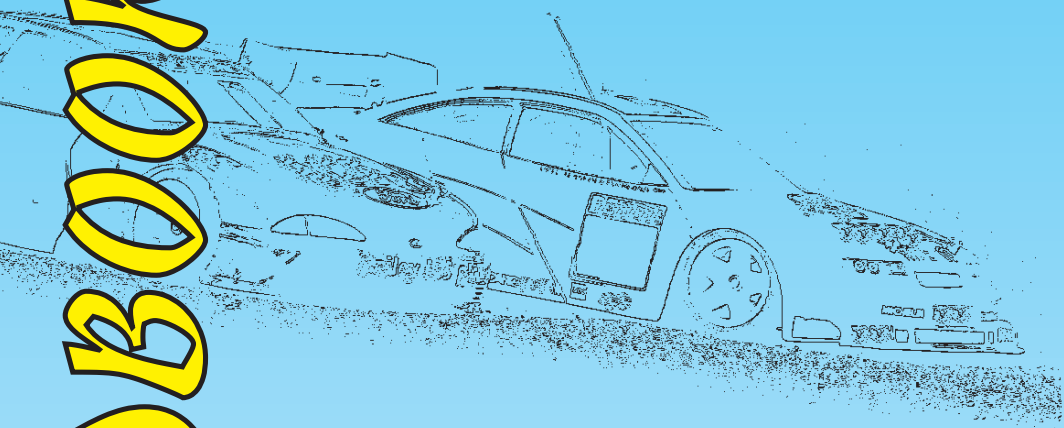


HANDBOOK 2009



Appendix 5



*European Federation of
Radio-Operated
Model Automobiles*

APPENDIX 5

LARGE SCALE I.C. RULES

1. RACE FORMAT

1.1 There will be two annual events called European Championships to determine the European Champion in:

- a.) 1:4 Scale GT/ Saloon, Formula 1
- b.) 1:5 Scale Touring Cars

The EC 1:4 Formula 1 and the EC 1:5 Touring cars can be combined during two consecutive weekends at the same venue.

Formula 1 Large Scale Euro Championship series. consist 6 Grand Prix races. According to EFRA GP races. The best 3 results taking account. Points shall be given as follows - GP 2 75, 71,

1.2 The results of the EFRA-GP's combined with that of the European Championship, will give the EFRA ranking list.

The Ranking list will be a continually updated one, for every new EFRA GP or EC/WC added, the oldest one will be deleted.

1.3 The number of drivers in one race meeting is limited for GP's to 110 and for EC's to 150.

There are running 2 section F1 Euro and GP, in case of more than 110 attendees wants to subscribe the numbers must be limited for each section to 76 TC and 34 F1 = 110 drivers in total.

If 2 weeks before an EFRA GP one class is oversubscribed and the second class does not reach the allowed number, these places can be given to the drivers on the waiting list in the other class.

1.4 Qualification for the European championships and World championships 1:5th Touring Cars:

20 places for the European championships and 7 places for the World Championships for the following year's meeting/s to be offered to the highest ranked drivers competing in the large scale efra gp series. The remainder to be split as per normal between countries as outlined in general rule 3.6.

Only the EFRA GP meetings to count for the points system, with the drivers best 4 meetings out of the 6 to count (or 50% plus 1 counting, e.g., 5 out of 8 meetings).

Points system to use: 1 = 50, 2 = 47, 3 = 45, 4 = 44, 5 = 43, ... 10 = 38, 11 = 35, 12 = 34 ... TQ = 1 extra point

2. RACE PROCEDURE

2.1. Duration of the races:

Free practice max. 8 minutes

Heats 10 minutes (plus the last lap and time of the last lap)

Sub-finals min. 15 minutes, max. 20 minutes up from the 1/32 final
and 30 minutes for semi finals (plus the last lap and time of the last lap)

Final Saloon 30 minutes (plus the last lap and time of the last lap)

Final Formula 1 45 minutes (plus the last lap and time of the last lap)

SPECIAL REGULATIONS F1

Single EC

3 rounds of timed practise

Qualification heats:

3 heats 10 minutes (plus the last lap and time of the last lap) Rolling starts.

Half finals 30 minutes

In case of the EC in a series of GP's

Following the time schedule of the GP (timed practise and heats following the time schedule of a single day) Half finals 30 minutes.

- 2.2.
- a) The EFRA Christmas Tree will be used.
 - b) All other drivers are allowed to race a sub-final.
 - c) Sub-Finals: The first 3 drivers from each sub-final progress up to the next final.
Semi-final: The first 4 drivers from each semi- final progress up to the final together with the next 2 drivers with the best times from the 2 semi-finals combined.
 - d) In the event of different weather conditions during the semi-finals the first five from each semi-final will move up to the final.
 - e) It is not allowed to drive a model car on any other place than the track and the marked track pit lane.

2.3a Number of drivers:

Heat: 10 to 15 drivers (only 1:5), track and facilities permitting.

Sub-finals and finals: Maximum 10 drivers

Final F1 EC Maximum 10 drivers

Final F1 EFRA GP's: Maximum 15 drivers, if the team managers agree

The race format will be notified in the event information and invitation material.

