINIMUM size of 250mm height with a MINIMUM line thickness of 25mm. The background shall have a minimum 25mm clear border, there should be a MINIMUM spacing of 20mm between numerals.
- B. Only one driver number shall be displayed at any one time, the same number must be displayed on both sides of the craft.

### 2.4 Insurance

- A. All drivers must insure their craft at each meeting with HCGB insurance. No Hovercraft will be allowed to operate without it.

## 2.5 Formula Classification

A. The following formulas shall apply:

a) Two stroke engines:

- F3 Up to and including 250cc total engine capacity
- F2 Over 250cc and under 600cc total engine capacity
- F1 600cc and over total engine capacity

b) Four stroke engines:

- F3 Up to and including 500cc total engine capacity
- F2 Over 500cc and under 750cc total engine capacity
- F1 750cc and over total engine capacity
- F35 4 stroke engines of total horse power of not more than 35HP, or total engine capacity not exceeding 1000cc and engine revs not greater than 4500rpm. (Refer to Appendix C for full definition).

c) F50 specifications are as follows:

- (a) Single engine standard Rotax 503/447 engine, single fan (excluding standard engine manufacturer's engine cooling fan), single duct integrated craft.
- (b) Single or twin carb round slide type maximum bore of 37mm.
- (c) Standard Rotax two into one exhaust system (positional modifications to allow safe fitting of the exhaust to the hull are permitted, but the exhaust must remain dimensionally the same).
- (d) Engine cylinders to be standard cast liners and pistons to be twin ring type with both rings fitted. Pattern pistons up to Rotax maximum oversize, and gaskets to standard Rotax sizes are permitted.
- (e) Must be standard Rotax cylinder head, additional cooling fins may be fitted.
- (f) The craft must weigh a minimum of 190kg. This weight will include the driver, his/her clothing and all safety equipment listed in 1.1C.
- (g) The Hirth 2703V engine with single 38mm carburettor and two into one exhaust is an acceptable alternative. Clauses 2.5A.c)(d) to (f) (Read Hirth in place of Rotax) shall be applied in a similar manner.
- (h) The Tajga PM3-500 (RMZ-500) engine with cooling fan, and with Tajga (or Rotax) standard two into one exhaust is an acceptable alternative. Clauses 2.5A.c)(b) to (f) shall be applied in a similar manner. (Read Tajga in place of Rotax).

d) Deleted.

e) The standard Rotax 447 single or twin carb engine is eligible for F3 and Juniors.

f) In Formula 2 and Formula 3 where the lift is provided by a separate engine, the capacity allowed of the lift engine may be multiplied by 2 if the lift engine and fan is in direct transmission (e.g. fan directly on the lift engine crank shaft).

B. Where a combination of two-stroke and four-stroke engines is employed on a craft, the total engine capacity is defined as the sum of the two-stroke capacity and the equivalent two-stroke capacity of the four-stroke engine.

a) For Formula 3 craft; the four-stroke engine capacity should be divided by two (2) to determine the equivalent two-stroke capacity.

b) For Formula 2 craft; the four-stroke engine capacity should be divided by 1.25 to determine the equivalent two-stroke capacity.

C. Engine Overbore:

- a) Engines will be classed according to the cubic capacity standard when new. Re-bores with engine manufacturer's recommended oversize pistons will not affect this classification.
  - b) Engines overbored outside these tolerances will be classified at the modified cubic capacity subject to the following defined limits:
    - Formula 3                      Two-Stroke engines    256cc  
                                            Four-Stroke engines   512cc
    - Formula 2                      Two-Stroke engines    610cc  
                                            Four Stroke engines   768cc
  - c) Non OEM engines, or engines manufactured of components from more than one original manufacturer, must be demonstrated in their designated standard capacity, before they may exploit the Engine Overbore allowances.
- D. Wankel engines are rated at twice the swept volume per chamber times the number of rotors, with the exception of engines where all the induction air is passed through the rotor, in which case the engine will be rated as swept volume per chamber times the number of rotors.
- E. Gas turbine powered craft shall be categorised as for Formula 1.
- F. Pressure charged engines e.g.: supercharged, turbo charged, shall be rated at twice their swept volume.
- G. Electric motors may not be used to power thrust and/or lift fans.

