OFFICIAL

AMERICAN MINIATURE RACING CAR ASSOCIATION

CONSTITUTION
AND
COMPETITION RULES
...
2021

CHAPTER TWO - CAR CLASSIFICATIONS

1. GENERAL DESCRIPTION OF CARS

a. A model racing car is defined as a vehicle having four wheels and powered by an internal combustion engine of conventional piston type or one or more electric motors.

b. The power transmission must be direct or through a gear box to one or more road wheels. Electric Ducted Fan powered cars are acceptable.

c. The contact points of the wheels with the track surface must be in the form of a rectangle or a trapezium when viewed from above.

d. Wheels on the same axle, i.e., front or rear, must have the same nominal diameter.

e. Principal and highly stressed parts of the car, such as chassis, bridle, motor and wheel assemblies, axles etc., must be so designed that they are capable of accepting the loads imposed during running with an adequate factor of safety.

f. Electric powered cars may use electronically automated or 2.4 GHz Radio Control throttle management. .All cars will still require a manually operated switch for emergency shutoff.

2. BODYWORK

a. 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, (max. 12 mm protrusion) pipe including fixing bracket, shut off lever, vent pipes to tank, needle valve, bridle, tail skid and wheels.

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

3. PAN-HANDLE

a. Every car must have a pan-handle (bridle) for attachment to the cable; this must be made from a material with a minimum tensile strength of 500 N/mm2.

b. The pan-handle must be 9 inches in length as measured from the cable hook-up to car centerline. Cars competing in WMCR Classes may run the approved WMCR Pan-handle Measurement.

c. Additional connectors between the pan-handle/cable connector and center arm/cable are not allowable.

4. SHUTOFF

Every car must have a shutoff device that must be capable of reliable operation every time.

5. TAIL SKID

Cars with rear wheel drive must be fitted with a tail skid to preclude any possibility of the car turning over. The tail skid should not damage the track surface.

6. RACING DIVISIONS

There shall be established two racing divisions.

A. AMRCA DIVISION

The designation "AMRCA Division" shall apply to cars conforming to traditional AMRCA competition rules. It does not describe the car's place of manufacture or the nationality of the contestant.

B. WMCR DIVISION

The designation "WMCR Division" shall apply to cars conforming to traditional World Organization for Miniature Car Racing (WMCR) competition rules. It does not describe the car's place of manufacture or the nationality of the contestant.

7. CLASSES

AMRCA Division

I. MANUFACTURED:

Arrow type cars with the pinion gear mounted directly on the crankshaft. No individual gearbox. Engine shall not exceed .61 ci. displacement. No Schnürle porting or ABC piston / liners. No chrome plating of any internal parts. Modifications may be made with hand tools only. Oversized Bar stock venturi allowed. Magnetos allowed. No minimum tread width. 11" Maximum wheelbase. Wheels must be outside the main pan. No wheel fairings or deflectors allowed. Entire diameter of front and rear tires shall be visible from the top and side of the car. Pan-handle allowed. Weight limit 6.9 Lbs.

II. MANUFACTURED MODIFIED:

A: OPEN

Arrow type cars with the pinion gear mounted directly on the crankshaft. No individual gearbox. Engine shall not exceed .61 ci. displacement. Any engine and modifications, including Schnürle porting or ABC piston / liners allowed. Magnetos allowed. No minimum tread width. 11" Maximum wheelbase. Wheels must be outside the main pan. No wheel fairings or deflectors allowed. Entire diameter of front and rear tires shall be visible from the top and side of the car. Pan-handle allowed. Weight limit 6.9 Lbs.

B: SIDE EXHAUST

Arrow type cars with the pinion gear mounted directly on the crankshaft. No individual gearbox. Engine shall not exceed .61 ci. displacement. No Schnürle porting or ABC piston / liners. Engines may have any modification. Magnetos allowed. No minimum tread width. 11" Maximum wheelbase. Wheels must be outside the main pan. No wheel fairings or deflectors allowed. Entire diameter of front and rear tires shall be visible from the top and side of the car. Pan-handle allowed. Weight limit 6.9 Lbs.

III. CUSTOM:

SAFETY:

Safety inspection (Loose fasteners/parts, sharp tail skid, cracks or binding) of each car at every race is mandatory.

Every new manufactured car presented for competition will be required to submit a certificate/letter of compliance from the foundry verifying pan casting material, and subsequent heat treated (if appropriate for casting material used) state of pan casting. Older cars that have provenance and/or a known history of running in the custom class will not require verification of pan material compliance.

All older cars (no pan casting verification) will be required to follow a one time, two (2) run safety qualifying procedure and re-inspected for safety after each run:

1st run limited to 120 MPH. Car re-inspected

2nd run limited to 150 MPH. Car re-inspected

Cars must successfully pass both qualifying runs without any safety inspection failures to become eligible for competition.

Billet pans (tub type) allowed with verification of material and heat treated state.

No slab (flat plate pan) type cars allowed.

All fasteners for high stress areas should be grade 8 or higher. No stainless fasteners allowed in high stress areas, which include: panhandle, engine mount, gearbox mount and front axle mount.

Panhandle suggested materials are 316 stainless streamlined flying wire or 4130 alloy steel. No lightening holes or milled slots allowed. Panhandles require two (2) 10-32 grade 8 or higher mounting screws.

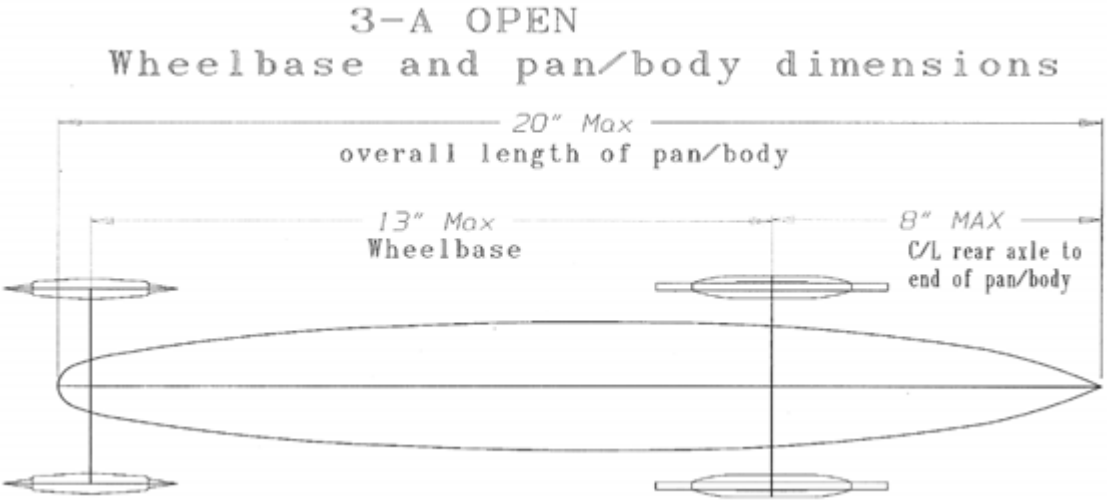
Rear axles must be free of rotating score marks, axle/hub and gears should run true to visual inspection. Suggested rear axle materials are H-13, S-7 Air hardening or Oil hardening Tool steels.

Front axles and components must be properly designed and manufactured. Suggested axle materials are: 316 flying wire. 316 stainless steel, O-1, 4130 steel, tempered spring steel and titanium.

Tail skid material should be 316 stainless or carbon steel streamlined flying wire or music wire. All tail skids to be rigidly mounted with quality graded fasteners.

CLASS III-A: OPEN

Any custom type car, examples as follows: (But not limited to) 1234 Car, Rouse, Fox, Fryco, Ed, Ed Hap, Kuebler, Davis, Flynt, and Tucci Terror. World Class conversions will not be allowed. Any engine combination allowed. Engine shall not exceed .61 ci. No tuned pipes. Constant volume "mini pipe" allowed. Transitional area approximately 1 inch from end of engine exhaust boss allowed. Wheels must be outside the main pan. No wheel fairings or deflectors allowed. Entire diameter of front and rear tires shall be visible from the top and side of the car. Pan-handle allowed. Maximum width 1". No sharp corners (radius) in stepped transition area where pan handle meets the pan. Front suspension allowed. Rigid rear axle (No rear suspension) with conventional type gearbox. Rear axle bearings must be outside (straddle) the ring gear and hub. No radical axle bearing offset. Gearbox such as 1234 with mild offset allowed. Wheelbase 13 inches maximum. No minimum tread width. Overall pan/body length, 20 inches maximum. Length from centerline of rear axle to back of pan/body 8 inches maximum. Weight limit 6.9 Lbs. (3130 gms.)



