



## 2018/2019 New London-Waterford Speedbowl *Sportsman Rules*

(Last Updated: 1-24-18)

### 2018/2019 NLWS Sportsman Competition and Tech Contacts:

Chris Forester - *New London-Waterford Speedbowl Race Director*  
Email: [chrif@speedbowlct.com](mailto:chrif@speedbowlct.com)

Todd Stiles - *New London-Waterford Speedbowl Technical Director*  
Email: [chiefinsp43@yahoo.com](mailto:chiefinsp43@yahoo.com) – Phone: 860-884-7798

Joe Delorimiere - *New London-Waterford Speedbowl Sportsman Technical Inspector*  
Email: [grip340@aol.com](mailto:grip340@aol.com) – Phone: 860-514-1713

**This rulebook will be in effect for the 2018 and 2019 Race Season. Our goal is that the only changes to this Rulebook will be for staff changes (as listed above), safety related items, and anything related to parts that become unavailable or have an alternative that is more cost effective to the racer. Any amendments to this rulebook over the next 2 season will be published on the NLWS Website. Any amendments will be reflected at the end of the 2018 season by an appendix at the end of the Rulebook which will be published to the tracks website.**

All items marked in **RED** are new and/or are wording changes from the **2017** Limited Sportsman rulebook.

All references to the New London-Waterford Speedbowl in the following rules may be referred to as (NLWS) as an abbreviation of the speedway name and deemed an official recognition of the New London-Waterford Speedbowl in this **2018/2019** rule book.

**Drivers & Car Owners are required to familiarize one's self with the General Track Rules as well as the Sportsman rulebook.**

**By registering as an owner or driver you agree to be knowledgeable and bound by the contents found in these divisional rules and in the General Rules.**



## 2018/2019 NLWS Sportsman General Rules

### 4.0) General NLWS Sportsman Division Rules

In the following rules you will see the term “stock OEM” used. This means “original equipment manufacturer”. These parts must come on your standard production car.

- a) No carbon fiber or titanium parts allowed.
- b) None of the following will be allowed in or on any engine or driveline component or part: abrasive cleaning, acid dipping, chemical milling, coating, epoxying, finishing, grinding, painting, plating, polishing, porting, etc.
- c) The rules herein are for the New London-Waterford Speedbowl only, with no expressed or implied agreement with any other Division or Speedway as to their interpretation and/or method of inspection. E. All equipment must be approved by track officials. No equipment is considered to be approved by reason of having passed through a technical or safety inspection unobserved. No car will be considered as having passed inspection for the event until the finish is made official.
- d) All engine models, equipment changes, or modifications not specifically addressed in this rule book must be submitted to the New London-Waterford Speedbowl for consideration of approval prior to competition.
- e) All equipment is subject to the approval of the New London-Waterford Speedbowl Officials.
- f) Once a car has been presented to the New London-Waterford Speedbowl Officials for post-race inspection the entire car and all of its components become subject to inspection. This includes but is not limited to items designated for inspection following a particular event
- g) All rule changes and updates made during the course of the season for the current rulebook will be posted to the New London-Waterford Speedbowl website ([www.speedbowlct.com](http://www.speedbowlct.com)). This will serve as the only form of official notification until the publication of the 2020 New London-Waterford Speedbowl rule book.
- h) An aftermarket aluminum fabricated racing seat, sized correctly for the driver, must be used. The seat frame must be made of steel tubing (min 1" round or square) and must be welded to the roll cage and/or frame. The seat cannot attach to any part of the floor pan. The seat must be bolted at 4 places at the bottom of the seat, and 4 places at the back. The bolts must be 3/8" diameter grade 8, with large fender washers on the seat side. You must have (2) head supports, (2) shoulder supports, and (2) leg supports bolted to your seat.

**\*\*\*Cars of a similar division from other race tracks may be eligible for competition, pending a discussion with track officials and subsequent inspection of said car\*\*\***

#### 4.0.1) Scoring Transponder Location

Transponder mounting brackets will be installed on the inside (or outside) of the right rear frame rail. The round post of the bracket must be on top and the square tab on the bottom flush with the lower edge of the frame rail. The bracket must be mounted with its center line exactly 12" to the rear of the rear axle centerline and must be completely vertical to the ground. Transponders are required on

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the cars at all times. Any car not registering a transponder signal at the start of an event may be black-flagged to the pit area for repairs. Transponder scoring is used for all laps except the final (checkered flag) lap. Hand scoring is used to determine the finish, with any visual "ties" being broken by the transponder results.

Transponders are available from: AMB, US, Inc. 32 Highlands Parkway, Suite 104 Smyrna, GA 30082 Tel 678-816-4000 Fax 678-816-4001

#### 4.0.2) Driver Eligibility

All drivers must have a completed **2018/2019** Driver Registration Form and Number Request form completed and on file.

### 2018/2019 NLWS Sportsman Technical Rules

#### 4.1) Approved Models

- a) All **Sportsman** racecars must be rear wheel drive and have a minimum 108" wheelbase. No convertibles, station wagons, Camaros or mustangs will be permitted.
- b) Ford and Chryslers from production years 1968-2000 with a 108" or longer wheelbase are permitted; however, the wheelbase may be shortened to 108" by cutting the center section of the frame rails equally on both sides.
- c) Only 1978 or newer General Motors cars with a metric G-body and frame are allowed.
- d) All stock-replacement parts in a **Sportsman** must be from 1968 -1987 to be eligible for use, unless otherwise noted in these rules.
- e) The body must be stock for the frame being used. All body parts must retain all factory-listed dimensions, lines, and angles. Stock OEM steel or otherwise approved aftermarket bodies (listed under letter "f"), centered on the chassis and mounted in the original position are required. No lowering, chopping, or channeling of any body parts will be permitted.
- f) Aftermarket body panels will be permitted for the Chevrolet Malibu and Monte Carlo, as well as for the Buick Regal. The panels must be steel and remain stock appearing.

#### 4.2) Roof

Stock OEM roof with stock windshield lip is permitted. The windshield must fit in the stock OEM position. Approved aftermarket fiberglass stock appearing roofs are available through Northeast Race Cars & Parts. Cars built with fiberglass roof must use halo bar safety plate (Exhibit 4).



#### **4.3) Hoods**

Hoods may be fiberglass, but must lay flat at the stock angle with no rear opening. The hood must be secured in the front with three (3) hood pins. Maximum two (2) inch high cowl induction/hood scoop is permitted.

#### **4.4) Bumpers & Bumper Covers**

- a) All bumpers must be standard for the make and model car being used. Bumpers must be welded to the frame support to prevent them from falling off. Bumper ends must be capped to the fenders or quarters to prevent hooking.
- b) Tubular bumpers will be allowed with the use of an aftermarket (rubber) front and rear bumper cover. The bumper supports must be inside the cover and may not extend past the flat surface of the tire.
- c) Bumper height will be measured from the center of the bumper or tubing. It must 18" to the ground.
- d) The approved bumper covers for GM are the early style Chevrolet Monte Carlo and Pontiac Grand Prix. Ford may use the 1988 Thunderbird. Chryslers may use the Avenger. Approved front and rear aftermarket bumper covers will be allowed. No holes are permitted in the rear bumper cover or rear body panel.

