

W M C R

World Organisation Model Car Racing

TECHNICAL REGULATIONS

JANUARY 1999. REVISED MAY 2001.

Including all Amendments.

Compiled
WMCR Committee

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A. GENERAL

A.1. SCOPE

These Regulations apply to all members of the World Organisation for the conducting of a World Championship and the running of World Class cars at International Meets.

A.2. APPLICATION

These Regulations shall be used to answer all questions that may arise during the running of a World Championship.

It is recommended that these Regulations be used as the basis for the Rules and Regulations formulated by the individual countries for application in their country. Individual countries may operate additional classes, vary the number of rounds for a competition etc.

A.3. COMRADESHIP

Every member is obligated to conduct himself/herself fairly and foster good sportsmanship.

B. CARS

B.1. GENERAL

B.1.1

A model race car must have four wheels and must be powered by a combustion engine (piston engine). The power must be transmitted to one or more wheels directly or by means of a gear box.

B.1.2

The contact points of the wheels with the surface are to form angles of a rectangle or a trapezium.

B.1.3

Wheels on the same axle, ie front or rear, must have the same nominal diameter. However it is not necessary that the front wheels be rotated against each other. In disassembled condition two independent wheels must exist.

B.2 CLASSES

B.2.1

The following race-classes are mandatory:

Class 1 Cars with engines up to max. 1,5 cm³ displacement

Class 11 Cars with engines of 1,5 to 2, 5 cm³ displacement

Class 111 Cars with engines of 2,5 to 3,5 cm displacement

Class 1V Cars with engines of 3,5 to 5 cm³ displacement

Class V Cars with engines of 5 to 10 cm³ displacement

Maximum allowable deviation for all classes: 0,009 cm³, measuring point = Upper dead centre.

B.3. WEIGHTS

A ready to run car, including all items carried like fuel and battery must not exceed the weight listed below:

Class I	-	1.050 kg	-	2 lb 5.04 oz
Class II	-	1.570 kg	-	3 lb 7.38 oz
Class III	-	2.000 kg	-	4 lb 6.40 oz
Class IV	-	2.300 kg	-	5 lb 1.10 oz
Class V	-	3.130 kg	-	6 lb 14.41 oz

B.4 STABILITY

B.4.1

Important load carrying and power transmitting items for example, like the bottom pan, bridle, engine and wheel mountings, axles etc. must be calculated to dimensions, that they can stand the loads during the run with an adequate factor of safety (see B.6.1).

B.5 BODY

B.5.1

Every car must have a top cover, which together with the chassis must form a body which covers all parts with the exception of the following: cylinder head, pipe including fixing bracket, shut off lever, vent pipes to tank, needle for needle valve, bridle, tail skid and wheels.

B.5.2

The bodywork must be designed, so that the car can be shut off without any risk of damage.

B.5.3

At international races the body of every car must carry a national identification mark and a national identification number, with letters at least 20 mm in height.

B.6 BRIDLE

B.6.1

Every car must have a bridle for attachment of the cable made of material with a minimum tensile strength of 500 N/mm². The bridle must be designed to have minimum dimensions according to Appendix 1.

B.6.2

Additional connectors between bridle and cable connector and cable and centre arm are not allowed.

B.6.3

All bridles must have a coloured mark at the outer end adjacent to the connector hole, approximately 20 mm in width (paint or tape). The colour shall match the colour of the tether cable for the respective class.

Class I	White
Class II	Green
Class III	Yellow
Class IV	Red
Class V	Black

B.7. SHUTOFF

B.7.1

Every car must have a shut off device so that the car can be stopped every time and without difficulty. To assist in this requirement, it is recommended that the shut off lever protrudes a minimum of 20mm. from the body of the car when in the "on" position.

B.8. SKID

B.8.1

Cars with rear wheel drive must be fitted with a tail skid to preclude any possibility of the car turning over.

The skid may be circular, oval or rectangular in cross-section and have a cross-sectional area not less than that of a 2mm (.080") diameter wire for Classes 1 and 11 and not less than that of a 3mm (.120") diameter wire for Class III, IV and V.

The end of the skid must be hardened or have a hard metal tip to reduce wear and minimise possible injuries.

C. RACE EQUIPMENT

This section describes the equipment necessary in order to conduct a race. It was adapted from the AMRCA, FEMA and TRCAA Rule Books with some modification. While many points are mandatory, some are just suggestions and alternative methods may be found to yield satisfactory results.

C1. TRACK SIZE (Refer Appendix 2)

C.1.1

Races must be conducted on a round flat track where the car is retained by a cable attached to a centre post which is secured in the track centre. The following are established track sizes. However, it is recommended that a 19.9 metre diameter track be the standard for all new construction.

- 70.00 foot diameter - 6 laps / 1/4 mile.
- 19.9 metres diameter - 8 laps / 500 metres (preferred size).

C.1.2

The track should have a minimum width of 0.35m. Inside this must be an apron with a recommended minimum width of 1.0m. In the centre of the track must be a horsing area with a recommended minimum diameter of 3m.

C.2. CENTRE POST (Refer Appendix 2)

C.2.1

The centre post must be **solid** steel, securely anchored and have a ball race mounted connector for the cable attachment.

C.2.2

The centre post must be provided with a horser platform, which has a diameter of between 300 and 500 mm.

C.2.3

The vertical distance between the cable connection and the running surface of the track must be 0 mm \pm 5 mm.

C.2.4

The dimension between the centre of the centre post and the centre of the cable connection hole must be 150 mm.

C.3 CABLES

C.3.1

For WMCR races, spring steel wire to DIN 17223 Part 1 Grade D, 1984, or equivalent shall be used. The wire used shall be smooth bare steel without any indication of rust or corrosion markings.

