POWRi National and West Midget Specifications

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Design & Construction

a. All phases of design and construction are subject to the approval of the Technical Director. The Series Director and the Technical Director may exclude any car, design, or construction, which they deem unsafe or not meeting the specifications, the spirit and/or the intentions of the rules contained herein.

Engines

a. Pushrod Type Engines
    i. Four cylinder in-line, two valves per cylinder, water cooled, with intake and exhaust ports on the same side of the head using an aluminum block and approved non-cross flow aluminum “Fontana” cylinder head.
        1. Maximum of 174 CID (2852cc)
        2. Maximum RPM 8800
    ii. Fontana (Rhino) sealed spec engine.
        1. Maximum of 200 CID (3278cc)
        2. Maximum RPM (factory set and sealed) 7800.
    iii. Four cylinder in-line, two valves per cylinder, water cooled, utilizing an aluminum block and/or head.
        1. Maximum 166 CID (2721cc)
        2. Maximum RPM 8700
b. Single Overhead Camshaft Type Engines
    i. Four cylinder in line, aluminum block and head, 2 valves per cylinder.
        1. Maximum 161 CID (2639cc)
        2. Maximum RPM 10,300 (Esslinger)
        3. Maximum RPM 9800 (Esslinger BB7)
        4. Maximum RPM 9800 (MOPAR SR11)
    ii. Esslinger EST sealed spec engine
        1. Maximum 161 CID (2639cc)
        2. Maximum RPM (factory set and sealed) 9400.
c. Double Overhead Camshaft Type Engines
    i. Honda K-Series four cylinder in-line, water-cooled, four valves per cylinder, must use Honda OEM cylinder block and cylinder head.
        1. Maximum 154.6 CID (2533.5cc)
        2. Maximum RPM 9600
        3. Maximum Stroke 99mm (3.898”)
d. The preceding engines sizes are the maximum permitted. No clean up permitted.
e. All engines must be normally aspirated, internal combustion, four cycle, reciprocating piston type, incorporating a maximum of four (4) cylinders. Only one spark plug per cylinder will be permitted.
f. Camshaft timing must be fixed. Any device used to alter camshaft timing during engine operation is prohibited. Penalties will be issued to the entrant and engine builder if such devices are found.

g. The entire engine lubricating system must be of the dry sump type.
h. The use of starters and de-clutching device is optional. If utilized, they must have a neutral position in the final drive.
i. IComplete engines and/or major components must be available in a reasonably sufficient supply to all competitors at comparative prices.
j. POWRi Racing, Inc. reserves the right to adjust rules or disallow any engine for competition, which in its judgment does not meet the spirit and intent of competitive racing, in regard to cost and/or performance. Any engines not covered by the preceding specifications must be submitted for approval prior to entering a competition.
k. Fontana (Rhino) and Esslinger EST sealed spec engines must be rebuilt and sealed by the original manufacturer. Fontana and Esslinger must supply POWRi with seal and engine numbers that will be available for view to any POWRi member. Any engine seal number not matching POWRi records cannot participate. Any seals that have been tampered with (not original) could result in disqualification, loss of points and money earned for the event. Sealed engines that are found to be out of manufacturer's specifications penalties to entrant and manufacturer (engine builder) will be issued. Loss of all points earned, one (1) year suspension and fine, engine manufacturer fine and engine removed from list of approved for use.
l. All probationary RPM limits will be monitored at each event and are subject to RPM adjustments on but not limited to an event-by-event basis and may be adjusted during an event.
m. Cylinder heads may not be billet. Any new design must be submitted to POWRi for approval.
n. No titanium crankshafts, connecting rods, and/or rod caps.

Fuel & Fuel Systems

a. Pure Methanol is the only approved fuel. (No Additives)
b. All fuel is subject to testing at any time. Any fuel that does not conform to standards, as administered at the track, will be considered illegal. The use of illegal fuel could result in disqualification for the event and/or the entire program.
c. A conventional tail tank, fuel cell and the fuel contained must be carried on the centerline of the chassis and be located behind the driver. All cars must be equipped with a fuel cell and tail tank meeting the requirements and SFI Specifications 28.2
d. The minimum capacity of the tank must be 18 U.S. gallons.
e. All tanks must have a minimum of four mounts to the chassis.
f. Fuel tanks may not be mounted to the chassis utilizing any portion of the access plates or the nut plates bonded into the fuel bladder.
g. The engine must be equipped with a fuel shut-off device located within easy reach of the driver.

