

A. ORGANISATION

Organisers of Kart Meetings must comply with Common Regulations for Organisers (Section B) and the following:

1.1. Kart Race Meetings may only be organised by clubs registered as ‘Kart Clubs’ by the MSA.

1.1.1. A permit for any Kart event is issued at the sole discretion of the MSA, and is subject to the circuit having a valid track licence.

1.2. A maximum of one International or MSA Championship event permit for gearbox and one for non-gearbox karts, may be issued per weekend.

1.3 Organisers shall adhere strictly to the class designations listed in the MSA Competitors’ Yearbook or Kart Race Yearbook and shall not in any way modify the title or classes or permit the use of unauthorised engines unless given specific permission by the MSA.

1.3.1 The development of a new class must follow the procedures set out below.

a) The new class must conform to the Section P definition of a Kart.

b) The class must have a maximum engine capacity of 250cc if it is of two-stroke design. If the engine(s) is of a direct drive four-stroke design the maximum permitted total engine(s) weight is 40kgs and a total engine(s) maximum of 30bhp. If the engine has a gearbox a maximum of six gears is permitted and a maximum of 80bhp. Class regulations may impose further limitations.

c) The performance of the complete outfit must fit within (b) above and should fit in the Boxed Class Structure as defined in the current MSA Kart Race Yearbook.

d) A new class must have its concept registered with the MSA prior to its use within MSA approved race meetings. Its performance will also be checked in order to determine it’s placing within (c) above.

2. CIRCUITS

2.1. A new application for a Kart Track Licence shall be made at least ten weeks in advance of any date on which it is proposed to run a meeting. If the organisation is by a new club the first three meetings after the granting of a Track Licence shall be restricted to members of the organising club and shall be subject to observation before upgrading.

(a) Track Licences for new Short Circuits, which must conform with CIK/FIA Regulations, will only be granted after inspection by the MSA.

Licences will be graded as follows:

- (i) suitable for all status meetings up to and including International.
- (ii) suitable for all status meetings up to and including National ‘A’.
- (iii) suitable for National ‘B’ meetings only.

If a Long Circuit track incorporates a Short Circuit these will be subject to individual grading and Track Licences.

(b) Existing Track Licences will be graded as above by an inspection.

2.1.1. There are five categories of track for Kart racing:

(a) **Kart Permanent:** Tracks with a lap distance of less than 1500m, where the shape can be determined at any time and all protective barriers are permanently in position.

(b) **Kart Temporary:** Tracks with a lap distance less than 1500m, where barriers are not permanently positioned.

(c) **Round the Houses:** Tracks using public roads or passing through residential areas or so classified by the MSA.

(d) **Long Circuits:** Any Kart circuit, other than (c), exceeding 1500m in lap distance, and all licensed Motor Race Circuits.

(e) **Indoor Kart Tracks**

2.2. All tracks shall comply with the following conditions:

(a) Minimum width – 6m.

(b) Chicanes are not encouraged but when essential they must be approved by the MSA.

(c) The surface shall be similar, i.e., sealed or unsealed, throughout the length of the track. The surface shall be durable and well graded, free of holes, rough spots or loose particles. All obstacles to a Kart leaving the track, such as poles, ditches, etc. shall be suitably protected.

2.2.1. The track edges shall be marked in a manner approved by the MSA. Half tyres set in the ground must not be used, and there shall be no drop between the edge of the track and the verge. Any marker shall be of such size and weight that it will not constitute a hazard. Tyres if used should be secured into columns of at least three tyres height all of the same diameter (see fig N1).

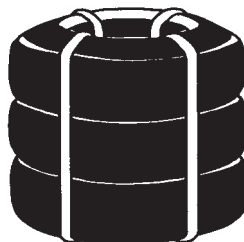


Figure N1

When tyres are used, each column should be constructed with tyres of equal diameter securely banded with non metallic strapping as shown, bolted as per MSA specification or secured by any other means approved by the MSA. Free standing tyre walls should be formed by securing each column to its neighbour to make up units of at least three columns length.

2.2.2. Where alternative routes on the same track may be used, those not in use must be clearly marked by bollards or marker boards. Painted lines on the track surface are not sufficient.

2.2.3. Any area which may at any time during practice or racing contain any persons, other than members of the organising staff carrying out their duties or competitors actually taking part in an event, should be protected from the track and from any area where Karts are in motion, by a physical barrier and safety precautions conforming to the following specification:

A barrier of a permanent type having a continuous, smooth, vertical face of at least 1m in height on the track side and of sound construction so as to be incapable of deflection away from the track if struck by a Kart travelling at the maximum speed likely to be achieved at that portion of the track. If this barrier is used to contain the persons in the enclosure it must be sited not less than 3m from the edge of the track. On a bend or corner, if this barrier is less than 10m from the edge of the track, there should be a post and rope fence, keeping spectators a further 1m behind the barrier. Unless otherwise authorised by the MSA no spectator may be within 3m of the edge of the track on a straight or 8m on a bend.

2.2.4. Greater safeguards may be required if an area is deemed to be hazardous or in the vicinity of Karts travelling at high speeds. In all cases, the maximum possible space shall be allowed in head-on situations and through any corner. Energy absorbing protection of either tyre stacks, straw bales or other material

approved by the MSA should be placed in front of the ultimate barrier in head-on situations.

2.2.5. No variation of barriers/enclosures from the Track Licence will be permitted unless specifically approved by the MSA.

2.2.6. Access to all enclosures and to the track should only be by means of controlled entrances.

2.2.7. Temporary tracks will be subject to MSA approval and must conform in all ways to the Track Licence issued.

2.3. The maximum number of starters will be determined as follows unless otherwise stated on the Track Licence.

	Min. width 6m
100cc4 per 100m, max. 24
Gearbox3 per 100m, max. 18
250 Int3 per 100m, max. 18

	Min. width 7m
100cc5 per 100m, max. 34
Gearbox4 per 100m, max. 30
250 Int4 per 100m, max. 23

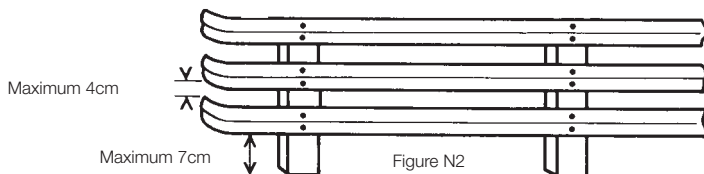
Specific criteria will be determined for endurance races as defined by the MSA.

2.3.1. The grid for a standing start should be laid out so that there is at least 4m between the front of each row. The grid formations shall be:

Track width		
6–8m	2x2x2 max.	9–12m 4x3x4 max.
8–9m	3x2x3 max.	Over 12m 5x4x5 max.
(If approved by the MSA).		

2.4. Where licensed motor racing circuits are used, spectators will be confined to the normal spectator enclosures. Safety precautions shall be those approved by the MSA for Kart Meetings at that circuit.

2.4.1. Long Circuit races will use slow rolling starts with formations as in 2.3.1. The number of starters at long circuits will be determined by the MSA.



If open type fencing or railing is employed, the gap at the bottom should not be more than 7cm in height, and the gap between the rails not more than 4cm. The support posts must not protrude above the level of the top rail.

2.5. A plan of the track and a Track Data Sheet shall be lodged with the MSA in conjunction with the issue of the Track Licence. This plan shall be to a scale of not less than 1:500.

3. EQUIPMENT

3.1. The following minimum equipment is mandatory for all Kart meetings.

3.1.1. Warning notices, tickets, armbands, etc., as specified in B 18.

3.1.2. Flags as detailed in 5.1.2 and J 5.1.1.

3.1.3. Fire extinguishers (minimum 2kg dry powder) with certificate from the manufacturers or their agents issued annually prior to the season's racing to the effect that they are in working order. As a minimum one must be available at the start line, two in the paddock in clearly visible positions, and one at each Marshal Post.

