

# New England Hillclimb Series

## Classifications • 2021

Additions to the 2020 rules are indicated in ***bold italic***.

The following are guidelines for the New England Hillclimb Series. They are meant to be a fair and equal grouping of cars in a competitive nature. All cars are classed as though they were prepared to the ultimate state. The tech inspectors are empowered to inspect your vehicle and personal equipment for general safety for participation at our events. Tech inspectors are NOT the classification committee.

### 1. FORMULA LIBRE

#### A. Class Requirements

1. Any car legal for any NEHA class may bump to Formula Libre (FL) at the entrant's request.
2. Cars in Formula Libre must be legal for some other NEHA class with the exception that cars not legal for Prepared because of engine displacement or tech rules 2.BB.1 and 5.FF.1 are legal in Formula Libre.

### 2. PREPARED

#### A. Base Class Determination

1. Class P1 - Prepared 1 – Cars with a displacement of 4501cc to 8000cc.
2. Class P2 - Prepared 2 – Cars with a displacement of 2201cc to 4500cc.
3. Class P3 - Prepared 3 – Cars with a displacement of 1601cc to 2200cc.
4. Class P4 - Prepared 4 – Cars with a displacement of 1600cc and less.

#### B. Displacement Factors - The following factors will be applied to engine displacements for determination of Prepared classes.

1. Supercharging, turbocharging, or nitrous oxide induction: Multiply actual displacement by 2.
2. Rotary engines: Multiply rated displacement by 1.62.

Factored displacement from 2.B.1 and 2.B.2 will apply as actual displacement for use of the following factors:

3. Cars with a throttle plate area of less than 0.65 mm<sup>2</sup>/cc: Deduct 12% of actual displacement.
4. Cars competing on tires meeting the requirements of Sec. 2.C.4 (DOT tires): Deduct 12% of actual displacement.
5. Four Wheel Drive: Multiply actual displacement by 1.25
6. Cars configured for production class racing (i.e. Retains stock chassis structure and suspension mounting points.) Deduct 12% of actual displacement.

Classes recognized as production classes include SCCA IT and AS; production classes in SCCA, EMRA, and SVRA; and most Street Stock classes. Criteria for recognition of existing classes, or for use of this factor on cars not originating in these classes, are retention of all-original body, frame, floors, and firewalls; use of all original control arms and original suspension geometry; original configuration of engine, in stock position.

### 3. UNPREPARED

#### A. Class Requirements

1. All cars shall be as produced, available in the North America, and at least 500 made by the manufacturer.
2. Must be capable of passing a Vermont State Vehicle Inspection.
3. No stock equipment or parts may be removed unless they were available as an option on that particular vehicle. The only exception is removal of the A/C system.
4. Some interior parts may be minimally altered (but not removed) to allow installation of safety equipment.
5. The engine is to be the original type and size for that year car.
6. Other than the air filter and its housings the induction system may not be modified to allow more air into the engine, such as oversize throttle bodies, carbs, or intake manifolds.
7. A piggyback computer that can modify the mass air flow or MAP sensor is illegal.
8. No modifications to the exhaust manifold. The exhaust system may be replaced with a "cat-back" system (where applicable) that runs in the stock location and exits in the stock location.
9. Bolt-on bracing and minor suspension reinforcements that require no cutting or fabrication for installation are allowed.
10. Springs must be on original seats.
11. Rim size may be changed. Tire size is free. (Fender lip may be flattened to help prevent tire chafing.)
12. Tires must be DOT approved.
13. OEM flexible brake lines may be replaced with aftermarket or motorsport braided stainless steel lines.

### 4. STREET PREPARED

#### A. Class Requirements

1. This category is based on stock production vehicles that are easily recognized as such, and must have operational lights, horn, glass, wipers, mirrors, door handles, bumpers, bumper reinforcement bars (in good condition OEM or equivalent), both front seats, heater and dashboard.
2. The following items may be removed: emissions equipment, sound deadening, sound system, head liner, floor covering, trunk area

covering, rear seating (provided that proper separation remains or is installed between driver and fuel area). Removal in excess of the above invokes the excessive lightening penalty.