Exhaust, Muffler, & Sound Reduction Devices

a. Exhaust system tail pipe(s) must not be any wider than the nerf bar.
b. The car may be required to have a muffler if local conditions warrant. If so, this will be properly communicated to all competitors and teams. The technical director may disallow a muffler that in their opinion is not within the spirit or intent of this rule.

Traction Control Devices

a. Traction control devices of any type are not permitted at any time, during any event.
b. Any team found with a traction control device in pre- and/or post-race inspection shall be subject to fines and/or suspensions, left at the discretion of the series and technical directors.
c. From time-to-time random inspections will occur and various components may be impounded for further analysis and inspection including, but not limited to ignition systems, ignition boxes, wiring looms and/or tachometers.

Chassis & Frames

a. Frame and/or chassis must be constructed of 4130 normalized tubing or equivalent.
b. All cars must have a roll cage that is integral with the frame and does not encroach upon an imaginary cylinder, 20 inches in diameter, extending through the top cockpit opening directly above the seat. The roll cage should extend four inches above the driver's helmet when seated in the driving position.
c. Roll Cage Construction cars constructed after 1/1/98, main uprights forming the roll cage must be a minimum of 1-3/8 inches O.D. x .095 wall thickness 4130 normalized tubing or equivalent.
d. No water or oil coolers are to be placed above or beside the cockpit opening.
e. (See diagrams on pages 11-12)

Dimensions & Weight

a. The wheelbase must be at least 66 inches and no more than 76 inches.
b. The overall width will be a maximum of 65 inches.
c. The right front tire cannot be farther out than the right rear tire when the right rear wheel is set at maximum width (as measured straight line along outside RR to outside RF).
d. All cars must weigh a minimum of 1,035 pounds, including the driver.
e. Additional bolt on weight must be mounted and fastened to the frame and/or chassis in a secure manner. Weight must be mounted in an area between bottom frame rails, front and rear axles and no higher than mid rails at the cockpit. All weight must be mounted within the confines of the frame. NO BALLAST/WEIGHT IN NERFS, BUMPERS, FRONT AXLE.

Car Construction & Body

a. All cars shall be rear drive only. Engine offset is limited to a maximum of one (1) inch, (two inches overall), from the chassis centerline as measured at the centerline of the crankshaft. Engine inclination is limited to forty-five degrees from vertical as measured from the vertical centerline of the cylinder bore.
b. Only torque tube type drivelines, utilizing only one u-joint or cv joint, will be allowed. The torque tube must be bolted directly to the face of the rear axle center section without any interruptions; the torque tube must be one solid piece. Torque tube hoop and/or strap highly recommended. A driveline containment system utilizing steel shield bolted to the engine plate or containment blanket to cover torque ball and u-joint is highly recommended.