## 2.6 Noise Levels

- A. Noise levels will be measured by fly-by and static methods.
- B. Fly-by measurements may be taken during practice or racing by an instrument set at a distance of 22-28 metres from the craft and 1.2 metres from the ground. Craft noise measuring in excess of 96dBA may be required to undertake a static noise test. Craft with a noise measuring in excess of 100 dBA can be black flagged at the earliest opportunity and may be required to undertake a static noise test before further operation.
- C. Static noise measurement will be made at a distance of 25 metres from the craft with an instrument set at 1.2 metres from the ground. The craft will be operated in a fixed position, with all engines fitted on maximum revs. Measurements will be taken at various points around the craft. Craft exceeding a static noise level of 94dBA, may at the Race Director's discretion be banned from further operation, unless further checks show remedial action has been taken.
- D. Formula 35 noise levels will be 85dBA fly-by and 82dBA static.

## 2.7 ELS (Electronic Lap Scoring) Tagging

- A. All craft must be fitted with a permanently fixed ELS duct bracket and carry an ELS tag.
- B. The bracket and tag will be supplied by, and remain the property of, the HCGB.

### 3. NATIONAL INLAND CHAMPIONSHIP REGULATIONS

#### 3.1 General

- A. National Race Meetings will be run according to the current Standard Race Programme (see Appendix A) or if a joint National and European Meeting, can be run according to a programme appropriate to the EHF regulations. Any Non Standard race program must be approved by the Competitions Committee.
- B. Every driver must attend the Race Director's formal briefings (except under exceptional circumstances in which case the driver must report to the Race Director before operating). Every driver must sign-on at every briefing on the sheets provided for every formula in which they intend to compete to indicate their attendance. Drivers who do not sign-on promptly will forfeit their grid position.
- C. All drivers must have read the current competition regulations and any supplementary regulations published at the race meeting and sign to that effect at the meeting. A signing-on sheet shall be provided for this purpose at the briefing.
- D. Races should be raced over a course including land and water except in unforeseen circumstances. Note: applications for all land or all water courses can be made to the Competitions Committee.
- E. At least three races per formula must be run at a one day meeting and at least two per day at a two or more day meeting, except in agreed circumstances. At least one Novice race per day must be included in each day's race programme.
- F. Heats may be run at the discretion of the Race Director.
- G. All races for Novice drivers will be run for a period of ten minutes plus one lap or fifteen minutes from the start of the race whichever is first. The result of the race will be determined from the lap chart.
- H. During a race no craft shall carry a passenger.
- I. A driver must not change craft or number during a race.
- J. Teams may not change craft, driver or number during a race.
- K. Rules I and J shall apply to any race re-started following a red flag incident. (see rule 3.10).
- L. Only fully qualified drivers from Formula's 1, 2, 3, 50, 35 can enter Open Championship races. i.e. Drivers who have completed at least ten National Championship races.
- M. Not used.
- N. In order to compete in Formula 1 specification craft, a qualified driver must complete 10 races in Formula 2, 3, 50, 35.
- O. Races must have a mass start, in line abreast or by a grid system dependent upon room.

#### 3.2 Race Director

- A. The Race Director must not be a competitor at an event where they are officiating. The organising branch shall appoint an Assistant to the Race Director.
- B. The number of officials will vary with the size and type of meeting but overall responsibility will rest with the Race Director.
- C. The Race Director has overall control of the meeting and their word is final, subject only to appeal.
- D. The Race Director, or their appointed deputy, will conduct a briefing with all drivers and marshals before the start of operating and at other times as felt necessary.
- E. Not used.

- F. The Race Director may prohibit a driver from taking part in any races if they consider that the driver is not competent to race safely or constitutes a hazard on the race course. This may entail that driver completing further Novice races or to retake manoeuvrability test.

### 3.2.1 Deputy Race Director

- A. The Deputy Race Director may be an active competitor, but should not officiate any races for the formula in which they compete.
- B. Responsibilities of the Deputy Race Director will be given by the Race Director at the start of the meeting.
- C. The Deputy Race Director will have control of the meeting when the Race Director is not available. (See 3.2).

