

## **Which Class Should I Choose? AN OVERVIEW**

This document is an overview of some of NASA’s road racing classes intended to help drivers choose a series. Nothing in this informal summary should be construed as a published rulebook or other enforcement document. The accuracy of the information in this document is not guaranteed as rule changes may have been put into effect after the publication of this guide. Car builders should thoroughly read all applicable rules and contact the NASA National office with any questions. More series descriptions will be added to this summary as they become available and as new classes develop.

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## **American Iron /American Iron Extreme (AI /AIX)**

<http://www.americanironracing.com>

This is a classic battle of muscle machines. The premise is simple: choose an American-made car and start modifying it. The American Iron class has a power-to-weight limit and other restrictions to control costs. American Iron Extreme allows nearly unlimited modifications and is the playground for the big horsepower monsters.

### Rules Summary:

- All 1960 and newer American made sedans except as specified
- 100" minimum wheelbase
- Front engine, rear wheel drive only
- Live axle rear end except specified IRS systems
- No tube frames
- Minimum weight for AI is 2700 pounds with driver
- Minimum weight for AIX is 2700 pounds with driver
- No Nitrous Oxide
- AI cars run on Toyo Proxes RA-1 275mm tires
- AI cars can run 18" x 9.5" rims maximum
- AIX cars can run any rim up to 18" x 13" maximum and any tires
- Wings /ground effects are open in AIX with some restrictions in AI
- No acid dipping or lightening of stock body panels in AI
- Not more than 300 pounds of ballast on any car
- Liquid cooled brakes prohibited
- Brake rotors must be iron and 14" or less in diameter
- AI cars can use synchromesh-type transmissions only
- AIX cars may use any transmission that shifts manually
- No traction control allowed
- No non-OEM aluminum blocks allowed in AI
- No dry sumps in AI
- AI cars are required to get a dyno certification

## **Honda Challenge (HC)**

<http://www.hondachallenge.com>

There are five classes within this series (HC1, HC2, HC3, HC4, and HC5) that cover a wide range of models and a broad spectrum of modifications. Since there is such a wide variety of modification permitted in the different classes, the rulebook is the best source to determine where a particular car fits. This series is well suited for Honda enthusiasts that want to modify their favorite Honda model.

### Rules Summary:

- Cage is nearly wide open providing that the minimums are met
- Minimum weight varies depending on model and modifications
- Ballast not to exceed 150 pounds
- Nitrous, forced induction, and dry sumps are prohibited
- Engine balancing, blueprinting, and boring to 0.040 over is allowed
- Port-matching allowed
- Head porting is only allowed in HC1
- Flywheel is open providing OEM diameter minimum is kept
- Limited slip is allowed, but only in stock housing
- Any clutch and pressure plate
- AC, smog, and heater core can be removed
- Minimum ride height is 4"
- Springs, shocks, and saw bars open but see rules for specifics
- Body kits and aerodynamic devices generally allowed with some restrictions
- Brake pads, fluid, and bias valves are unrestricted
- Brake rotors are limited to OEM or replacement
- Gutting of interior, except dash pad, is allowed
- Any wheel diameter allowed
- HC2, HC3, HC4, and HC5 wheel width is 7" maximum
- HC1 wheels are unlimited in width
- Toyo Proxes RA-1 spec tire

### **Spec Miata (SM)/Showroom Spec Miata (SSM)**

This class is widely popular mainly because it is inexpensive to run and the cars are a blast to drive. The engine is stock and the suspension components are specified, thus keeping construction cost low as well. Someone can construct a competitive car for about \$7,000 - \$8,000 including the cost of the car. Eligible models are 1990 – 2005. The 1.8L cars run a restrictor plate and have to weigh more in order to level the playing field.

#### Rules Summary:

- Stock engines
- Weight for the 1.6L models is 2300 pounds
- Weight for the 1.8L models is 2400 pounds
- Balancing and lightening of engine parts is not permitted
- 1.8L cars must run a restrictor plate at the throttle body
- Stock downpipe must be used but the rest of the exhaust is open
- Limited slip permitted
- Shocks, coilovers, and sway bars are all spec parts
- Any ride height so long as no metal part of the car touches the ground while on track
- Any 14” or 15” rims with 7” width maximum. Rims must weigh 13 pounds.
- Toyo Proxes RA-1 spec tires
- Any brake pads

### **Camaro Mustang Challenge (CMC)**

<http://www.camaromustangchallenge.com>

This series attempts to settle the old Ford vs. Chevy rivalry with inexpensive production cars. The series includes 1979-2010 V8 Mustangs and 1982-2002 Camaros and Firebirds. The cost to build a competitive car for this series varies greatly depending on the year and model chosen, but a competitor should expect to spend about \$3,000-\$5,000 over the cost of the car itself to make their car race ready depending on the condition of the base car. The engine rules are policed largely through use of dyno certifications to avoid expensive teardown inspections.