CLASS 3-B: SIDE EXHAUST

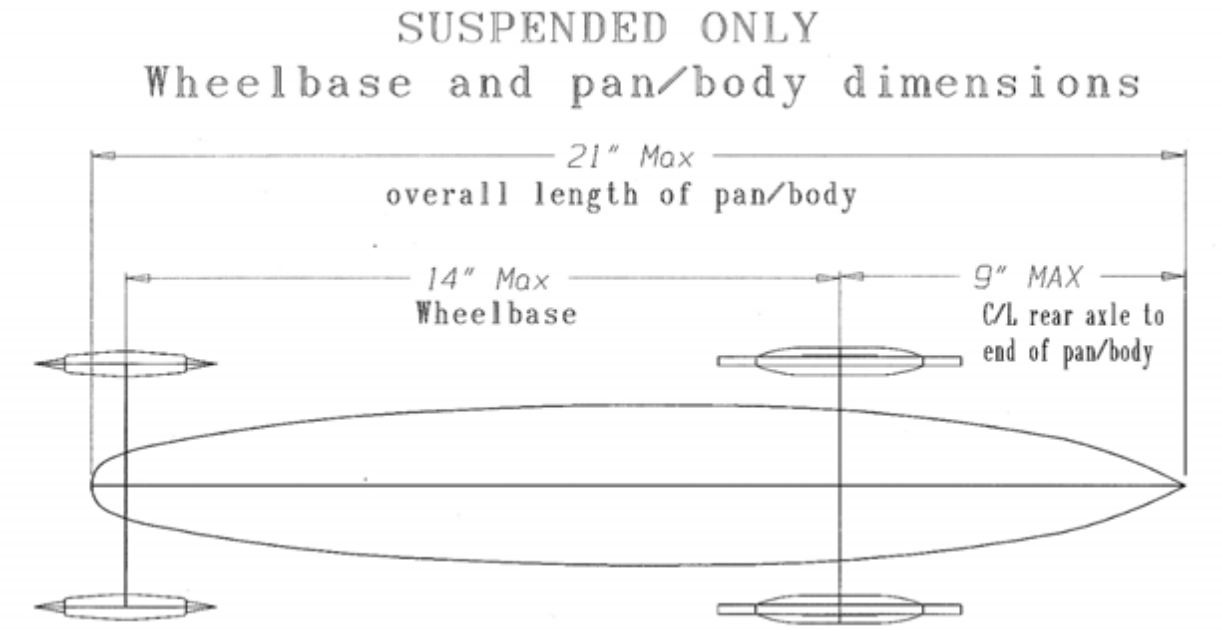
Any custom type car, examples as follows: (But not limited to)
1234 Car, Rouse, Fox, Fryco, Ed, Ed Hap, Kuebler, Davis, Flynt, and Tucci Terror. World Class conversions will not be allowed. Engine limited to Dooling 61, Yellow Jacket, Super Tigre, Rossi Speed, McCoy, Webra or custom. (Side exhaust only) or reproductions manufactured abroad. Engines may have any modification. Engine shall not exceed .61 ci.
Piston must have a baffle tall enough so that when set at bottom dead center no part of the intake port is visible through the exhaust opening. Allowances will be made for erosion to the top of the baffle, So long as the variation in height is due to erosion caused by racing (melted edge). Simulated or intentional modification to stock baffle height is not allowed. The baffle must direct gasses towards the head of the engine.
No Schneurle porting. No modern internal conversions, (ABC sleeve/piston). Magnetos allowed.
12" Maximum wheelbase. No minimum tread width. Wheels must be outside the main pan. No wheel fairings or deflectors allowed. Entire diameter of front and rear tires shall be visible from the top and side of the car. Pan-handle allowed.
Weight limit 6.9 Lbs.

CLASS III-C: SUSPENDED

Any custom type car, examples as follows: (But not limited to) Fryco MK VII, Eagle.
World Class conversions will not be allowed.
Any engine combination allowed. Engine shall not exceed .61 ci. No tuned pipes. Constant volume "mini pipe" allowed. Transitional area approximately 1 inch from end of engine exhaust boss allowed.
Wheels must be outside the main pan. No wheel fairings or deflectors allowed. Entire diameter of front and rear tires shall be visible from the top and side of the car. Pan-handle allowed. Maximum width 1". No sharp corners (radius) in stepped transition area where the pan handle meets the pan. Front and rear suspension allowed.
Suspended conventional type gearbox. Rear axle bearings must be outside (straddle) the ring gear and hub. No bearing offset. Wheelbase 14 inches maximum. No minimum tread width. Overall pan/body length, 21 inches maximum. Length from centerline of rear axle to back of pan/body 9 inches maximum. Weight limit 6.9 Lbs. (3130 gms.)

CLASS III-E: CUSTOM ELECTRIC

Any custom type car that meets the chassis and body specifications for Class III. Any electric motor (s) and ESC (Electronic Speed Control) may be used for propulsion. Any number and type of batteries may be used but total wattage will not exceed 80 WH.
(WH = (mAh/1000) x 3.7 x number of cells.)



IV. MANUFACTURED PROTO - B GRADE:

Strictly stock manufactured cars such as, (but not limited to) McCoy Invader, McCoy Railton, Dooling F or Papina, or modern reproductions of same. Cars shall have been produced and available for sale in quantities of more than 25 units prior to 1960. Any car not listed above must be submitted to the rules committee for approval. Stock type front axles (rubber mounting allowed). No blade type axles. No suspension. Maximum engine displacement .61 ci. Engines must have one transfer port leading gasses into the cylinder although there may be webs in that port. No external modifications to the intake bypass. No Schnürle ports. ABC piston / liner allowed. Piston must have a baffle tall enough so that when set at bottom dead center no part of the intake port is visible through the exhaust opening. Allowances will be made for erosion to the top of the baffle, So long as the variation in height is due to erosion caused by racing (melted edge). Simulated or intentional modification to stock baffle height is not allowed. The baffle must direct gasses towards the head of the engine. Modern technology engine components (Picco, OPS, Rossi, etc.) are not allowed. With the exception of the Dooling 61 the following engines are allowed: McCoy, Hornet, Rossi (original ABC liner allowed), Webra, Super Tigre (G-24) and other engines that resemble the McCoy 60. Any engine not listed above must be submitted to the rules committee for approval. No tuned exhaust systems are allowed including partially tuned mufflers that are available. No minimum tread width. 13" Maximum wheelbase. Wheels must be outside the main pan. No wheel fairings or deflectors allowed. Entire diameter of front and rear tires shall be visible from the top and side of the car. Pan-handle allowed. Weight limit 6.9 Lbs.

V. EXPERIMENTAL:

A: OPEN

Any car with the exception of World Class conversions, any engine combination allowed. Engine shall not exceed .61 ci. Tuned pipes allowed. New cars must provide some form of verification as to the quality of the pan casting. No minimum tread width. 14" Maximum wheelbase. Wheels must be outside the main pan. No wheel fairings or deflectors allowed. Entire diameter of front and rear tires shall be visible from the top and side of the car Pan-handle allowed. Weight limit 6.9 Lbs.

B: UNLIMITED (Formerly Piped Streamliner)

Any car (World Class conversions allowed), any engine combination allowed. Engine shall not exceed .61 ci. Tuned pipes allowed. New cars must provide some form of verification as to the quality of the pan casting. No minimum tread width. 18" Maximum wheelbase. Wheels must be outside the main pan. No wheel fairings or deflectors allowed. Entire diameter of front and rear tires shall be visible from the top and side of the car. Pan-handle allowed.
Weight limit 6.9 Lbs.

C: UNLIMITED UNPIPED (Formerly Custom unlimited)

Any car (World Class conversions allowed), any engine combination allowed. Engine shall not exceed .61 ci. No tuned pipes. Constant volume "mini pipe" allowed. Transitional area approximately 1 inch from end of engine exhaust boss allowed. New cars must provide some form of verification as to the quality of the pan casting. No minimum tread width. 18" Maximum wheelbase. Wheels must be outside the main pan. No wheel fairings or deflectors allowed. Entire diameter of front and rear tires shall be visible from the top and side of the car. Pan-handle allowed. Weight limit 6.9 Lbs.

VI. MITES MODIFIED:

Cars with unlimited modified engines. Modern engines allowed. No tuned pipes. Mini pipes allowed. No minimum tread width.
12" Maximum wheelbase. Wheels must be outside the main pan. Suspension allowed. Cars designed to run with a 6 inch pan-handle centerline length will be allowed to run with a 3 inch extension providing it is inspected and deemed safe. Gears may be bevel or spur. No wheel fairings or deflectors allowed. Entire diameter of front and rear tires shall be visible from the top and side of the car. Pan-handle allowed. Mites will be run as 4 sub classes:

Engine displacement: Weight limit:

A: Up to .12 ci. 4 Lbs.
B: .13 to .15 ci. 4 Lbs.
C: .16 to .21 ci. 4.5 Lbs.
D: .22 to .29 ci. 5 Lbs.