C.3.2

The minimum tensile strength of a straight cable in accordance with DIN 17223, is calculated using the formula:-

$R_m = 2220 - (820 \times \log d)$ Newtons/mm², where the logarithm is to base 10 and d is the minus tolerance diameter of the cable, eg. a 1mm. cable is manufactured to a tolerance of ± 0.015 mm. The cable diameter "d" used in the R_m formulae is 1 minus 0.015 ie. 0.985mm.

C.3.3

The force RF in each cable using the R_m figure and the cross-sectional area of the cable using the minus tolerance diameter is set out in the following table.

Nominal Dia. [mm]	0.9	1.0	1.1	1.2	1.3
Nominal Dia. [Inches]	0.0354	0.0393	0.0433	0.0472	0.0512
Force RF in Newtons	1392.381	1695.770	2025.729	2381.716	2763.238
Nominal Dia [mm]	1.4	1.5	1.6	2.0	2.1
Nominal Dia. [Inches]	0.0551	0.059	0.063	0.079	0.0826
Force RF in Newtons	3169.841	3578.962	4033.292	6068.514	6657.216

C.3.4

For the calculation of the cable changeover speeds the following will apply:-

- (a) A safety factor of 2 must be used on the tensile force figures given in C3.3.
- (b) An allowance for the weight of the tether cable and the weight of the cable termination and cable to car connector must be added to the cars ready to run weight in determining the load on the cable.
 - (i) The allowance to be used for the cable is half the weight of a piece of cable equal to the cars running radius, having a diameter equal to the + tolerance diameter of the cable and having a weight per cubic millimetre as set out in DIN 17223 Part 1 - 1984. eg. A 0.9mm. diam. cable has a manufacturing tolerance of ± 0.015 mm. It's maximum allowable diameter is therefore 0.915mm. The volume of a piece of cable 9.95 metres long (the standard metric track radius) and a diameter of 0.915mm. is 65422.672025 cubic millimetres.

From DIN 17223 - 1984, a 0.9mm. cable weighs 4.99 kg. per 1000 metres, which equates to 0.007843784 gms. per cubic millimetre. Our 9.95 metre cable, with a volume of 6542.672025 cubic millimetres, will therefore weigh 51.31930847 grams. One half this weight is the weight to be used in the calculations ie. 25.65965424 grams.

(ii) The weight to be added for the end termination and cable to car connector is as follows:-

Class I and II - 15 grams

Class III, IV and V - 30 grams

(iii)

Class	Nominal cable Dia mm	Termination weight kg	1/2 Cable weight kg	Car weight kg	Wt "w" for calculations kg
I	0.9	0.015	0.025659654	1.050	1.090659654
	1.0	0.015	0.031623529	1.050	1.096623529
II	1.1	0.015	0.038132588	1.570	1.623132588
	1.2	0.015	0.045289353	1.570	1.630289353
III	1.3	0.030	0.053042698	2.000	2.083042698
	1.4	0.030	0.061392713	2.000	2.091392713
IV	1.5	0.030	0.07100886	2.300	2.40100886
	1.6	0.030	0.080582407	2.300	2.410582407
V	2.0	0.030	0.125352438	3.130	3.285352438
	2.1	0.030	0.137909798	3.130	3.297909798

C.3.5

The recommended changeover speeds are calculated from the formula:-

$$S = \sqrt{\frac{R_f \times r}{2 \times w}} \times 3.6$$

Where S = Speed in kilometres per hour

R_f = Tensile force in Newtons from Table C. 3.3

r = Track radius 9.95 metres

2 = Factor of Safety

w = Calculated weight at the end of the cable Table C. 3.4 b(iii)

C.3.6

Cable speed figures, presently mandatory (March 2001) are printed extra bold in the following table:-

Table amended March 2001.

Class	Cable Diameter in mm	Maximum Speed KMH	Maximum Speed MPH
I	0.9 / 1.0	286 / 315	178 / 196
II	1.1 / 1.2	283 / 306	176 / 190
III	1.3 / 1.4	292 / 312	182 / 195
IV	1.5 / 1.6	310 / 328	192 / 204
V	2.0 / 2.1	345 / 360	214 / 224

C.3.7

The cable ends must be of an accepted design. Terminations shall be in accordance with Appendix 3. Cable lengths shall be as detailed in C.3.10. It should be noted that the drill hole in the brass thimble is shown for the thimble at the car end of the cable.

The brass thimble at the centre pole end of the cable shall be drilled to suit the pin attachment at the individual race tracks. The attachment pin at the centre pole end shall not be less than 5mm. The cable termination at the car end of the cable shall be permanently coloured as follows:-

Class I	WHITE
Class II	GREEN
Class III	YELLOW
Class IV	RED
Class V	BLACK

Every cable should have the date of entry into service stamped or engraved on the brass thimble at the centre pole end of the cable.

The cable and the connector to the bridle of the car belongs to the track and no attempt shall be made to cover, fair or modify these parts.

C.3.8

For 6 lap tracks (1/4 mile), and 8 lap tracks (500 metres), the distance from the centre of the centre pole to the centreline of the car must measure 35 ft., and 9.95 metres respectively.