#### Rules Summary:

- Dyno certification ensures engine power equalization
- Stock engine required with a few limited modifications
- Smog devices may be removed
- Interior allowed to be mostly gutted
- Battery may be relocated
- Min weight varies. Ranges from 3150-3480 depending on year and model.

- Restrictor plates required on some model years
- Engine balancing and lightening is not allowed
- Carburetor or fuel injection may be used with some restrictions
- Any air cleaner
- Any plugs and wires allowed, but the rest of the ignition must be stock
- Any single disc clutch
- Transmission can be any OEM four, five, or six speed originally offered in OEM models or T5 or Tremec 3550
- No transmission modifications allowed but rear gear ratios are open
- Toyo Proxes RA-1 spec tires
- Rims are 17" X 9.5" maximum
- Variety of suspension modifications allowed. See rules.

### **Factory Five Challenge (FFR)**

NASA and Factory Five Racing (FFR) formed a partnership to create a unique class based on the widely popular Factory Five Racing Mk3 Roadster platform.

Factory Five Racing has built a purpose-built spec racer, which is based upon their FFR 65 Roadster with the addition of an integrated roll cage.

The Factory Five Challenge Series racer uses Mustang 5.0-liter running gear, and provides the perfect combination of performance, safety, affordability and good looks. Although this car is built for race competition, it remains completely street legal.

This is the ideal class for the person who has always wanted to own and experience the feel of one of America's most famous sportscars! Drivers can purchase a kit for about \$13,000. A 5.0L Mustang donor car is needed for the drive train components. The cost of a donor car can vary, but a competitive racer should cost about \$20,000 by the time everything is finished. The kit is assembled per the instructions and most parts are specified.

#### **Rules Summary:**

- Donor drive train from 1987-1993 5.0L Mustang
- Ride height 3.5 inches
- Optional front air dam
- Engine balancing not allowed
- Any headers with use of the Factory Five provided J-Pipe
- Smog may be removed
- Max overbore is 0.030" for rebuilds
- Weight penalty of 10 pounds per 0.010" overbore
- ECU and Mass Air Sensor part numbers specified. Must remain stock.
- Any OEM T-5 transmission from eligible donor car. Stock ratios.

- Optional Tremec 3550 transmission may be used with specific ratios
- Stock 8.8" rear end with 2.73:1 gears required
- Rims must be at least 20 pounds and 17" x 9" max
- Toyo Proxes RA-1 spec tires
- Adjustable brake biasing valve allowed
- Brake caliper. Several Ford OEM options allowed. Rotors 10.5" max diameter.
- Any spring rate
- Shocks are spec and supplied with kit
- Minimum weight is 2400 pounds

### **Performance Touring (PT)**

Performance Touring is a unique series that classifies over 600 makes and models of cars into one of seven classes. Once the base class is identified, participants then add points for each specific modification made to the vehicle. The modification points are added up and the vehicle moves up into its final class. Anytime a modification is added or subtracted, the participant can reclassify their vehicle. This formula not only allows classification of just about any preexisting race vehicle, but it can also accommodate any modifications starting with any vehicle. The classes closely match those found in NASA's Time Trial system, which provides an easy transition from Time Trialing to racing.

### **Super Touring (ST)**

Super Touring is an extension of the Performance Touring series, catering to more powerful and exotic cars. ST uses power-to-weight formulas along with additional factors to class cars in one of two classes, ST1 or ST2. ST encourages nearly unlimited builds within the power-to-weight confines to provide tuners and racers a showcase for their talent and imagination.

### **Super Unlimited**

Super Unlimited is a class available for cars that have power-to-weight ratios or construction over and above Super Touring or that do not fit in any other NASA class and are heavily prepared for serious speed. Slicks are allowed as well as any other modification including full tube frames provided that all the safety regulations in the NASA CCR are met.

## **GTS Challenge**

<http://www.nasagts.com>

GTS Challenge pits German sedans from BMW, Porsche, Mercedes, Audi, and Volkswagen against each other in a “gentleman racer” format. GTS has six classes (GTS1-5, GTSU) and rules in place to discourage body contact and encourage good sportsmanship. Because of the wide variety of eligible cars, cost to build a competitive car could range from \$10,000 to almost anything.