VI-E MITES ELECTRIC:

Any Mite car that meets the chassis and body specifications for Class VI.. Any electric motor(s) and ESC (Electronic Speed Control) may be used for propulsion. Any number and type of batteries may be used but total wattage will not exceed 40 WH.
(WH = (mAh/1000) x 3.7 x number of cells.)

VII. MITES STOCK:

Cars with vintage type engines (Dooling, McCoy etc.). No modern internal components (ABC sleeves/pistons). Engines may be modified with hand tools. Modern engines not allowed. No pipes. No minimum tread width. 12" Maximum wheelbase. Wheels must be outside the main pan. Suspension allowed. Cars designed to run with a 6 inch pan-handle centerline length will be allowed to run with a 3 inch extension providing it is inspected and deemed safe. Gears may be bevel or spur. No wheel fairings or deflectors allowed. Entire diameter of front and rear tires shall be visible from the top and side of the car. Pan-handle allowed. Mites will be run as 4 sub classes:
Engine displacement: Weight limit:

A: Up to .09 ci. 4 Lbs.
B: .10 to .15 ci. 4 Lbs.
C: .16 to .19 ci. 4.5 Lbs.
D: .20 to .29 ci. 5 Lbs.

VIII. SPUR GEAR:

Cars driven through a set of spur gears between the engine and axle (front or rear.) Gears must be inside the car. Any non-Schnürle engine (rear intake) up to .61 ci. displacement is allowed. No tuned pipes. Exhaust stacks to remove hot gasses out of the vehicle are permitted. Cars may be front or rear drive. Teardrop, Hot rod through Indianapolis roadster replicas are acceptable. No minimum tread width. 12" Maximum wheelbase. No wheel fairings or deflectors allowed. Entire diameter of front and rear tires shall be visible from the top and side of the car Pan-handle allowed. Weight limit 6.9 Lbs.

IX. MODERN NOSTALGIA:

A: .46 ci.
B: .60 ci.

The cars should resemble vintage full sized race cars prior to the 1960s. This would include (but not be limited to) land speed, hot rod, midget/sprint/Indy and grand prix types. Freak designs may be deemed un-safe and not allowed. Builders of new cars should meet the intent and spirit of the Modern Nostalgia Class. Gears may be bevel or spur. Wheels must be outside the main pan with the exception of land speed type cars. With the exception of land speed type cars, the entire diameter of the front and rear tires shall be visible from the top and side views of the car. No wheel fairings or deflectors are allowed. Any cars with enclosed wheels shall have a width wider than 4.5". **Pan type cars generally of custom or prototype (Approx. 3" or less at engine bay less pan handle lug) will not be allowed.** Pan Handles are

allowed. Maximum wheel base is 13 inches. Maximum weight of a car shall not exceed 6.9 pounds ready to run. Engines shall have a maximum displacement as stated for their sub-class. All engines must be of the front intake rotary valve type (air intake through the crankshaft), Schnürle porting allowed. Exhaust extensions to remove gasses from the body allowed. No exhaust extensions, headers, tuned pipes or partially tuned mufflers designed to enhance performance shall be allowed. All cars must pass a safety inspection before being allowed on the track.

IX-E MODERN NOSTALGIA ELECTRIC:

A-E: 60 WH
B-E: 80 WH

Any Modern Nostalgia car that meets the chassis and body specifications for Class IX. Any electric motor (s) and ESC (Electronic Speed Control) may be used for propulsion. Any number and type of batteries may be used that do not exceed the maximum Watt Hour rating for the class.
(WH = (mAh/1000) x 3.7 x number of cells.)

X. FRONT INTAKE OPEN (Custom or Proto):

A: .46 ci.
B: .60 ci.

Any car with the exception of world class conversions allowed. Gears may be bevel or spur. Pan Handles are allowed. Wheels must be outside the main pan. The entire diameter of the front and rear tires shall be visible from the top and side views of the car. No wheel fairings or deflectors are allowed. Maximum wheel base is 13 inches. Maximum weight of a car shall not exceed 6.9 pounds ready to run. Engines shall have a maximum displacement as stated for their sub-class. All engines must be of the front intake rotary valve type (air intake through the crankshaft), Schnürle porting allowed. Exhaust extensions (Mini pipe) of a constant diameter are allowed. No tuned pipes or partially tuned mufflers designed to enhance performance shall be allowed. All cars must pass a safety inspection before being allowed on the track. All cars must show some form of verification as to pan casting alloy and heat treatment.

CLASS XI OPEN ELECTRIC

All parameters of existing tether car requirements including General (with the exception of cars being limited to internal combustion engines), Stability, Body, Bridle, Shutoff, and Skid, apply. Wheels may be open or enclosed. Cars powered with Electric Ducted Fans (EDF) are included.
Cars will be classified E-1 through E-3, with E-3 being the heaviest and most powerful cars. There are no restrictions on the equipment concerning the motor, motor controller, battery size, type, number of cells, or car design that may be used in each class, providing the car meets the watt-hour limitations as specified in the class requirements (see below), conforms to the weight requirements, and passes the required safety inspection.

The classes are determined by limiting the total amount of energy available to the motor from the onboard batteries as measured in watt-hours (amp hour rating of the battery times the battery packs' total voltage, or Ah x V as rated by the battery manufacturer). All classes MUST use commercially manufactured and labeled battery packs. The limitations would be as follows:
E-3 Maximum allowable watt-hours of motor battery power = 61 - 80 WH
E-2 Maximum allowable watt-hours of motor battery power = 41 - 60 WH
E-1 Maximum allowable watt-hours of motor battery power = up to 40 WH
Each class is allowed a maximum total weight to comply with established safety standards regarding the class cable size. Maximum weight limits are as follows:
E-3 Maximum allowable weight = 3.130 kg. (6 lbs. 14.4 oz.)
E-2 Maximum allowable weight = 2.300 kg. (5 lbs. 1.13 oz.)
E-1 Maximum allowable weight = 2.000 kg. (4 lbs. 6.54 oz.)

CABLE SIZES

Based on current safety factor calculations, the proposed initial cable sizes for different classes are listed below. These will be updated as required to maintain safe operation of the cars in each class.
E-3 2.0 mm. (.079 inch) change at 214 mph.
E-2 1.6 mm. (.063 inch) change at 203 mph.
E-1 1.4 mm. (.055 inch) change at 193mph.

WATT-HOUR FORMULA

WH = Milliamp hours (battery rating) divided by 1000 times nominal battery voltage.
WH = (Mah/1000) x 3.7 x number of cells.

B. WMCR DIVISION

The AMRCA adheres to the WMCR Rules and Regulations for World Class Division cars. A portion of the WMCR Rulebook appears as a guide for those interested. Should you wish to compete, you may apply to the AMRCA for a WMCR Rulebook.

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, i.e. 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 WMCR race-classes are mandatory:

Class I Cars with engines up to max. 1.5 cm^3 displacement
Class II Cars with engines of 1.5 to 2.5 cm^3 displacement
Class III Cars with engines of 2.5 to 3.5 cm^3 displacement
Class IV Cars with engines of 3.5 to 5 cm^3 displacement
Class V Cars with engines of 5 to 10 cm^3 displacement

Maximum allowable deviation for all classes: 0.009 cm^3, measuring point = Upper dead center.

B.3. WEIGHTS

A WMCR 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.

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 (WMCR rulebook Appendix 1.)

B.6.2
Additional connectors between bridle and cable connector and cable and center arm are not allowed.

B.6.3
All bridles must have a colored mark at the outer end adjacent to the connector hole, approximately 20 mm in width (paint or tape). The color shall match the color 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 minimize possible injuries.

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 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 Organizer is to supply the fuel for practice and for the heats.
The Driver may be charged by the Race Organizer for the fuel consumed.

D.14.4
The cars must be refueled 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 analyzed, on the free decision of the Race Officials.