3.1.4. Track cleaning equipment comprising two units of:

(a) One ordinary shovel.

(b) Two brooms.

(c) A metal container of 3kg of dry cement or suitable cleansing agent for removing oil.

3.1.5. A public address system available to the Clerk of the Course (a hand-held powered megaphone is acceptable as a minimum), for communicating with competitors.

3.1.6. A Starter's Sheet, and an Officials' signing-on-sheet, in the control of the Secretary of the Meeting.

3.1.7. An Official Notice Board, prominently sited in the paddock or at Race Control for all official communications, grid positions and race results.

3.1.8. Certified scales and 100kg of certified check weights.

3.1.9. A calibrated noise meter, microphone and accessories.

3.2. At Motor Race Circuits, equipment shall be to a similar standard for a car race meeting.

4. OFFICIALS

An organising club must appoint the following essential officials and shall brief them fully prior to the meeting. No marshal or official shall be under 16 years old.

4.1. No official shall commence his duties before signing-on. No official shall expose himself to any hazard not essential to the performance of his allotted duties. [See Section C.]

4.2. Clerk of the Course. Must hold a licence valid for the grade of the meeting. The duties of the Clerk of the Course are specified in C 5.

4.2.1. Details of the upgrading procedure for Kart Clerks of the Course are given in Section AA of the Officials' Yearbook.

4.2.2. A Clerk of the Course will normally have only one Deputy at any meeting.

4.3. Medical Organisation

4.3.1. All International permit events, and all events on Long Circuits must have at least one doctor and two ambulances. One ambulance must be equipped with portable resuscitation equipment and a crew trained in its use.

4.3.2. It is recommended that a fast rescue car is also available for all Long Circuit meetings.

4.3.3. All other events. A local authority, St John, Red Cross or other approved ambulance equipped to a suitable standard and including a portable resuscitation unit with crew trained in its use must be in attendance at all times. A doctor or MSA registered Paramedic [S 4.1.1, S 4.1.2] must be present throughout practice and racing.

4.3.4. If entries exceed 100 or for MSA Championship events there should be two ambulances present, or one ambulance and a fully equipped medical centre [S 3.1].

4.3.5. If only one ambulance is present and it has to leave the circuit, racing must not continue until it returns, unless alternative suitable transport approved by the doctor, or the chief medical representative, is present and available with sufficient trained staff to man it.

4.4. Kart Scrutineer. The Chief Scrutineer must hold a licence (minimum grade National 'B') valid for the grade of meeting. Licence grades are shown in the Officials' Yearbook.

4.5. Marshals. The Clerk of the Course shall ensure that responsible persons are appointed as flag marshals, track marshals and paddock marshals, and that they are fully briefed as to their duties.

4.5.1. All marshals' posts, as detailed on the track plan, must be fully manned and equipped. Trackside posts must be properly protected and flag marshals must remain within the confines of that protection.

4.5.2. Flag Marshals. Flag marshals are responsible for signalling to competitors, warning them of hazards. They should not leave their posts to render assistance in the case of an incident.

4.5.3. Course Marshals. Course marshals are responsible to the Clerk of the Course for ensuring that the track surface, markings, and protective works are maintained in good order throughout a meeting. Where alternative routes on circuits exist, to ensure those not being used are properly indicated. To ensure that the fire fighting equipment is readily available and correctly sited and that they are familiar with its operation. To ensure that the track cleaning units are sited at suitable points. To supervise the removal from the track of any Kart which may have stopped on or adjacent to the track. To see that all entrances to the track are manned and that no unauthorised person

comes within this area. If enclosures are not surrounded by fencing, there must be a course marshal stationed at intervals between all enclosures and the track.

4.5.4. Paddock Marshals. Shall maintain orderly conduct in the paddock and/or pit area. To notify competitors of their starting positions and to assemble competitors prior to a race. To ensure that no competing vehicle goes out onto the track until it has been approved by the Scrutineers. To exclude from the paddock any unauthorised persons.

4.6. Secretary of the Meeting. Duties as detailed in C 3.

4.7. Stewards. The organising club is responsible for the appointment of two Event Stewards, whose duties are as detailed in C 2.

4.7.1. The MSA will also appoint a Steward, whose duties are detailed in C 2. In addition he will be responsible for observing all competitors, (including novices) and if satisfied with their competence, for signing their licences.

4.8. Attention is drawn to C 1.1.

4.9. Lap Scoring & Timing

4.9.1. Manual lap scoring must be carried out at all meetings.

4.9.2. The Chief Lap Scorer shall be nominated as a Judge of Fact in respect of race finishing order.

4.9.3. Deleted.

4.9.4. If transponders are used for the purposes of lap scoring only, the Chief Lap Scorer must hold a certificate of Competence to operate the recording system.

***4.9.5.** Where timing takes place there must be a Chief Timekeeper. The Chief Timekeeper must hold a licence valid for the grade of meeting (minimum – Timekeeper Kart).

(a) If using a light beam it must be to an accuracy of not less than 0.01 secs. The equipment must be certified in accordance with FF5.

(b) If using transponder timing for Short Circuit Kart events it must not be to an accuracy of less than 0.01 secs. Transponders used must be from the MSA approved list in conjunction with a decoder certified in accordance with FF5. The fitment of the transponder must be in accordance with the manufacturer's instructions at a predetermined position on the left hand side of the kart as detailed in the SRs.

5. SIGNALS

5.1. Red and Green lights are mandatory for the starting signal.

5.1.1. The National Flag should only be used as a starting signal if the lights fail.

(a) Rolling start – start at the moment flag is raised.

(b) Standing start – start at the moment the flag is dropped.

5.1.2. A Green flag with Yellow chevron – false start. [See Section B for flag designs]

5.1.3 Yellow/Black Quartered flag: This flag may be introduced by the Clerk of the Course, for Short Circuit Kart Race Meetings only, following a report from an Observer. The flag will first be displayed at the start/finish line and then in trackwise order at all flag posts. On passing the flag at the start/finish line, the Race leader must slow down sufficiently to a steady pace as used on a rolling start and all competing Karts must line up in order behind the Race leader who will act as the pace setter. No overtaking is permitted.

The field will remain in close formation, at reduced speed, for as long as it takes to clear the obstruction or remove the hazard, whatever its nature. Competitors who fail to slow down sufficiently or who overtake under the Yellow/Black flag, thereby gaining advantage, may be excluded or otherwise penalised.

When the Clerk of the Course is satisfied that the track is clear, or the problem resolved, the Race will be resumed with a Green Flag at the start/finish line and the simultaneous withdrawal of all Yellow/Black flags around the circuit.

6. RACE PROCEDURE

6.1. The Clerk of the Course may permit a change of make of chassis or engine from those nominated on the entry form, provided the application is made in writing before the end of scrutineering.

6.1.1. Only a driver using a scrutineered engine/chassis who has completed a minimum of three laps practice at racing speeds within the official practice period will be permitted to race.

6.1.2. Only one chassis may be used *except when a second chassis is permitted in the SRs.*

6.1.3. The maximum number of engines which may be used during a meeting is two, *unless specifically varied in the SRs.* Changing the crankcase constitutes a change of engine.

6.2. The number practising at any time shall not exceed the maximum permitted on the track for a race. Adequate practice periods must be allotted to all classes which must include sufficient time for competitors requiring observation to be seen. Where possible novice and experienced drivers should be allocated separate sessions. Exceptionally, for Long Circuits, 120% of the number permitted to race may practice at a time. Each competitor must have the opportunity of 15 minutes practice.