C.3.9

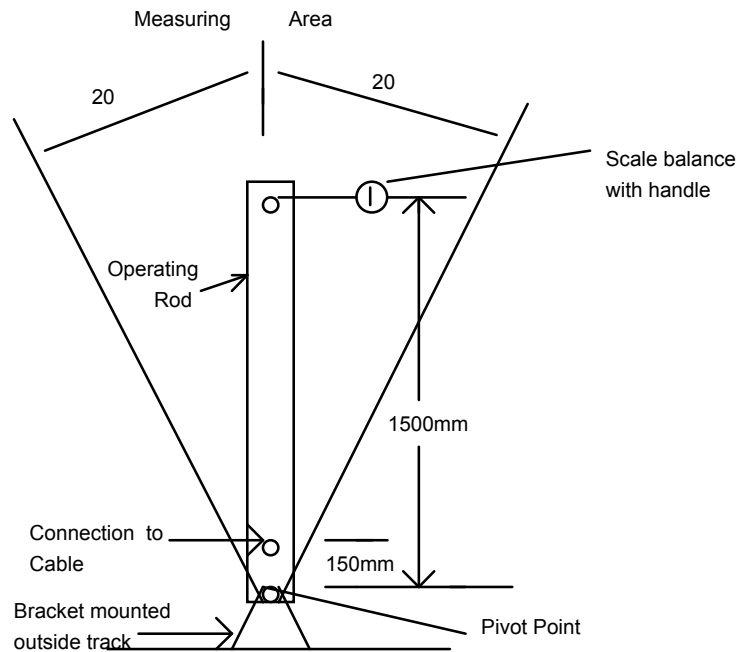
New cables shall be used for World Championships. Cables should be tested when manufactured, in accordance with the test equipment detailed below and in accordance with the loads set out in the table.

Test load = 50% of the minimum breaking force RF set out in Table C.3.3

Table of scale balance readings for test equipment.

Class I	0.9 / 7.1 kg	1.0 / 8.6 kg
Class II	1.1 / 10.3 kg	1.2 / 12.1 kg
Class III	1.3 / 14.1 kg	1.4 / 16.2 kg
Class IV	1.5 / 19.8 kg	1.6 / 20.6 kg
Class V	2.0 / 31.0 kg	2.1 / 33.9 kg

In normal club use it is recommended that cables be changed every 2 years.



The scale balance should have a capacity of 50 kg with dial graduations of 200gms for correct reading.

The balance must be kept at right angles to the rod and the rod must be kept within the measuring area to prevent large errors.

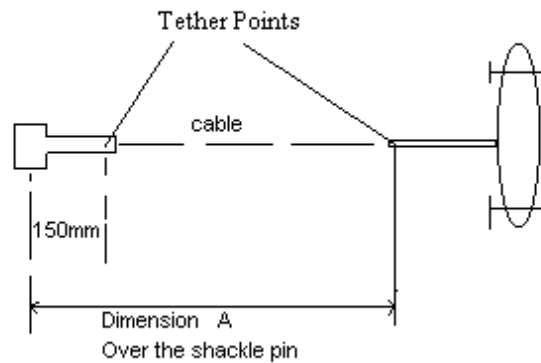
Pull slowly and evenly on the handle taking care not to exceed the test load.

C.3.10

Tether cables shall have the following lengths when subjected to 10% of the scale balance readings.

Dimension 'A'

6 lap 1/4 mile track	34' - 3 1/2" ± 3/8"
8 lap 500 metre track	9735mm ± 10 mm



C.4. SAFETY FEATURES

C.4.1

For the safety of competitors and spectators, the track must have double safety fencing.

Cars flying into a fence after a cable rupture, will distort the fence severely and could be dangerous for competitors and spectators watching the run. Race organisers must ensure that competitors and spectators stay at least 1 metre away from the fence.

C.4.2

A strong safe protective barrier must be provided for the driver to supervise the running of his car. It must provide adequate protection from cars running clockwise or anti-clockwise.

C.4.3

Additional sections of fence must be provided at the driver's position to protect other entrants and helpers.

C 4.4

In the event of some part of a car coming loose or coming off during a timed run, the car shall be stopped immediately and a "no run" recorded.

C.4.5

For shutting off the cars, a clean broom must be provided by the organisers. The broom must have a minimum bristle length of 200mm.

C.4.6

Refer APPENDIX 2, pages 1 and 2, for a recommended layout of a race track.

C.5. TIMING SYSTEM

C.5.1

The timing of WMCR races must be performed with two reliable and independent systems. One of the systems must be electronic and show the laps and be capable of measurement to within 1/1000 seconds.

C.5.2

The second system may be a stop watch capable of measurement to within 1/100 second. Time measured this way can only be for checking and for safety purposes in case the electronic system fails. Speed measured with a stop watch can never be accepted as a record.

C.5.3

The timing systems must both be activated simultaneously as soon as the signal is given by the driver. The timing must not commence until the car has completed 3 laps after horsing.

C.5.4

After the timed run, the driver must have a visual or acoustic signal from the timer advising him to stop the car.

C.5.5

The driver must be notified of the result of his run before he leaves the track and the timing system must not be zeroed until the driver indicates his acceptance and / or vacates the track.

C.5.6

For the records, the measured time in 1/1000 seconds and the speed in kmh / mph to 3 decimal places shall be recorded in the results book.

D. RACE REGULATIONS

D.1

SANCTIONS

D.1.1

Sanctions for international races for the year will be given upon request to the WMCR

Requests should be in the hands of the WMCR by the 31st December of the previous year.

WMCR sanctioned races will be recorded in the WMCR race calendar.

Race dates arriving late will not be recorded in the race calendar.

Normally, only members of clubs in countries affiliated with the WMCR shall be eligible to compete in WMCR sanctioned races.

D.2 ORGANISATION COMMITTEE

For WMCR races, an Organisation Committee shall sponsor the race and be responsible for its operation.

The Organisation Committee shall consist of the following persons:

Race Organiser
Two (2) Timing Persons
A Cable Marshall
A Fuel Marshall
A Jury of three (3) persons

The Race Organiser and Race Marshals shall have the following responsibilities:-

To ensure the WMCR Regulations are followed.
To ensure that all cars comply with the safety regulations.
To resolve any protests and objections.
If necessary, amend the start listing and the sequence of the various classes.
To ensure that one issue of the latest technical rules is available at the track.

D.3 INTERNATIONAL LICENCES

D.3.1

For cars to compete in the WMCR Races, they must have an International Car Licence issued by the ruling body of the country in which the driver is registered. Cars not competing in International Races do not require an International Licence.

D.3.2

The individual Associations of WMCR affiliated countries are responsible for the issuing of valid licences for cars participating in International Races. Licences must be issued before the start of each season.