2.3b In the event that the transponder loop is before the exit to pit lane any car than should start from pit lane will start from position 11 on the grid.

2.4 TIME SCHEDULE for EC

EC Tracks must be closed for Large Scale Racing, two weeks prior of the event.

No cars are allowed on the track before Monday morning.

General qualification format for EC's: Minimum 4 and Maximum 6 series of 10 minutes heats depending on the number of drivers.

If there are 60 drivers or less, 6 rounds.

If there are >60 - <80 drivers, 5 rounds.

If there are more than 80 drivers, 4 rounds.

Monday 09:00-18:00 Free practice (ticket system)

Tuesday 09:00-18:00 Free practice (ticket system)

Wednesday 09:00-18:00 Free practice (ticket system)

Thursday 09:00-18:00 Timed practice /tech inspection/heats

Friday qualification heats

Saturday qualification heats, lower finals

Sunday 09:00 - 17:00 sub-finals and final.

2.5 STARTS

(see also General Race Procedures Chapter 8).

The arrangements of the heats and the numbering must be done using the EFRA ranking list according to the general rule 3.3.6. (The season is the last 365 days before the event). The drivers must stand adjacent to their numbers on the rostrum, the mechanics must remain in their boxes along the pit lane. For all finals, drivers with the lowest starting numbers may choose their position on the rostrum and the mechanics must stand under the driver where this is possible.

- 1 There must be a 3 min. gap between the end of one heat and the start of the next heat. Also a minimum of 2 minutes must be allowed between the issuance of the transmitters and the start of the heat.

- 2 An audible warning will be given at 1 minute and again at 30 seconds prior to the official start, in English and other languages as appropriate.
- 3 From 30 seconds till 3 seconds the cars must be hold at the startingboxes. If a car is not at the starting box at 30 seconds due to unforeseen problems the car may start from the pitlane after other cars have officially started. The race director and referees will monitor for the abuse of this facility.
- 4 From 10 seconds until 3 seconds prior to the start a second by second count-down will be made in English.
- 5 During Formula 1 Grid Starts at 5 seconds prior to the start, the Starter will lower the starting flag and at 3 seconds the flag will be fully down. The cars must remain in the boxes, no part of the car touching the starting line. For sub-finals and final the "Formula 1" grid start must be used. The starting order for the qualifying heats will be predetermined by the best results during the organised, timed practice. When using the "Formula 1" grid start procedure, a one lap trial start must be made (to check all transponders). Following this trial lap, the start will be within 5 seconds after the last car is stationery on his correct grid position. No mechanics are allowed on the track. Any car missing from the starting grid, must start from out of the pits lane after the last car on the grid has passed.
- 6 From 3 seconds the verbal count down stops and the actual start-signal will be given by the Starter after a period of between 0 and 5 seconds has elapsed. If the grid is not to the satisfaction of the Starter, he may require a re-start, re-commencing the count down from 30 seconds.
- 7 The official start signal will be audible by means of a hooter, operated by the Starter. This signal will also start the Timing Systems.
- 8 Early starts (i.e. any part of the car touching the starting line), will be penalised. (10 sec. up to 1lap) This penalty is issued by the Starting Official or the Time- keeping official and must be announced immediately after the start. The penalty will be marked on the resultsheet.
- 9 Under no circumstances will the race be stopped due to a jump start.
- 10 The Starter may only interrupt the race and make a re-start in the event that he considers the starting procedure or the start was not carried out correctly.
- 11 Delayed start. As long as the starter has not called the cars to the start line, any participant of the semi-finals and final may request a delay of 10 minutes to carry out repairs on his car. This delay can be granted only once for each semi final and final. - the track is closed, if the delay is requested as a result of frequency or radio problems - the track is open, if the delay is requested for mechanical repairs or problems. If a driver is asking for a delay on frequency problems, the mechanics are only allowed to turn off engine and receiver. They are not allowed to make any repairs including change of tyres.
- 12 When the starter calls the main final to the start line, the mechanics are not allowed to refuel the cars.
- 13 The driver asking for the delay for what ever reason, except an error in frequencies of the race control, must start from the pit lane.

2.5.1 STARTING PROCEDURE OF HEATS

For qualifying heats no stop between practice time (warming up) and start of the heat. Just start the clock when practice time is over. (Flying start.)

- 1 If the number of heats differ from 10, or if the event is planned with more/less rounds, a sequence following this general scheme has to be used.
 Round 1: 1,2,3,4,5,6,7,8,9,10
 Round 2: 4,5,6,7,8,9,10,1,2,3
 Round 3: 7,8,9,10,1,2,3,4,5,6
 Round 4: 10,9,8,7,6,5,4,3,2,1

Starting for Sub Finals and Final will be on a Formula 1 grid depending on the track layout, with the faster Qualifier starting in front of the slower.

- 2.5.2. -1 When the time is over, an audible signal is given. A car finishes when it passes the finish line after the finish-signal is given. The car must immediately return to the pits and may not hinder other cars still racing.
- 2 In case of doubt (on the finish-line when time is over), a car may race one more lap and finish. Whether he finishes or not when time was completed, is up to the Time-keepers and cannot be disputed.
- 3 After returning to the pits, the engine must be stopped immediately and the transmitter turned off and impounded.