6.2.1. At no time may non-gearbox and gearbox Karts practice or race together, however, due regard must be paid to driver experience and the relative speed of the karts if different classes are on the track at any one time during practice.

6.2.2. The course or its features or markings may only be changed between the last practice period and the event itself in

exceptional circumstances. Should it be necessary to make any change following the scheduled practice an additional period of practice must be arranged.

6.3. The starting order in which the Karts shall be arranged will be determined by:

- (a) Ballot.
- (b) Lap times recorded in practice.
- (c) Order of receipt of entry.
- (d) Finishing order of a preceding race.
- (e) As defined in SRs.

In all races where the grid position is determined by (a), (c) or (e), novice drivers must occupy the rearmost grid positions

6.3.1. The Pole position shall be on the side of the track that is on the inside of the first corner after the start, or, as defined on the track licence.

6.3.2. When the Starter is ready for a race, he must signal by raising a Green Flag. A Marshal will then raise a Green Flag which will be the signal for the Karts to be released on to the circuit. After the marshal has lowered the Green Flag, the entrance to the track will be closed and no further karts will be allowed to join the track.

6.3.3. Karts will be formed up in the assembly area and will be pushed started when authorised by the Paddock official following the Green Flag being shown.

6.3.4. Each track will establish a 'Safety Line'. Any competitor who, having passed that 'Safety Line', receives assistance from anyone other than a signed-on official, may be excluded from the results.

6.3.5. Drivers will be under Starter's Orders from the moment that the Green flag is displayed.

6.3.6. Starts for races shall be :

- (a) Non-gearbox Karts – A rolling start or a standing start if permitted by the track licence.
- (b) Gearbox Karts – A standing start with engines running, or a rolling start.
- (c) For Long Circuit events, all starts should be slow rolling starts following a formation lap.

6.3.7. 'Le Mans' or any starts other than the above are forbidden.

6.3.8. In the case of a rolling start, on display of the Green flag, karts will proceed round the course in grid formation at a steady pace to await the starting signal. The karts may be preceded by an official Pace vehicle which will control their speed. If there is no pace vehicle the driver in No. 1 position shall control the speed.

When the starter is satisfied that the karts are approaching the start line in correct formation, the starting signal will be given by a Red/Green light signal, or by raising the National flag. It is an offence to break formation before crossing the start line itself and may result in the offender being moved to the back of the grid or otherwise penalised. Such penalties will not incur points or be recorded on a competition licence.

6.4. The Clerk of the Course (or his designated representative(s)) may decide to stop a race or practice. Should a race be stopped by the display of red flags the following procedures shall apply;

6.4.1.

(a) If 25% or less of the race distance has been completed by the leader, the race shall be abandoned, or if possible, the race should be re-run in its entirety.

Unless re-run the race will be null and void.

(b) If more than 25% but less than 75% has been completed by the leader, the Clerk of the Course shall, at his discretion, decide to:-

- i) Abandon the race or
- ii) Consider the race suspended and run a two part race or
- iii) Re-run the race in its entirety.

If i), the race results shall be declared as the order of finishing behind the leader on the last full lap completed by himself and before the race was stopped.

If ii), Karts will be restarted in a single file rolling start. The starting order for the second part shall be the order at the last full lap completed by the leader before the race was stopped. Drivers "one lap down" shall be put in their correct position i.e. behind drivers on the same lap as the leader. The race distance shall be the number of laps required to make up the full race distance. The finishing order of the second part shall be the finishing order for the race (drivers "one lap down" in the first part shall be deemed to have finished the race "one lap down" unless they have unlapped themselves) and results declared accordingly.

Any kart not racing before the race was stopped, shall not rejoin the re-started race. Karts involved in the incident that gave rise to the stoppage, may only rejoin the race if the Clerk of Course in consultation with the Chief Medical Officer and Chief Scrutineer are satisfied that they are safe to continue racing and then they must start at the rear.

While the race is stopped, the whole course shall be considered as parc fermé and no work may be carried out to any kart. If a kart leaves the course during the race stoppage, it will not be permitted to rejoin the race. When authorised by the Clerk of Course, spark plugs may be changed and finger adjustments may be made to the carburettor settings.

(c) If 75% or more of the race distance has been completed by the leader, the race will be deemed to have ended. The race results shall be declared as the order of finishing behind the leader on the last full lap completed by him and before the race was stopped.

6.4.2. On long circuits or Round the House circuits, if the race is stopped at less than 75% of its full distance, it should be re-run in its



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entirety if at all possible. Should more than 75% have been completed, the race will be deemed to have ended and the order of finishing will be that at the end of the lap preceding the stopping of the race.

6.4.3. Race Finish

After receiving the end of race signals all karts must proceed directly to the Parc Fermé without stopping, without giving or receiving any object whatsoever and without any assistance (except that of marshals, if necessary). Any classified kart unable to reach the Parc Fermé by its own means will be placed under the control of marshals who will supervise the movement of the kart to the Parc Fermé.

6.5. Ineligible Entries. Attention is drawn to B 10.2.

6.6. Results. See J 18.4.

6.6.1. Where timing is not authorised, it is prohibited to publish times or speeds in any practice or race result. Any other publication or display giving this information must clearly be shown and declared as 'Unofficial and for Information Purposes Only'.

6.7. Parc Fermé

Parc Fermé requirements where appropriate will be specified in accordance with B 12.1.17.

6.7.1. Only authorised officials may enter the Parc Fermé. No intervention of any kind is allowed there unless authorised by such officials.

6.7.2. When the Parc Fermé is in use, Parc Fermé regulations will also apply in the area between the finishing line and the Parc Fermé entrance.

6.7.3. The Parc Fermé shall be sufficiently large and secure so that no unauthorised person can gain access to it.

7. FEES FOR KARTING. See Section Z.

8. CHAMPIONSHIPS

8.1. No Championship may commence until a Championship Permit has been issued by the MSA. The Notice of Intent and the regulations must be submitted to the MSA in accordance with the timescales laid down in the guidelines of the Kart Championship Control Panel.

8.2. Any Championship for which awards include cash, or goods in lieu of cash, either race by race, or as the result of a series of races, or in which the Sponsor's name or title is used in connection with the title of the Championship or series, shall be deemed a Commercial Championship.

8.2.1. Championship Registration Fees:

All Commercial Championships are subject to a Registration Fee, which is individually assessed.

B. COMPETITORS

Competitors must comply with the Common Regulations for Competitors (Section E) and the following:

***10.1.** Competitors must report for signing-on and scrutineering at the time specified in the SRs.

10.1.1. Any competitor who does not report as instructed may be fined or excluded.

10.1.2. In conjunction with signing-on, the following items must be produced for approval:

- (a) Kart Racing Licence of the appropriate grade [12].
- (b) Club Membership Card (if appropriate) [B 3].

10.1.3. No kart may be driven in practice or in a race until it has been passed and logged by the MSA Scrutineer.

10.2. For all events the Clerk of the Course in consultation with the Stewards shall designate the race as dry or open or wet, and if it is designated:

- (a) DRY – All competitors shall use dry tyres.
- (b) OPEN – Competitors have the choice of tyres (i.e. wet or dry).
- (c) WET – All competitors shall use wet tyres.

A definition of wet tyres appears in 14.6.6.

At no time may a Kart be fitted with a mixture of wet and dry tyres. Tyres shall only be those defined in the class regulations.

10.3. Competitors must obey the flag signals detailed in 5 and J 16.1.

10.4. To be classified as a finisher, a Kart must cross the finish line with the driver seated correctly in his Kart and the engine providing the motive power, within two minutes (or as specified in SRs) of the winner, and have completed not less than 50% of the race distance.

