

# New England Hillclimb Series

## Technical and Safety Requirements • 2012

Changes to the 2011 rules are indicated in ***bold italic***.

These regulations are set forth to provide for the orderly conduct of time trial events. Participants are cautioned that all motor sports have inherent risks; it is the participant's responsibility to take adequate precautions in light of these risks. No express or implied warranty of safety or freedom from risk shall result from publication of or compliance with these rules and regulations. They are intended as a guide for the conduct of this motor sport and are in no way a guarantee against property damage or injury to participants, spectators, or others. (Note: Double-letter designation [AA, BB, etc.] refers only to Prepared cars.)

### 1. CLOTHING

#### A. Shoes

1. No nylon.
2. No platform soles, high heels, open shoes, sandals.

#### B. Clothing

1. No nylon.
2. Long sleeves, long pants.
3. Fire-retardant outer clothing or underwear recommended.

#### BB. Clothing

1. Fire-retardant outer clothing or underwear.
2. Fire-retardant gloves.
3. Fire-retardant hood or helmet skirt in open-engine cars. Recommended for all.

#### C. Helmet

1. a. Snell SA2005 or newer, or b. FIA legal
2. Full-face helmets are recommended.
3. All helmets must be in good condition.
4. Recommended that helmets carry a sticker or label with medical information (blood type, any allergy, etc.).

#### D. Eye Protection

1. DOT-approved windshield or
2. Suitable goggles (in good condition) or
3. Face shield (shatterproof polycarbonate (Lexan) required).
4. Polycarbonate (Lexan) may be used where permitted as an alternate windshield or window. Acrylic (Plexiglass) is not acceptable.

#### ***E. Head and Neck Support***

1. ***Starting January 1, 2013, SFI or FIA head and neck restraints are mandatory for all cars running faster than the breakout time.***
2. ***Starting January 1, 2014, SFI or FIA head and neck restraints are mandatory in cars that require cages.***

### 2. CHASSIS

#### A. Suspension

1. Ball joints, bushings and rod ends to have negligible play (not to exceed manufacturer's specifications).
2. Wheel bearings: minimal play and secure.
3. Steering: no loose tie rods, pitman arms, idler arms, or rack ends. Limited free play; steering wheel in good condition, tight column. If a quick-disconnect steering wheel coupler is used, it must be made of metal, with no plastic inserts.
4. No excessive ride heights, devices that bind suspension, or other unsafe conditions.
5. Suspension to be in generally safe condition and suitable for high-speed competition.

#### B. Brakes

1. Master cylinder full to capacity, no leaks.
2. No leaks in lines, hoses, cylinders or calipers.
3. Four-wheel brakes required.
4. Solid pedal; limited free play.
5. Dual or duplex master cylinder(s) required unless car was produced prior to 1967.

#### BB. Dual System

1. Any device that actuates the brake independent of driver control shall not be allowed, except for Formula Libre. Devices that limit braking power independent of driver control are allowed.

#### C. Wheels/Tires

1. No missing or loose lugs.
2. No cracked, broken, or badly bent wheels.
3. Street tires: visible tread the full width of the tire, no cord separation, DOT#, good tire condition.

#### CC. Race Tires

1. No cuts or frayed cords, sidewalls in good condition, tread indicators visible.

### 3. BODY AND FRAME

#### A. Construction

1. Neat, safe construction, all parts secure, adequate tire clearance, no jagged edges within driver's reach. Maximum wheelbase of 144", waivable only by prior approval of the tow operator and the event chair or designee (i.e. tech inspector).
2. No excessive rust in floors or structure.
3. Firewall between engine and driver.
4. Exhaust systems should be securely mounted.
5. All rotary engine cars must be adequately muffled.
6. All cars shall be muffled, 96 dBa limit at 50 feet will be considered muffled. The event chair has the right to waive this requirement.

#### AA. Construction

1. In absence of full factory steel floor and firewall, chassis structure must be reinforced to prevent driveline intrusion into driver's compartment.

2. Driver must be guarded from driveshaft.
3. Front driveshaft loop required on rear-wheel-drive cars.

#### B. Numbers

1. Legible numbers both sides (i.e., 8" minimum with 1" stroke) with class designation (3" min.). Numbers will be no more than 3 numerals, or, at the registrars option, 2 numerals and a letter."
2. Only the number for the competing driver may be displayed. Alternate (i.e., double driver) numbers must be obscured or removed.
3. A registry of permanent numbers will be maintained by the NEHA points keeper. These numbers will be given preference in assignment for each event. If a driver is inactive (not working or driving) for more than two years their number will be removed from the list. An inactive driver can keep their number on the list for \$10.00 per year payable to The New England Sports Car Club Council. NEHA also reserves the right to retire numbers.