2.5.3. Qualification Order and Finals.

- 1 After all series have been completed the Qualification order is established, by taking the best result of each driver.
- 2 In case of more than one driver recording identical best results of qualifications the next best result is taken.
- 3 In the case of more than one driver recording identical results in a final, the driver starting with the higher start number is classified as the faster, e.g. if number 5 and 2 have equal times, 5 is deemed to have higher final placing.
- 4 The sub-finals and final are run according to the schedule printed in the official race program, which may only be changed by teammanagers majority vote.
- 5 Starting order for the drivers who moved up to the final is based on number of laps and time.

In different circumstances it will be number 1 from the A-final who gets the number 1 and the number 1 from the B-final who gets the number 2 etc.

- 2.5.4 During the warm-up period, or at any other time of a race in progress, deliberate stopping a car on the race track will lead to be penalised with a 10 second "stop and go" after the start of the race. Consecutive stopping on the race track will lead to immediate disqualification.

2.6. RAIN SITUATION

In case of different weather conditions during subfinals the final classification will be as follows: Place 4 of subfinal A and Place 4 of subfinal B will both be awarded place 11th equal in the general classification. Place 5 of subfinal A and place 5 of subfinal B will both be awarded place 13th equal in the general classification and so on.

2.7. RACE INTERRUPTIONS

- 1 In the case of a race which is interrupted for more than 60 minutes for reasons beyond the control of the organisers, the jury will decide whether to cancel or continue the meeting.
- 2 In the case of an interruption of a heat the entire heat will be re-run.
- 3 In the case of an interruption of sub-final or a final the following procedure will be used:

- A. If less than 10 minutes of a final has been run, the results will be cancelled and a new start given for the total time of the final. Vehicles may be repaired before the new start.
- B. If more than 10 minutes of the final have been run, the results at the moment of the interruption will be kept. The new start will be given for the time which remains to complete the final. The two results will be added to give the final and definitive placing. If the second start cannot be made for any reason, the results from the first part will be used as the final and definitive placing.
- C. When the interruption takes place after 75% or more of the race is past, the results as at the time of the interruption becomes the final result. At the moment of the interruption of the race, the drivers will leave their vehicles on the start-line under the control of the Race Director. They may switch off the radio and stop the engine. There will be no repairs carried out to the vehicle or changing of tyres. Any driver who does not observe this rule will be immediately disqualified.

2.8.1. RAIN PROCEDURE DURING QUALIFYING

- 1 The Race Director and the Referees are jointly responsible for the decision to stop a race in the event of rain.
- 2 On the result sheets the Race Director or the appointed official must mark a heat "WET" when the heat was raced under wet conditions. On the corresponding record sheets, this must also be marked. The Race Director together with the Referees will decide in case of doubt. Heats are generally considered to be "WET2" when average lap times are approximately 20% slower than before, due to rain or moisture on the track.
- 3 When all drivers have had at least one dry heat, all results will be counted.
- 4 When weather and time permits, the Race Director may decide to offer an extra heat to those drivers who did not have a chance to drive a heat dry (i.e. when most drivers had 2 resp. 3 dry runs, a 2nd. resp. 3rd. run may be offered to those who had only 1 resp. 2 dry runs).
- 5 When not all drivers have had a chance to run a dry heat, only the wet results will be counted.
- 6 When continuation is judged to be senseless, or when other drivers should be offered a fair chance to drive under dry conditions, the Race Director together with the Referees may decide to end a heat or cancel a complete heat (2.7.-1.)

2.9. ACCIDENTS/CRASHES

- a) A yellow flag situation will be announced, if an accident occurs. (This must be a yellow flashlight combined with an audible signal, that can be operated by the referees and the race-director) During the yellow period overtaking other cars is not allowed. Cars are required to slow down so that they can stop immediately.
Disregarding this rule will be penalised by deducting one lap from the result of the driver concerned in that particular heat, sub-final or final. An official warning has also to be issued. Racing will recommence at racing speed following display of a green flag or the official announcement "track is clear". Signals given by flags have to be visible for all drivers.
- b) Mechanics are allowed to enter the track to save the car of their driver. The mechanic may restart the engine (3x) beside the track, but not repair the car. The mechanic may not disturb the progress of other cars in the

race. Mechanics or Spectators entering the track from outside the pit lane to save a car will produce a penalty for that particular car. (Penalties can be given as stop and go or one lap penalty. The referees will inform the Team Managers about the sort of penalties given.)

If served by a spectator then this car should remain stationary until touched by the mechanic to save a penalty given.

The duration of a stop and go penalty given must be always as long as decided by the Referees and announced during the Team Managers meeting prior to the race-meeting. It is not allowed for any of the race officials to change the time of the stop and go penalties during the race meeting. The driver have three laps time to come in.

Three stop and go penalties for one car during one race will lead to disqualification (black flag).

3. TRACKS

3.1.1 Tracks for Large Scale racing will be inspected by EFRA Officials with regard to safety provisions for drivers, mechanics, race officials and spectators. EFRA Officials have the authority to ask for improvements to be carried out before racing starts.