c. Radius rods may not be attached within the confines of the cockpit. All radius rods must be one piece, no spring rods or shock dampers.
d. The driver shall be seated directly behind the engine; the centerline of the top of the seat at the driver's helmet can be no more than one (1") inch off centerline of the roll cage.
e. Only standard type Midget Car bodies, tail tanks and hoods will be permitted.
f. The front part of the body, known as the nose assembly, shall not be wider than the parallel lines of the body and may not exceed the width of the frame. The nose assembly may not extend forward beyond the confines of the front bumper.
g. Any item added to resemble imitate and/or specifically designed to deflect, trap and/or form a pattern for air to travel in a directed manner, except for those used to cool and/or protect engine and brake system will not be permitted.
h. The engine must be covered with a cowling or hood secured in place. The hood or cowling need not enclose the sides of the engine.
i. A forward-facing scoop, or ducting, supplying "forced air induction" to the injection inlets is not permitted.
j. Side panels covering the sides of the engine and/or vertical spill plates may not extend vertically past tubing
k. Any wicker or turnout may not extend past the frame rail vertical of downtubes or cage, rearward of back of cage, or below bottom of lower frame rails.
l. Right side cockpit body panels may be a maximum of thirty-six (36) inches high as measured from the bottom of the bottom frame rail. The opening must be 150 square inches and not distract drivers' vision determined by the Series Director. The right-side panel cannot extend out any further than four (4") inches. This includes turnouts from the frame uprights (cage post).
m. Left side cockpit body panels may be a maximum of thirty-four (34) inches high as measured from the bottom of the bottom frame rail. Opening must be at least ten (10) inches vertically and twenty (20) inches horizontally, and not distract drivers' vision determined by the Series Director.
n. Side visors on the roll cage will be limited to eight (8) inches tall. Visors that restrict driver's vision at the discretion of officials will not be permitted.
o. Only steel, aluminum, or carbon fiber floor/belly pan are permitted. The floor/belly pan may not extend rearward past the leading edge of the rear axle and must be flat from side to side without any aerodynamic aids. Horizontal panels may not extend below the plane of the floor/belly or fuel tank.
p. Sun visors must not extend forward more than seven (7) inches from the front of the forward most edge of the roll cage/halo tube and may not be wider than the width of the cage; sun visors must be flat on both sides. For fan recognition, all teams are encouraged to place the drivers' name on their visors in large letters.
q. Panels attached to nerf bars will not be permitted.
r. An effective firewall must be installed between the engine compartment and the cockpit. It must be as leak proof as practical.
s. The motor plate may not be made from carbon fiber, or any type of composite materials.
t. Airfoils, wings, spoilers, or other aerodynamic appendages will not be permitted. The Series Director or Technical Director may have any panel or part removed which in their opinion is not within the spirit or intent of this rule.
u. All paneling must not extend past the edge of frame rails more than thickness of material.

v. One (1”) inch turnout allowed on all body and sail panel edges, except sun visor.
w. With the exception of suspension components, induction and/or exhaust systems and nerf bars, no accessory or component of the car may extend more than 6 inches from the main frame tubes. Cylindrical oil tanks mounted outside the frame, behind the engine must be mounted as close to the frame as practical.
x. Rear view mirrors are not permitted.

Bumpers & Nerf Bars

a. The car must be equipped with a rear bumper at all times.
b. Front and rear bumpers and nerf bars must be constructed of magnetic and or stainless steel (NO TITANIUM) tubing with a minimum O.D. of 7/8 inch and having a minimum wall thickness of .065 inch and a maximum wall thickness of .120 inch. A maximum of three horizontal and/or three vertical tubes are allowed in the construction of nerf bars.
c. All cars must have a tubular front bumper extending forward no more than 21 inches from the leading edge of the front axle. Bumpers must be constructed so as not to cause a safety hazard.
d. The right nerf bar cannot extend beyond the outside of the right rear tire.
e. With the exception of the exhaust system, no components or accessories may be attached to the nerf bar assembly.

Steering & Suspension

a. Removable steering wheels incorporating a quick release mechanism conforming to SFI Specification 42.1 are mandatory. Pip pin type mechanisms are not allowed.
b. Welded aluminum or titanium suspension parts are prohibited except for Jacob’s ladder (Watts link).
c. No electronic weight, shock, sway bar or any suspension item adjuster.
d. No independent suspension.
e. Wheel cover fasteners made of steel are highly recommended.

Axles

a. The car’s axles connecting the wheels must be of one-piece tubular construction without the capability of camber or independent castor adjustment to the wheel assembly. Offset kingpin bushings are allowed on the front axle.
b. Any other construction will be considered as independent suspension.
c. All front axles must be constructed of SAE 4130 steel or a steel alloy equivalent in structural strength. Titanium front or rear axles are not permitted.

Wheels

a. The number of allowable wheels is restricted to two (2) front wheels and two (2) rear wheels on each car.
b. The wheel diameter must be 13 inches.

c. The wheel width is limited to eight (8) inches for both front wheels and the left rear.
d. The right rear wheel may be a maximum of ten (10) inches in width.
e. An approved tire bead locking device must be used on the outer bead seat of the right rear tire and wheel assembly.
f. The use of full-face brake scoops and/or wheel covers on the inside of wheels is not allowed.
g. All bolts are mandatory in bead lock and wheel centers.
h. Digital bleeders are allowed. Air may not be introduced to the tire. Bleeders may not be controlled remotely.
i. Any wheel cover dislodging under racing conditions will be subject to a fine. Wheel cover must utilize 3 bolts.