10.5. Any driver leaving the track more than twice, whatever the reason, may be excluded from the race. Where a driver consistently drives with a wheel off the track or leaves the circuit, this may be deemed careless driving and he may be excluded from the race at the discretion of the Clerk of the Course.

10.5.1. Once a race or practice session has started, karts may only be worked upon in a place of safety.

10.6. Refuelling during a race is forbidden, *unless permitted by the SRs.*

10.7. Any driver receiving outside assistance, other than by an official, between coming under starter's orders and the end of the race may be excluded from the results at the discretion of the Clerk of the Course.

10.8. Deleted.

10.9. The track regulations in J 15, as appropriate, apply to kart racing.

10.10. All transmission of data or verbal communication of data or verbal communication between a moving Kart and the Kart's entrant or team prohibited unless as specified below:-

The fitting of officially sanctioned cameras and other recording devices and transponders and other equipment required by the organisers of that specific meeting.

Voice communication in endurance races where SRs specify the use of such equipment which must be appropriately licensed.

A single burst of timing data from the Kart as it passes the receiver.

11. CLOTHING

11.1.1. Crash Helmets. Crash helmets bearing an MSA Approval Sticker must be worn at all times during training, practice and competition. The user must ensure that the helmet is to a standard specified in the current MSA Yearbook, that it fits properly, is secured properly and that it is in a serviceable condition – see Q 10. (Full face helmets are strongly recommended.)

Competitors are warned that the addition of non-standard studs to a helmet for the attachment of visors or peaks is contrary to the BSI standards and may produce dangerous weakening of the helmet.

11.1.2. Goggles or a visor [Q 11] ('Whirlrey' visors are acceptable when fitted on top of normal visors, but holes must not be cut in normal visors), complete gloves (not mitts or gloves with open backs) and boots (which must cover and protect the ankles) must be worn at all times. Trailing or loose scarves are not permitted.

11.1.3. For Long Circuit Meetings, all Drivers must wear leather suits, or MSA approved suits for Long Circuit kart racing. For Short Circuits, leather, heavy duty PVC, MSA suits approved for Short Circuit kart racing or suits bearing the CIK homologation label will be accepted. Leather suits must have a minimum thickness of 1.2mm measured at any part of the suit. All clothing will be securely fastened at wrists, ankle and neck and must be adequate to minimise abrasions. Drivers may wear two piece suits providing they are zipped together. It is recommended that heavy duty PVC suits are only worn in conjunction with other approved suits for wet weather protection. Driving suits, helmets, visors etc. and all other protective clothing must be presented for inspection by the Scrutineers. Examples of the only acceptable CIK homologation labels are shown opposite (Figure N11).

Suits homologated by the CIK prior to 1st January 1997 are not acceptable.

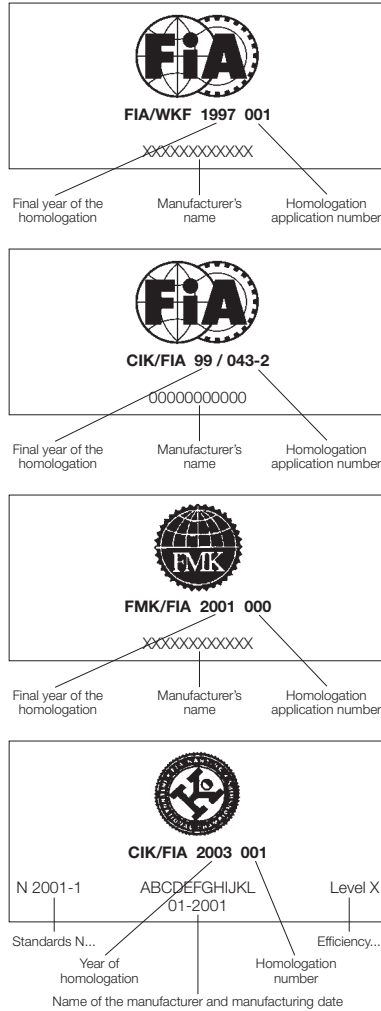


Figure N11

Only suits bearing one of the above labels are acceptable as CIK homologated.

12. KART LICENCES

12.1. KART COMPETITION LICENCES are issued to competitors from the age of eight and are divided into five grades – National 'B', National 'A', International 'C', International 'B' and International 'A'.

12.2. Retaining and Upgrading. Details are given in Section E 2.15.12.

12.2.1. A competitor will be considered as a 'Novice' and must use Novice number plates [14.16.4], until he has obtained six kart race signatures from MSA Stewards. Thereafter he

can continue to compete on a National 'B' Licence, or can upgrade to a National 'A' Licence in accordance with E 2.15.12(a) but he will no longer be considered a novice. Completion of the ARKS Course [E 2.3.3] will constitute one of the six signatures.

12.3. A valid licence/medical certificate must be produced at signing-on at all events [see E 2.9].

12.4. Deleted.

12.5. Licence validity: See chart of Minimum Acceptable Licences in Section E.

12.5.1 A competitor on long circuits will be considered as a Novice, and will have to carry a Novice plate [J 12.3], until he has received 4 signatures from the MSA Steward for competing successfully on long circuits.

12.6. Deleted.

12.7. All competitors who have not reached their 18th birthday must:

(a) have the Competition Licence application form counter-signed by a parent or guardian who will be considered to be the Entrant of the driver and will be responsible for their behaviour.
(b) insert their date of birth on their licence.

12.8. Any competitor who is unable to produce his Licence/Medical Certificate will be reported to the MSA Steward. He might be allowed to compete if he can satisfy the Steward that the licence is missing because of administrative problems and in particular he must satisfy the Steward that he has been medically examined and approved. He will be subject to a non-refundable fine as detailed in Appendix Z.

12.9. At all meetings drivers and entrants are responsible for the conduct of their mechanics, helpers and team personnel [E 4.1.9].

13. CLASS RESTRICTIONS

13.1. Cadet Class. Compulsory class for 8–11 year olds. However, a competitor may continue in the class until 31st December in the year the 12th birthday falls, but he may not move up before his eleventh birthday. Having moved into another class he may not revert to Cadet.

13.2. Junior Classes

Junior classes are detailed in the Kart Race Yearbook.

13.2.1. A Junior, who is no longer a Novice [12.2.1] may transfer to any Senior Class (subject to the SRs of that Class so permitting) at any time during the Year that he achieves his sixteenth birthday. However, he may not compete in Gearbox Karts until his thirteenth birthday (subject to individual class regulations). Once a Junior transfers to a Senior Class, he may not revert to Juniors.

13.2.2. When a Junior competitor transfers to the Senior Classes his licence will be endorsed SENIOR by the MSA Steward.

C. TECHNICAL

All Karts must comply with these Technical Regulations

Modification, addition, variation or tuning other than specifically permitted in these regulations is prohibited.

IF IN DOUBT . . . DON'T.

Anyone requiring clarification or definitions concerning the Technical Content of these Regulations should apply in writing to the MSA.

The approval of a vehicle or component herein is an indication of the acceptance solely for the purpose of these regulations, and is not to be taken as a guarantee or warranty as to the standard of its design or manufacture, or its fitness or suitability for any use to which it may be put.

14. CHASSIS – ALL CLASSES

14.1. The Scrutineer must be satisfied that the Kart is safe, is of an adequately strong construction, does not include any components of a temporary character, and presents no undue hazard to its driver or to other competitors. In particular, steering, brakes and wheels must be adequate for speeds that are likely to be attained. Any replacement of original components and fixings must be fit for purpose.