3.1.2 A monitor must be placed in the pit area or under the rostrum during all international races. (WC/EC/GP)

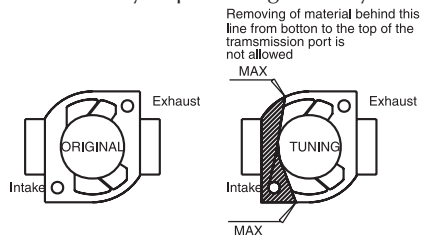
4. GENERAL Technical Specifications

4.1. ENGINE and FUEL

For QS: The engine must be a single cylinder, pull start, 2 or 4 stroke, maximum 26 cm³, magneto Ignition, Turbocharging or compressor are not allowed.

For Formula 1, Off Road and Fifth Scale Saloon:

1. Only one marked engine allowed. In case of rain situation, a second engine could be allowed during the time of wet track. The race director may decide an engine replacement of the same type or repair in case of failure. The replaced engine will be kept in race control till the end of the event. A driver asking for engine replacement will be placed at the end of the grid at his first final. Each driver is only allowed to use a maximum of 2 engines per event.
2. The engine to be a single cylinder, 2 or 4 stroke, maximum 23 cm³, maximum 26 cm³ for F1, QS and Off Road, pull starter.
3. No Turbo charging, Fuel injection, Supercharging, Wankel or rotary valve/distribution engines are allowed.
4. All ignition timing must be mechanically fixed, only manual static adjustment is allowed.
5. No Battery operated ignition allowed. Only a passive ignition system using R.P.M. as the single input parameter is allowed.
6. Only open deck admission ports are allowed.
The removal of material is free as long as the modified shape of the transfer/admission port walls are in the direction of the cylinder bore at all times.
7. The Cylinder block must be of a single casting. no independent liners or slipping liners are allowed.



8. The maximum numbers of admission ports is limited to 4.
9. Engine must be air cooled. The air being driven directly by the flywheel.
10. The crankshaft must be of split shaft configuration, with enclosed big end. No half crankshafts allowed.
11. An air filter must be fitted to the carburettor.
12. The maximum venturi diameter of the carburettor is limited to 13 mm.
13. Only fuel admitted will be petrol normally available at street petrol stations. The fuel must be bought at a fuel Station within the vicinity of the event. Details of the fuel station location and opening times should be provided by the race organiser prior to the event commencement, Fuel testing should begin prior to the start of qualification. Special fuel's like Avgas, race fuel etc. are strictly forbidden. The only additive allowed is mass production two stroke oil.

Technical inspection may ask for a sealed bottle of that oil, to check it. If a fuel is found suspect, the driver will be asked to mix his fuel at technical inspection, so it can be verified.

If an organiser is able to provide fuel at the track, all competitors have to use this fuel. The price of this fuel must not exceed the normal street price by more than 5%. Fuel tests may be made at random during the race. If a fuel is found illegal, the driver will be disqualified from the particular event, he may loose his EFRA licence for up to ten years. The fuel tester must be available to the competitors during the event.

If a driver want's to protest that decision, he has to make a written protest to EFRA with a deposit of 500.- EUR.

4.2. EXHAUST/NOISE REDUCTION

- 4.2.1 Maximum noise level is 81dB (A) measured at 10 metres, 1 metre above the track.

The race director has the authority to decide a different method of measuring (using the EFRA noise trap) as long, as the result will be the same.

If a car produces a noise level much in excess of the other cars, it is the Race Director's decision on whether this car is allowed to race.

Exhausts have to be of minimum three chamber type. No open exhausts or pipes are allowed.

The total exhaust have to be inside the body, with the exception of the tailend of the pipe, which may protrude the body not more than 10 mm.

The body may be cut out at that point max. 20 mm more than the tailend diameter.

Max. inside diameter tail end 13 mm.

- 4.2.2 All cars to be equipped with an air - box to reduce the intake noise of the carburettor and a second muffler (in case, that a two chamber exhaust is used) or a three chamber type muffler. All three chambers must be designed that way, that the exhaust fumes will pass it and then have to change direction twice to get the max. possible noise reduction

The design of that additional silencer is free, but with both systems together, the max. noise level must not be over 81 dB (A).

- 4.2.3 No refuelling allowed during racing for all cars in 1:5 Touring Cars and Off Road. Refueling is allowed only in Formula 1 and QS.

4.3. CAR

- a. The car has to have a functioning brake, which has to be capable of keeping the car stationary whilst the engine is running.

- b. A mechanical failsafe has to be fitted to the carburettor which returns the throttle to a closed position in case of breaking of the throttle linkage.
- c. Variable ratio transmission is not allowed.
- d. Only 2WD (rear-wheel drive) cars are allowed.
- e. No other function than steering and throttle/brake are allowed to operate with radio control by the driver. Any other electronic or hydraulic systems are not allowed in the car, with the acceptance of electronic failsave to stop the car in case of radio failure and the hydraulic brake system.
- f. The use of an electronic failsafe system is highly recommended.
- g. The ignition kill switch must be on his original place on the engine and the window on this side must be cut. The position must be marked with an E (size 20 mm) on the bodyshell. To create more safety, it is allowed to have a second kill switch fixed near the rear window to allow easy access. This kill switch should be away from hot or moving parts.