D.3.3

Licences shall be produced at every WMCR Race and shall be endorsed by the Race Organiser.

D.3.4

Any driver found guilty of violations and/or false entry in the International Licence will automatically be disqualified from that race.

D4. COMPETITOR

D.4.1

Every competitor, called a "driver", must accept the instruction of the Race Organiser and the Race Marshals.

D.4.2

Any driver may start with maximum 2 cars in each class. For the final placings only the fastest car in the corresponding class will be considered.

D.4.3

Drivers with two cars must identify each car positively for starting and timing.

D.4.4

At all WMCR races, the driver must be present and be at trackside during the starting phase.

D.5 NUMBER OF RUNS

In WMCR World Championships, three runs for each class shall be run. In other WMCR sanctioned races the number of runs per class shall be as advertised by the Race Organisers.

D.6 STARTING ORDER**D.6.1**

The Race Organiser decides the starting order of the classes and of the drivers. Drivers with two cars in any given class must be given enough time between the runs for preparation purposes (See D.2).

D.7 START - START TIME**D.7.1**

After being called to start, the driver must be at the track as soon as possible. That means within one minute. As soon as the track is clear, the car must be attached to the cable.

D.7.2

When the car is attached to the cable, the driver has three (3) minutes to start the car. During this time period, it is permitted to stop the car for adjustments and to re-start.

D.7.3

Race Organiser and Race Marshals are authorised to reduce the time period to two minutes after the first round, if required for time saving.

D.7.4

Each driver is permitted a maximum of two helpers for start preparation, one of which is the line master/horser.

D.7.5

At the moment of starting, the car must be complete. The screws for bridle, body, tail skid etc. must be securely tightened.

D.7.6

The signal to start the timing will be given by the driver, or with exception by another person, during the three minute period. The signal can be given after the 3 minute period has elapsed only if the car is running under its own power.

D.7.7

If the car does not run after the three minutes period, the start must be declared void and the car must be removed from the track.

D.7.8

After the signal for the completion of the timed run is given, the driver must shut off the engine within the next 10 laps, otherwise the run will be declared void.

D.8 HORSING

D.8.1

To prevent damage to the cable during start and stop, every driver is responsible for having a line master/horser to support the cable at the centre post.

D.8.2

Within the three minute period the line master/horser can attempt to bring the car into resonance. To prevent damage to the cable, the line master/horser is to watch that the cable is not supported too high.

D.8.3

In the interest of safety, once the line master/horser stands up on the centre platform, no further horsing shall be permitted until the car is stopped. There is no limit to the number of times that the car can be started, horsed and stopped within the three minute period.

D.8.4

The line master/horser is not allowed to decelerate the car with the cable after shut down. The cable must only be supported.

D.8.5

Horsing while on the horser platform is not allowed.

D.8.6

For safety purposes the line master/horser must always have one hand on the centre post when horsing and a glove on the hand holding the cable.

D.8.7

The driver is responsible for his horser to know this regulation and obey it.

D.9 RACE RESULTS

D.9.1

Immediately after each race, a results list must be provided.

D.9.2

Should several have reached the same speed, then in order to resolve the placings, the sum of all runs will be taken. If there is still a tie, then a runoff must take place after the race, but this is only to determine the first three places. The remaining drivers with the same speed are credited with the same position.

D.9.3

After the race the results lists must be sent within 7 days to the WMCR.

D.10 CANCELLATION OF A RACE

D.10.1

The cancellation of a race must be made by the Race Organiser only, according to the Regulations.

D.10.2

If a second or third run cannot be completed, the results from all runs completed and the results of any classes completed in the second or third runs, shall be used to decide the result list.

D.10.3

If a heat of a class for any reason has to be interrupted for more than one hour, then the Race Organiser in conjunction with the Race Marshals decides whether the heat of the class shall be re-run. Records, in the heat of the interrupted class set before the interruption, count for records, but not for the results list.

D.11 PROTESTS

D.11.1

A protest against a run (speed, starting time, shutdown etc.) should be made immediately to the Race Organiser. This may be done verbally and then followed by a written statement about the nature of the protest.

D.11.2

A protest against a car or driver must be made in writing before the end of the race.

D.11.3

If a protest requires the dismantling of a car, a fee of DM50 or it's local equivalent, must be paid by the person making the protest. If the protest is upheld, the money will be returned to the person making the protest. If the protest is not upheld, the money will be given to the driver whose car was protested against.

D.11.4

All protests will be decided upon by the Race Jury according to these Regulations. The Juries decision will be final.

D.12 CABLE AND CABLE CHANGING

D.12.1

For WMCR races, cables as described in Chapter C3 (Cables) must be used. The cable dimensions are to be selected according to the record marks presently valid. The WMCR will keep all countries informed on the stipulated cable dimensions.

D.12.2

If the speed limit for the cable size in a class is exceeded during a WMCR sanctioned event, the cable shall be replaced with a new cable of the same size and the event completed. The WMCR committee shall be notified of the exceeding of the speed limit within 24 hours. The WMCR committee will notify the officials of AMRCA, FEMA and TRCAA as soon as possible of the new cable size for that class.

The new cable size shall be used at the next race date following the receipt of that advice.

D.12.3

In case of damage to the cable, the Race Organiser decides when to change the cable. (see C3.9).

D.13 WORLD RECORDS

D.13.1

For an official record claim, a completed form must be submitted to the WMCR, signed by the Race Organiser, Race Marshals and Timers. (See Appendix 4).

D.13.2

Records will be recognised only if set at a sanctioned race with electric timing system and during an official run. (See C5).

D.13.3

Immediately after a record time, the Race Officials must check whether the car and cable comply with the Regulations and complete a Record Claim Form and forward it to their WMCR Representative.

D.13.4

The processing of the record car has to be undertaken by the Race Committee, together with the driver, with the public excluded.