### 4. COCKPIT

#### A. Belts

1. An SFI or FIA approved 5-, 6-, or 7-point harness assembly is mandatory for all cars with roll cages, and strongly advised for all cars.
2. Y-type shoulder harness is NOT permitted.
3. All harnesses must be properly mounted and adjusted.
4. All harness assemblies must be in excellent condition, not discolored or visibly deteriorated and not altered from original condition. FIA harness assemblies must not be past their expiration date, SFI harness assemblies must be no more than 3 years old from date of manufacture.
5. Seat belt anchor points must not be rusted.

#### B. Fire Extinguisher minimum requirements

1. Type. All vehicles must be equipped with at least one portable 2.5-lb net minimum A-B-C type, 1.25-lb net Halon or approved substitute. It must be fully charged and must have a gauge.
2. Portable installation. All portable extinguisher brackets shall be securely mounted to vehicle. Portable extinguishers must not be mounted on the floor in the driver foot well if the car is equipped with suspended pedals. It should be mounted within reach of the driver. Additional extinguishers may be mounted beyond the driver's immediate reach. No non-metal or elastic straps, latches, or brackets are permitted. Brackets for 2.5-lb net and smaller extinguishers may use a single latching metal strap. Extinguishers over 2.5-lb net must have at least one additional metal restraining feature that secures the tank of the extinguisher to the bracket. The additional restraint(s) may consist of a second strap, a receiver on the bracket to secure the bottom of the tank, or a similar device and should still permit rapid removal of the extinguisher.
3. Onboard systems. An onboard fire system may be installed in addition to the portable, and is required in any car with a nitrous system. This system must be of an approved type, and in good condition.

#### C. Seats

1. Shall be sturdily mounted and sturdily constructed.
2. Fiberglass and other lightweight seats must be framed and mounted at multiple points. FIA seats do not require additional bracketing beyond their normal mounting points.
3. Racing seats are allowed in Unprepared class and highly recommended in Street Prepared and Prepared classes.

#### D. Interior and Trunk

1. No loose objects, loose carpets or mats.
2. No spare tire or jack.
3. Small tools or items shall be in a closed compartment or suitably secured.

#### E. Collision Protection minimum requirements

1. Roll bar required in all cars without a full steel roof. Roll bar should be equivalent in construction to cage specs
2. Roll cage and fire retardant gear (per technical rule 1.BB.) required in all cars with the exception of:

(a) Any Unprepared or Street Prepared car that has a time greater than the break-out time established for each course (crosses the finish line with a time that is greater than the break-out time) satisfies the exemption requirement.

(b) If the driver of an Unprepared or Street Prepared car gets a time that is less than the breakout time (they broke out), they will receive a warning that they broke out and the time will not be recorded and will not count in the event results or year-end points. If they break out a second time during the event (either day) after receiving a warning, or if they break out by more than 10 seconds (Philo: 5 seconds) on a single run, they will require a roll cage and fire retardant gear at the venue with the same Unprepared or Street Prepared car and the time will not be recorded, does not count in the event results or year-end points. After they breakout a second time, or exceeding the break-out by more than 10 seconds (Philo: 5 seconds), the driver will not be allowed to drive again at the current event in the same Unprepared or Street Prepared car.

#### 3. Break-out times:

Ascutney 3:20 (short course), 4:20 (long course)  
Bolton 1:32  
Burke 2:30  
Okemo 2:43  
Philo 1:20