### 3.3 Paddock

- A. The paddock boundaries must be physically defined and specified by a map or at the drivers briefing.
- B. As the public may only be admitted during specified times, it is the driver's responsibility to see that his support team have the required membership status for entry into the paddock and that they abide by the rules of the Hovercraft Club of Great Britain.
- C. It may be necessary to park trailers outside the paddock and drivers must follow the Officials' instructions. Vehicles MUST be parked outside the paddock at all times while craft are operating.
- D. Engines shall NOT be run in the paddock or engine test area during the times specified for public entry.
- E. No smoking or naked flames will be allowed in the paddock, or within 4 metres of the boundary, except for welding which must be carried out by designated welders in designated areas.
- F. Craft must be operated at a walking pace within the paddock boundaries.
- G. Drivers must not allow their engines to be tested on full power in the paddock. There will be a designated area for engine testing.
- H. It is a regulation of the HCGB that no unaccompanied child under the age of 11 is allowed in the paddock during craft operations and children under 6 years of age are not allowed in the paddock except at specified paddock opening times.
- I. *Except during specified times, the correct paddock pass for the event must be displayed about the person when within the paddock.*

### 3.4 Race Course

- A. This must be described by the meeting regulations or by the Race Director at briefings. (Also see Penalties.
- B. It may be necessary to add regulations to these, dependent upon a specific course; such regulations must be given to the drivers in writing, or at a briefing. It will be the responsibility of the driver to ensure that his support team and family are aware of any restrictions and comply with them.
- C. Hovercraft will only operate on the race course at specified times for Practice or Race purposes. Operating at other times is only with the permission of the Race Director or deputy.
- D. For penalties involved with course cutting, see 3.8E.

### 3.5 Flags and Signals

- A. Flags should be at least 450mm x 225mm and must be clearly visible from the course.
- B. The current Flags in use are identified below:

FLAG	PURPOSE
Union	Start of Race
Yellow	Stationary - Caution Waved - Extreme Caution - Be prepared to stop
Red	Race stopped. Slow down and stop safely at first opportunity. Only proceed under marshal's instructions.
Yellow with Black Diagonal Cross	Leader on last lap
Black together with number board	Noise or safety issue. Craft bearing that number to stop safely at the first opportunity and only proceed under Race Director's instructions
Half Yellow/Black With Vertical Division	False start, craft to return to start grid
Chequered	To complete a race or end a practice session.

- C. Additional flags to those described above may be used for other purposes; their use will be made clear at the Race Director's briefing.
- D. The starting light system, employing red and green or just red lights, is recommended for use at National Race Meetings.
- E. Boards and an audible signal shall be used to notify the drivers of 10 (ten), 5 (five), 2 (two) and 1 (one) minutes to go before the race start signal.
- F. If a delay occurs after the showing of the 2 (two) minute board, an 'H' (Hold) board will be shown. Thereafter procedure will revert to the 2 (two) minute board as if the 2 (two) minute had already been shown.
- G. After the 1 (one) minute board is shown, non-operational craft should be removed from the grid if possible.
- H. Only marshals designated by the Race Director or Chief Marshal are permitted to use course flags during a race or practice sessions. Flag Marshals must ensure that neither spectators nor racing drivers pick up and use course flags during a race or practice sessions. Use of the black flag must be authorised by the Race Director.

### 3.6 Grid Positions

- A. Start grids shall have a minimum distance of one craft width between each craft in a row and, except in exceptional circumstances, should have a minimum of one craft length between every row of craft. Recommended grid sizes can be found in publication HC129 Rules and Guidance for the running of National Inland Race Meetings.



**B. National Race Grid positions:**

- a) At the start of every new season grid positions will be based on the National results of the previous season.
- b) After the first race of the new season, grid positions will be based on the results of the first race. Points accumulated at that meeting will continue to determine the grid positions. At the next and subsequent meetings, grid positions for the first race will be determined by the points gained on a cumulative basis at the previous meetings. The grid positions will then revert to the meeting points accumulated for the remainder of that meeting.
- c) Grid positions may also be decided by lap timing.
- d) Grid positions will only be allocated to a driver who has ticked the relevant race selection box on the signing on sheet. Drivers who have not done this will be added to the back of the grid on a first come first served basis.