D.13.5

Records will be recognised by the WMCR, if set on 1/4 mile imperial tracks also, if cable diameters as set out in Chapter C3 are used.

D.13.6

Record tries conducted as a separate event are not permitted. (See D.13.2)

D.14 FUEL

WARNING

[A] Methyl Alcohol is very toxic.

[B] Keep out of reach of children.

[C] Closely supervise and advise newcomers to our hobby on the safe handling and use of the fuel.

D.14.1

For WMCR sanctioned races only standard fuel is to be used.

D.14.2

The components of the fuel must be only -

20% Castor Oil, by volume

80% Methanol, water free quality, by volume

D.14.3

The Race Organiser is to supply the fuel for practice and for the heats.

The Driver may be charged by the Race Organiser for the fuel consumed.

D.14.4

The cars must be refuelled under control of a Fuel Marshal and must be placed from the fuel station into a control area at the track side.

D.14.5

For supervision purposes of the fuel regulation, spot checks of the fuel may be taken from individual drivers and be analysed, on the free decision of the Race Officials.

D.14.6

A driver called to have a fuel check after a run, is to obey the order of the Race Officials.

D.14.7

Disobeying the call on a fuel check is a violation against the fuel regulation, and the driver shall be immediately disqualified from that race and the WMCR Committee shall be notified accordingly.

D.15 CAR WEIGHTS

The Race Organiser shall check the weight of each car directly prior to a run.

For car weight limits, see B3.

D.16 ACCIDENTS AND DAMAGES TO THE CABLE

D.16.1

Accidents during sanctioned races and their associated practice are to be reported to the Technical Secretary for statistical assessment within 30 days as follows:

1. Description of the accident and the cause if known.
2. Description of the damage, if any, to the safety devices of the track.

D.16.2

All this data will be used only for statistical purposes to determine any trends developing that may lower our safety standards.

E. WORLD CHAMPIONSHIP.

E.1.1

The World Championship shall be organised every three years and include the individual Championships in Classes I, II, III, IV and V.

E.1.2

The World Championship shall rotate around the various Continents as follows:-
U.S.A - Europe - Europe - Australia - U.S.A. etc.

The Association representing the Continent concerned, shall advise the place and the date of the next World Championship within 12 months of the completion of a World Championship.

E.1.3

Before the running of a World Championship, a minimum of one International Race Meeting must have been held at the selected venue.

E.1.4

Each member country of the WMCR is entitled to enter a total of 20 cars. These cars may be in any of the classes.

E.1.5

All entries for a World Championship must be made through the Member Country's Association and be received by the Race Organiser at least 3 weeks before the Meeting.

E.1.6

Each country must name a Team Captain who alone is the Team Representative to talk to the Race Organiser in cases of disputes.

E.1.7

The race must be run over a time of 3 days with one heat per day.

E.1.8

Awards will be made for the first three places as a minimum in each class.

E.1.9

The National Anthem of the first place winners in each class will be played.

E.1.10

The Organisers of the World Championship must mail an announcement of the race to all member nations, a minimum of 20 weeks in advance of the race.

This announcement must contain the following information as a minimum:-

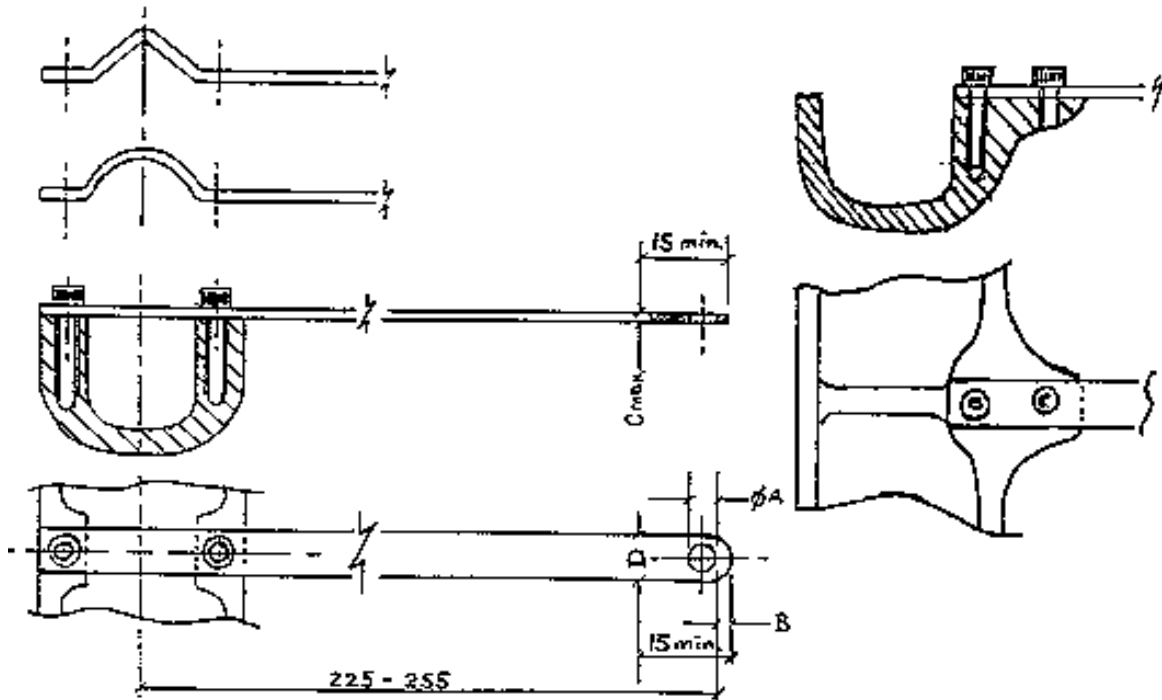
1. The exact location of the track.
2. Official practice times.
3. Registration times (car and licence inspection).
4. Starting time of each heat.
5. Place and time for the WMCR Meeting.
6. Place, time and cost of the Banquet.
7. Arrangements for food at the track site.
8. A selection of accommodation and costs.
9. Any official formalities required such as Visas.
10. Name of the Race Officials and the Host Club.
11. Name and Postal Address of the Official to receive entry forms and further enquires.
12. Advice on additional rules concerning the local track that may be in force, such as quiet times.
13. Entry Forms.