#### **4.5) Minimum Front Fender Height**

- a) The front fender must measure 29" high from the top front inside edge of fender to the ground.
- b) No down force fenders permitted.

#### **4.6) Minimum Roof Height**

Roof height will be checked in two locations: 10" back from the windshield and six (6) inches forward from the top of the rear window. In both locations, the roof must measure 50" high.

#### **4.7) Minimum Windshield Angle**

The windshield angle must measure 30 degrees from anywhere in the center of the windshield.

#### **4.8) Maximum Vent Window**

The vent window must measure maximum seven (7) inches from the base of the A-pillar. Vent window may not be tapered back; it must go straight up the pillar.

#### **4.9) Minimum Rear Overhang**

The minimum rear overhang is 40", measured from the center of the rear axle to the end of the rear bumper.



#### 4.10) Window Net

A commercially manufactured, SFI-rated, nylon window net must be installed in the driver side door window opening. It must be positioned to cover the entire window opening. Window nets may not be used beyond three (3) years from the date of manufacture **or no older than the date of expiration.** The window net must be rib type, made from minimum three-quarter ( $\frac{3}{4}$ ) inch and maximum one (1) inch wide nylon material with a minimum one (1) inch and a maximum two and one-quarter ( $2\frac{1}{4}$ ) inch square opening between the ribs. The minimum window net size must be 22 inches wide by 16 inches high. All window net mounts must be a minimum one-half ( $\frac{1}{2}$ ) inch diameter solid steel rod on the bottom and a minimum one (1) inch wide by three-sixteenths ( $\frac{3}{16}$ ) inch thick flat steel or a minimum one-half ( $\frac{1}{2}$ ) inch diameter solid steel rod on the top, with mounts welded to the roll cage. The window net must fit tight and be secured with a lever-type quick release latch. The lever must be secured by a detent ball in the lever and may be supplemented by Velcro® fastener only – pins or clips are not permitted. The latch must mount at the top in the front to roof bar (#3) and release from the inside.

#### 4.11) Glass

A full windshield made of polycarbonate material (minimum  $\frac{1}{8}$ " thickness) is required. Quarter windows are allowed, but must be made of clear polycarbonate material only. If quarter glass is not used, then the window openings must remain open.

#### 4.12) Body Spoilers

Side skirts are allowed between wheel openings. They must follow the contour of the body and may not be stepped or angled. Side skirts must make ride height.

#### 4.13) Rear Spoiler

A four (4) inch high by 60" long Lexan rear spoiler may be used. Spoiler height will be measured from the horizontal portion of the tail-piece or trunk lid.

#### 4.14) Nerf Bars

Nerf Bars may be used between wheel openings at hub height. The bars must be 1" round or 1" x 1" square tubing mounted skin tight to the body with no sharp edges, angles or points. Nerf bar ends must be tapered or capped. Carriage type bolts must mount inward. Polycarbonate rub rails are allowed.

#### 4.15) Interior Sheet Metal

- a) All interior sheet metal must be a minimum 0.031" steel. Drivers must be separated from the engine and the trunk area. Firewalls must be welded.
- b) The front firewall must be in stock location. No foot boxes.
- c) The rear firewall must remain at stock angle between wheel wells.
- d) A full, stock appearing floor pan must be used.
- e) Filler panels must be used between the firewall, the roll cage uprights, and the right and left door. These panels must be straight to the frame rails, with no bends or curves.





#### 4.16) Frame & Chassis

- a) All frames/chassis must be Stock OEM. No repositioning, elongating, or oversizing of any mounting holes in the frame.
- b) Two (2) inch by three (3) inch by 0.083" magnetic steel tubing may be used to replace the frame rails from the rear spring pocket to the rear bumper. The tubing must follow stock dimensions of the frame being used. Tubing must maintain a minimum ground clearance of 11".
- c) Unibody cars must connect sub-frames with two (2) inch by three (3) inch by 0.120" magnetic steel tubing.
- d) The center section of the frame may insert tubing to form an "X."
- e) The Johnson and Hamm's X-Y-G Metric chassis and front clip are allowed. The chassis and front clip must remain as manufactured and must retain all factory OEM specifications including, but not limited to, mounting locations for the following components: OEM upper and lower A-frames, shocks, rear trailing arms, steering components and engine mounts. The Johnson and Hamm's, X-Y-G Metric chassis rear clips are allowed and rear upper control arm cross members may be installed.

#### 4.17) Wheelbase

Wheelbase must measure 108" with a three eights (3/8) inch tolerance. Wheelbase will be measured from the center of the axle to the center of the front lower ball joints.

#### 4.18) Roll Cage

- a) No plating of the frame.
- b) The following are additional requirements and clarifications for the installation of the roll bars:
  - i) The minimum distance from the top of the roll cage to the top of the frame rails must be 38".
  - ii) The minimum distance from the top of the frame to the dash bar, top door bars, and the crossbar behind the driver's seat will be 21".
  - iii) The front of the front leg bars (#2A & #2B) cannot be further back than 38" from the centerline of the front lower ball joints.
  - iv) The main roll bar (#1) cannot be more than 83 ½" rearward from the centerline of the lower ball joints. The main roll bar must be mounted vertical (90 degrees) on the center section of the frame with no offset. This bar must be centered to the chassis.
  - v) The roof bar (#4) must be within four (4) inches of the side window and/or door openings on both sides, as well as the front windshield.
- c) No offset roll cages will be permitted.

#### 4.19) Fuel Cell Crash Bar

A reinforcement bar, made of minimum one and one half (1 ½) by 0.083", must extend below the rear frame section behind the fuel cell. This bar must be as wide as the rear frame rails and extend as low as



the bottom of the fuel cell with two (2) vertical uprights evenly spaced between the frame rails and attached to the rear cross member. Two (2) support bars, one (1) located on each corner, must angle upwards and be welded to the rear frame rails.

#### 4.20) Fuel Cell

- a) The use of a commercially manufactured fuel cell is mandatory.
- b) Fuel cell vent check valves are mandatory.
- c) Fuel cell must be mounted using, minimum 1" x 1" x 0.083" square tubing as shown in NASCAR Diagram in the 2016 NWAAS Rule Book
- d) The use of magnetic steel fuel cell containers made of 22 gauge (0.030") steel is mandatory.
- e) Gas caps must be tethered and have your division (LS), and car number (XX) on it for identification.
- f) The fuel cell must be minimum of 10" off the ground.

#### 4.21) Ballast Weight

- a) Added weight may be mounted under the car, providing that it is securely bolted to the floor pan and up as high as possible. The weight may not block the area behind the left front tire and the area in front of the left rear tire in order to allow for chassis height to be checked.
- b) Added weight must be magnetic steel or lead only, in block form, and weighing no less than five (5) lbs. per block (no pellets). Added weight must be securely bolted or welded and painted white with the car number stenciled in black. No added weight will be permitted inside the driver's compartment. Weight must be welded in a box or attached with two (2) or more 7/16" minimum diameter, grade 8 bolts and locking nuts. All weight must make 5" ride height.
- c) Any car losing ballast weight or found with unmarked weight is subject to a fine.
- d) The mounting of ballast weight is subject to the approval of NLWS Officials.

#### 4.22) Ground Clearance

Minimum ground clearance for chassis, body, nose and tail pieces is five (5) inches.