4.4 TYRES

Tyres have to be black. The design of the tyre profile is free. It is not allowed to treat the tyres in the pit area. This means it is clearly forbidden. But if someone use it at home, it is recommended that the chemical components of these products must be harmless for people and environment. Liability at the use of tyre additives lies at the user and manufacturer.

5. SPECIAL TECHNICAL SPECIFICATIONS

5.1 1:4 Scale

A 1:4 scale car must be to genuine 1:4 scale, and based on an existing 1:1 scale car.

5.1.1 GENERAL REQUIREMENTS:

The car must comply with the following dimensions:

Width (GT/Saloon)	Maximum 530 mm
Height	Maximum 400 mm
Tyre width - front	maximum 90 mm
Tyre width - rear	maximum 120 mm
	Tyre width is the overall width of the tire at any time during the race. It is not the width of the rims.
Weight GT/Saloon:	Minimum 12 kg
Fuel tank - capacity	Maximum 1000 cm ³ with the air cleaner, fuel pipe and without any removable pieces inside.

5.1.2 BODY

The car must have a Saloon or GT, derived from existing 1:1 Scale cars either used in motorsports, tuned up road versions or historic cars. It must be properly fixed to the chassis. Saloon and GT bodies must cover the top of the wheels at the centre of the axle when viewed from the top.

The bodies must be made 1:4 scale with a tolerance of 10% in all dimensions and must be carefully adapted from a 1:1 scale existing car. Open bodies (including Formula Cars) must carry a minimum of driver arms, shoulders and helmet (in scale) in the place where the driver normally is located. It is not allowed to cut out the windshield, but a maximum size hole of 6 sq cm is allowed for the antenna or fuel bottle if necessary.

No major parts of the body may be lost during racing. Damage must be repaired in the pits immediately if so directed by the Race Director. It is not allowed to cut holes into the body. If there are holes shown on the 1:1 scale body for

either intake or output of air then it is allowed to cut them out.

Only bodies that are approved by EFRA will be allowed to race in EFRA GP and EC events. The body must have a EFRA Registration Number moulded in. The cut outs for Group "C" must follow the following definition:

Side windows and rear windscreen may be removed. It is not allowed to bend windows to the outside - all parts of the vehicle must be covered, except:

- a) cooling head of engine
- b) air filter
- c) aerial (max. 10 mm)
- d) outlet pipe of muffler
- e) fuel filler cap
- f) roll-over bar

Only if these parts are extending the body. Cut outs for above mentioned parts are to have no more than 10 mm clearance. In addition to this, the following holes are allowed:

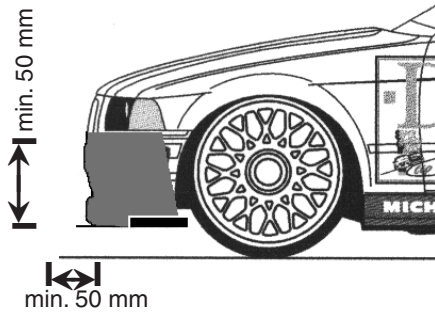
- g) for muffler outlet
- h) for fuel filler cap (50 mm when viewed from above)
- i) for radio switch (max. 10 mm)
- j) for spark plug, spark shoe (max. 20 mm)
- k) fuel mixture valve (max 15 mm)

The start numbers must be placed according to the drawing (and the corresponding picture) . For Formula cars the side pots had to be used to fit the starting number. About the design of the Car numbers see 5. General Requirements EFRA Events 5.2.5

5.1.3 BUMPER

a) A bumper must be fitted to the car chassis.

b) Bumpers must be designed in a way that they fill the front part of a car body completely. The material used must be flexible like PURIM or other foams that are used in car construction to absorb energy. PURIM type foam min 50 mm height and minimum 50 mm overhang on any solid or semi-solid type flat plate or skid at the front of the car.

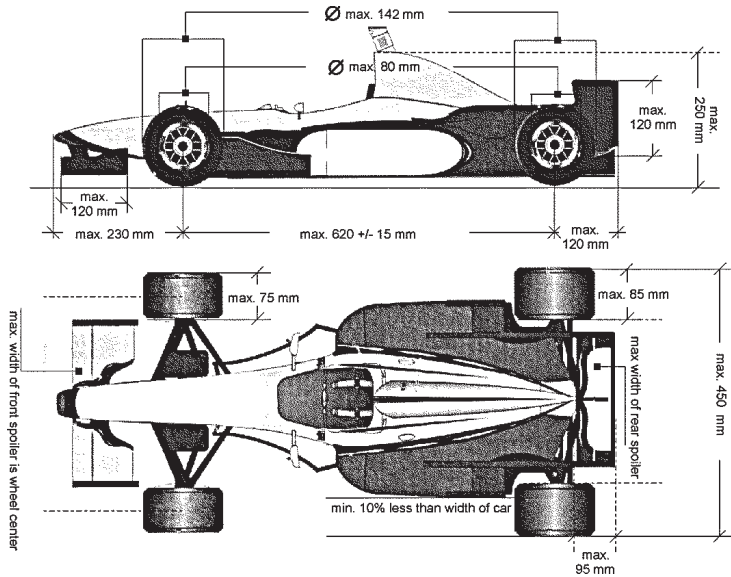


5.2 LARGE SCALE FORMULA

Only Formula one cars following the FIA 2000/1 (or younger) Formula One Regulations are allowed. Bodies must be the model of a existing car from the season 2000/1 or younger. Paintwork and colour is free. The design of the visible suspension parts must have the same appearance than the original F1 cars.