F.1 AMENDMENTS**F 1.1 LIMITATIONS**

With the exception of cable sizes and urgent safety related items, these Technical Regulations shall not be amended in whole or in part, repealed or altered, except upon written presentation of the proposed revisions and a vote of the three [3] WMCR Directors at their tri-annual business meeting which will be held during the period of the world championship event. A majority of the Directors in good standing shall be required to effect any amendments to these Technical Regulations.

APPENDIX I

Examples of Bridle Construction



Dimensions of Bridles in mm. Table Amended May 2001

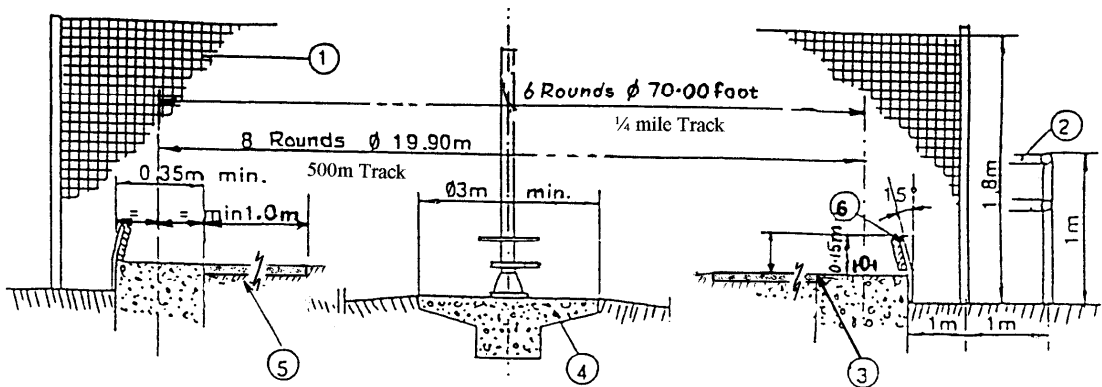
Class	A	B		C		D	min 2 screws - min. quality 8.8	
		min.	max.	min.	max.		metric	imperial
1	4.5	2.5	4.0	2.0	3.5	8.5	M3	5 x 40
11	4.5	2.5	4.0	2.0	3.5	9.5	M4	8 x 32
111	5.5	3.0	4.0	3.0	4.5	11.5	M4	8 x 32
IV	5.5	3.0	4.0	3.0	4.5	11.5	M4	8 x 32
V	5.5	3.5	4.5	4.0	4.5	12.5	M5	10 x 32

N.B. The above table shall apply for cars constructed after 1998. It should be noted that the C and D dimensions are for a rectangular cross section. Should the car builder want to make the bridle into an aerofoil shape then the width D should be increased so that the C/D rectangle cross section is maintained, especially at the bridle connecting hole.

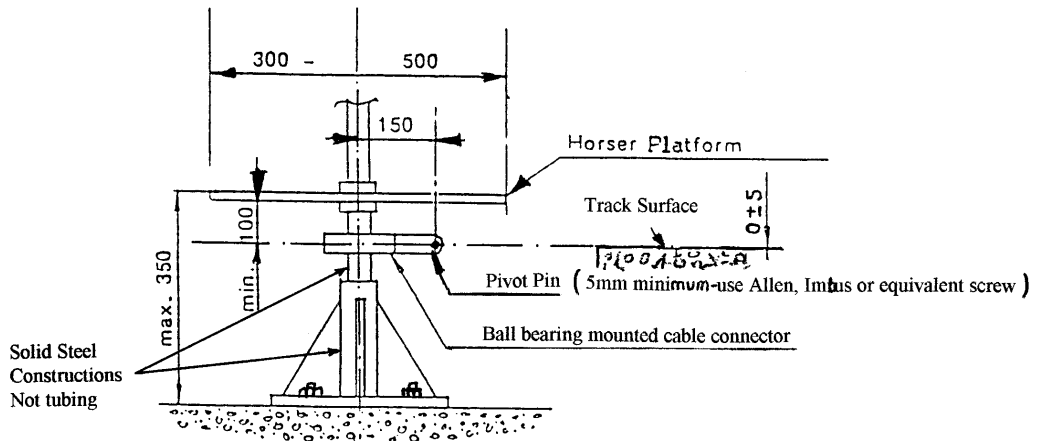
APPENDIX 2
Track Dimensions

The 500 metre, 8 revolutions track is the preferred track size for new construction.

1. Fence
2. Spectator barricade
3. Transition without edges
4. Personal Horsing area
5. Car Horsing area
6. Wooden Crash Fence