**C. Novice Race Grid positions:**

- a) The grid for the first Novice race at each meeting will be on 'first come first served' basis thereafter the grid positions will be decided by the finishing positions of the previous Novice race, regardless of formula.

**D. Open Race Grid positions:**

- a) Grid positions will only be allocated to a driver who has ticked the relevant race selection box on the signing on sheet. Drivers who have not done this will be added to the back of the grid on a first come first served basis.
- b) For the first race of a new season, grid positions will be based on the Overall Open results of the previous season.
- c) For the first race of a new season, Teams/drivers changing Formula from the previous season will not be allocated a grid position but will be added to the back of the grid on a first come first served basis.
- d) For the first race at subsequent meetings, grid positions will be based on the Overall Open results of the current season.
- e) For other races, grid positions will be decided by the cumulative points for the weekend, regardless of Formula.
- f) Grid positions may also be decided by lap timing.
- g) For alternative style Open races, different grid arrangements may be used.
- h) Not used.

**E. If a driver does not take up their allocated grid position, they will start from the pit lane.**

**F. Where there is a tied position, the higher grid place will be allocated to the driver who obtained the better result in the most recent race/meeting.**

### **3.7 Race Procedure**

- A. After showing of the 2 minute board no craft will be allowed into position on the grid. Late craft will be held in the pit lane until all operating craft have cleared the grid.
- B. All craft entering a race course will do so from the designated pit lane or paddock exit.
- C. All craft eligible to enter a race will be allowed to enter the race at any time during that race provided that a race marshal supervises entry to the course to ensure safety.
- D. The race will finish for each craft as it is driven past the black and white chequered flag. The first part of a craft crossing the finishing line between two designated points will be deemed to have finished the race.



- E. Once the leading craft has passed the finishing line, the black and white chequered flag will remain shown until all craft have finished the race. Subject to the regulation in section 3.7F.
- F. Lap-scoring for any race will cease five minutes after the winning craft passes the finish line.
- G. To qualify as a finisher, a craft must have completed at least one third of the required number of laps. In the event of the race being completed due to a red flag, a craft must have completed one third of the total laps completed by the race leader. For qualification, Novice craft must complete the same number of laps as for Formula Junior.
- H. A race shall be stopped by the showing of a red flag if an incident occurs which poses a danger to drivers or spectators, or when medical assistance is required on the course. If a race is stopped, then the race will conclude according to the red flag procedure, refer to section 3.10. Lap Scoring of a race which is red-flagged will cease upon radio call of 'red flag'.
- I. Drivers in difficulties on the course should raise one arm vertically to warn other drivers.
- J. It is the duty of all drivers whose craft become damaged to ensure that their continuation in the race does not endanger other drivers.
- K. It is the responsibility of all drivers to maintain awareness of what is happening around them, this includes craft approaching from behind, and that the craft may be lapping them.

### **3.8 Penalties**

- A. The Race Director has the power to penalise drivers in the case of inconsiderate, reckless or dangerous driving or any other infringement of the rules. A verbal warning will be given by the Race Director and any of the following penalties may be applied:
  - a) The driver may be placed at the back of the starting grid for the next race.
  - b) The driver may be disqualified from the race and therefore lose any points scored in that race.
  - c) The driver may be disqualified from the race meeting and lose all points for that meeting.
  - d) Any other penalty.
- B. F50 Penalties
  - a) The driver/team will lose all points for any race that the hovercraft was underweight (Refer 2.5.A.c.(f)).
- C. Numbers
  - a) Drivers may be penalised at the discretion of the Race Director, by the docking of laps, or points for the race if:
    - Numbers do not comply with the size and/or colour restrictions (Para. 2.3A)
    - Numbers are unreadable
    - Numbers have fallen off

**D. Sinking Craft**

- a) The driver/team will lose all points for any race in which the hovercraft is considered to have sunk.
- b) Craft which are considered to have sunk will not be permitted back onto the course until they have passed a flotation test to the satisfaction of the Chief Scrutineer. The test will only be carried out when it is convenient to do so and only if the programme permits.
- c) Failure to pass the flotation test will require verifiable remedial work and a successful re-test before the craft is permitted to operate again.