14.1.1. The chassis frame must be constructed from magnetic steel tubing. Cross section is free. It must be of one piece construction either welded or brazed. Any form of chassis frame control which includes pivots, dampers or similar devices is prohibited.

14.1.2. No additional holes for lightening or any other purpose (with the exception of those required for seat fixing) may be drilled in the rolling chassis. Only those holes shown in the manufacturer's homologation or in manufacturer's official replacement parts list will be allowed.

14.2. Dimensions (excluding Cadet Class)

14.2.1. Wheelbase – minimum 101cm, maximum 127cm.

14.2.2. The track must be a minimum of two-thirds of the wheelbase.

14.2.3. Maximum overall length, 210cms including bodywork.

14.2.4. Maximum overall width, all classes, 140cm.

14.2.5. No part may protrude outside the quadrilateral formed by the front fairing, rear bumper and outer face of the wheels and tyres.

14.2.6. No part of the kart, shall be higher than 60cm from the ground, except for a structure solely designed as a head-rest.

14.2.7. Chassis frame. This must be permanently marked with a unique number and year of manufacture in an easily recognisable position. The use of titanium or magnesium is prohibited.

14.3. Flooring. There must be a floor made from suitably durable material that, as a minimum, stretches from the seat to the front of the Kart. The floor tray shall be of flat construction with any deviation permitted upwards, not downward. It must be edged on each side by a tube or a rim to prevent the driver's feet from sliding off the floor.

14.4. Suspension. [Section P] Any method of suspension, either by elastomeric material or by pivots is prohibited.

14.5. Wheels

14.5.1. The wheels must be equipped with pneumatic tyres (with or without tubes) and the front wheels/hubs must be fitted with rolling element bearings. Wheels which have been cut and welded are prohibited.

14.5.2. The attachment of the wheels to the axles/hubs must incorporate locking pins or self locking nuts. The requirement for wheel retaining locking nuts or secondary locking devices is waived for CIK homologated wheels and their associated fixings. Hubs with single retaining bolt feature must not protrude beyond the end of the axle unless designed for that purpose and must incorporate a retaining device. Extended hubs with single or two retaining bolts designed to overhang the end of the axle are permitted. Any hub with an overall length, excluding wheel studs, of less than 60mm must not overhang the ends of the rear axle.

14.5.3. No form of hub nave plate is permitted on the wheel.

14.5.4. For Long Circuits all wheels must be fitted with some form of bead retention. Both rear outer rims must incorporate bead retention consisting of three pegs at equidistant positions. Applicable to both wet and dry tyres.

14.6. Tyres

14.6.1. Tyres, when inflated on the wheel rims, must not exceed a maximum external diameter of 35.0cm. Minimum external diameter must not be less than 22.2cm.

14.6.2. For certain classes only permitted tyres may be used as detailed in the class regulations.

14.6.3. Deleted.

14.6.4. All tyres designated for a specific class must be identical in specification to the samples that have been tested and selected. Control tyres may be held by the MSA as a reference in the event of any dispute.

14.6.5. Tyres must be freely available as single units to the open market in the UK so that customers are not forced to buy either complete sets or other equipment in order to purchase a particular tyre.

14.6.6. Wet Tyres

To qualify as a wet tyre, tyres must be moulded in such a way as to ensure that grooves are created to leave a minimum of 60% and a maximum of 85% of the total surface area as a raised tread pattern. The grooves to have a minimum depth of 2mm at race start. Hand cutting of all tyres is prohibited.

14.6.7. Remould tyres are prohibited.

14.6.8. Heating of tyres, by any method, or their treatment by any chemical substance, is prohibited. The mechanical removal of accumulated rubber debris is permitted.

14.7. Brakes. Direct drive karts must have effective brakes acting on the rear wheels only. Karts in the gearbox classes must have brakes operating on all four wheels, preferably with independent front and rear systems which must be hydraulic. Master cylinders must be fitted in a position safe from impact, at least 15cm behind the front bumper or to the rear of the pedals. Hydraulic pipes must be securely fitted to the chassis upper sides and should be protected against damage. All karts must have an effective dual connection between the brake pedal and calliper if mechanical and between the pedal and master cylinder if hydraulic. Where there is a dual linkage between master cylinders, the mandatory requirement for a secondary dual connection is waived. The prime connection may be either solid or cable operated with a secondary safety cable set slightly looser to act as a back up in case of failure. Drum brakes are not permitted. Brake disc(s) must be made from ferrous material. When a cable is used a minimum thickness of 1.8mm is recommended.

14.8. Steering. Must be controlled by a steering wheel which must have a circular shape. The upper part above $\frac{2}{3}$ s of the circumference of the wheel may be flat. Any device mounted on the steering wheel must not protrude by more than 20mm from the plane forward of the steering wheel and must not have sharp edges. It is recommended that the minimum diameter for a steering wheel is not less than 300mm across the widest section of the wheel. Wheels with flat handgrips are considered acceptable. Flexible steering controls by cable or chain are prohibited. All parts of the steering must have a method of attachment offering maximum safety (split pins, self locking nuts or burred bolts). The fitment of a steering lock is not permitted when the kart is being driven.

14.8.1. Stub Axles. The use of Chromium Plated Stub Axle assemblies is not permitted for any 250cc Gearbox classes.

14.9. Seat. It is recommended that the seat be made of a fire retardant material. It must be rigidly located on the chassis and designed to securely locate the driver without movement relative to the chassis when cornering or braking.

It is mandatory that all seats comprise metal or nylon reinforcement at their upper anchorage points between the seat supports and the seat.

Reinforcements must have a minimum thickness of 1.5mm and a minimum surface area of 20 sq cm. All such supports must be bolted or welded at each end.

14.10. Pedals. Whatever the position of the pedals, they must not protrude forward of the chassis or bumper. The accelerator must be operated by a pedal equipped with a return spring.

14.11. Exhaust. The exhaust system must discharge behind the driver and must not exceed a height of 45cm. The terminal part of the silencer must not cross the quadrilateral formed by the outside of the wheels and the front and rear bumpers. It must not present a hazard. The Kart must have protection to prevent any contact between the driver and the exhaust system when seated in the normal driving position.

14.11.1. Sound Testing

Intake and exhaust silencing is mandatory. Competitors must ensure that engines are prepared and equipped in order to meet or better sound level requirements. Event organisers and venue operators may impose more strict levels according to their own environmental requirements. Such additional restrictions must be published in event SRs and be approved by the MSA. The requirements for sound control officials (Environmental Scrutineers) are detailed in C 12.

14.11.2. Effective exhaust and induction muffling is mandatory on all karts so that the sound level regulations contained in 14.11.4 are respected. The responsibility rests with the competitor to ensure that he complies with the sound regulations. Scrutineers will check all intake and exhaust silencers for professional construction and secure fixing. Any competitor losing a silencer during a race will be immediately shown a black flag and excluded.

14.11.3. Intake silencers sealed to the carburettor intake, so that all air entering the carburettor passes through the intake silencer, are mandatory for all classes. Details of specific silencing requirements and of approved silencers are given in the Kart Race Yearbook.

14.11.4. Sound testing shall be carried out at all kart race meetings using equipment equal to or better than the minimum requirements of C 12.7 and should be calibrated before use. Tests will be conducted using a microphone suspended over the track above the normal driving line and connected by cable to the sound level meter. The microphone should be positioned on a straight section of the track at a point where karts are at maximum power. The measurement position should be selected in consideration of ambient and reflected

sounds so that such factors are minimised.

This position will be shown on the track licence. Maximum sound levels will be 108 dBA with a microphone set at a height of 1.8m 0.1m, or 105 dBA with a microphone set at a height of 3.6m 0.1m above the track.