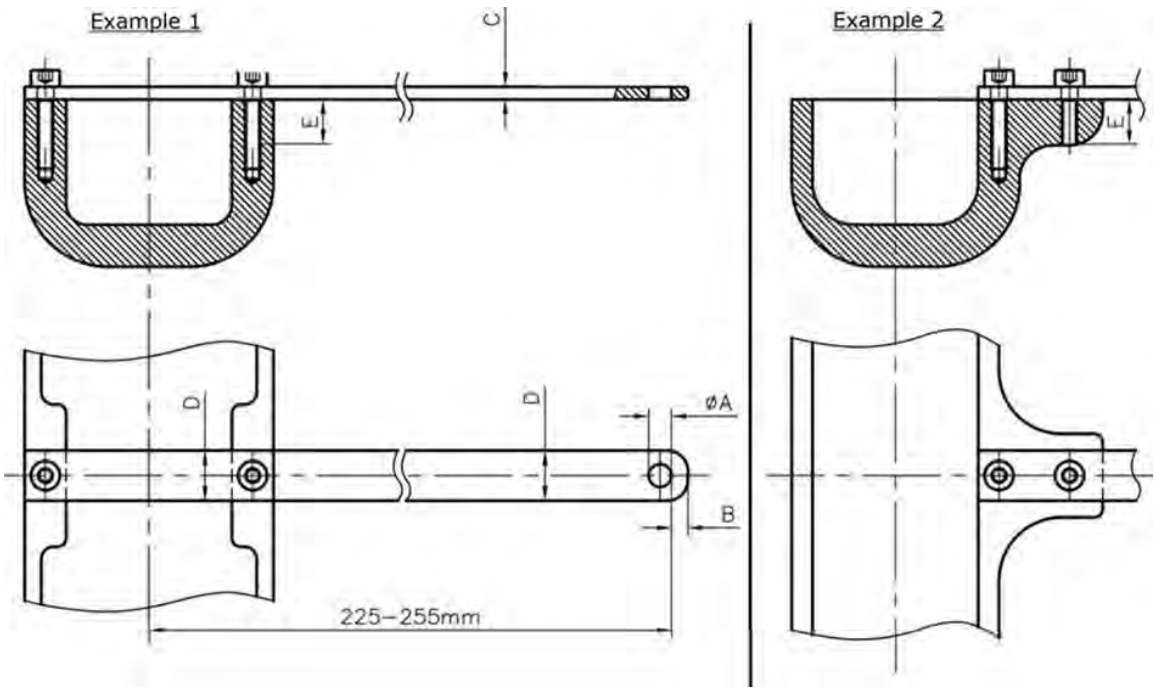
WMCR TECHNICAL INSPECTION

WMCR

Class	A	B min.	B max	C min.	C max.	D min.	E length	2 screws	Imperial	E min.
1	4.5	2.0	4.0	2.0	3.5	8.5	9	M 3	5 x 40	0.110
2	4.5	2.5	4.0	2.0	3.5	9.5	9	M 3	5 x 40	0.110
3	5.5	3.0	4.0	2.5	4.5	11.5	12	M 4	8 x 32	0.151
4	5.5	3.0	4.0	2.5	4.5	11.5	12	M 4	8 x 32	0.151
5	5.5	3.0	4.0	3.0	4.5	12.5	15	M 5	10 x 32	0.182

Screw Quality: 8.8 Tolerance: +/- .1mm (.004 inch) No countersunk screws

Example Illustration: Construction of The Bridle and Fasteners
Table: Dimensions for Bridle Illustration



WMCR TECHNICAL INSPECTION

Panhandle:
Length: mid-model to the outer edge of shackle hole. 225 – 255 mm _____

Dimension: A diameter shackle hole . .2165 inch _____

Dimensions: B bridge width at shackle hole .118 - .158 inch _____

Dimensions: C MIN. thickness over the length: Class 3,4= .118 inch _____

Dimensions: C MIN. thickness over the length: Class 5 = .157 inch _____

Dimensions: C MAX. thickness over the entire length: Class 3,4,5 = 177 inch _____

Dimension: D MIN. width over the length: Class 3,4 = .452 inch ____ 5 =.492 inch_____

Dimension: E MIN. screw length in chassis: Class 3,4 = .472 inch ____
5= .591 inch_____

Dimension: E MIN. screw diameter: Class 1,2=.110 inch ___ Class 3,4 =.151 ____ 5 =182
___

Color marking present _____

Shut-off: In ON position Minimum 20 mm / .787 above the highest point
_____

Car top: All essential parts are covered _____

Skid: Length: min. 150 mm . / 5.9 inch _____

Skid integrated and maximum skid height Yes / No _____

Class 1 = 20mm / Class 2, 3 = 25mm / Class 4 + 5 = 30mm. _____

Skid end Carbide tipped Yes / No _____

Front wheels: Two separate wheels when disassembled Yes / No _____

CHAPTER 3 - AMRCA RACE ORGANIZATION

1. GENERAL

a. Clubs holding a sanctioned race under the auspices of the AMRCA shall obtain a certificate of sanction from the AMRCA secretary. (See Chapter 1, Article VIII for further description of sanctions.)

b. All race meets promoted under AMRCA sanction shall have an official entry blank and this blank shall carry the official release clause. (See Form #4 - Official Entry Blank.)

2. RACE OFFICIALS

a. All sanctioned races shall be conducted under the jurisdiction of a RACE COMMITTEE composed of a REFEREE, a STEWARD, a TIMER-RECORDER, and a LINE-MASTER.

b. The race committee shall be selected by a majority vote of the host club. All members of the committee shall be members of the AMRCA in good standing. All members of the committee shall have a full knowledge of the AMRCA competition rules.

c. The race committee shall arbitrate any dispute at a sanctioned race.

d. A copy of the AMRCA Competition Rules shall be available at all sanctioned meets for ready reference.

e. All members of the committee shall be supplied with the proper forms on which to submit records.

3. DUTIES OF RACE OFFICIALS

a. The REFEREE shall enforce all rules and regulations. He shall arbitrate all disputes. His decisions shall be final. The race committee is to submit a written statement of any incident to the officers of the AMRCA. A committee of not less than two contestants may appeal a ruling of the referee
by furnishing a written statement of the incident to the AMRCA within five (5) days after the racing date. Those appealing the ruling shall sign the statement giving their full names and AMRCA number, and stating that they were in good standing at the time of the appeal.

b. The STEWARD shall be in charge of all racing activity and is responsible only to the race committee. He shall see that each official properly carries out his duties. He shall have authority in all matters pertaining to the running of the race and its management, except in the matter of decisions by the referee. It shall be the duty of the steward to notify the contestants of the racing schedule, and all other matters necessary to expedite the running of the racing program.

c. The TIMER-RECORDER shall keep a record of the starts, runs, times and speeds, and make this information available immediately after each contestant has run. He shall furnish the race committee a complete and detailed record of every run in the race immediately upon completion of the meet. A copy of the speed records in each sanctioned race shall be forwarded to the secretary of the AMRCA within five (5) days after the race date on forms furnished for this purpose by the AMRCA. The records compiled by the timer-recorder shall be counter-signed by the referee.
During the running of a race, the TIMER-RECORDER shall give his undivided attention to the timing of the contestant's car. The time registered on the timing device shall be verified before the device is reset for the next run. The timer-recorder shall not begin timing the car until it has completed at least three (3) laps under its own power.

d. The LINE-MASTER shall attach the cable to the car and lead it on its course until the car has developed sufficient speed to hold the cable taut. He shall inspect the hitch to the bridle or pan-handle cables and track equipment and report any deficiencies to the steward for immediate correction.

e. The referee, steward, and timer-recorder shall not be eligible to compete unless properly relieved of their duties by other members of the race committee, who shall assume the duties of the relieved official only for the time required to run his car.

f. In the case of a dispute over a run in which a race official is competing, he shall not be allowed to vote on the matter.

4. SAFETY

a. It shall be the duty and responsibility of each member of the race committee, and each contestant to exercise the greatest care to insure maximum safety at all times.

b. The race committee shall inspect each car for safety before the car is entered in the first event of the race. If, in the opinion of the committee, the car is considered to be unsafe, it shall be ruled out of competition. The operator may correct deficiencies, and submit the car for re-inspection.

c. A car shall be given a safety inspection by the race committee after any mishap on the track.

CHAPTER FOUR - RACE EQUIPMENT

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

1. TRACK SIZE

a. Races must be conducted on a round flat track where the car is retained by a cable attached to a center post which is secured in the track middle. The following track sizes are established:

70.00 feet diameter - 6 laps / ¼ mile.

19.90 meters diameter - 8 laps / 500 meters.

b. The track must have a minimum width of 14 inches (0.35 meter). Inside this must be an apron with a minimum width of 36 inches (1 meter). In the center of the track must be a horsing area with a minimum diameter of 10 feet (3 meters).

2. CENTER POST

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

b. The center post must be provided with a horser platform which has a diameter of between 12 and 20 inches (300 and 500 mm).

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

3. CABLE

Cables now in use (Jan. 2017) will be utilized for all existing, new and revitalized classes. Rules committee will provide specifications according to safety calculations. (100% safety factor). Classes requiring cable changes will be within the division that the change speed was achieved. No cable changes will be required of other divisions within that class until that division exceeds the safety threshold. Cable extensions for Mite classes will be provided to each club by the AMRCA.

a. A safety factor of 2 must be used when calculating the cable shear strength required.

b. For the calculation of centrifugal force, a factor (one half cable weight) must be added to the total weight of the car.