**E. Cutting the Course**

- a) Drivers who try to gain race positions or time by missing part of the course will be penalised by the removal of one lap from their lap chart position per occurrence.
- b) Drivers who hit course markers may be penalised by the removal of 1 point for each occurrence.
- c) Drivers who drive over or inside course markers may be penalised by the removal of 5 points. Up to the number of points gained in that race.

### **3.9 Points and Scoring**

A. Results will be provisionally displayed as soon as possible after the race.

B. Organisers of National race meetings shall display, prior to the first race, a list of awards and the races which count towards the appropriate awards.

**C. National Championships**

a) Scoring of points for all races shall be:

- Winner 25 points
- Second 20 points
- Third 17 points
- Fourth 15 points
- Then reducing by one point to 1 point for 18th position and below

b) Championship points for the overall positions of the weekend will then be allocated as:

- Winner 25 points
- Second 20 points
- Third 17 points
- Fourth 15 points
- Then reducing by one point to 1 point for 18th position and below.

c) Championship points will then accumulate as a sum of the points allocated at the end of each meeting.

d) Where there are equal points scored by any driver/team in a race meeting or Championship, the results of all single races run at the meeting or throughout the Championship will be considered. The Rules listed below will be applied in the following order; (a) then (b) then (c) and then (d).

- (a) The driver/team with the highest sum of all single races has the advantage.
- (b) The driver/team with the most number of first places in single races has the advantage.
- (c) The driver/team with the most number of second places in single races has the advantage.
- (d) The driver/team with the better points in the last race of the meeting or championship, in which at least one of the drivers/teams competed, will have the advantage.

- (e) All meetings will count towards the National Championship in each Formula.
- e) For alternative style non championship racing, a different points arrangement may be used.
- f) Deleted.
- D. Open Championship Races.
  - a) Scoring of points for the Overall Open Championship races shall be on the same basis as in 3.9C.a). irrespective of Formula.
  - b) Overall Open Championship points will then accumulate as a sum of the points allocated at the end of each meeting to produce an Annual Overall Open Champion.
  - c) Scoring of points for the Individual Formula Open Championship races shall be in relation to other Teams in the same Formula and on the same basis as in 3.9C.a).
  - d) The individual formula Open Championship points will then accumulate as a sum of the points allocated at the end of each meeting to produce an Annual Individual Formula Open Champion in each Formula.
  - e) Where there are equal points scored by any driver/team in a race meeting or championship then positions will be determined by the same procedures as set out in 3.9C.c).
- E. Novice drivers
  - a) Scoring of points for the Individual Formula Novice races shall be in relation to other drivers in the same Formula and on the same basis as in 3.9C.a).
  - b) The accumulated individual formula novice points from all races will be totalled to produce a meeting champion in each formula.

### 3.10 Red Flag Procedure

- A. For the purposes of clarification the definition of a restart is as follows:
  - a) A re-start is the return to the start of the race as it was at the drop of the flag or green light. Grid positions will remain the same. Teams must field the same driver and drivers are not permitted to change craft or number.
- B. If a race is stopped due to a red flag:
  - a) If the leading craft in the race has completed greater than half of the laps required to complete the race when the red flag is called, the result will stand and there will be no re-run.
  - b) If the leading craft in the race has completed less than half of the laps required to complete the race when the red flag is called, the race will be subject to a full re-start. Also see point 3.1K.
  - c) It will be re-started as soon as possible after the incident. The re-start may be postponed to allow another scheduled race to be started. In this case the Race Director must inform the drivers of the time, or sequence in the race programme the re-start will occur.
  - d) There will be a maximum of two re-starts for any red-flagged race, after which that race will be nullified.
  - e) Boards and an audible signal shall be used to notify the drivers of 2 (two) and 1 (one) minutes to go before the race start signal. Grid positions, drivers and craft shall be those of the original race. Subject to 3.1K., any other craft/drivers not on the original grid should start from the back of the grid.

### **3.11 Team Racing**

- A. The team driver must be identified by signing on correctly at drivers briefing - see 3.1B and 3.6B.d). Subsequent changes must be notified to Race Control and failure to do so will result in loss of points for that race.
- B. A team driver who signs-on in time will get his/her grid position but if another member of that team signs-on late, he/she will go to the back of the grid.