4. All Roll cages must have horizontal and vertical bars above, ahead, behind, and to the sides of the plane of the drivers' helmet. Main hoop must be braced front and/or back, must have diagonal member(s) or equivalent within the hoop if spanning more than 3'.
  5. Head rest, maximum of 3" behind driver's head as seated. Any area reachable by driver's head must be covered by high density shock-absorbing material.
  6. Roll bar or roll cage must be of adequate construction, i.e.:
    - Magnetic** steel tubing, minimum diameter and wall thickness of:
      - 1.25" x .120" or 1.38" x .090" under 1500 lbs.
      - 1.38" x .120" or 1.50" x .090" under 2500 lbs.
      - 1.50" x .120" or 1.75" x .090" over 2500 lbs.
    - Any caged car that competed at a NEHA event prior to January 1, 2012 is exempt from this rule, but it is strongly encouraged to comply with the changes to the cage rules.**
    - Current applicable FIA and SEMA spec cages with documentation are acceptable.**
  7. **Plating and brackets should equal or exceed tubing wall. Welded joints in the basic cage not containing a continuous tube section must be reinforced with gussets, sleeves, or diagonals so that weld equals 2x tube circumference. Cast or forged fittings are NOT acceptable. Welds must be fully penetrated, all around the tube. Minimum weld section should equal tubing wall. Filler/sealer in the weld area is not acceptable. 4" minimum of weld on (welded) belt/harness mounts and seat mounts.**
  8. Roll cages must be mounted to the structure of the car at 6 points minimum. Welded mountings must be socketed, gusseted, or "doubler" plated. Bolted foot plates must be at least 3x tube area, and use at least 3 grade 5 (or better) bolts each with large washers or "sandwich" plates
  9. Cars must have at least 2 sections of side protection. Roll cages must have at least one bar in the door area. Stock door beam found in most cars is acceptable as a section, as is a substantial outboard frame rail or rocker panel.
  10. Protection for the foot well area, and from "drive train intrusion", (as in 3.AA.1) must be incorporated into the chassis/roll cage structure. Complete stock steel floor is considered adequate.
  11. Energy absorbing features must be incorporated into the chassis structure ahead of the driver's feet, and to the side of the driver. Cockpit to be entirely contained within the wheelbase.
- Ea. Recommendations for collision protection
1. Bend radii at least 3x tubing diameter, and continuous main hoop(s)
  2. DOM, SAE 1020 tubing is recommended for roll cage construction.
  3. Tubing larger than specification is recommended.
  4. 4 door bars are recommended, as are additional vertical supports plating, and/or "FIA" gussets in the door bar area.
  5. Additional reinforcement (i.e. "Flemke" bar) of front cage posts is recommended, as is a diagonal member in the roof, a vertical (i.e. "Earnhardt") bar in the center of the windshield area, and 45 deg joins in front frame rails and down tubes (i.e. "Corellis" bars)
6. Cage installation should include significant structural enhancements (i.e. seam welding, gusseting, plating subframe connection) to the cockpit area. Cages should be tied in at as many points as possible (our rules specifically exempt safety equipment from class restrictions)
  7. Entrants are urged to research specifications relevant to their particular car, and to build to or above the highest specification available.
- F. Arm Restraints
1. Driver's window must be raised enough to keep the driver's arms in the car or car must be equipped with a window net.
  2. If a window net is used the window net must withstand 50-lb outward pull. Net must be releasable by driver or workers, without tools.
- FF. Arm Restraints
1. Window net or arm restraints required; however, where it can be shown to the Technical Inspector that it will interfere with the safe operation of the car, this requirement can be waived.
5. GENERAL
- A. Electrical
1. No frayed, loose, or easily pinched wires. Battery cable must not pass through the frame rails or roll cage tubing.
  2. Battery must be securely mounted and sealed from the driver.
  3. Positive battery terminal must be covered with a nonconducting cover to protect against shorting out and causing a fire.
  4. Batteries mounted in same compartment with fuel tank must be enclosed in an insulated box and securely mounted.
- AA. Kill Switch
1. Switch to cut off / isolate battery power throughout the car, obviously marked with a universal sign.
- B. Fuel System
1. Gas tank must be securely mounted and protected.
  2. No leaks in tank or system.
  3. Fuel cells in a metal can recommended.
  4. Gas tank sealed from driver, or approved by SCCA, NASCAR, etc.
  5. Tank must be vented to outside air or EEC system and may not be pressurized.
  6. The fuel pumps may only operate when the engine is running, except during the starting process.
  7. Fuel lines must be securely mounted and well protected from heat, collision and abrasion.
- C. Fuel
1. Any normally accepted fuel is legal.
  2. Hydrazine and liquid oxygen are specifically banned.
- D. Oil System
1. No leaks.
  2. No excessive oil in engine compartment.

DD. Oil System

1. Must have oil overflow catch can of at least 1 qt or breather system to prevent oil escape.

E. Coolant Overflow

1. One-quart minimum nonpressurized reservoir required or to meet manufacturer's specifications.

FF. Traction Control

1. Devices that automatically limit engine power to control traction shall not be allowed, except in Formula Libre.

G. Horns

1. A horn (either air or electric) is required on all vehicles.