Tires

a. Hoosier Tires are required on all four corners; the right rear must be an SP 3. Left rear must be a D-12 or harder.
b. Tire Prep
    i. The altering of any tire compound, by any means will not be permitted. Chemical alteration of the tread carcass and/or tread compound, such as tire ‘soaking’ and/or the introduction of tread ‘softener’ and/or physical defacement (removal, altering and/or covering) of tire sidewall markings in any manner will not be permitted. If any competitor is found to have altered their tire(s), they will be fined one thousand dollars ($1,000.00) and will be suspended from the next two (2) completed events.
    ii. Any tire may be inspected and/or analyzed for alteration at any time. This will consist of a process as determined by the independent laboratory that performs the analysis. The analysis process will require a sample shipment of the tire to the selected laboratory.
    iii. Additional race event(s) may be completed before a determination is made. If a penalty is issued, the event(s) that fell into the analysis time period while the tire(s) were being analyzed will be considered as part of the penalty time period.
    iv. Money won in an event may be held until the final determination is made by the independent laboratory.

Throttle

a. A minimum of two (2) return springs.
b. If the throttle actuating mechanism is the cable type, the cable must be encased.

Brakes

a. No electronic controlled brake bias adjuster. (Manual adjustment only)
b. Master cylinders not fixed to the frame must have flexible lines.
c. Carbon fiber or carbon composite brake discs or components are not allowed.
d. If at any time during competition it becomes evident that a car is without brakes, the necessary repairs must be completed before the car can continue in competition.

Ignition & Electronic Equipment

a. All cars must be equipped with an ignition switch or emergency shut-off located within easy reach of the driver.
b. Electronically controlled fuel injection systems are not permitted. An exception is the Esslinger EST sealed spec engine.
c. Any ignition, other than magnetos, must be approved by the Technical Director prior to their use in competition. It is the responsibility of the participant, not the manufacturer, to obtain proper approval.
    i. Current list of approved electronic ignitions for national events:
        1. MSD programmable 6214, EFI R1i (Red, Gold, or Blue - NO BLACK),Electromotive, Magnetos, Electromotive on Esslinger EST.
d. All Ignition units must have a download cable on LH cockpit side attached to mid-rail by seat or front cage upright. Electro motive, magnetos and sealed Rhino excluded.
e. Electronics that provide traction control are prohibited. All electronic components may be inspected, sealed, or confiscated at any time. The maximum penalty for utilizing traction control is a one-year suspension from competition and loss of all points earned for the season.
f. Electronic ignition systems may only be used to control and collect data for ignition; coil(s), trigger(s), spark curve(s), battery voltage, and maximum RPM limits. The electromotive ECU unit on Esslinger EST sealed spec engine in addition to above is permitted to control EFI (electronic fuel injection) with following sensors. TPS, fuel pressure, and MAP sensor.
g. The use of electronic logic processors of any type to control any function of the race car and/or any system for gathering continuous data from any function of the race car is strictly prohibited with the exception of ignition.
h. A tachometer with water temperature and oil pressure collection capability is the only item approved for use to collect/record data other than electronic ignition systems. Specific device approval is at the discretion of the Series Director.
i. RPM limitation will be mandatory at all national events. Ignition to all cylinders must be cut at or before the predetermined limit as established in section 2.
j. Only one ignition switch is allowed in the cockpit. A second ignition switch can be utilized but must be in the engine compartment.

Car Appearance

a. All cars must pass a technical inspection by the Series Director before being allowed to race.
b. Car numbers must be displayed in three (3) areas one (1) each side of the tail and one (1) on the front section of the hood.
c. After a number is assigned to a particular car and owner, it will remain with the owner until the end of the racing season.