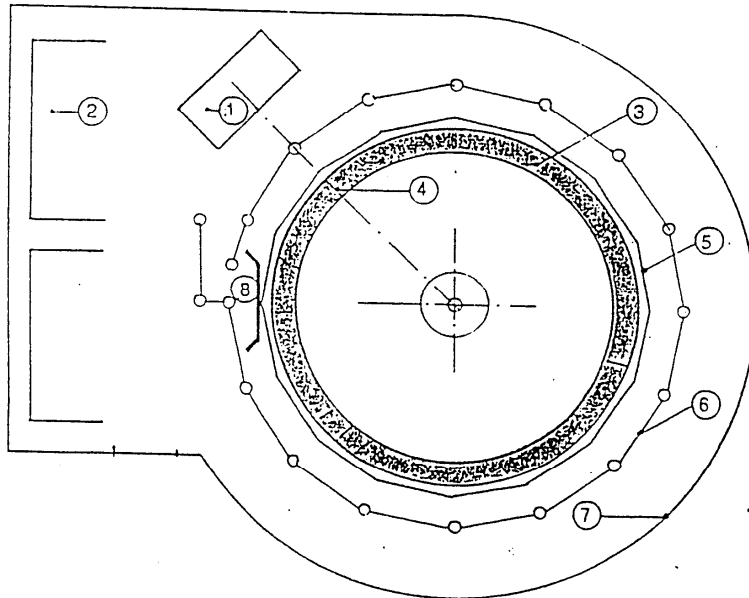


Centre Pole Dimensions

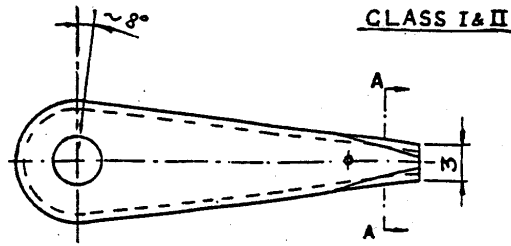


APPENDIX 2

1. Timing
2. Participants area
3. Track
4. Timing mark
5. Safety fence
6. Safety fence
7. Spectator area
8. Drivers



**APPENDIX 3
CABLE TERMINATIONS**

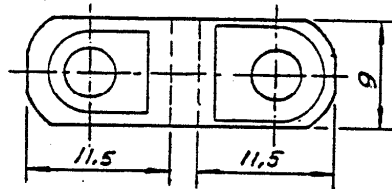
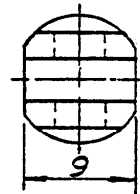
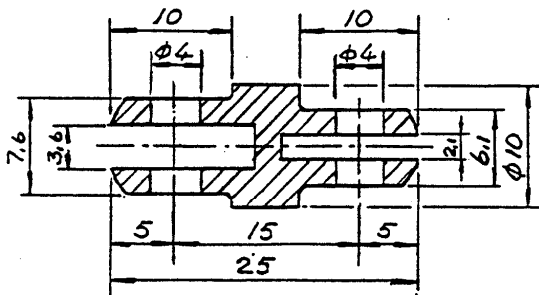
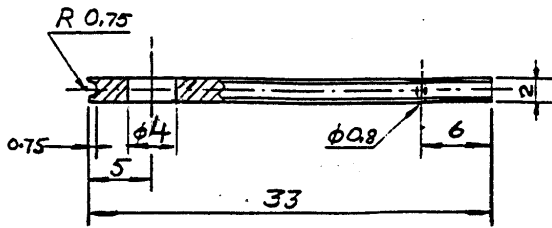


CLASS I & II

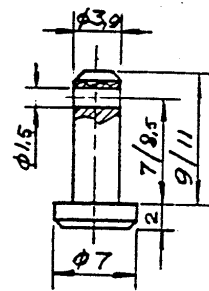


A-A

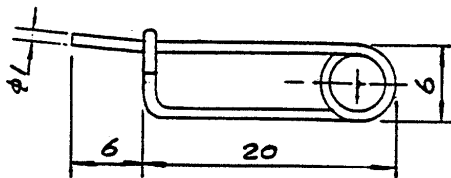
Thimble
Mat Brass



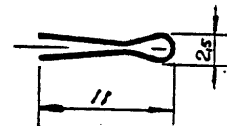
Shackle
Mat Steel 8.8 Grade



Pin
Mat Steel 12.9 Grade



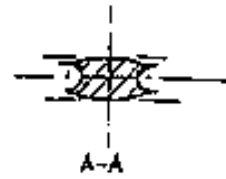
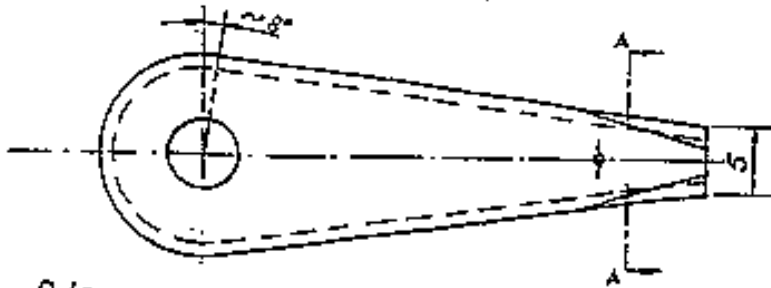
Safety Clip
Mat Piano Wire



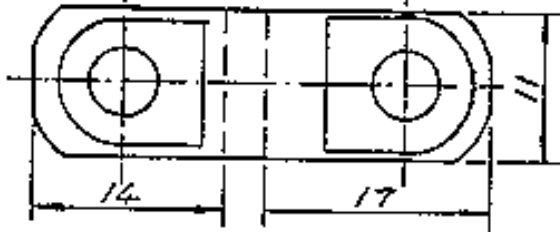
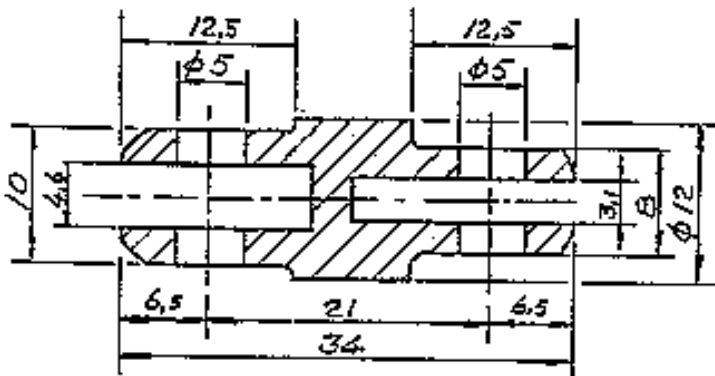
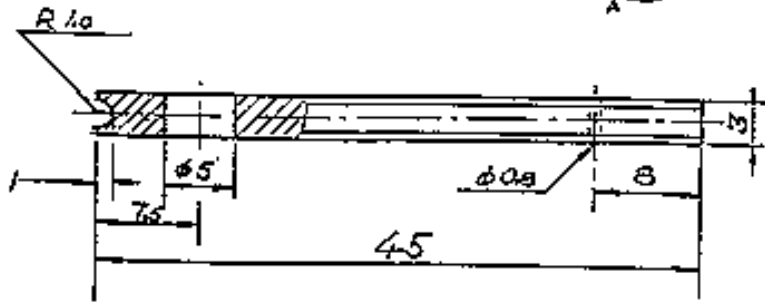
Cotter Pin