#### 4.23) Car Weight

- a) All specified weight requirements will be with the driver.
- b) The minimum total weight at all times will be 3000 lbs.
- c) Maximum left side weight is 55.0% of total weight.
- d) **Left A-Pillar must be labeled with the car weight.**

#### 4.24) GM 602 Crate Engine: Car Weight

- a) All specified weight requirements will be with the driver.
- b) The minimum total weight at all times will be 2975 lbs. for 2-barrel carburetor or 3050 lbs. for 4-barrel carburetor.
- c) Maximum left side weight of crate engine cars is 55.0% of total weight.



#### 4.25) A-Frames

- a) Upper and lower A-frames must remain stock (as manufactured) and unaltered.
- b) A-frames may not be changed from side-to-side.
- c) Upper ball joints must be stock OEM.
- d) Lower ball joints must remain in stock position.
- e) Screw-in ball joints are allowed. The only lower screw in ball joint that may be used is Moog part # K727 or (conventional type) equivalent part #.
- f) Upper A-frame bolts may be replaced for added camber. Upper and lower A-frame bushings may be replaced with polyurethane bushings, but hole location may not be altered.
- g) Johnson Chassis Stock OEM lower A-frames (Part #JCI-09-02-01RC-SP) are allowed.
- h) QA1 part #'s 1210-109, 1210-208P, and 1210-209P ball joints may be installed in OEM GM lower A-frames.

#### 4.26) Tubular Upper Control Arms

Steel, tubular, G-Metric, exact-fit replacement control arms with steel cross shaft are allowed. Acceptable examples: UB Machine part #14-0829-6L & 14-0809-5R. Control arm must fit the stock 6 7/8" perch and must accept the OEM bolt-on ball joint. Left arm must measure 8 1/2" and right arm must measure 8". No offset control arms will be allowed. Must match NLWS control arm.

#### 4.27) Sway Bar

- a) The front end sway bar must be stock OEM or a stock OEM replacement. No rear sway bar will be allowed.
- b) Link pins may be replaced with threaded rod.

#### 4.28) Spindle/Hub

- a) Spindle may be changed to heavy duty OEM units. They must be bolt on units and not be altered in any way except for the lower ball joint hole may be reamed or tapered to fit the lower ball joint pin. No aluminum spindles.
- b) Tread width must remain stock.
- c) Track supplied spindles must fit the car.
- d) Hub/Rotor must be stock OEM. Coleman safety hub will be allowed on both sides.

#### 4.29) Bearings

All bearings— wheel (front and rear), differential, and transmission —must be of stock OEM design. Bearings may be either angle-type cone, straight barrel-type or ball bearing. All bearings, including the rollers, must be magnetic steel only. No REM machined bearings or micro polished bearings.





#### 4.30) Brakes

- a) Brake systems must be stock OEM hydraulic systems. All four (4) brakes must be in working order. Disc brakes are allowed in the front only. Ultra Cool PART # LMBFS5-625 L or R hub mounted cooling fans may be used on front brakes. One per wheel.
- b) No aluminum brake drums.
- c) No drilling or lightening of any brake parts including backing plates, shoes and pads.
- d) Aftermarket master cylinders/pedals are allowed.
- e) Adjustable proportioning valves are allowed – front to rear adjustment only.

GM may use an aftermarket caliper produced by Howe (part #HOW337 or HOW33658). That part must have the Howe logo.

g) **Rear disc brakes may be installed. Stock G-Body metric calipers only. Calipers must be mounted in same position left to right side. Steel caliper slider pins only. Steel caliper brackets only. May be welded or bolted to housing tubes or tube flanges. Speedway Motors rotor part #91031043 is the only approved rotor at this time. Maximum rotor diameter 11.630" inches. No drilled, scalloped or slotted rotors. No lightening of brake rotors in any way.**

#### 4.31) Brake Lines

Braided stainless steel brake lines are permitted.

#### 4.32) Steering

- a) The steering linkage and steering box (including turning ratio) must be stock OEM for the chassis being used. The steering shaft may be removed from the column and securely reinstalled with Heim joints.
- b) Idler arm holes on chassis may be slotted or an adjustable stock dimension idler arm may be used.
- c) The forward most bolt hole on the chassis for the steering box chassis must remain unaltered. The two (2) rearward bolt holes may be slotted.

#### 4.33) Coil Springs

- a) Front and rear steel racing springs are allowed. They must measure minimum five (5) inches in diameter. Springs may use spring spacers and adjusting cups. Rear jacking bolts are allowed. **No front jacking bolts allowed.**
- b) The only modification permitted to the spring pocket is the installation of a jacking bolt, **or adjusting cup.** In all other ways, the spring pocket must remain stock OEM.
- c) **Spring cup on axel tube may be replaced. Cup must be in the stock location on the axel tube. No offsetting of the cup.**



#### 4.34) Leaf Springs

Only steel leaf springs are permitted. Leafs may be added on both sides. All leafs must be the same width. Stock-appearing, adjustable shackles and lowering blocks are allowed. No other modifications allowed.

#### 4.35) Shocks

- a) Front and rear shocks must be a matched pair, left to right. Shocks must remain in stock location. Rear shocks may be placed on top of frame in original position (must use original mounting holes) with a maximum one and one half (1 ½) inch spacer. Listed below are the only approved shocks for GM cars:

Brand	Front	Rear
KYB	KG4513	KG5548
Pro Shock	SS-100 SS-100A	SS-201 SS-201A
AFCO	1020 1021 1022	1030 1031 1035
QA1	EC1956P	EC1685P

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Any GM shocks not listed here must be approved in writing to be allowed in competition.

- b) For non-GM cars, you must use the same brand and series shocks from the above list.

#### 4.36) Trailing Arms

Must be stock for the year, make and model being used. Lower trailing arms must be stock OEM and unaltered. Upper trailing arms may be slotted or cut and welded and must be within one (1) inch of stock length, and must be centered. Mounting holes and locations must remain Stock OEM. GM metric cars may use Johnson Chassis upper and lower trailing arms (part #JCI-09-03-04 & JCI09-03-03B) **or Speedway part #s 91634052 and 91634054**. Trailing arm bushings must be Stock OEM, or polyurethane OEM replacement bushings. No offset bushings permitted.

#### 4.37) Suspension Tie Downs

No tie downs or travel limiting devices permitted on the front suspension. Rear suspension devices must allow the frame rail to be raised a minimum four (4) inches before the rear tires come off the ground.



#### 4.38) Wheels

All four (4) wheels must be heavy-duty, aftermarket steel wheels. All wheels must be 15" by 7". Minimum wheel weight is 20 lbs. One (1) inch lug nuts are mandatory. One-half (1/2) inch studs are mandatory.

#### 4.39) Wheel Offset

Wheel offset will be measured as follows: the inside surface of the wheel flange (mounting surface) must be in the center of the wheel as determined by measuring from the outside bead seat to outside bead seat. A tolerance of +/- three-eighths (3/8) of an inch will be allowed.

#### 4.40) Wheel Spacers /Track Width

**Spacers may only be used on rear axle. Equal amount and equal thickness of spacers must be used left side to right side.**

**Track Width Track will be measured from the outside bead seats. Left outside bead seat to right outside bead seat. Maximum allowable track width is 67 3/8" inches at the bead seats. The measurement will be taken 12" inches vertical from the floor to the outside bead seats. Front track width will be measured at the front of the rim.**

#### 4.41 Valve Stems

No "bleed off" type valve stems.