### **3.12 Merged Races**

- A. National F1, F2, F3, F50 and F35 races may be merged at the discretion of the Race Director.
- B. Merged races may be run no earlier than the earliest time slot of any of the formulae to be merged.
- C. Merging of races will be announced at a Driver's Briefing.
- D. Objections to the merging of races must be presented to the Race Director at Drivers briefing.
- E. The driver of a craft entitled to compete in more than one formula in a merged race must elect in which formula they are competing and display the relevant driver number for that formula.
- F. A merged race will be deemed to have finished when the leading craft from any of the formulae in the merged race has crossed the finish line at the end of their last lap.
- G. In the event of a red flag the race will be concluded according to the positions of all of the craft in the merged race.
- H. In all other respects, races merged will be considered to be separate.

## **4. APPEALS PROCEDURE**

### **4.1 General**

- A. Refer to the HCGB Appeals Procedure ref. HC148

## **5. NOVICE/JUNIOR TESTERS**

### **5.1 Names of approved Testers**

- A. For the purposes of clarification the names of the testers for the current season are as follows: -

Conrad Beale	Ewan Black	Bob Coles
David Polfrey	Jonathan Spedding	Daniel Turnbull
Lee Willars	Bob Beech	Keith Lovell
Charlie Peach	Tony Broad	

## 6. APPENDIX – A

### 6.1 Standard Race Programme

First Day		Second and Subsequent Day(s)	
08:00	Course Inspection (Assigned Officials Only)	08:30	Marshals' Briefing
08:30	Scrutineering	09:00	Drivers' Briefing
09:00	Marshals' Briefing	09:30	Novice Practice 20 min
09:15	Drivers' Briefing		F35/F3/F2/F1 practice 20 min
10:00	F3/F35 Practice 15 min		Junior practice 20 min
	F2 Practice 15 min		Paddock Open
	F1 Practice 15 min		
	Novice Practice 20 min	11:30	Novice Race
	F35/F3/F2/F1 Practice 15 min		F50 Race
	Junior Practice 20 min		F3 Race
	Paddock Open		F35 Race
			F1 Race
			F2 Race
			Junior Race
			Open Race
13:10	Novice Race		Paddock Open
	F50 Race		
	F3 Race		
	F35 Race		
	F1 Race		
	F2 Race		
	Junior Race		
	Open Race		
	Paddock Open	14:20	Novice Race
			F50 Race
			F3 Race
			F35 Race
			F1 Race
			F2 Race
			Junior Race
			Open Race
15:50	Novice Race		Paddock Open
	F50 Race		
	F3 Race		
	F35 Race		
	F1 Race		
	F2 Race		
	Junior Race		
	Open Race		
			Course dismantling - PLEASE HELP!!
			PRIZE GIVING Approx 20 mins after last race

**NOTE:** The first race meeting of the season shall only have 1 session of races on the first day to allow for training, testing new drivers and initial scrutineering of new craft.

## 7. APPENDIX – B

### 7.1 Inexperienced or new juniors

- A. Integrated craft are recommended for new or inexperienced juniors, due to their generally lighter weight, and ease of control.
- B. An under-powered craft can be as much of a danger to the driver and others as an over-powered one. For this reason the minimum power considered adequate is 22HP.
- C. Craft weight should be considered; slightly built drivers will find it very difficult to adequately manoeuvre a heavy craft.
- D. New/younger drivers will be less able to cope with performance craft. Performance equivalent to a Rotax 447 (Approx 40HP) or F35 (35HP) is generally considered to be acceptable for new/younger drivers.

### 7.2 Experienced Juniors

- A. Performance equivalent to a Yamaha TZR250 (Approx 50HP) or a Rotax 503 (Approx 50HP) is considered to be the maximum acceptable for Juniors.
- B. With more powerful craft, consideration should be given to restricting power and/or minimising control options, such as locking adjustable splitter plates at maximum lift for Juniors. As a guide, appropriate lift on a Rotax 503 powered integrated craft would be 25-30% of duct area.
- C. More experienced drivers can expect less restrictions as they develop towards adult formula racing, subject always to the safety and well being of the driver and others.
- D. High performance engines (greater than Approx 60HP) are not suitable for use in juniors, and should not be considered.