AMRCA Division	Max. Car Weight (Ready to race)	
Class 1, 2, 3,4,5,8,9,10	3.130 kg.	6lb. 14.41 oz.
Class 6A, 6B, 7A, 7B	1.814 kg.	4lb.
Class 6C, 7C	2.041 kg.	4lb. 8oz.
Class 6D, 7D	2.268 kg.	5lb.

c. For AMRCA races, piano wire to ASTM 228 spec. must be used.

d. For the calculation of cable strength, the minimum figure for tensile strength must be used. With cables of a better quality than formally described and also for 6 lap tracks, there is an increase in safety factor. This must be maintained in order to comply with WMCR procedure, not withstanding the figures quoted in the table.

e. The cable ends must be of an accepted design. The cable ends must be fabricated so as not to damage the cable. Alternative cable ends can only be used with permission from the AMRCA assuming that the cable end has a minimum tensile strength of 80% of the cable itself.

f. The attachments (cable, bridle, center attachment) must be of an accepted design. The attachment pin must have a safety fastener.

g. For 6 lap tracks (1/4 ml.) the total length of the center pole attachment plus the cable and pan-handle must measure 35.0 feet as measured from the center of the car through the center of the center pole. For 8 lap tracks, (500 meters) this distance must be 9.95 meters.

h. Cable diameters and cable safety formulas are to be published at regular intervals in the AMRCA newsletter.

4. SAFETY FEATURES

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

b. A strong enclosure must be provided for the entrant to run his car. It must provide adequate protection from cars running clockwise or counter-clockwise.

c. An additional section of fence must be provided at the driver's position to protect other entrants.

d. For shutting off the cars, a clean broom must be provided by the organizers. This must have a minimum bristle length of 8 inches (20 cm).

Chapter Five - COMPETITION RULES

GENERAL:

These competition rules shall apply to AMRCA Division cars. The AMRCA adheres to the WMCR Rules and Regulations for World Class Division cars. It is strongly recommended, should you wish to compete, that you apply to the AMRCA for a complete set of WMCR Rules and Regulations. Each new car must be inspected by a knowledgeable inspector and passed before being allowed on the track.

All AMRCA classes will be run as speed events. No bracket racing, combining of classes or drag racing will be allowed. The winner in each class is determined by fastest speed achieved.

All members should respect the "true spirit of the rules." Every rulebook will have loopholes. As a matter of integrity, every member should police himself or herself; otherwise, the officials will have no choice but to enforce the rules for you.

1. HEATS

a. At local club races, races other than the AMRCA. Nationals or WMCR World Championships, 1 car entered will constitute a class. No contestant will be forced to compete in a higher class.

b. A race meet shall consist of three (3) or more heats in all classes stipulated in the application for a sanction. The host club shall state in the application for a sanction, and all advertisements of the meet, the classes involved and the distance of the race.

c. "Casual racing" where contestants compete randomly in unstructured heats without regard for line-time shall not be permitted.

2. STARTING AND TIMING THE CAR

a. After being called to start, the contestant must be at the track side within one minute. As soon as the track is clear, the car must be attached to the cable.

b. When the car is attached, the contestant has three minutes to start it. During this three minute period, he is permitted to stop, make adjustments to needle valve, etc. and to re-start.

c. The race committee is empowered to reduce the three minute period to two minutes if required for reasons of time saving.

d. Each contestant is permitted a maximum of two helpers, one of which is the line-master.

e. At the moment of starting, the car must be complete, with all screws, etc. securely tightened.

f. The signal to the timer to start the timing can be from the contestant or by proxy, during the three minute period. The signal can be given after the three minute period only if the car is running under its own power.

g. If the car is not started within the three minute period, the run is declared void and the car must be removed from the track.

h. Timing must be carried out by two discrete and independent systems - one must be electronic and should be capable 1/1000. Other system must be capable of measurement to within 1/100 sec.

i. As soon as it is indicated that the timed laps are completed, the contestant must activate the fuel shut-off within the next ten laps, otherwise the run will be declared void.

j. The distance used for timing purposes is 500 meters or ¼ mile.

k. The timing systems must both be activated simultaneously as soon as the signal is given by the contestant. The timing must not commence until the car has completed at least 3 laps without assistance - i.e. horsing.

l. After the timed run, the contestant must have a visual or acoustic confirmation of his performance from the timer.

m. The timing system must not be zeroed before the contestant actually leaves the track.

n. For the time keeping, a record must be kept in which the measured time, through the timer system, is recorded to within 1/1000 seconds, as well as the corresponding speed in mph with at least three decimal places.

o. A car which suffers a breakage during the timed run, i.e. a broken or lost wheel, loss of body, loss of the tuned pipe, or some similar fault (tire and plug excluded) shall be declared disqualified from the heat.

p. The race committee shall determine the starting order of the cars. Special consideration may be given to a contestant with two cars in the same class or a contestant horsing a class of cars in which he is competing.

q. In the event of a malfunction in the timing system, the contestant will be entitled to a re-run.

r. In the event that a contestant activates the clock, resets the clock to zero and then reactivates it, no time shall be recorded and the run will be declared void.

3. HORSING

a. To reduce the risk of damage to the cable during start and stop, every contestant is responsible for having a line-master to support the cable at the center post.

b. During the three minute period, the line-master can attempt to bring the car into resonance, but care must be exercised not to cause damage, or to lift the cable too high.

c. Horsing while on the center post platform is not allowed.

d. For safety reasons, the line-master must always have one hand on the center post when whipping.

4. DETERMINING THE WINNER

The contestants making the fastest time of any of the three heats in each class shall be declared the winner of that class.

5. RACE RESULTS

All sanctioned race results must be sent to the AMRCA secretary within 5 days of the event.

6. TIES

In the event of a tie, the contestants can determine the winner by the toss of a coin, or the running of a single ¼ mile or 500 meter event. The contestants will draw lots to determine which one will run first if a run-off is decided upon. The results of the settlement of the tie will in no way affect the position of other contestants in higher positions, and is only done to determine which of the tying contestants shall be placed in the lower position.

7. RAIN OR CANCELLATION

a. The decision to cancel a heat or race must be made by the race committee.

b. In the event of rain, one full heat shall constitute a race, and the results shall stand as determined by that heat.

c. If the rain stops a race before all of the contestants have had at least one heat, the meet shall be called off or postponed.

d. In the case of rain or darkness before completion of three heats, the winners shall be decided by the results of the completed heats.

e. If a heat has to be interrupted for more than one hour for any reason, the race committee shall decide whether the whole heat of the affected class shall be re-run. A possible record which was set before the interruption shall stand, but will not count in the race results.

8. CARS TO COMPETE IN THEIR OWN CLASS

a. No car shall be eligible to compete in a class lower than its own rating.

b. Cars may be entered in a higher class at the discretion of the owner, if there are insufficient cars to justify a class for his particular car.

9. RACE TIME

Evening or night racing is permitted as long as all safety standards are maintained. The starting time of the race must be included in the application for sanction in order to allow for proper notification to AMRCA and WMCR members.

10. LIMIT ON ENTRIES

a. Not more than two (2) cars may be entered in any one class by a contestant, and only the faster of the two will be officially credited with the speed attained.

b. A contestant is defined as one individual.

11. TEAM ENTRIES

a. Team entries are permitted, but must adhere to the ruling of not more than two (2) cars per class.

b. When a car has been entered by a team, the same car may not be entered by a member of the team acting as an individual in another heat of the Meet.

12. CAR OWNERSHIP

a. Ownership of a car may not change during a race meet.

b. If the car ownership changes, the car shall not be eligible to participate in the particular meet.

13. CAR IDENTIFICATION

All cars shall be identified by a numeral or a letter in plain view of the officials when the car is in operation on the track.

14. PROXY CARS

a. A contestant's car may be run by proxy providing the officials are notified of the arrangement prior to the start of the race.

b. No car will be permitted to be entered in a race by anyone other than the owner or his official deputy.

c. No car shall be run by proxy if the owner is present, unless he is physically incapable of operating the car.

15. IMPOUNDING

a. Only a car which sets a new record will be impounded, and the engine measured to determine whether it meets specifications.

b. The engine will be dismantled only far enough to allow measurement of the displacement.

c. The engine will be measured in strict privacy and the owner, or his deputy, shall be present. If possible, inspection should be performed by neutral party, so as to not allow a competitor running in the same class to examine the internal geometry of another competitor's engine.

16. PROTESTS

a. If there is any doubt that an engine used to power a car entered in a race is irregular and does not meet specifications, a member may protest and request that the engine be measured. In this case, he will post a bond of ten dollars ($10.00) and the money will be returned if the engine is found to be irregular. If the engine is found to meet all specifications, the money will be forfeited to the owner of the challenged engine to compensate him for the work of dismantling and re-assembling his engine.

b. If it is proved that a contestant has knowingly changed his engine so that it no longer meets specifications, he may be suspended or expelled from the AMRCA at the discretion of the AMRCA officials.