#### 4.42) Tires

- a) The Hoosier Race tire 790 is the only approved tire for the NLWS Sportsman division
- b) **The sizes are 26.5/7.0-15.0 or 27.0/7.0-15. The compound number is 790. If a tire cannot be identified, it will be considered illegal.**
- c) NLWS Officials may confiscate and/or impound tires at any time for inspection.
- d) **NLWS will announce the number of tires available to teams in advance, using a Sportsman Tire Inventory schedule located at [www.speedbowlct.com](http://www.speedbowlct.com). NLWS competitors are required to register tires for each event. Tire registration form must be submitted to NLWS designated tire coordinator at a determined time. Tire rules and inventory schedule will be posted as an appendix prior to the start of each season.**
- e) The JTR Eagle PPM Tester will be set at a fixed level and will be strictly enforced throughout the season.
- f) A participant competing in any race at the NLWS specifically agrees that he/she acknowledges it is illegal to soak or treat racing tires and that said soaking or treatment of racing tires is against EPA regulations and further contains carcinogens and hazardous material which are unfit for his/her health and the health of all competitors and spectators. Any participant found violating the rule is subject to suspension.



4.43) Crate Engine: General Engine Requirements

- a) The only approved engines for Crate use are the GM Performance Factory Sealed Circle Track 602 (Part #19258602). Engines must be purchased directly through General Motors or an authorized service center. All crate engines must be serviced through an authorized NLWS service center (see below) prior to competing at the NLWS. Only NLWS authorized service centers can perform updates to the GM Performance Factory Sealed Circle Track engine. Upon completion of the updates, which include a parts package and dyno sheet, the engine will be sealed. . For the 2017 season forward, any team switching to a crate engine must purchase a brand new, unused, (part #19258602) OEM GM Performance Factory Sealed Engine. It must be purchased from an authorized GM dealer. Invoice from the purchase must be presented with engine during registration when NLWS seals are installed. Any motor with Thompson Speedway seals are also eligible to be used in competition at the NLWS in 2017. Any team that has a sealed, pre-registered, part #19258602 engine from 2016 may continue to use it, following existing rules. The GM crate engine manual will be used to inspect all crate engines, new or rebuilt.
- b) Seals may only be removed by an NLWS Official or NLWS authorized service center. Any seals that appear to have been tampered with, or have been removed, without one of these two parties being present will result in the engine being deemed illegal. At this point, the engine must be re-sealed at the participant's expense.

NOTE: All engines must be sealed and documented to compete at the NLWS. A completed crate engine registration form must be completed and submitted to NLWS Officials. Engine seals are only good for two (2) years.

- c) NLWS authorized service centers are:

**Engines by Andy**

**332 Broad St.**

**New London Ct. 06320**

**(860) 917-6505**

**Contact: Andrew Dorsey**

Nat's Racing Engines

702 Warren Avenue

Swansea, MA 02777

(508) 336-4142

Contact: Nat Chiavettone

RAD Auto Machine

80 Ravenwood Drive

Ludlow, MA 01056

(413) 583-4414

Contact: Don Wood

4.44) General Engine Requirements

- a) Stock OEM engines for year, make and model of the car must be used. Engine must be OEM cast iron V8 production block with cast iron heads. The only approved engine blocks are the following:

Chevrolet: 350

Ford: 351W and 351C **and 347**



Chrysler: 340 and 360

- b) The engine block must retain all OEM specifications with the exception of the cylinder overbore and the surfacing of the block deck. Cylinders may be bored a maximum of 0.040" from the standard size.
- c) Stock appearing, aftermarket OEM-type magnetic steel main bearing caps are allowed. d) No splade caps are allowed.
- e) Only stock OEM-type engine bearings will be permitted; no roller cam type bearings.
- f) The following cylinder block modifications that are not permitted, including, but not limited to: angle-cutting of the decks, grinding, polishing, painting, or coating ay internal surface, offset boring, changing dowel pin size or location, installing offset dowel pins.
- g) Only normal OEM-type engine balancing is permitted.

#### 4.45) Compression

- a) Maximum compression is 9.5 to 1 for non-Ford engines.
- b) Maximum compression for the Ford engine is 10.0 to 1.
- c) Compression will be checked with the "Whistler."
- d) The two-most forward bolts on both sides of the intake must be drilled to accept a seal.

#### 4.46) Engine Location

- a) The engine must be in the stock location, centered in the chassis.
- b) Steel replacement motor mounts are permitted.
- c) The minimum crankshaft height is 13 ½", measured from the centerline of the crankshaft to the ground.

#### 4.47) Crankshaft

- a) Only stock OEM production crankshafts are allowed. The maximum stroke on a Chevrolet will be 3.495". The maximum allowable stroke tolerance will be +/- .015". Regrinding of the rod and main journals to a maximum of 0.030" under standard size is permitted.
- b) The following are exceptions for the Chevrolet:
  - i) Chevrolet must use the large journal crank.
  - ii) Chevrolet may use the following SCAT Crankshafts or Eagle crankshafts:
    - (1) SCAT One-Piece: Part #9-10526 or Part #435010L
    - (2) SCAT Two-piece: Part #9-10442 or #435010
    - (3) Eagle: Part #435034805700
    - (4) Eagle Part #435334805700
- c) The rod journals may be drilled to obtain the minimum crankshaft weight.





- d) No machining or polishing of the crankshaft allowed. Standard engine balancing is the only acceptable modification that can be performed on this component. No painting or Teflon coating.
- e) Minimum crankshaft weights are: OEM GM 50 lbs., Ford and Chrysler 54 lbs.
- f) Aftermarket crankshafts must weigh the manufacturer's advertised specification.
- g) **Ford 347 may use Scat Crankshaft part #4-302-3400-5400-2123. Standard balancing only. This is the only approved part # for this engine.**

#### 4.48) Harmonic Balancer

Only a stock OEM or exact replacement will be allowed. Chevrolet engines must use a stock 350 balancer or exact replacement, 6 3/4" or 8" diameter, stock weight.

#### 4.49) Pistons & Rods

- a) Any flat-top three (3) ring aluminum piston is permitted. All three rings must be magnetic steel. No portion of the piston may protrude above the top of the block. The minimum ring thickness is as follows:
  - Compression Rings: 0.43 inches
  - Oil Ring Assembly: 3.0 mm
- b) Only stock type steel rods will be permitted. All aftermarket connecting rods must be steel sportsman rods with a steel pin. Rod length must be stock. All rods must be the same length.
- c) Minimum weight for piston, pin, rings, bearing and rod assembly is 1075 grams.
- d) Chevrolet must use 5.7 inch rod.
- e) **Ford 347 may use Scat connecting rods part#2-1CR5400-7/16. Standard balancing only. This is the only approved part # for this engine.**

#### 4.50) Oil Pan

- a) Stock-appearing, steel, aftermarket oil pans are permitted. The only approved aftermarket oil pans for Chevrolet are:
  - Moroso Part Numbers: 21804, 21807, 21808
  - Canton Part Numbers: 11-200, 11-200M, 11-200T.
- b) An OEM oil pan may be modified to Moroso or Canton specifications.