All cut-outs must exist also in the full size car. Cuttings for engine and fuel tank are allowed in the area of the tank seal, starting device and adjusting screws for carburettor i.e. choke, neutral gear etc.

For Formula cars the side pots had to be used to fit the starting number. About the design of the Car numbers see 5. General Requirements EFRA Events 5.2.5



5.2.1 TECHNICAL SPECIFICATIONS

Minimum weight dry	10.000 g
Width Formula maximum	450 mm (incl. tyres)
Height maximum	250 mm
Wheel base	620 mm +/-15 mm
Fuel tank - capacity	Maximum 700 cm ³ with the air cleaner, fuel pipe and without any removable pieces inside.
Tyres front diameter	142 mm +/- 5% = 134,9-149,1mm
Tyres rear diameter	142 mm +/- 5% = 134,9-149,1mm (front and rear tyres must have the same diameter)
Tyre width front minimum	60 mm, max. 75mm
Tyre width rear maximum	85 mm, rear wheels must be min. 5 mm wider
Rims outside diameter	than the front wheels 80mm +/-5mm, indicators must be the same on tyres and rims.

No mixture of +/- allowed

5.2.2 TYRES

Tyres must be semi-pneumatic rubber.
 In case of rain the use of rain tyre can be allowed by the race director.
 Only 2 complete sets of tyres are allowed for the heats and will be marked by technical inspection with the registration number of the driver.
 For EC Series during EFRA GP's only one set of marked tyres is allowed during the three rounds of qualification.

5.2.3 FRONT SPOILER

Max width 375 mm max. cord 120 mm, /No part of the front wing may exceed the centreline of the front wheels. The front spoiler must be fixed at the chassis, so that it can bend up or down in case of an accident.

REAR WING

The rear wing must fit into a side profile box of 95x120 mm. The number of added wings inside is free. The rear wing must not be wider than the space between the rear tyres.

The front part of the car should not overhang the centre of the front wheel by more than 230 mm. The rear wing and a the diffuser should not overhang the car by more than 120 mm.

The width of the side-pods must be min. 10% less than the overall width. They should not be higher than the tyres.

5.2.4 TANK SIZE, ENGINE RULES, AIR BOX, MUFFLER ETC.

Air box, muffler, engine rules, etc have to follow Large Scale General Technical Specifications.

Exhaust outlet pipes must exit within the body shell side pods and point down to the track.

5.2.5 F1 WINGS

Front and rear wing are part of the bodyshell of a F1 car and must be repaired immediately if they get damaged or come off the car.

5.3 1:5 Scale TOURING CARS

There is one series to recognise in accordance with the 1:1 scale series namely the Touring Car Championship Series, following FIA class 2 Super Touring Car, FIA Group N and Touring Cars Super 2000.

5.3.1 GENERAL SPECIFICATIONS

The carbody has to comply with the calculated scale dimensions 1:5 with the allowance of using the following tolerances.

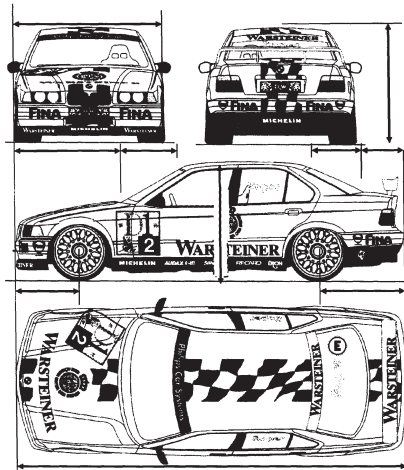
Length:	within scale +/- 5%
Width:	max. 395 mm measured at the widest point of the bodyshell
Height:	within scale +/- 5%
Tank capacity:	700 cm ³
Minimum weight, without fuel:	10.000 g
Maximum weight, without fuel:	12.000 g

5.3.2 All 1:5 cars have to be genuine scale in all details and proportions and be a

fully detailed model of an existing 1:1 touring race car. If the allowed tolerances are used, then all parts of the model in that particular view have to be within the same sign (wheelbase-, length,-/wheelbase+, length+). Mixtures of car design's are not allowed.

The minimum length of a Super Touring Car is 4.200 mm that gives a minimum length of 798 mm in scale including max.-tolerance.

All bodies that are produced world-wide, descend from a original touring car racing and are commercially available, under consideration of Paragraph 5.3, will be allowed.



Only bodysHELLs that are approved by EFRA will be allowed to race in EFRA sanctioned events. The EFRA-homologation number have to be permanently engraved or moulded in within the space normally used for car-registration numbers at the rear end of the model.