14.12. Fuel. Fuel must be Unleaded BS EN 228, as defined in Section P, plus lubricant.

The petrol/lubricant mixture, as well as petrol only, must comply with the specifications in Section P.

Electrically powered vehicles are permitted. Alternative fuels may be permitted subject to MSA approval.

14.12.1. The fuel tank must be fixed in such a way that neither it nor the fuel pipes, which must be flexible, present any danger of leakage during the competition. The use of devices fitted to fuel lines, such as 'Powerplus', 'Proplus' or 'Carbonflow' is prohibited. If plastic is used for the tank it must be of a type suitable for carrying fuel. The tank must supply the fuel pump with petrol under normal air pressure only. Unless otherwise specified the petrol tank must be mounted within the area of the chassis frame. Where appropriate the Class Regulations will specify tank capacity. For all classes, to enable a fuel test to be conducted a minimum of one litre of fuel must be present at the end of each race. The penalty for non-compliance will be exclusion from the results in that race.

14.12.2. Side tanks. The front and full side of any side tank shall be protected by a single tube of adequate strength (minimum diameter of 15mm), which shall not be in contact with the tank at any point, and must not present any sharp ends. Along the side of the tank this tube must be parallel to the ground and 25mm above the rear axle centre.

Between the rear end of the tube and the chassis, a plate shall be mounted to prevent any backward movement of the tank. Irrespective of any other method of fixing, the tank shall be held in place by a strap.

14.13. Bumpers. The Kart must have protection (bumpers) at the front and the rear which shall have a strength and construction appropriate to their function. All tubing used must be of magnetic steel. Requirements for Cadet bumpers are specified in the appropriate class regulations contained in the Kart Race Yearbook.

14.13.1. No bumper may project sideways beyond a line drawn horizontally along both front and rear tyre, at the level of axle centres (front wheels in the straight ahead position).

14.13.2. Front bumper (Non-gearbox, excluding Cadets). This must consist of a minimum of a single tube presenting a forward horizontal and flat face of at least 25cm linked to the chassis side members and reinforced by

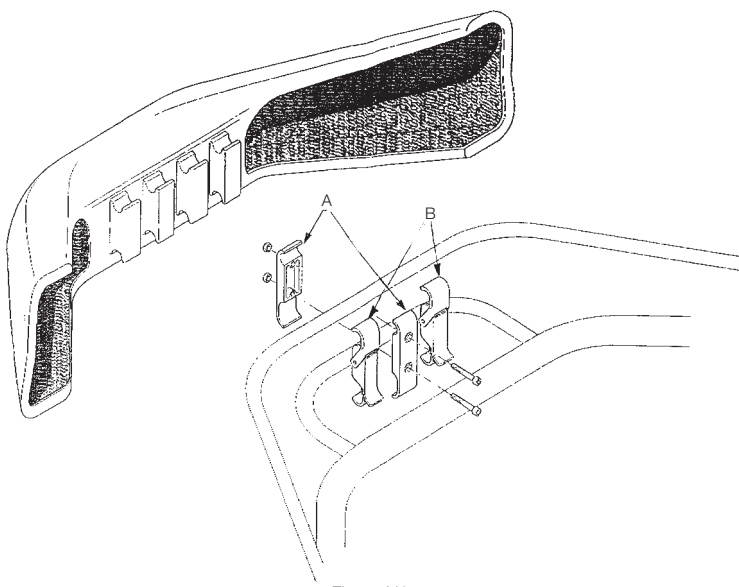


Figure N9

two single piece uprights firmly attached to the chassis. These uprights must be vertical when viewed from the side. The height from the ground under all circumstances must be a maximum of 22cm and minimum of 15cm. Where a CIK homologated fairing is used to the 1997 homologation specification (see Drawing No. N9) the requirement for two vertical uprights is waived. The fairing must be securely clamped between the two horizontal bumper rails by the over-centre clips and the centre clamping block must be securely in place. For UK events the CIK pattern plastic clamping block (2 piece, marked A on Drawing No. N9) must be replaced by a metal 2 piece assembly (machined aluminium or pressed steel). The over-centre clips (marked B on Drawing No. N9) must be retained to the chassis tube so that they can not fall off should the fairing become detached.

14.13.3. Front bumper (Gearbox karts). This must consist of a single tube between 15cm and 30cm from the ground and presenting a forward horizontal and flat face of at least 25cm linked to the chassis side members and reinforced by two uprights firmly attached to the chassis. These uprights must be vertical when viewed from the side. At no time may the height of the front bumper exceed the height of the foot pedals with the pedals in the relaxed position. It is mandatory that Karts should have adequate support to the front bumper to prevent it folding back on the driver's feet in the event of a heavy impact.

14.13.4. Rear bumper (Non-Gearbox, excluding Cadets). The bumper must consist of a minimum of a single horizontal rail, with outer extensions forming a closed loop with two vertical link tubes to the chassis anchorage points, as per Fig N5 Diagram 1. The rail and uppermost extension element must be between 16cm and 20cm above the ground in dry configuration. In side view the bumper must have a rearward rake of between 20 and 45 degrees to the vertical (Fig N5 Diagram 3). The overall width of the bumper must not exceed the rear width of the kart at any time, measurement taken outside the rear wheels or tyres, whichever is the greater, and must cover at least 50% of each rear wheel/tyre at all times. The bumper must be constructed from magnetic steel tubing, minimum o/d 18mm, minimum wall thickness 16swg. Upper rail and extension loops must be made of a single piece of tubing. Rear bumper attachment fasteners, i.e. bolts, spigots, etc., must be made of high tensile steel. Adjustable width bumpers are not permitted.

14.13.5. Rear bumper (Gearbox karts). The bumper must consist of two horizontal and parallel rails, with outer extensions forming a closed loop with two vertical link tubes to the chassis anchorage points, as per Fig N5 Diagram 2. The upper rail and uppermost extension element must be between 20cm and 30cm above the ground. The lower rail must be fixed horizontally between the main



Diagram 1



Diagram 2



Diagram 3

Figure N5

uprights, between 10cm and 12cm above the ground in dry configuration. In side view the bumper must have a rearward rake of between 0 and 45 degrees to the vertical. Where a vertical bumper is fitted, the extension loops must be strengthened by triangulated steel braces to the chassis. The overall width of the bumper must not exceed the rear width of the kart at any time, measurement taken outside the rear wheels or tyres, whichever is the greater, and must cover at least 50% of each rear wheel/tyre at all times. The bumper must be constructed from magnetic steel tubing, minimum o/d 18mm, minimum wall thickness 16swg. Upper rail and extension loops must be made of a single piece of tubing. Rear bumper attachment fasteners, i.e. bolts, spigots, etc., must be made of high tensile steel. Adjustable width bumpers are not permitted.

14.13.6. No part of the chassis or bumper may have any sharp edges.

14.13.7. No bodywork or tubing may extend behind the compulsory rear bumpers.

14.14. [see 14.2.7].

14.15. Bodywork. Bodywork is permitted on all karts as specified in these Regulations. No part of the bodywork may be used as a fuel tank or to carry ballast. The fitment of 2003 CIK homologated bodywork that does not meet all of the dimensions listed in table N6 are permitted providing the bodywork is used as a complete set including mounting attachments and fitted in accordance with CIK regulations.

14.15.1. All bodywork must be soundly constructed from non-metallic material, and if plastic be non-splinterable. It must be designed to provide maximum safety for the driver and other competitors, both during normal racing or an accident, and must not present any sharp edges.

14.15.2. With the exception of Bubble Shields, as specified in 14.15.6 or Nassau panels, nothing (including any form of bodywork), may be above any portion of the driver's head, body or limbs when viewed from above.