#### 4.51) Engine Oil Specifications

- a) Combustion enhancing oils or additives are not permitted.
- b) Oil coolers, remote filters, and accumulators may be used. Components must be mounted securely in the engine compartment.



**4.52) Cylinder Heads**

- a) Only OEM-type cast iron cylinder heads will be permitted.
- b) Approved Cylinder Heads
  - i) All factory Chevrolet heads must be factory listed for 70CC's or greater. Chevrolet may use the following OEM-replacement aftermarket heads:

WORLD PRODUCT Stock Replacement Series

Bare Casting (Part #043600B and 043610B)

DART (Part #10024361-165CC Runner 67CC Chamber, Part #10021070-165CC Runner 72CC Chamber, Part # 10024360-165CC Runner 76CC Chamber)

- ii) Ford Cleveland must use Stock OEM steel heads of two-barrel design that came on a passenger vehicle. Ford Windsor may use the cast iron "WORLD PRODUCT Windsor, Jr." cylinder head – part number 05303B. Intake valve must be 1.94" maximum. Exhaust valve must be 1.60" diameter. This is the only approved aftermarket cylinder head.
- c) Maximum Valve Size permitted is as follows:

	<u>Maximum Intake</u>	<u>Maximum Exhaust</u>
Chevrolet	1.94"	1.50"
Ford Windsor	1.94"	1.60"
Ford Cleveland	2.09"	1.71"
Chrysler 340	2.02"	1.60"
Chrysler 360	1.88"	1.60"

- d) Head studs are not allowed on any cylinder heads.
- e) All cast lines and insignias must be clearly visible and complete.
- f) Angle milling, changing the angle of the head gasket surface in relationship to the rest of the head, is not permitted. Additionally altering the position or angle of the valve guide is not permitted. The addition of screw-in studs, guide plates, valve spring seats, option valve seals, Poly-Locks, or jamnut devises are permitted. The machining of valve guide bosses allowed is for seals only. Coolant return lines are allowed to be placed on the ends of the heads. The following head modifications are not permitted, including, but not limited to: port matching, flow work, grinding, polishing, beading or chemical (acid) milling. No welding or sectioning. No internal modifications of any kind, including painting or Teflon coating. No more than two-intake mounting holes may have HeliCoils. Intake or exhaust manifold mounting holes may not be added or relocated. Holes must take standard intake manifold bolts.
- g) Rocker studs must be in stock OEM location and installed at stock OEM angle for engine being used. No enlarging or relocating of any bolt holes or dowel pin bores. No offset or oversize dowel pins.
- h)



**4.53) Valves**

All valves must be identical in appearance and construction as an OEM type valve. Any valve stem with an undercut of 0.015” or more will not be permitted. **Steel valves only.**

**4.54) Valve Springs & Retainers**

- a) The valve springs’ maximum outside diameter must measure no larger than 1.55”
- b) Double springs are permitted.
- c) Only steel valve spring retainers are allowed.

**4.55) Valve Job**

Multi-angle valve jobs are permitted. When cutting the valve seat angles, no stone or grinding marks are permitted above the bottom of the valve guide. All cutting in reference to the valve job must be centered off the centerline of the valve guide. The maximum angle of cutting and grinding on the bowl side of the intake and exhaust seats is 90 degrees. Upon completion of the valve job, the bowl area under the valve seat down to the bottom of the valve guide must still be the same configuration as far as shape and finish as it was from the manufacturer. Surfaces and/or edges where the cutter or stone has touched must not be polished. No hand grinding or polishing is permitted on any part of the head. No work is permitted to take place in the combustion chamber. It must remain as cast from the manufacturer. No modifying, cutting, spot-facing, or milling valve guide bosses in port bowl area.

**4.56) Camshaft**

- a) Only hydraulic camshafts will be permitted. No roller camshafts or lifters are allowed.
- b) Valve lift regulations are as follows:

	<u>Max. Intake</u>	<u>Max. Exhaust</u>
Chevrolet	0.390”	0.410”
Ford Windsor	0.427”	0.465”
Ford Cleveland	0.461”	0.463”
Chrysler	0.429”	0.444”

- c) Camshaft lift may be measured at the valve, rocker arm, or directly on the camshaft. It may not exceed the gross valve lift divided by the OEM-listed rocker arm ratio. Tolerance for camshafts will be + 0.005”.

**4.57) Timing Chain**

- a) Any timing chain and gears will be allowed. Gear drive or belt drive-type timing chains are not permitted.
- b) Degree buttons and offset crank keys will be allowed.



#### 4.58) Lifters

Only stock diameter hydraulic lifters will be permitted. No Rhodes or other variable duration lifters. Hydraulic lifters must be operative and pass a leak down test. A maximum of two lifter bore sleeves (bushings) will be allowed for block repair.

#### 4.59) Rocker Arms & Push Rods

- a) Stock rocker arms and aftermarket roller rockers are allowed. The rocker arms must maintain stock ratio.
- b) Guide plates are allowed.
- c) General Motors must use 1.50 ratio rocker arms.
- d) Push rods must be magnetic steel and stock diameter. Length may be + or – 0.100” **from the stock dimension.**

#### 4.60) Intake Manifold

Only the latest Edelbrock Performer intake, with the Edelbrock-applied American Flag, allowed. A stock, track-supplied intake, including gaskets, must fit the engine. The intake must remain as manufactured. No alterations, adding bolt holes, painting, or coating of the intake will be permitted. The approved part numbers are as follows:

Chevrolet	2101
Ford	2181, 2665, 2750, <b>2121</b>
Chrysler	7176

*Note: NLWS Officials, at any time, reserves the right to confiscate a competitor’s intake manifold and require them to compete with a stock manifold provided by the Speedway. A failure to comply will result in penalties.*

#### 4.61) Crate Engine and General Engine Carburetor

- a) Holley two-barrel model #4412 carburetor may be used for GM crate **602** and must be used on the general engine. The body, base plate, metering block, and bowl must be a standard Holley 4412 part. HP parts are not permitted. Carburetors and/or carburetor components machined from billet materials are not permitted.
- b) OEM type gaskets, jets and power valve must be used.
- c) The diameter of every hole in the carburetor must pass the standard NASCAR/NLWS pin and tooling gauges as part of our routine inspection process.
- d) The only changes that will be allowed are as follows:
  - i) The choke plate and shaft may be removed, but must be permanently sealed.
  - ii) Throttle plate screws may be trimmed flush with the shaft.
- e) Body of carburetor and metering block: No polishing, grinding or reshaping of any part. Drilling of additional holes or plugging holes is not permitted.