5.3.3 BODY

Bodies have to follow the description in point 5.3.2. They have to be properly fixed to the chassis and must cover the outer edge of the wheels at the centre of the axle when viewed from the top.

It is not permitted to cut the windscreen out. The side and rear windows may be cut out for cooling. It is not allowed to open them by cutting out only some holes. Also it is not allowed to mould air channels into the side windows to



guide air into the interior.

The body shells have to be painted and all windows to remain clear.

All parts of the car have to be covered by the body. Only the radio antenna is allowed to come outside. All openings in the body have also to be in the existing 1:1 race car.

It is not allowed to modify the car-body by cutting it over the marked trim lines or to widen it by heating it or parts of it.

The start numbers must be placed according to the drawing (and the corresponding picture) . About the design of the Car numbers see 5. General Requirements EFRA Events 5.2.5

If the race-meeting has started, a competitor is only allowed to change the body shell in case of damage to a body shell of the same brand and car design. Only allowed for manufactures:

Aerodynamic modifications at the front, the sides and the rear below the wheel hub centre are free subject to the requirements for ground clearance, overall length and overall width.

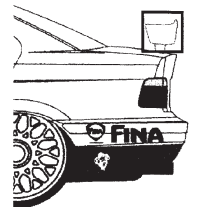
The modifications have to correspond to the original. The materials have to be the same as that of the bodysHELL. The homologation number has to be engraved. A photo of the modification 1:1/1:5 have to be sent to the responsible Homologation Officer.

5.3.4 GROUND CLEARANCE

The measurement of the body shell height will be made with 6mm ground clearance.

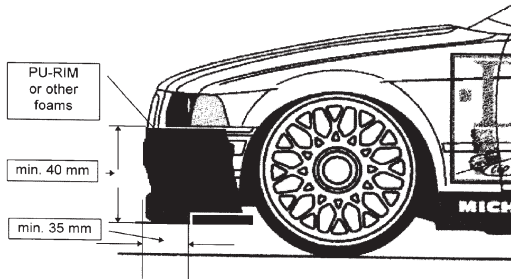
5.3.5 WING/SPOILER

A single rear wing is permitted as long as it does not exceed the front view profile and the length of the car. The wing has to fit in a side "profile box" measuring 60 mm x 60 mm per side and should not overhang the end of the car.



5.3.6 BUMPER

A bumper has to be fitted to the chassis. Bumpers have to be designed in a way that they fill the front of a car body completely and be a minimum height of 40mm. The material used has to be flexible like PU-RIM or other foams, that are used in



1:1 construction to absorb impact energy.

At no point may any part of inflexible material for bodyshell mounting protrude from the body more than 10mm.

5.3.7. TYRES

Rim Diameter	max.: 107 mm
Rim and fitted tyre Diameter:	max.: 136 mm
Rim and fitted tyre width - front	max.: 75 mm
Rim and fitted tyre width - rear	max.: 80 mm

Only semi pneumatic rubber is allowed. Foam tires are not allowed.

5.4 Large Scale Off - Road Rules

Technical requirements for Large scale off road racing

5.4.1 Technical classes and weight

All cars have to be large scale

Rear wheel drive

Weight limits are 10 kg min and 14 kg max

Weight limits for a race ready car with transponder / PT but no fuel load

Modifying or self builder cars are allowed, as far as those fulfil the technical rules mentioned

5.4.2 Motors (as in large scale F 1)

5.4.3 Exhaust: The exhaust system may never produce more than 81 DB measured at 10 meters distance and 1 meter from the ground

The exhaust must be fitted under the body shell . The exhaust end pipe may be outside the shell. This pipe must be fitted so the rearward or to the ground and within the size off the car. In case of the exhaust system produces more noise than the 81 DB the race director and /or the referee can order the car to come in for a noise check. If the car exceeds the allowed limits it needs to be repaired to enter the race (again)

5.4.4 Fuel tank and fuel

The max content of the fuel tank till the carb is 700 cc

The allowed fuel may only exists of Lead-free gasoline, oils and additives

Forbidden are all special fuels and extra's as Avgas, octane boosters and race fuel.

5.4.5 Only 2 wheel rear drive is allowed

Cars with electric drive, propellers or rocket-fuel drive are not allowed

Cars can only have 1 gearing: no multispeed transmissions allowed

5.4.6 Clutch and brake: The model cars must have a working clutch and brake system. Other than Active ABS systems there are no restrictions for brakes.