14.15.3. Front Fairings. Front fairings are mandatory for all non-gearbox karts and optional for Gearbox karts.

The purpose of the front fairing is to prevent, in conjunction with the rear bumper, the potential for wheel over wheel incidents.

Installation of the fairing must be such that the front bumper complies with the regulations and if the fairing were removed would be the foremost part of the kart. Fairings must not extend beyond the plane through the outside of the front tyres with the front wheels in the straight ahead position with wheels in outermost positions, nor extend beyond the plane through the top of the tyres. On **non-gearbox karts**, front fairings must comply with the dimensions in Diagram 4/5. On **gearbox karts**, where fitted, they must not exceed the maximum width of the kart as described above.

14.15.4. Any wing end plates must have a 4mm curved beading of minimum radius of 2mm and no part of the bodywork, including wings and end plates, shall exceed the maximum width of 140cm.

14.15.5. No form of 'skirt' is permitted and only the tyres must come into contact with the circuit. See figure N10 showing side and rear views of the floorplan.

14.15.6. Bubble Shields may be used on all gearbox classes provided they comply with the following definition:

The Shield must be made of a non-metallic material with no sharp edges and so fixed as to retain its shape. It must not cross the horizontal plane through the top of the steering wheel or be closer than 5cm to any part of the steering wheel. At the bottom, it shall be no closer than 15cm from any pedal in the normal unused position and shall expose the feet and ankles. Maximum dimensions: overall length 50cm, overall width 50cm when measured chordally, width of supports 25cm [as shown in Fig N7, diagrams 6, 7 and 8]. It must be detachable from the bodywork without the use of tools, and have a minimum of four fixing points. A bubble shield on its own does not constitute bodywork.

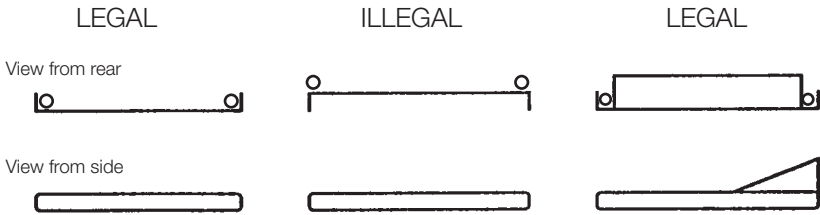


Figure N10

14.15.7. Side Protection. Side protection is mandatory for all classes. Its purpose is to prevent the possibility of wheel to wheel interlock. For non-gearbox karts this will be accomplished by the fitment of side pods as defined in (a) below. Gearbox karts may use side bars, with or without bodywork or side pods, as defined in (b) below.

Any form of side protection must not be nearer the ground than the floor tray, and must have adequate clearance between any part of the bodywork, side bar(s), bumpers or side pods, and the tyres, but any clearance must not exceed 100mm with wheels in straight ahead position.

(a) **Non-gearbox karts** (Diagram 4/5). Side pods must not extend beyond the plane through the outside of the front and rear tyres with the front tyres in the straight ahead position in dry conditions. (Dry configuration, see Fig N7 Diagram 9). In wet conditions the tyres may be inside the pods. The pod on the engine side may incorporate the possibility of being used as a noise box for the engine intake. The surface of the pods must be uniform and smooth. Pods may be moulded or cut to incorporate provision for air box, radiator, transponders and starter access. Any cuts are limited to a maximum of two surfaces of the pod. Additionally holes to the front and rear of the pod may be wholly or partially blanked and no other holes or modifications are permitted. Side pods must be securely fixed to the chassis frame by a minimum of two points each and may incorporate a lateral support on the outer surface. Lateral support bars must be positively attached to the chassis by a minimum of two fixing points. Side pods must cover at least two thirds of the width of each rear tyre at all times.

(b) **Gearbox karts.** Excluding bodywork, protection must not extend beyond the plane through the top of the front and rear tyres, nor beyond the plane through the outside of the front and rear tyres with the front wheels in the straight ahead position. (Dry configuration, see Fig N7, Diagram 9.) Where side bars are used, two bars each side of the kart must be fitted. The height of the lower bar must not exceed that of the top of the rear axle. An upper bar must be fitted at a height providing a minimum gap to the lower bar of 50mm. The upper bar

must be joined to the lower bar at each end and also include two additional uprights which may be radiused where they join the side bars. All side bar tubing must be a minimum of 19mm magnetic steel of adequate wall strength (15mm for karts manufactured before 1.1.97), and must cover a minimum of two thirds of the width of each rear tyre at all times.

14.15.8. A front 'Nassau' type panel may also be used. This must be of non-metallic material and securely fixed to the front bumper or front chassis member and to the steering column support. The panel shall have a maximum width of 25cm. It shall finish below the top of the steering wheel and have a minimum gap of 5cm between it and the steering wheel. It must not cover any part of the pedals or the feet in the normal driving position. It shall incorporate an area of 22 x 22cm for a number panel. (See Fig N7, Diagram 8.)

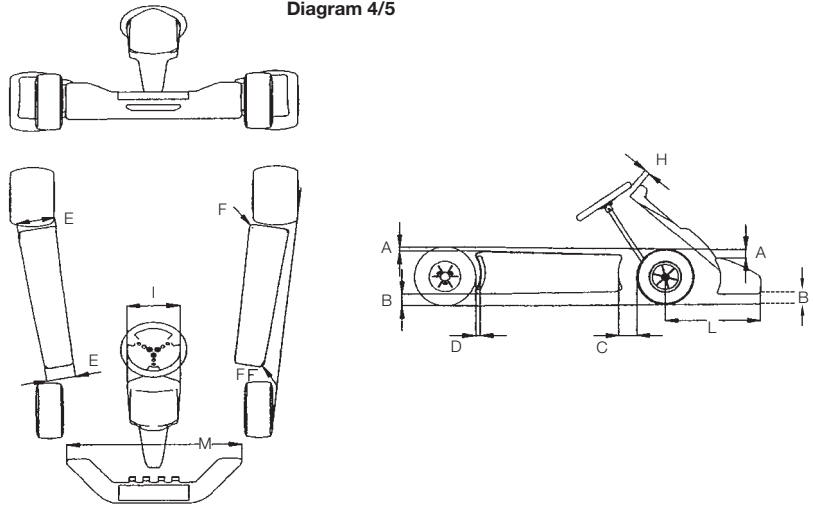
14.16. Number Plates. Number plates shall have rounded corners (diameter of corner 15 to 25mm) with 22cm sides. The number must be at least 15cm high and 2cm thick. They must be fitted to front, rear and both sides. Number plates must be securely attached and numbers always legible.

14.16.1. For Long Circuit events, number plates must be carried front, rear and on the side facing the Timekeeper's box. The plates must be square having sides of 30cm. The numbers must be of a height of 25cm and with a minimum stroke of 3cm. The plates must be fixed in such a manner so as not to bend or otherwise change their attitude in the airflow.

14.16.2. No Club may alter the requirements concerning the numbering of Karts. The plates must be in opaque flexible plastic, fixed in such a way that they are not deflected by the airflow. The plates must be solid or be attached to a solid backing and contain no holes other than those required for fixing.

14.16.3. The MSA reserve the right to nominate special 'numbers' such as Grand Prix Winner – GP. Further, the first fifteen in all MSA British Championships may use their finishing position number for the following year should they continue to race in the same class and in the same type of event (Short Circuit Gearbox one to fifteen may not use their numbers for Long Circuit events or vice-versa).