17. CALCULATING ENGINE DISPLACEMENT

a. To calculate the displacement of an engine, square the cylinder radius, multiply the result by 3.1416 and multiply this product by the stroke.
Or, square the cylinder bore and multiply by .7854 and multiply this product by the stroke.
All dimensions are in inches, tolerance 0.0005 inch.

b. For cubic centimeters, follow the same method, but use the constant 0.061024.

c. The maximum deviation from catalog size for any engine shall be 0.009cc. (e.g. Max for 10cc is 10.009 ccm or .6108 cubic inches.)

18. TRACK CLEANING

a. The race committee shall determine when the track is to be cleaned. The track may not be cleaned in the middle of a heat.

b. Anyone able to walk shall participate in cleaning the track.

19. FUEL

General

All AMRCA classes 1 through 10 will allow nitro fuels. Any participant may blend his own fuel or fuels. Any additives with the exception of nitrobenzene and hydrogen peroxide are allowable. No contestant will be forced to use nitro fuel.

a. Each organized area or club may run either unlimited hot fuel, or the official AMRCA cold community fuel, as they wish.

b. AMRCA Official Cold Community Fuel shall consist of the following:
80% Methanol
20% AAA Bond Castor Oil

c. The cold community fuel shall be furnished by the host club, and all contestants will draw their supply from the same container.

d. All cars using community fuel must empty their tanks before fueling up. The race committee must verify this.

e. Local clubs shall provide a fuel dump container for the safe disposal of unused fuels at all practice and sanctioned AMRCA events.

20. WEIGHT LIMITS

A car ready to race, must not exceed the following weight limit:

AMRCA Division	Max. Car Weight	(Ready to race)
Class 1, 2, 3,4,5,8,9,10	3.130 kg.	6lb. 14.41 oz.
Class 6A, 6B, 7A, 7B	1.814 kg.	4lb.
Class 6C, 7C	2.041 kg.	4lb. 8oz.
Class 6D, 7D	2.268 kg.	5lb.
WMCR Division		
All 10 cc cars	3.130 kg.	6 lb. 14.41 oz.
All 5 cc cars	2.300 kg.	5 lb. 01.10 oz.
All 3.5 cc cars	2.000 kg.	4 lb. 06.40 oz.
All 2.5 cc cars	1.570 kg.	3 lb. 07.38 oz.
All 1.5 cc cars	1.050 kg.	2 lb. 05.04 oz.

21. SPEED RECORD CLAIMS

a. Claims for speed records shall be submitted to the secretary of the AMRCA on forms provided for this purpose. The claim shall be made out and signed by the contestant, referee, steward, and timer-recorder. (See Form #5 - Speed Record Claiming Affidavit) A completed record application must be received by the A.M.R.C.A. Secretary postmarked no later than 7 days after the record speed was recorded. After receipt of the record application, all three officers of the A.M.R.C.A. must sign off on the reverse of the form in order for the record's acceptance. Once the signatures of the three officers are received, the A.M.R.C.A. Secretary shall take action to post the new record to the A.M.R.C.A. web site promptly.

b. An award will not be granted unless made by a member of the AMRCA in good standing while participating in a sanctioned race.

c. A record will not be recognized unless made in competition with three (3) or more members of the AMRCA competing in the same event.

d. When a record has been made, the race committee shall impound the car, engine and cable for measurement to determine that they meet specifications.

e. Records will not be recognized unless established on a standard size track.

22. RECORD TRIES

AMRCA Division Record

a. Single cars may try for an AMRCA record as a separate event at any meet, provided that the notice is filed with the officials that such an attempt will be made.

b. It must be determined in advance of the trial whether the attempt will be made with the official 80% Methanol - 20% AAA Bond castor oil fuel, or with the contestant's own fuel mixture.

WMCR Division Record

Tries for USA or World record conducted as a separate event, are not permitted.

23. CABLE CHANGING

a. The AMRCA shall publish in the newsletter, at regular intervals, the correct cable diameter for all classes and the threshold speeds at which cable changing is necessary.

b. For AMRCA Division competition, a larger diameter cable shall be required only after a new record is submitted where the safety threshold speed has been exceeded.

c. For AMRCA Division competition, cable changes will not be made during a race. When necessary, the cables will be changed the day following a one day race or the day following the conclusion of a 3-day national race.

d. All AMRCA local clubs and the WMCR must be notified in writing or by telegram within 24 hours of a cable change to maintain safety.

f. If a cable has to be replaced through damage or breakage, the contestant who has just run does not have to repeat his run.

g. If a cable becomes damaged, the race committee is responsible for its replacement.

24. CABLE CHANGE SPEEDS

Cable Change Speeds, (Wire to ASTM 228 standard). Formula approved AMRCA, published AMRCA Newsletter July, October 1995.

As of Jan. 1, 2017 Cables in use in AMRCA and WMCR Divisions are .035, .047, .055, .059, .063, .071, .079 inch. Mite Class Cars cable changes will be made to the next cable size in this list. For AMRCA Classes 1,2,3,4,5,8,9 and 10 new cables will be manufactured as necessary, (.067 and .075 inch.)

AMRCA Cars weighing 6.9 Lbs. will change cables when these speeds are reached in their individual respective class.

All 6.9 lbs. Classes (1, 2, 3, 4, 5, 8, 9, 10) will start at .055 inch cable or higher.

Cable	Change Speed
.055 “	157 MPH
.059 “	167 MPH
.063 “	177 MPH
.067 “	187 MPH
.071 “	198 MPH
.075 “	208 MPH
.080 “	219 MPH

AMRCA Cars weighing 4.0 Lbs. will change cables when these speeds are reached in their individual respective class.
Class 6A, 6B, 7A, 7B.

Cable	Change Speed
.035 “	137 MPH
.047 “	178 MPH

AMRCA Cars weighing 4.5 Lbs. will change cables when these speeds are reached in their individual respective class.
Class 6C, 7C.

Cable	Change Speed
.035 "	129 MPH
.047 "	168 MPH

AMRCA Cars weighing 5.0 Lbs. will change cables when these speeds are reached in their individual respective class.
Class 6D, 7D.

Cable	Change Speed
.035 "	122 MPH
.047 "	160 MPH

25. AWARDS / TITLES:

3 cars must be entered in a class to be eligible for awards. Cars must pre-register for a National event to be eligible for awards. While foreign members and non member guests may be invited to participate in AMRCA Nationals for AMRCA and WMCR Classes, the National title, rankings and awards shall go to AMRCA - USA members.

CABLES AMRCA DIVISION

3/16/2021

Class	Class	Color	Present Cable	Change Speed / Next Cable
Class 1	(Manufactured)	Yellow	.055 in. (1.4mm)	157 MPH / .059 in.
Class 2 A-B	(Manufactured Modified)	Yellow	.055 in. (1.4mm)	157 MPH / .059 in.
Class 3 A	(Custom Open)	Red	.063 in. (1.6mm)	177 MPH / .067 in.
Class 3 B	(Custom Side Exhaust)	Purple	.059 in. (1.5mm)	167 MPH / .063 in.
Class 3 C	(Custom Fully Suspended)	Red	.063 in. (1.6mm)	177 MPH / .067 in.
Class 3 E	(Custom Electric 80 WH)	Red	.063 in. (1.6mm)	177 MPH / .067 in.
Class 4	(Manufactured Proto B Grade)	Yellow	.055 in. (1.4mm)	157 MPH / .059 in.
Class 5 A	(Experimental Open)	Blue	.067 in. (1.7mm)	187 MPH / .071 in.
Class 5 B	(Experimental Unlimited)	Orange	.071 in. (1.8mm)	198 MPH / .075 in.
Class 5 C	(Experimental Unlimited Unpiped)	Orange	.071 in. (1.8mm)	198 MPH / .075 in.
Class 6 A	(Modified Mite Up to .129 c.i.)	White	.035 in. (.9 mm)	137 MPH / .047 in.
Class 6 B	(Modified Mite .13 to .159 c.i.)	White	.035 in. (.9 mm)	137 MPH / .047 in.
Class 6 C	(Modified Mite .16 to .219 c.i.)	White	.035 in. (.9 mm)	129 MPH / .047 in.
Class 6 D	(Modified Mite .22 to .3056 c.i.)	Green	.047 in. (1.2 mm)	160 MPH / .055 in.
Class 6 E	(Mite Electric 40 WH)	White	.035 in. (.9 mm)	122 MPH / .047 in.
Class 7 A	(Stock Mite Up to .099 c.i.)	White	.035 in. (.9 mm)	137 MPH / .047 in.
Class 7 B	(Stock Mite .10 to .159 c.i.)	White	.035 in. (.9 mm)	137 MPH / .047 in.
Class 7 C	(Stock Mite .16 to .199 c.i.)	White	.035 in. (.9 mm)	129 MPH / .047 in.
Class 7 D	(Stock Mite .20 to .299 c.i.)	White	.035 in. (.9 mm)	122 MPH / .047 in.
Class 8	(Spur gear)	Yellow	.055 in. (1.4mm)	157 MPH / .059 in.
Class 9 A-B	(Modern Nostalgia 46 + 60)	Yellow	.055 in. (1.4mm)	157 MPH / .059 in.
Class 9 A-E	(Modern Nostalgia Electric 60 WH)	Purple	.059 in. (1.5mm)	167 MPH / .063 in.
Class 9 B-E	(Modern Nostalgia Electric 80 WH)	Yellow	.055 in. (1.4mm)	157 MPH / .059 in.
Class 10 A	(Front Intake Custom 46)	Yellow	.055 in. (1.4mm)	157 MPH / .059 in.
Class 10 B	(Front Intake Custom 60)	Purple	.059 in. (1.5mm)	167 MPH / .063 in.
Class 11 E-1	(Custom Electric up to 40 WH)	Yellow	.055 in. (1.4mm)	193 MPH / .059 in.
Class 11 E-2	(Custom Electric 41 to 60 WH)	Red	.063 in. (1.6mm)	203 MPH / .067 in.
Class 11 E-3	(Custom Electric 61 to 80 WH)	Black	.082 in. (2.1mm)	224 MPH / .087 in.