APPENDIX 3
CABLE TERMINATIONS

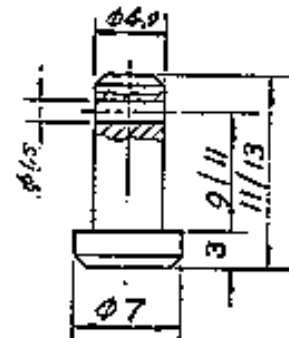
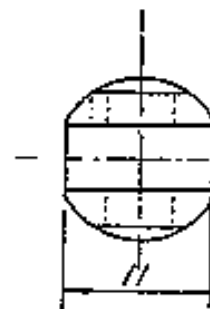
Classes III, IV & V



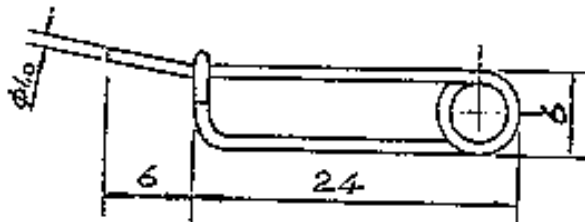
Thimble
Mat Brass



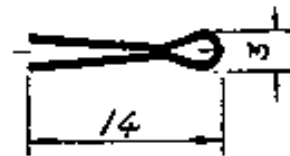
Shackle
Mat Steel 8.8 Grade



Pin
Mat Steel 12.9 Grade

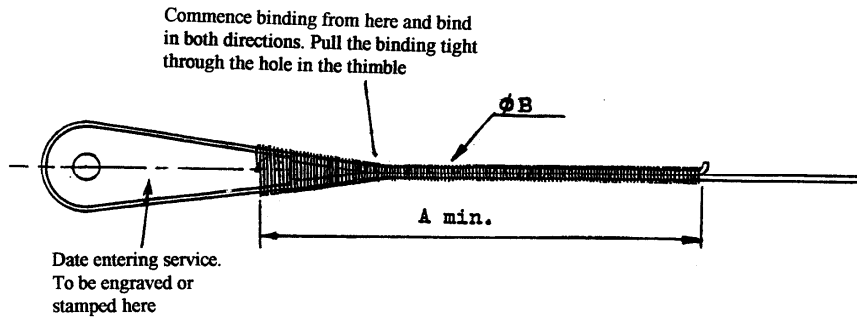


Safety Clip
Mat Piano Wire



Cotter Pin

**APPENDIX 3
CABLE TERMINATION**



A = Min. Length B = Dia. Copper or Brass Binding Wire

Class	Metric mm		Imperial Inches	
	A	B	A	B
1	40	0.4	1.625	0.016
11	60	0.4	2.375	0.016
111	80	0.5	3.1875	0.020
1V	100	0.5	4.00	0.020

SOLDERING PROCEDURE FOR ALL CABLES

1. Clean end of wire with fine emery.
2. Immerse end of wire 300 mm. in solder.
3. Bend wire around a dowel.
4. Straighten wire ends and wire.
5. Put thimble in the eye.
6. Starting at the bend in the steel cable, wrap cable with locking wire carefully turn by turn in both directions.
7. Cut off excessive wire.
8. Solder by immerse process.
9. Clean with soapy solution and neutralise.
10. Prime eye and paint with corresponding lacquer.
11. Spray cable with slushing oil.
12. Test cable with test equipment (see C.3.9).
Soldering solution acid free. Solder 40/60. Melt solder in tube \varnothing 25mm \times 350mm long. Fill soldering solution into second tube, \varnothing 25mm \times 350mm long.

THE CABLES ARE VERY SENSITIVE TO TEMPERATURE

Point 2. Immerse, alternating in soldering solution and solder, then clean with a cloth.
Point 8. Immerse the loop, alternating into the soldering solution and the solder until the loop is completely tinned. Allow to cool.

APPENDIX 4

WMCR

WORLD RECORD CLAIM

Section A

Class and Speed Details

Class	1	11	111	1V
Time in Seconds [1/1000]				
Kilometres / Miles Per Hour [1/1000]				
Date of Record Run				
Track Location				
Cable Diameter				

Section B

Driver ID

Name _____

Home Address _____

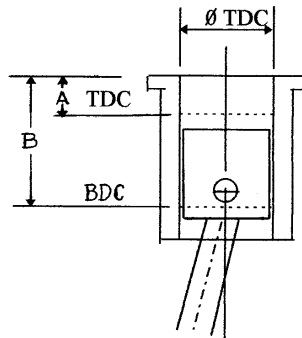
Club _____

Section C

Car ID

Car No _____

Car Chassis No [where applicable] _____



Measurement of Capacity

\varnothing TDC cm (1/100) =

A cm (1/100) =

B cm (1/100) =

$$\text{Capacity} = \frac{\varnothing \text{TDC}^2 \times 3.14159 \times (B-A)}{4}$$

$$\left(\quad \right)^2 \times 3.14159 \times \quad = \quad \text{ccm.}$$

Section D

Approval

Measurer _____

Timekeeper _____

Head of Race Committee _____

Driver _____