### 7.3 General

- A. The following engines are considered suitable for juniors:

Engine	Approximate Power
F35 eligible craft	35HP
Rotax 253	22HP
Rotax 277	26HP
Rotax 377	35HP
Rotax 447	40HP
Rotax 503	50HP
Polaris EC25PS	22HP
Polaris EC25PF	28-38HP depending on model
Polaris EC25PT	35HP
Polaris EC44PM/2PM	50HP
Yamaha RD250	35HP
Yamaha LC250	38HP
Yamaha TZR250	50HP
Honda CB500	58HP
Honda CBR400	46HP
Kawasaki KR1S	59HP

- B. Further advice can be obtained from a member of the Competitions Committee, the Hovercraft Club Youth Officer or one of the Competitions Committee appointed Testers,

or by contacting; [youthofficer@hovercraft.org.uk](mailto:youthofficer@hovercraft.org.uk)

## 8. Appendix C:- Additional F35 Regulations

### 8.1 Engine

- A. Option A
  - a) The engine or engines must be four stroke / cycle, air cooled industrial models set up to operate at a maximum of 4500 rpm when craft is on static test.
  - b) Total engine/s capacity not to exceed 1000 cc.
  - c) Total installed power is not to exceed 35HP.
  - d) The HCGB reserve the right to carry out independent engine and fan checks.
- B. Option B
  - a) The use of the manufactures labelled four stroke / cycle, air cooled industrial engine / s of a combined 35 HP and running at the manufactures engine speed will be permitted with the necessary supporting paperwork.
  - b) See 8.2 for list of suitable engines.
- C. Twin engines applications are acceptable, but at all times the design must be within the multi role concept of Formula 35 and be suitable for in shore use.
- D. The craft thrust engine shall be fitted with a suitable tachometer, Tiny Tac or similar.
- E. Craft may be checked for installed power by means of manufacturers fan tables. Where a craft is found to have more than the maximum power, a lower rev limit will be applied to restrict power. If it is found that this has been exceeded, penalties may be applied.

### 8.2 Guide to Suitable Engine Manufacturers

- A. The following manufacturers are recommended to supply engines suitable for F35:
  - a) Briggs & Stratton.
  - b) Honda
  - c) Kawasaki
  - d) Kohler
  - e) Tecumseh

### 8.3 Noise Limits

- A. Low noise levels are a fundamental part of the Formula and will be strictly controlled. The Maximum noise limit is 82dBA static at full power.
- B. Measurements will be taken at various points around the craft. Fly by measurement to be 85dBA maximum at 25 metres.

### 8.4 Lift and Propulsion Systems

- A. Single or multi fan / propeller designs are acceptable.
- B. Craft with a separate lift fan shall have sea state performance. i.e. the lift fan blades shall be clear of the water level when floating with the engines stopped and carrying the normal crew.
- C. **Note:** Designers are reminded that high fan rpm normally means high noise levels.



## 8.5 Buoyancy

- A. The craft shall have buoyancy providing a minimum of 100% of the maximum design weight and an additional 20kg of buoyancy per occupant when afloat on fresh water.
- B. The craft shall remain afloat when capsized or at an angle other than in the upright normal position.
- C. The definition of remaining afloat shall be that in the worst case of a craft capsizing or total flooding, the craft will not sink and will be capable of supporting crew in the water.

## 8.6 Tow Points

- A. A front tow point shall be fitted, capable of withstanding the craft being dragged on land with engines off. This will be checked by the appropriate Scrutineers.

## 8.7 Fire Extinguisher

- A. When used for cruising the craft shall carry a 1kg dry powder fire extinguisher.

## 8.8 Useful Contacts

- A. Technical Advice
  - a) Keith Smallwood (Chairman, Scrutineers Committee)  
07793807073  
Keith@vortex.org.uk
  - b) Bill Baker  
01295 670465  
info@bbvhovercraft.co.uk
- B. Craft Registration Officer
  - a) Conrad@conairsports.co.uk