AMRCA Speed Record Claiming Affidavit

Date:_____ **Location:**_____

Contestant:_____ **Address:**_____

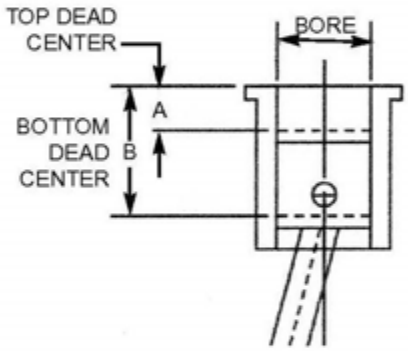
Car/Builder: _____ **Engine**_____

AMRCA Class:_____

Time:_____**Speed (1/1000 MPH):**_____ **Distance:**_____

Cable Diameter:_____ **Bridle Length:**_____**Car Weight (Ready to run):**_____

BORE
Diameter @ top of cylinder = ._ _ _ _ BORE



STROKE
Piston @ bottom dead center = ._ _ _ _ B
Piston @ top dead center = ._ _ _ _ A
B minus A = STROKE ._ _ _ _

DISPLACEMENT
BORE X BORE X STROKE X .7854 = DISPLACEMENT
BORE ._ _ _ _
X BORE ._ _ _ _
=._ _ _ _ X STROKE ._ _ _ _ X .7854 = DISPLACEMENT . __ __ __ _

Maximum Displacement Limits:
Classes 1, 2, 3, 4, 5, 8, 9B, & 10B: 0.6108 Cubic Inches (ci).
Classes 9a & 10A: 0.460 ci
Class 6A: 0.1205 ci, Class 6B: 0.1531 ci, Class 6C: 0.2141 ci, Class 6D: 0.3057 ci.
Class 7A: 0.0920 ci, Class 7B: 0.1531 ci, Class 7C: 0.1999 ci, Class 7D: 0.2999 ci.

We, the Referee, Timer-Recorder, and Steward, were in charge at the model race car meet:
We believe that the times were correctly recorded by the timer-recorder and the car was never out of the sight of the Referee until measured. The battery capacities were verified in the presence of witnesses. The race meet was fairly and accurately carried out under the supervision of the referee and the three minute limit rule was observed.
We, the undersigned, individually and collectively swear to the accuracy of every observation herein contained which came to our personal attention, and we believe the rest to be accurate to the best our knowledge.

Referee:_____ **Contestant:**_____

Steward:_____ **Timer-Recorder**:_____

AMRCA Approval (Initials): Pres._____ **VP:**_____ **Sec.:**_____

FORM #5B W.M.C.R. Division SPEED RECORD CLAIMING AFFIDAVIT -

We, the Referee, Timer-Recorder, and Steward, had charge at the model race car meet:

Date: _____ **Location:** _____

CONTESTANT: _____ **Address:** _____

Model Race Car: _____ **Engine:** _____

WMCR Class: 1.5cc 2.5cc 3.5cc 5cc 10cc

Time: (Seconds 1/1000)_____**Speed: (1/1000 MPH)** _____ **Distance:**_____

Cable Dimension: _____ **Pan-Handle Length:** _____ **Car Weight Ready to run:** _____

Displacement:

Measure Bore: Ø at TDC. (0.0005 inch) = _____

Measure Stroke: Stroke = (B - A)

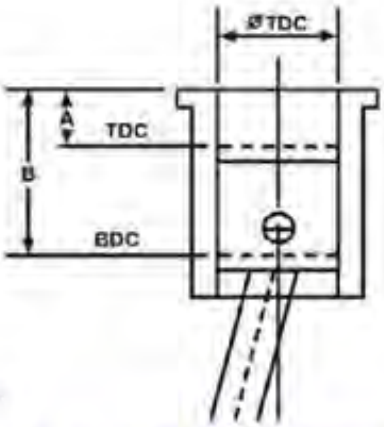
B (0.0005 inch) = _____

A (0.0005 inch) = _____

Stroke = (B - A) = _____

Displacement = (Ø TDC) (Ø TDC) x (0.7854) x (B – A)

Displacement = ( ) x ( ) x (0.7854) x ( ) = _____ c.i.



Maximum displacement deviation is 0.009cc (1.509cc 2.509cc 3.509cc 5.009cc 10.009cc)

Cubic inch conversion factor is .061024 gives Max: (.0921 c.i. .1531 c.i. .2141 c.i. .3057 c.i. .6108 c.i.)

We believe that the times were correctly observed by the timer-recorder, that the car was never out of the secure and safekeeping of the referee until measured, that the engine was measured by the referee in the presence of witnesses. The race meet was fairly and accurately carried out under the supervision of the referee and the three minute rule was observed.

We, the undersigned, individually and collectively swear to the accuracy of every observation herein contained, which came to our best personal attention, and to the rest we swear to it as to the best of our knowledge and belief.

REFEREE _____ **CONTESTANT**_____

STEWARD _____ **TIMER-RECORDER** _____

AMRCA Approval (Initials): Pres. _____ **VP**_____ **Sec.** _____

AMRCA Electric Car Speed Record Claiming Affidavit

Date:_____ **Location:**_____

Contestant:_____ **Address:**_____

Car/Builder: _____ **Motor:**_____

AMRCA Class:_____ **(3E, 6E, 9A-E, 9B-E, 11 E-1, 11 E-2, 11 E-3)**

Time:_____**Speed (1/1000 MPH):**_____ **Distance:**_____

Cable Diameter:_____ **Bridle Length:**_____**Car Weight (Ready to run):**_____

Battery Cells:_____ **Total Voltage:**_____ **Battery mAh**:_____

Total Watt Hours: _____

The classes are determined by the car configuration and limiting the total amount of energy available to the motor from the onboard batteries as measured in Watt-Hours (WH). Watt Hours are determined by multiplying the amp hour rating of the battery times the battery packs' total voltage, or Ah x V as rated by the battery manufacturer. See page 2 for a conversion chart. All classes MUST use commercially manufactured and labeled battery packs. The WH limitations are as follows:

AMRCA Class 3E, **Custom Electric**: 80 WH
AMRCA Class 6E, **Mite Electric**: 40 WH
AMRCA Class 9A-E, **Modern Nostalgia Electric**: 60 WH, **9B-E**: 80 WH
AMRCA Class 11, **Open Electric**, **E-1**: 40 WH, **E-2**: 60 WH, **E-3**: 80 WH

We, the Referee, Timer-Recorder, and Steward, were in charge at the model race car meet:
We believe that the times were correctly recorded by the timer-recorder and the car was never out of the sight of the Referee until measured. The battery capacities were verified in the presence of witnesses. The race meet was fairly and accurately carried out under the supervision of the referee and the three minute limit rule was observed.
We, the undersigned, individually and collectively swear to the accuracy of every observation herein contained which came to our personal attention, and we believe the rest to be accurate to the best our knowledge.

Referee:_____ **Contestant:**_____

Steward:_____ **Timer-Recorder**:_____

AMRCA Approval (Initials): Pres._____ **VP:**_____ **Sec.:**_____

AMRCA Watt Hour (Wh) Table for Electric Tether Cars

mAh/1000) x 3.7V x number of cells = Watt Hours (Wh).