3. Plastic side **or** rear windows will invoke the excessive lightening penalty unless 30 lbs of compensating weight is added to the car.
4. Doors may not have any structure removed causing them to be excessively lightened – i.e.; intrusion bar, outer framework and basic structure of the door must remain intact.
5. The floor and trunk area must remain intact and in stock location. Any modifications to the floor or trunk area must be sealed as good as the factory original.
6. All exterior body panels must appear as stock and remain in place (fender flares are free).
7. Relocation of accessories, batteries, fuel system, electrical components is allowed, provided that the exterior of vehicle remains as produced.
8. Interchange of production options within the model is free (while adhering to the adjustments from the norm section).
9. Engine/ driveline modifications are allowed.
10. Rim size may be changed. Tire size is free but the tread may not be seen from above. Tires must be DOT approved. Wheel openings shall retain their original contour when viewed from the side.
11. The above items do not void any applicable safety requirements as listed in the Technical and Safety Requirements.

## 5. UNPREPARED AND STREET PREPARED CLASS DETERMINATION

### A. Base Class Determination

1. Classes are determined within a category by the ratio of adjusted engine displacement (in cubic centimeters) to vehicle weight (in pounds).
2. Curb weights are those published in the N.A.D.A. used car dealer guide, if available, or on the vehicle manufacturer's tag if equipped and not tampered with. If the tag weight is used, it will be given in gross vehicle weight and must be adjusted. Subtract 175 lb per occupant, from the GVW to get curb weight.
3. Actual displacement is adjusted by factors from the "norm" and then divided by the curb weight. (Norm = 2 valves and 1 injector per cylinder normally aspirated, in-line configuration.) This number will be used to class the car.
4. Side-intake-port Wankel rotary engine displacement is multiplied by 1.62 prior to applying factors.
5. Some classes in Unprepared and Street Prepared are limited to two-wheel drive (2WD) vehicles.
6. No kit cars and no engine swaps will be allowed in Unprepared. In Street Prepared kit cars and engine swaps will be classed where deemed most competitive.

7. To determine your car's class, multiply your car's actual displacement by each applicable adjustment under 5.F. Take the sum and divide this by the car's weight to come up with your class factor. Apply this number to the chart above. Then come run and have fun!
8. There will be no penalty for a roll cage regardless of how it is tied in to the body structure, or for racing seats.
9. Updating or backdating within the model will not be penalized (factors will be assessed after the changes).
10. Emission requirements shall not be considered in the enforcement of these rules.

### B. Unprepared Base Class Determination

|                            |     |                       |
|----------------------------|-----|-----------------------|
| 1. Class U1 - Unprepared 1 |     | 1.550 and above cc/lb |
| 2. Class U2 - Unprepared 2 | 2WD | 1.550 and above cc/lb |
| 3. Class U3 - Unprepared 3 |     | Less than 1.550 cc/lb |
| 4. Class U4 - Unprepared 4 | 2WD | Less than 1.550 cc/lb |
| 5. Class U5 - Unprepared 5 |     | Less than 1.000 cc/lb |
| 6. Class U6 - Unprepared 6 |     | Less than 0.840 cc/lb |

### C. Street Prepared Base Class Determination

|                                 |     |                       |
|---------------------------------|-----|-----------------------|
| 1. Class S1 - Street Prepared 1 |     | 1.500 and above cc/lb |
| 2. Class S2 - Street Prepared 2 | 2WD | 1.500 and above cc/lb |
| 3. Class S3 - Street Prepared 3 |     | Less than 1.500 cc/lb |
| 4. Class S4 - Street Prepared 4 | 2WD | Less than 1.500 cc/lb |
| 5. Class S5 - Street Prepared 5 |     | Less than 1.060 cc/lb |
| 6. Class S6 - Street Prepared 6 |     | Less than 0.900 cc/lb |