Electronics

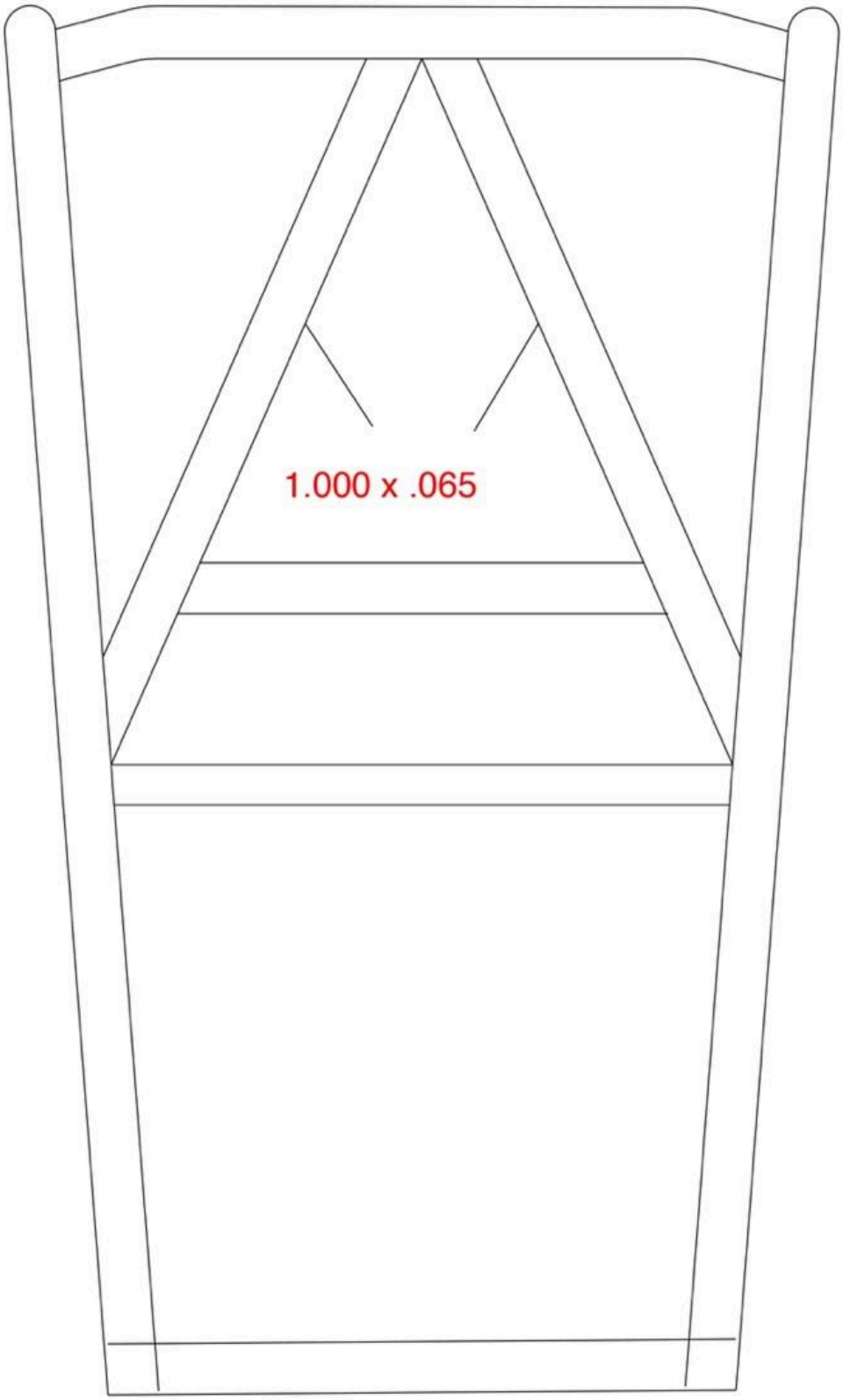
a. Wi-Fi, cellular, or satellite devices (including cell phones and smart watches) in or attached to the race vehicle or the driver will not be permitted.

b. All forms of vehicle position system (GPS) will not be permitted.

Miscellaneous

a. The use of in-car radio transmitting devices is prohibited.
b. Only one-way communication from POWRi Race Control will be allowed and is mandatory.
    i. Frequency: 464.5500
c. Any part that may appear illegal is subject to confiscation at any time without notice for evaluation. If deemed necessary by series officials, any confiscated part may not be returned.

Midget Frame Dimensions



Midget Chassis Dimensions