- f) Choke horn may not be removed.
- g) Boosters may not be changed. Size or shape must not be altered. Height must remain standard.
- h) Venturi area must not be altered in any manner. Casting ring must not be removed.
- i) Alterations to allow additional air to be picked up below the opening of the venturi such as altered gaskets, base plates, and drilling holes into the carburetor will not be permitted.
- j) Base plate must not be altered in shape or size.
- k) The stock Holley 4412 or Stainless Steel Holly part #346 butterflies must be used. They may not be thinned or tapered. The Butterflies must remain as manufactured, and must maintain the Holley production tolerance thickness of .0438" to .0398". Idle holes may be drilled in butterflies. Screw ends may be cut even with the shaft but screw heads must remain standard.
- l) Throttle shaft must remain standard and must not be thinned or cut in any manner.
- m) GM crate 602 optional 4 bbl. carburetor:
  - i) The Holley 650 cfm four-barrel P/N 80541-1 carburetor must be used. Polishing, grinding, resizing or reshaping of any part or orifice is not permitted.
  - ii) The body, base plate, metering blocks, and bowls must be a standard Holley 80541-1. HP parts are not permitted. OEM type gaskets, jets and power valves must be used.
  - iii) The diameter of every hole in carburetor must pass the standard NASCAR /NLWS pin and tooling gauges as part of our routine tech process.
  - iv) Body of Carburetor and metering blocks: No polishing, grinding or reshaping of any part. Drilling of additional holes or plugging holes is not permitted.
  - v) The choke may be removed, but all screw holes must be permanently sealed. Choke Horn: Choke horn may not be removed.
  - vi) Boosters: Boosters may not be changed. Size or shape must not be altered. Height must remain standard.
  - vii) Venturi: Venturi area must not be altered in any manner. Casting ring must not be removed.
  - viii) Alterations to allow additional air to be picked up below the opening of the venturi such as altered gaskets, base plates and drilling holes into the carburetor will not be permitted.
  - ix) Base Plate: Base plate must not be altered in shape or size.
  - x) Butterflies: The stock Holley 80541-1 butterflies must be used. They may not be thinned or tapered. The Idle holes may be drilled in butterflies. Screw ends may be cut even with shaft but screw heads must remain standard.
  - xi) Shaft: Shaft must remain standard and must not be thinned or cut in any manner.

#### 4.62) Carburetor Spacer

- a) One spacer/adaptor, made of solid material, is allowed. Canton Part #85-065, and Canton Part #85-060, are the only spacer/adaptor permitted on "Open," and 602 two barrel carbureted engines. Maximum height of one (1) inch will be permitted.
- b) No wedge shape spacers/adaptors will be allowed. Both the top and bottom surfaces must be parallel.





- c) Portholes must be vertical to the top and bottom. No modifications of any kind that direct or redirect air flow or allow additional air into the engine permitted. Only one 0.075" thick gasket per side of the spacer will be allowed. The spacer may not be stepped or undercut.
- d) No additional openings for air induction will be allowed.
- e) No spacer may be used on the 602 crate engine when a 4-barrel carburetor is used. Only one 0.075" thick gasket may be used to seal the carburetor to the intake manifold.

#### 4.63) Air Cleaner/Filter

- a) Only a round, dry paper, maximum four (4) inch high air filter element is allowed. The air cleaner top and bottom must be solid metal, measuring 12-14", matching the size of the air filter being used. The central hole in the air cleaner base may not have a lip of more than one (1) inch, as produced by the manufacturer. Engines using Holley 4412 carburetors may use R2C air cleaner base plate, part #AC10519.
- b) Air filter may not be sprayed or soaked with chemicals.
- c) No ducts, baffles or anything that may control airflow is allowed on, or in, the air cleaner assembly.  
All air entering the carburetor must pass through the air filter.
- d) No air boxes are permitted.
- e) A shield may be used on the front outer half of the element if it is on the element. Air cleaners must remain under the hood.
- f) All air cleaners are subject to NLWS approval.

#### 4.64) Exhaust Manifolds

- a) Only a stock OEM cast iron exhaust manifold is permitted. No modifications are allowed. No headers allowed.
- b) GM must use "log type" manifolds. No Chevy II, **Vortec**, truck type, T/A, Ram Horn, or IROC-type manifolds are permitted. No "down draft" type manifolds will be allowed. Silver Seal part #6553 manifold adapter plate may be used on the right side exhaust manifold.
- c) The maximum **below spark plug type exhaust** manifold outlet diameter for Chevrolet open motors is 1 7/8". Chevrolet must use the over-the-top spark plug-type manifold on the right side of the car (passenger side). Maximum outlet diameter for the right side manifold is 2 1/8<sup>th</sup> inches.
- d) Maximum exhaust pipe diameter is two and one-half (2 ½) inches. Exhaust pipes must exit six (6) inches behind the driver's seat and under the car. Both pipes may be located on the same side of the car. No crossover or "H pipes" allowed. Pipes must maintain a minimum of one (1) inch separation.
- e) Ford may use factory tubular exhaust manifolds.
- f) See "Crate Engine: Exhaust Manifold" section for additional, more specific rules for cars with a crate engine.



- g) **GM may use over the top of spark plug truck exhaust manifolds. No truck exhaust manifolds from fuel injected or Vortec engines. Contact division inspector if you are unsure of your manifold application.**

#### 4.65) **Crate Engine: Exhaust Manifold**

Crate engine may match the exhaust manifold port to the cylinder head. The maximum depth into the top of the exhaust manifold is 1½". The maximum depth into the bottom of the exhaust manifold is ½". No blending is permitted beyond these points. The remainder of the manifold must remain unaltered. The maximum exhaust manifold outlet diameter for crate motors is 2 1/2". Medieval Chassis part #MMXLT1-100 LT1 exhaust manifold adapter plates may be used.

#### 4.66) **Mufflers & Exhaust System**

- a) Mufflers are mandatory. The only approved muffler is the Lobak RCM 12" Spiral Flow (part number: RCM251225). Moroso muffler part #94050 may also be used.
- b) Only one (1) muffler per exhaust pipe. The end of the muffler must be located six (6) inches from the end of the exhaust system. The last six (6) inches of the exhaust system must be turned down.  
The exhaust system must extend six (6) inches beyond the driver's seat and remain under the car.
- c) Mufflers must be removable for inspection.
- d) Muffler must remain complete with ends as manufactured.
- e) Check valve tubes are not allowed in any part of the muffler.
- f) Interior coatings are not permitted.
- g) Cars using a Holley 4412 carburetor may use Dynomax Muffler part #24215. One muffler per exhaust pipe.
- h) Exterior coatings are not permitted. All other coatings including powder coatings are not permitted.
- i) The life expectancy for all Lobak mufflers is two years. Race teams are responsible for the condition of their mufflers. Mufflers found to have deteriorated baffles due to rust/rot will be treated the same as if they were modified. Your mufflers must be in good condition and have complete baffles.
- j) Exhaust system subject to approval by NLWS Officials.
- k) Exhaust system may only be fabricated with 2 ½" O.D. magnetic steel exhaust pipe. No flex pipe or stainless steel exhaust tubing may be used. **Sections of 2 ½ inch flex pipe may be used on the exhaust. One per bank. Maximum length is 2' per section.**

#### 4.67) **Ignition**

- a) Only Stock OEM-type HEI distributors, using factory production firing order, are permitted, unless noted in letter b below. The firing order is as follows:



GM & Chrysler  
Ford

1-8-4-3-6-5-7-2  
1-3-7-2-6-5-4-8

- b) The only aftermarket distributors allowed are the Moroso (part # 72231) and the Performance Distributor (Part #127212).
- c) Only stock-type coils are permitted. GM must have the coil in the cap. No MSD or super coil-type coils.
- d) The only aftermarket part allowed in, or on, the complete distributor will be advance springs.
- e) All crate engine ignition systems must be equipped with a working MSD rev limiter Part # 8727CT. Mounted to the engine side firewall, with all wiring visible. Maximum engine RPM must be set to 6500 RPM's.