### D. Unprepared and Street Prepared Displacement Factors

|   |          |
|---|----------|
| 1. Variable valve timing  | 25%      |
| 2. Four-wheel drive   | 25%      |
| 3. Wheel size (diameter and width) per .5 inch  | 1%       |
| 4. Tire treadwear rating (50–150 U Class) (< 100 SP Class)                                    | 8%       |
| 5. Non-stock antiroll bars (SP only)  | 5%       |
| 6. Non-stock springs (SP only)  | 5%       |
| 7. Modified suspension (SP only)<br>(other than shocks, alignment, and bolt-on reinforcement) | 5%       |
| 8. 6-point roll cage (U Class)  | – 5%     |
| 9. 6-point roll cage (SP Class)   | – 20%    |
| 10. Intact interior (SP only with full cage)  | – 5%     |
| 11. Excessive lightening (SP only)  | 15%      |
| 12. More than 2 valves per cylinder *<br>(Stratified charge valves not included.)             | 10% each |
| 13. More than 1 camshaft per bank of cylinders  | 5%       |
| 14. V type engine configuration   | 10%      |
| 15. 1 venturi or injector per 4 or more cylinders   | – 20%    |

- |   |           |
|---|-----------|
| 16. 1 venturi or injector per 2 cylinders           | - 10%     |
| 17. Non-stock exhaust manifold (SP only)            | 10%       |
| 18. Non-stock induction (SP only)                   | 10%       |
| 19. Turbocharger                                    | 30%       |
| 20. Supercharger                                    | 25%       |
| 21. Intercooler                                     | 25%       |
| 22. Excessive sound (over 96 dB) at 50 feet         | 15%       |
| 23. Nitrous oxide (mandatory fire system) (SP only) | + 1 Class |
| 24. Diesel  | - 25%     |

## 6. ELECTRIC VEHICLES

### A. Class Requirements

1. Electric vehicles must use only electric power during racing. Motor(s) must be powered only by a charge storage device (batteries, capacitors, other charge accumulators), or by fuel cell. A hybrid electric vehicle (e.g., Toyota Prius) may be raced in electric-only mode.

### B. Electric Vehicle Class Determination

1. Unprepared Electric (UE) Electric class is for unmodified electric vehicles built by a recognized manufacturer to U.S. DOT standards.
2. Prepared Electric (PE) class is for modified, converted, or custom electric vehicles, and must comply with the technical and safety rules for prepared electric vehicles.

## 7. RALLY SPRINT

### A. Class Requirements

1. Properly Rally Logbooked cars only-includes NASA Rally, RA, FIA, CARS, ARA. Rally Sprint cars do not need to be registered/street legal as there are no transits.
2. Driver and co-driver must have all safety gear required by Logbook's sanctioning body. Driver and co-driver must be as listed on the entry. No Rally license required.
3. Tires: Must be DOT tires or Tarmac Rally Tires. Slicks are disallowed: "slicks" are defined as any tire that does not have a minimum of 1.6mm (2/32") tread depth over at least a 17% void area.
4. Any rule not directly addressed by the rally sprint class rules defaults to NEHA SP class rules. (Example: all cars with a kill switch must have an air horn installed)

### B. Rally Sprint Class Determination

1. Class R1 - Rally 1 - Turbo/supercharged/high displacement cars. AWD turbo cars in R1 must use a turbo restrictor in accordance to current US rally regulations.
2. Class R2 – Rally 2 - Non-turbo cars.

## 8. BRACKET

### A. Class Requirements

1. Any car legal for any NEHA class may bump to Bracket class at the entrant's request.
2. Cars in Bracket are subject to a bracket time which is 5 seconds more than the breakout time for the course.
3. If the driver of a Bracket class car gets a time that is less than the bracket time the driver will receive no time (NT) in the results.
4. Bracket class cars that are subject to the breakout rule (Tech E.2.b) are still subject to that rule if they run less than the breakout time for the course.

### B. Bracket Class Determination

1. Class B – Bracket – The Bracket (B) class is the only Bracket class and is used for all entrants.