			Watt Hours (Wh) per number of cells									
			No. of Cells	No. of Cells	No. of Cells	No. of Cells	No. of Cells	No. of Cells	No. of Cells	No. of Cells	No. of Cells	No. of Cells
mAh	/1000	X 3.7	1	2	3	4	5	6	7	8	9	10
500	0.5	1.85	1.85	3.70	5.55	7.40	9.25	11.10	12.95	14.80	16.65	18.50
600	0.6	2.22	2.22	4.44	6.66	8.88	11.10	13.32	15.54	17.76	19.98	22.20
700	0.7	2.59	2.59	5.18	7.77	10.36	12.95	15.54	18.13	20.72	23.31	25.90
800	0.8	2.96	2.96	5.92	8.88	11.84	14.80	17.76	20.72	23.68	26.64	29.60
900	0.9	3.33	3.33	6.66	9.99	13.32	16.65	19.98	23.31	26.64	29.97	33.30
1000	1	3.70	3.70	7.40	11.10	14.80	18.50	22.20	25.90	29.60	33.30	37.00
1100	1.1	4.07	4.07	8.14	12.21	16.28	20.35	24.42	28.49	32.56	36.63	40.70
1200	1.2	4.44	4.44	8.88	13.32	17.76	22.20	26.64	31.08	35.52	39.96	44.40
1300	1.3	4.81	4.81	9.62	14.43	19.24	24.05	28.86	33.67	38.48	43.29	48.10
1400	1.4	5.18	5.18	10.36	15.54	20.72	25.90	31.08	36.26	41.44	46.62	51.80
1500	1.5	5.55	5.55	11.10	16.65	22.20	27.75	33.30	38.85	44.40	49.95	55.50
1600	1.6	5.92	5.92	11.84	17.76	23.68	29.60	35.52	41.44	47.36	53.28	59.20
1700	1.7	6.29	6.29	12.58	18.87	25.16	31.45	37.74	44.03	50.32	56.61	62.90
1800	1.8	6.66	6.66	13.32	19.98	26.64	33.30	39.96	46.62	53.28	59.94	66.60
1900	1.9	7.03	7.03	14.06	21.09	28.12	35.15	42.18	49.21	56.24	63.27	70.30
2000	2	7.40	7.40	14.80	22.20	29.60	37.00	44.40	51.80	59.20	66.60	74.00
2100	2.1	7.77	7.77	15.54	23.31	31.08	38.85	46.62	54.39	62.16	69.93	77.70
2200	2.2	8.14	8.14	16.28	24.42	32.56	40.70	48.84	56.98	65.12	73.26	81.40
2300	2.3	8.51	8.51	17.02	25.53	34.04	42.55	51.06	59.57	68.08	76.59	85.10
2400	2.4	8.88	8.88	17.76	26.64	35.52	44.40	53.28	62.16	71.04	79.92	88.80
2500	2.5	9.25	9.25	18.50	27.75	37.00	46.25	55.50	64.75	74.00	83.25	92.50
2600	2.6	9.62	9.62	19.24	28.86	38.48	48.10	57.72	67.34	76.96	86.58	96.20
2700	2.7	9.99	9.99	19.98	29.97	39.96	49.95	59.94	69.93	79.92	89.91	99.90
2800	2.8	10.36	10.36	20.72	31.08	41.44	51.80	62.16	72.52	82.88	93.24	103.60
2900	2.9	10.73	10.73	21.46	32.19	42.92	53.65	64.38	75.11	85.84	96.57	107.30
3000	3	11.10	11.10	22.20	33.30	44.40	55.50	66.60	77.70	88.80	99.90	111.00
3100	3.1	11.47	11.47	22.94	34.41	45.88	57.35	68.82	80.29	91.76	103.23	114.70
3200	3.2	11.84	11.84	23.68	35.52	47.36	59.20	71.04	82.88	94.72	106.56	118.40
3300	3.3	12.21	12.21	24.42	36.63	48.84	61.05	73.26	85.47	97.68	109.89	122.10
3400	3.4	12.58	12.58	25.16	37.74	50.32	62.90	75.48	88.06	100.64	113.22	125.80
3500	3.5	12.95	12.95	25.90	38.85	51.80	64.75	77.70	90.65	103.60	116.55	129.50
3600	3.6	13.32	13.32	26.64	39.96	53.28	66.60	79.92	93.24	106.56	119.88	133.20
3700	3.7	13.69	13.69	27.38	41.07	54.76	68.45	82.14	95.83	109.52	123.21	136.90
3800	3.8	14.06	14.06	28.12	42.18	56.24	70.30	84.36	98.42	112.48	126.54	140.60
3900	3.9	14.43	14.43	28.86	43.29	57.72	72.15	86.58	101.01	115.44	129.87	144.30
4000	4	14.80	14.80	29.60	44.40	59.20	74.00	88.80	103.60	118.40	133.20	148.00
4100	4.1	15.17	15.17	30.34	45.51	60.68	75.85	91.02	106.19	121.36	136.53	151.70
4200	4.2	15.54	15.54	31.08	46.62	62.16	77.70	93.24	108.78	124.32	139.86	155.40
4300	4.3	15.91	15.91	31.82	47.73	63.64	79.55	95.46	111.37	127.28	143.19	159.10
4400	4.4	16.28	16.28	32.56	48.84	65.12	81.40	97.68	113.96	130.24	146.52	162.80
4500	4.5	16.65	16.65	33.30	49.95	66.60	83.25	99.90	116.55	133.20	149.85	166.50
4600	4.6	17.02	17.02	34.04	51.06	68.08	85.10	102.12	119.14	136.16	153.18	170.20
4700	4.7	17.39	17.39	34.78	52.17	69.56	86.95	104.34	121.73	139.12	156.51	173.90
4800	4.8	17.76	17.76	35.52	53.28	71.04	88.80	106.56	124.32	142.08	159.84	177.60
4900	4.9	18.13	18.13	36.26	54.39	72.52	90.65	108.78	126.91	145.04	163.17	181.30
5000	5	18.50	18.50	37.00	55.50	74.00	92.50	111.00	129.50	148.00	166.50	185.00

	40 Wh Maximum by cell count to mAh	For example: 3600 mAh 3 Cell Battery, or 2700 mAh 4 Cell Battery, etc.
	60 Wh Maximum by cell count to mAh	For example: 4000 mAh 4 Cell Battery, or 3200 mAh 5 Cell Battery, etc.
	80 Wh Maximum by cell count to mAh	For example: 4300 mAh 5 Cell Battery, or 3600 mAh 6 Cell Battery, etc.

FORM #2 AMRCA APPLICATION FOR CLUB REGISTRATION

(To be completed and mailed to the AMRCA Secretary by December 1st for races to be held during the following year.)

We hereby apply for registration or registration renewal with the American Miniature Racing Car Association and enclose the necessary fee of one dollar ($1.00) for the year____.

We agree to conform to the rules and regulations of the AMRCA, to support its efforts to promote clean competition and to protect their interests. We, in turn, are to receive the support of the AMRCA's members in the promotion and conducting of our club activities.

Club Name _____

Meeting Date _____

Track Location _____

CLUB PRESIDENT_____**AMRCA#**_____

ADDRESS _____**CITY/STATE**_____

CLUB SECRETARY_____**AMRCA#** _____

ADDRESS_____**CITY/STATE**_____

REFEREE_____**AMRCA#**_____

ADDRESS_____**CITY/STATE**_____

Who may be contacted for use of track by out-of-town members?

NAME_____

ADDRESS_____

PHONE_____

SIGNATURE OF LOCAL CLUB SECRETARY_____DATE_____

FORM #3 APPLICATION FOR RACE SANCTION

(To be completed and mailed to the AMRCA Secretary by December 1st for races to be held during the following year.)

The undersigned makes application for sanction of a race as follows:

( ) "AMRCA" DIVISION

( ) "WMCR" DIVISION

Track Radius: 35 feet or 10 meters

Distance to be run ¼ mile or 500 meters

Dates and times of races_____

Location of track_____

The AMRCA referee at this meet will be:

_____

It is hereby agreed that the race will be run and managed in strict accordance with the rules and regulations of the AMRCA.

NAME OF CLUB_____

CLUB ADDRESS_____

SIGNATURE OF SECRETARY _____

DATE _____

FORM #4 OFFICIAL ENTRY BLANK

NAME_____ **AMRCA #**_____

ADDRESS_____

CITY_____ **STATE**_____ **ZIP**_____

CLUB AFFILIATION_____

MAKE OF CAR_____

MAKE OF ENGINE_____

CLASS OF CAR_____

FUEL USED_____

I hereby agree to conform to and comply with the rules governing this contest in connection with the competition rules of the American Miniature Racing Car Association, and I further agree to hold blameless the American Miniature Racing Car Association, the contest committee, the local host club, the park or landowner where track is located, for any loss or injury to myself or property, and to assume responsibility for any loss or injury in which I may become involved by reason of participating in this event.

I have read the above and understand same.

ENTRY FEE _____

_____DATE

_____SIGNATURE