*Note: NLWS Officials, at any time, reserves the right to confiscate a competitor's ignition module and require them to compete with a stock component provided by the Speedway. A failure to comply will result in penalties.*

#### **4.68) Spark Plugs**

Spark plugs must match the type of head being used. The gasket-type head must use the gasket seat spark plug. The tapered-type head must use the tapered seat spark plug.

#### **4.69) Battery**

- a) Only a single 12-volt OEM automotive type or an automotive type gel-battery is permitted.
- b) The battery must be located inside of the frame rails, forward of the rear end. The battery may not be inside the driver's compartment. The battery and/or box may not extend below the frame rails where it is mounted. Battery must be held in place with a metal cross bar and two threaded rods, welded or bolted to chassis or roll cage.
- c) The positive cable of the battery must be inside of the frame rails.

#### **4.70) Engine Cooling System**

Radiators must remain in the stock OEM location. All cars must be equipped with a minimum one (1) gallon overflow container. Only water or Water Wetter-type additives may be used in the cooling systems. No antifreeze allowed.

#### **4.71) Water Pump**

- a) Only stock OEM water pumps are allowed.
- b) The Chevrolet must use the stock steel water pump; no aluminum or aftermarket.

#### **4.72) Radiator Fan**

An electric radiator fan is permitted.



#### 4.73) Fuel Pump

One mechanical, stock-type diaphragm pump is permitted in the stock location.

#### 4.74) Fuel Shut Off Valve

- a) A ¼-turn fuel shut off valve is required in the fuel line.
- b) The fuel shut off valves ON and OFF positions must be clearly labeled.
- c) The valve must be open when the handle is aiming front to back, and the valve must be closed when the handle is aiming left to right.
- d) No fuel shut offs permitted on the driver's side. The valve must be easily accessible to emergency workers.

#### 4.75) Fuel Specifications

- a) Sunoco Race Fuel 260GTX and 93 octane Super Unleaded automotive pump gasoline are the only fuels permitted in the **Sportsman** Division. The 93 octane Super Unleaded automotive pump gasoline must be purchased from a retail outlet and must contain a minimum of 7 percent and a maximum of 10 percent of ethanol. The use of an additives or catalysts is not permitted. These two fuels may be mixed together.
- b) NLWS Officials will take fuel samples as part of their normal inspection process.
- c) Icing or cooling of the fuel system is not permitted in the garage, pit or paddock areas.
- d) Nothing may be placed in the fuel line except a standard fuel filter. The use of any type of fuel catalyst or other fuel-altering device is prohibited.

#### 4.76) Radiator Fan

The radiator fan must be electric.

#### 4.77) Bell Housing

The blow shield must be fully-enclosed, commercially manufactured, and 100% steel.

#### 4.78) Clutch & Flywheel

- a) The clutch and pressure plate must be stock OEM steel. No modifications of any kind are permitted. The minimum diameter for the clutch and the pressure plate is 10.4".
- b) Any steel flywheel for the make and model of the car may be used. It must have come with a 10.4" or larger clutch and pressure plate.
- c) Minimum weights are as follows:
  - i) Flywheel: 20 lbs.
  - ii) Pressure Plate: 13 lbs.
  - iii) Clutch Disc: 3.0 lbs.
- d) Fords must comply with the following regulations:



- i) The flywheel must be steel, have a Stock OEM part number, and weigh 20 lbs. ii) The clutch and pressure plate must be OEM steel. The minimum diameter is 10.0". . The minimum total weight for the clutch and pressure plate is 17.0 lbs.
- e) See "Crate Engine: Clutch & Flywheel" section for additional, more specific rules for cars with a crate engine.

#### **4.79) Crate Engine: Clutch & Flywheel**

The crate engine must use the GM flywheel (Part # 14088646), and weigh at least 14.50 lbs.

#### **4.80) Transmission**

- a) Only OEM production stock 3 & 4 speed transmissions will be permitted. All internal parts must be stock. Gear ratio must be of stock OEM production.
- b) Machining or lightening of any internal rotating or non-rotating parts including gears, shafts and case is not permitted. Gun drilled transmission shafts are not be permitted. Welding on any internal part is not permitted.
- c) Auxiliary, over or under drive transmissions are not permitted. High gear must have a ratio of 1 to 1 and no other gear may have a ratio closer than 1.35 to 1.
- d) Aluminum transmissions are permitted.
- e) Thermal coatings are not allowed. No REM machining or REM type processes allowed.
- f) Aftermarket stock-type shifters are allowed.

#### **4.81) Rear Ends**

- a) Rear ends must be stock OEM. Stock tread width must be maintained.
- b) Modifications that lock the rear while under the load of being turned by the drive train, including, but not limited to locking the rear end, welding of spider gears, Posi rear ends, limited slip, Detroit lockers, and shimming of spider gears, are not permitted. Minimum clearance of .008" of an inch must be present between side gears, spider gears, thrust washers, cross shaft, axles, and differential carrier.
- c) Thermal coatings are not allowed.
- d) GM must use a seven and one-half (7 ½) inch rear end assembly.
- e) Ring and pinion gears may be changed.
- g) Aftermarket gears are permitted, but must be steel and the in the same design and of the same appearance as OEM. No REM machining or REM type processes allowed.

#### **4.82) Ring and Pinion Ratio**

- a) Maximum ring and pinion ratio is 4.56 to 1.

#### **4.83) Axle Shafts & Drive Shaft**

- a) Solid steel, aftermarket axles are allowed. Axles must retain all stock dimensions.





- b) C-clip eliminators are allowed.
- c) A heavy duty axle must be used in the right rear.
- d) Drive shaft must be stock length and stock diameter, magnetic steel. **Minimum driveshaft length is 50 3/8". Minimum tube diameter is 2 1/2", outside diameter. Must be made with magnetic steel.**

#### 4.84) Radios

- a) One way communication from the Race Director/Tower to the driver is mandatory.
- b) A scanner or Raceceiver must be used.
- c) The preferred scanner is the Raceceiver scanner used by 600 racing.
- d) If a scanner other than the Raceceiver is used it must be locked onto the track tower frequency. Monitoring the track is your responsibility. You may be placed at the tail end of the field for failure to monitor the track frequency.
- e) No other type of communication, one way or two way, is permitted. Drivers found using any type of communicating device other than the Raceceiver or scanner locked on track frequency may be disqualified for that event.
- f) If the Raceceiver is not working, you may be black flagged from the event if it presents a problem on the race track.

#### 4.85) Electronics

- a) No onboard computers, automated electronics, recording devices or digital readout gauges of any kind are permitted.
- b) All teams must get approval before using any in-car camera equipment.