5.4.7 Bumper: All models must have a front bumper, a rear bumper is allowed but not mandatory. Bumpers must be made from a flexible material

- The front bumper can have minimum 100mm, a maximum size of 220 mm width, rear bumper can have a max size of 300 mm width
- 5.4.9 Chassis, Body measurements
 Only original large scale lexan body shells are allowed
 The body must be fully painted except for the windows
 Motorstop access must be easy .
 The chassis must be flat underneath and no screws may extend
 Car size
 Max length 820 mm
 Max with 480 mm with full compressed suspension
 Max height 360 mm with full compressed suspension
- 5.4.10 Wing
 The wing must be made from a flexible material
 Max size 300 mm x 140 mm
 Overhang max 150 mm from the middle of the rear drive shafts
- 5.4.11 Race
 The European Championship will be run as a single event (large scale euro rules), This rule is valid from 2010
 Racers with equal points: the racer with the highest single finish will be rewarded the tie: if still tied, the second best finish position etc. In case of a continue tie the tie will be rewarded to the highest finish the last race both drivers entered. All drivers entering the European Championship must have a valid EFRA Licence An Efra licence must be obtained from the native country
- 5.4.12 Re-Fuelling
 Refuelling is only allowed until the cars are called for the start. Cars re-fuelled within 30 sec before the start must start from the Pit.
 During a heat or final there is no re-fuelling allowed
- 5.4.13 Marshalls have to be 16 years of age minimum. If not they need to have an experienced substitute
- 5.4.14 Race procedure's as in EFRA Large scale
- 5.4.14 Tracks
- a) Size: Minimum preferred total length: 200 meter.
 Minimum preferred width between marking/lanes: 3.5 meter for GP's 4 meter for an EC.
 The point most far away from the middle of the drivers rostrum can be 60 meters
 - b) The track design can be made by the organiser. Obstacles as trees, etc cannot be inside the track area. The drivers view to the track must be free without obstacles of any sort.
 The track must be made with a reasonable variety of small and large corners, left as well as right handed. The straights must have different lengths.
 - c) Marking
 The lanes must be clearly viewable by the competitors on the rostrum and the track markers must be chosen in such way the cars will not be damaged if they hit the track markers. The track markers must be solid enough not to be moved by a single contact.
 - d) Track markings
 The organiser must make sure a car can never come into the public. Safety of the public, drivers, mechanics and race directors / assistants must be maintained all time by a save and functional track surrounding.

The track markers must be situated so that corner cutting is highly impossible and cars cannot enter another lane easily. Track markers can be made of wood, fire hoses filled with sand, rubber hoses etc.

By choosing the track markers the safety of the public is far more important as preventing damage to the cars.

e) Start / Finish

There must be a clearly visible start/finish line. On the finish line the timing loop must be placed in such way the cars may not damage it. In case of a loose track surface the markings for start finish can be made on the track markers.

All finals make use of a formula 1 starting grid. 10 start boxes will be marked so the difference between the cars 1 -3 will be 4 meters. The cars with the even numbers will be placed in the same way with 4 meters between 2 – 4 etc Car 2 will start minimum 2 meters beside the number 1 car but will be placed 2 meters back from the number 1 car and will be 2 meters in front off the number 3 car and so on.

f) Pits: It needs to be separated from the track Pits entrance and exit needs to be at least 1 meter width.

g) The drivers preparation area needs to be within a reasonable distance of the track. It needs to have pit tables for all drivers and 220 volts available. Only drivers, mechanics and race officials can enter the pit area. They have to show ID cards, made available by the organiser to identify. Each driver should receive a card for himself and 2 cards for mechanics.

5.4.15 All warnings and instructions must be clear to hear for all competitors and mechanics

5.4.16 Adequate sanitary must be available during the event.

Measurements Bodyshells

Tolerances (max.):

Producer / type	395mm +/-5%				Measurements original-racecar						Measurements model scale 1:5										
	Measurements original-racecar				min. length 4200mm		height		width		length		wheelbase		width		height -5%		Homologation No.		
	min. length	width	height	min. length	width	height	width	length	width	length	width	length	width	length	width	length	width	height	length	width	
FIA Super Production / Super 2000																					
Alfa Romeo 156 2.0 GTA WTCC	2610	4430	1815	1311	1820	1820	1815	1311	522	886	372	249	5035 am,5043/04,5053/06,5054/06,5056/07								
Audi A4 2.0 STCC 05	2648	4586	1820	1337				1337	530	917	364	254									
3er BMW 320si E90 WTCC 06/08	2760	4535	1845	1310			1845	1310	552	907	369	249	5051/06,5052/06,5057/08,5058/08								
Chevrolet Lencetti/NUBIA WTCC 05	2620	4500	1809	1345			1809	1345	520	900	345	256									
Honda Accord Euro R ETCC 04	2685	4665	1831	1325			1831	1325	537	933	366	252	5045/04,5048/06,5050/06								
LEXUS IS 200 BTCC	2670	4400	1725	1295			1725	1295	534	880	345	246									
Mercedes C-Class STCC 05	2715	4606	1828	1350			1828	1350	543	932	366	256									
Vauxhall Astra Sport Hatch BTCC 05	2614	4288	1773	1320			1773	1320	523	858	355	251									
PEUGEOT 407 STCC 05	2725	4676	1831	1345			1831	1345	543	935	366	255									
Ford Focus WTCC 05	2640	4342	1840	1340			1840	1340	523	858	340	254									
SEAT Leon WTCC 05	2600	4328	1820	1338			1820	1338	520	866	364	254	5055/07								

All informations without guarantee. Source material: Touring Car World 2003 - 2008 and information material of manufacturers, race-car magazines and web-pages from various touring car race series around the world. This list will be continued.

Cars written in italics not yet available as models with EFRA-Homologation updated:

10. January 2009

Max. width to take at the widest point of the body except side mirrors