Diagram 4/5



Code Letter	Short Circuit	Cadet	Limit	Comments
A	4cm	5cm	Maximum	
B	2.5cm	2.5cm	Minimum	Driver on board
	4cm	4cm	Maximum	Driver on board
C & D	2cm	N/A	Minimum	
	15cm	15cm	Maximum	
E	12cm	9.5cm	Minimum	Front
E	18cm	13.5cm	Maximum	Rear
F	0.5cm	0.5cm	Radius Minimum	
	2cm	2cm	Radius Maximum	
H	5cm	5cm	Minimum	
I	25cm	25cm	Maximum	Nassau Panel
L	65cm	45cm	Maximum	
M	80cm	70cm	Minimum	

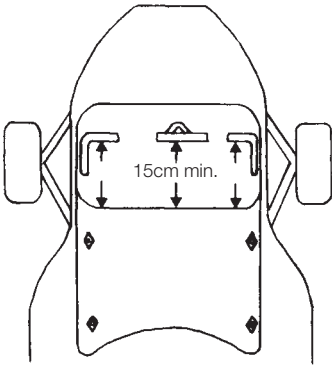
Figure N6

14.16.4. Novice number plates will be black with either white or yellow numbers.

14.17. Weight. The minimum weight limit is the combined weight of driver, kart and engine with the kart in complete racing trim, as at the end of each race or heat. If it is necessary to use ballast in order to achieve a minimum weight, the fixing of the ballast to the kart must be by a minimum of two mechanical fixings. No single piece of ballast may exceed 5 kgs. No solid object (excluding jewellery/dog tags) may be carried on

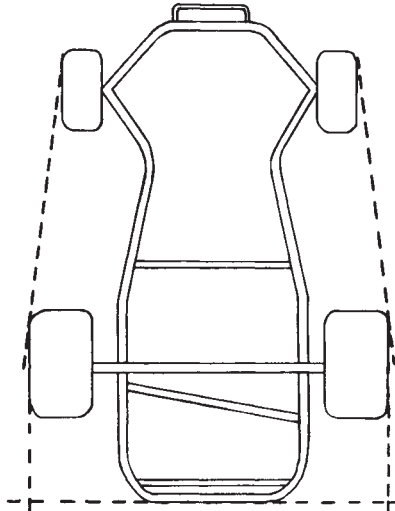
the driver's person. Plugs and plug spanner may be carried on the kart in a suitable receptacle, secured to the kart in a manner acceptable to the Scrutineer. After a Kart and driver have competed in a heat or race it is not permissible to alter the weight of the Kart or driver in any way before being weighed. The driver must have his crash helmet and goggles, as raced, with him for weighing.

14.17.1. Clubs may run classes to heavier weight limits (if so specified in SRs), but may not reduce the weight limits.



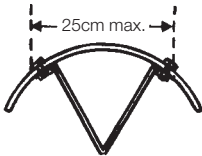
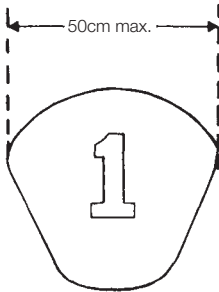
Lower end of bubbleshield showing minimum 15cm gap between shield and pedals. Also indicating the maximum 4 fixing points if shield attached to bodywork.

Diagram 6



The plan showing the limits beyond which neither bodywork, wings or end plates may protrude. (Kart in dry tyre condition.)

Diagram 9



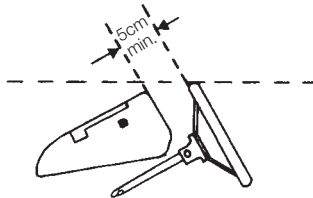
Bubbleshield showing overall width dimensions and the maximum width of supports.

Diagram 7



Floor tray. Showing legal and illegal. Illegal is defined as creating a skirt effect.

Diagram 10



Bubbleshield profile showing horizontal line it must not cross and the minimum 5cm gap between the shield and steering wheel.

Diagram 8

Figure N7

14.18. Rear Lights on Long Circuit Gearbox Karts. A rear facing high intensity lamp must be fitted. It will be permanently illuminated when a race is designated as a wet race. Only lamps having built-in power supply and a high intensity, polarised light source will be permitted. The lens shall have a minimum surface area of 28cm² and the illumination must be visible from a point 45° either side of the centre line. The lamp unit will be mounted securely, centrally on the Kart, forward of the rear bumper and no lower than the top of the upper bumper rail.

15. ENGINES AND TRANSMISSIONS

15.1. The Scrutineer must be satisfied that the engine, transmission, exhaust system and all associated parts are installed in a workmanlike manner and will perform safely and present no undue hazard to the driver or other competitors. Where hand throttle systems are fitted to assist push starts these systems should be maintained in a clean and fail-safe condition.

15.2. Engine. The engine is understood to be the sole propelling unit of the Kart in running order. It may be of two, or four, stroke cycle type, but both types may not take part in the same race with the exception of the Formula Cadet and compatible 4 stroke Cadet classes, which with specific MSA authorisation, may be amalgamated. Other 4 stroke engines of equivalent performance may be raced with 2 stroke engined karts in the same race subject to MSA authorisation [N 1.3(c) and (d)].

15.2.1. *Unless the SRs state otherwise*, only engines readily available through normal commercial channels may be used.

15.2.2. Forced induction in any form is not permitted.

15.2.3. Power valves are allowed subject to class regulations. But all electronic/microchip methods of operation are forbidden.

15.2.4. (All non-gearbox karts). Any form of variable ignition (advancing or retarding systems) is forbidden. The use of programmable electronic engine management systems, which can be varied whilst the kart is in motion, is forbidden.

15.2.5. (All Gearbox karts). The use of programmable electronic engine management systems, which can be varied whilst the kart is in motion, is forbidden.

15.2.6. Engines must be fitted with radio interference suppressors as specified by the Wireless Telegraphy Act 1952.

15.2.7. Only sealed, leakproof batteries are permitted. Proprietary lead acid batteries, sealed for life, properly mounted and protected, are acceptable. Batteries where permitted must be fitted within the confines of

the main chassis frame. Terminals and electrical connections must be covered with insulating material.

15.2.8. No part of the cooling system is permitted to be located directly in front of the driver's seat and may not pass over any part of the driver's body. All pressurised pipes must be reinforced and a catch tank is recommended on cooling systems with vented caps. A retaining device is recommended on pressure caps. The use of inhibiting agents including anti-freeze is permitted.

15.3. Transmission. The transmission is the method of transferring drive from the crankshaft drive sprocket to the back axle sprocket. For some classes this drive may have a variable ratio gearbox interposed between engine and back axle sprocket.

15.3.1. Direct drive classes must not be fitted with a variable ratio transmission. However, they may be fitted with a clutch if permitted in class regulations.

Clutches are recommended for all Cadet and Junior categories, and have been mandatory for all new Cadet and Junior UK homologated engines from 1.1.2004.

Karts competing in the gearbox classes must be equipped with a variable ratio transmission providing a minimum of two speeds and be fitted with a clutch.

15.3.2. All classes must use axles of magnetic steel material.

15.3.3. The drive shall always be to the rear wheels only. Any method may be used provided no differential is incorporated. All methods of chain oiling and greasing whilst the vehicle is in motion are forbidden unless specifically permitted in the SRs for an event.

A guard covering the transmission chain (or belt), engine sprockets and rear axle sprockets/gears is compulsory. Protection must be provided over the top and both sides of the chain and sprockets and extend to at least the lower plane of the rear axle. It must not be possible for a finger to be inserted into the transmission in the areas covered by the mandatory guard. Access for the starter is permitted. Clutches on non-gearbox karts must be covered, metal guards being recommended.

16. HOMOLOGATION FOR ENGINE AND CHASSIS

16.1. Homologation. Full details of the homologation procedures for both chassis and engines are available from the Technical Department of the MSA.

17. CLASSES

Full details of all permitted classes are contained in the Kart Race Yearbook.