#### 4.86) Roll Cage

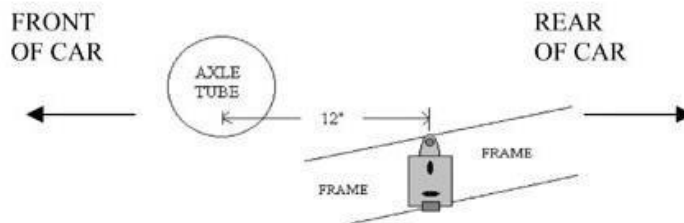
- a) Roll cage must be in accordance with diagrams numbered: 2, 3, 4, 5 & 6 of the **2018** NASCAR Whelen All-American Series rule book
- b) All tubing shown in the roll cage diagram is mandatory and must be 1-3/4" x .095" wall (HREW or DOM) magnetic steel tubing.
- c) The tubing shown in the roll cage diagram is the minimum amount of tubing you must install in the car.
- d) Additional tubing may vary in size and thickness.
- e) All bars within reach of the driver must be padded with commercially purchased roll bar padding.
- f) Driver's door bars, seat frame and main cage in the driver's compartment must be gusseted.
- g) It is mandatory that you "plate" the driver's door bars with minimum .080 thick steel plate. Please see the **2018** General Rules for door bar plating requirements.
- h) Stock OEM chassis: The minimum distance from the top of the roll cage to the top of the frame



rail is 38". The minimum distance from the top of the frame rail to the top of the dash bar, top door bars and the cross bar behind the driver's seat is 21". The leading edge of the roof halo bar must be within 4" of the windshield. The maximum distance from the lower a frame ball joints to the forward edge of the main cage is 36". The maximum distance from the lower a frame ball joints the rear edge of the main cage is 83-1/2".

#### 4.87) Picture Diagrams

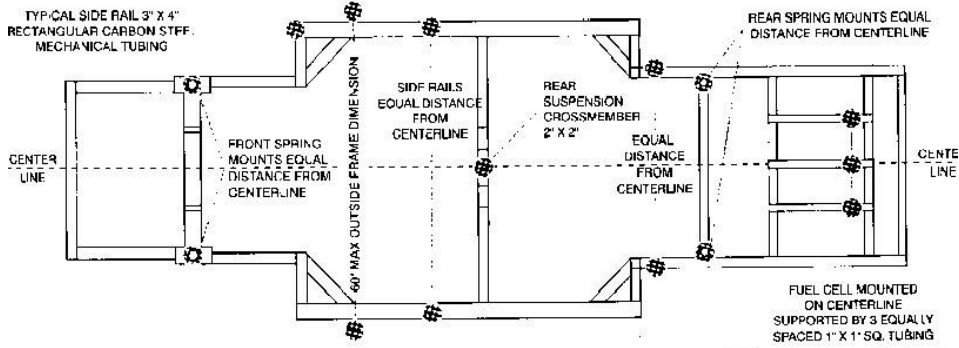
a) Exhibit A – Transponder Location



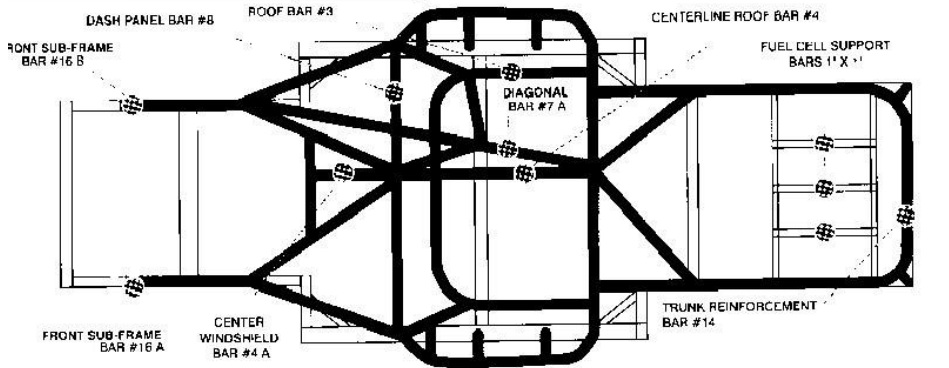


b) Exhibit B- NASCAR Construction Diagram

**DIAGRAM # 1 - TYPICAL NASCAR FRAME (PLAN VIEW)**

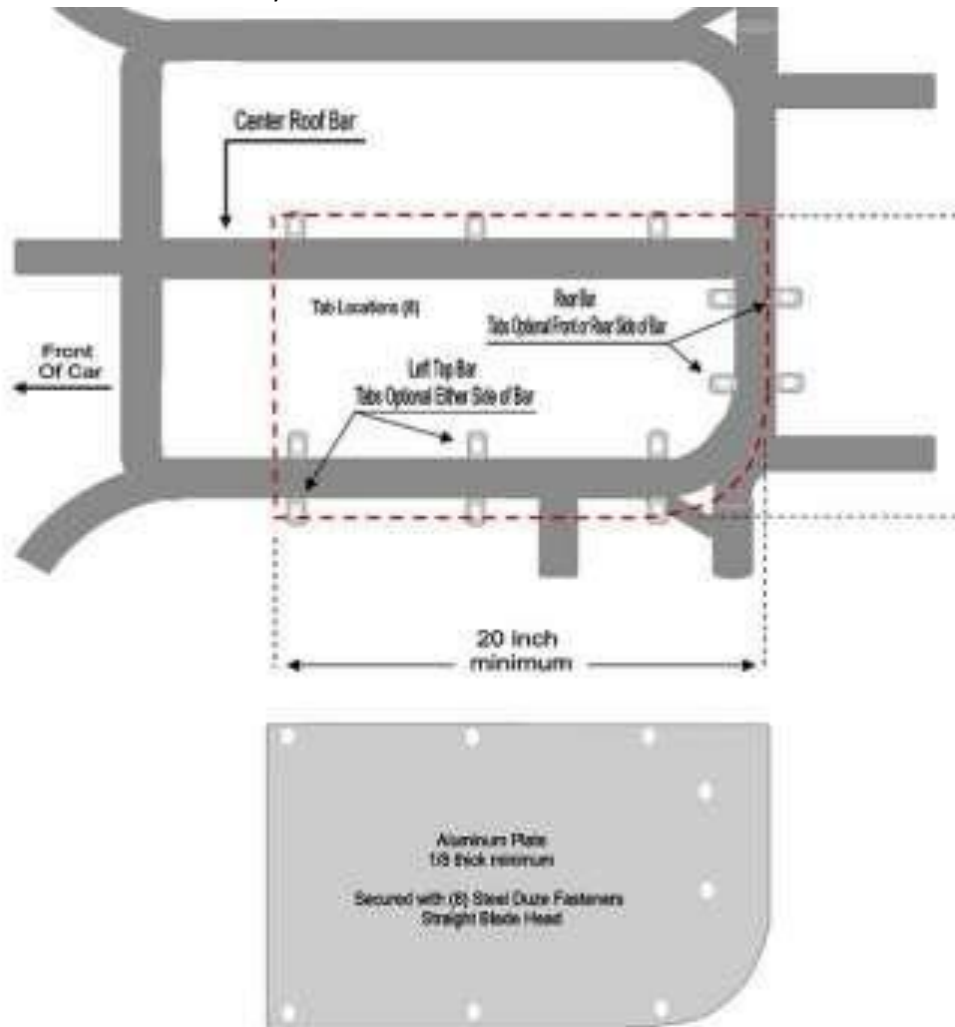


**DIAGRAM # 2 - TYPICAL ROLL CAGE AND FRAME CONSTRUCTION (PLAN VIEW)**





c) Exhibit C- Halo Bar Safety Plate



New London-Waterford Speedbowl officials reserve the right to interrupt any and all of the above the published rules in any way, under the guidelines of the published **2018/2019** NLWS **Sportsman** rules.