Rules Summary:

- Classing is based on weight to HP ratio as follows:
  - GTSU = Under 6.599
  - GTS5 = 6.6 - 8.49
  - GTS4 = 8.5 - 10.99
  - GTS3 = 11.0 - 14.49
  - GTS2 = 14.50 - 18.49
  - GTS1 = 18.50 and higher
- AWD Drive cars and cars running slicks as follows:
  - GTSU = Under 7.199
  - GTS5 = 7.2 - 8.99
  - GTS4 = 9.0 - 11.99
  - GTS3 = 12.0 - 15.99
  - GTS2 = 16.0 - 19.99
  - GTS1 = 20.0 and higher
- All cars must obtain a dyno certification
- Modified 13/13 (vintage) style rules apply for driving conduct

## **Endurance Racing**

NASA offers a full spectrum of local endurance races and the signature 25 Hours of Thunderhill race that takes place annually at Thunderhill Park, in Northern California. NASA has assigned most currently classified cars from nearly every sanctioning body in the country to six classes: ES (anything goes), ESR (anything goes for sports racers), and E0, E1, E2, and E3 depending on prep level. Teams must declare a set of rules that the car meets (i.e. AI, CMC, SM, etc.) This can be a regular NASA class, or a class from another sanctioning body. The NASA administration will classify the car into one of the six endurance racing classes. Race lengths will vary with the typical event being 2, 3, 4, 6, 12, or 25 hours long.

Rules Summary:

- Pit stops are not timed
- Pits closed during full course yellows
- Pit lane speed limit is 25 MPH; paddock speed limit is 5 MPH

- Gas spills bring penalties
- No limit to “number of crew over the wall”
- Refueler(s) must wear same gear as driver
- Each fuel stop requires one person manning a fire bottle
- One tire change per stop limitation (except ES and ESR)
- Races less than six hours require all cars (except ES and ESR) to take on at least 5 gallons of gas
- Races of six hours or more- limit 10 gallons per stop (except ES and ESR)
- No fueling rigs; approved 5-gallon jugs only (ES and ESR- fueling rigs permitted)

### **Legends**

These are 5/8-scale fiberglass full-fendered versions of the famed NASCAR modifieds that were run in the 40s and 50s. All cars are produced by 600 Racing and are identical in almost every way. They are powered by a Yamaha FJ1250 drive train, which produces about 125 HP. Cars weigh in at 1300 pounds with driver. The rules are simple; this is a true spec car with almost no modifications allowed. They run on a spec 205/60R13 BF Goodrich Comp TA HR4 tire mounted on 13” x 7” wheels. The cost of a new car is about \$13,000.

### **Thunder Roadsters**

The Thunder Roadster should bring back many memories for people who experienced first-hand open-wheel racing during the '50s and '60s while offering younger fans a racecar that not only looks fast, but also goes fast. This car is similar looking to the famed “Watson Roadster.” All cars are produced by 600 Racing and are identical in almost every way. They are powered by a Yamaha FJ1250 drive train, which produces about 135 HP. Cars weigh in at 1500 pounds with driver. The rules are simple; this is a true spec car with almost no modifications allowed. They run on a spec 880 Racing Hoosier 26.5/8.0-15 tire mounted on 15” x 8” wheels. The cost of a new car is about \$18,000.

### **SpecE30/Spec 3**

[www.spece30.com](http://www.spece30.com)

[www.spec3racing.com](http://www.spec3racing.com)

These are racing series devoted to non-M BMW E30 and E36 models. The goal for Spec E30 and Spec 3 is to create high levels of competition between similarly prepared E30's and E36's at a reasonable cost. Purchase and preparation of a car for these series should be less than \$10,000.

Summary of the rules:

- Limited to non-motorsport E30 and E36 models
- Stock engine
- Stock transmission
- Specified shocks
- Specified anti-sway bars
- Specified springs
- Removal of interior allowed
- Stock exhaust manifold and down-pipe must be used
- Any 14x 6" or 15x7" rims. Must weigh 13 pounds.
- Toyo Proxes RA-1 spec tires

## 944 Spec

(<http://944spec.org> )

This class focuses on the variants of the Porsche 924 and 944. Cars are mildly prepared to keep the costs low and the driving fun. Cost to build a competitive car can range from about \$6,000 or more depending on the cost of the car itself.

### Rules Summary (944-Spec):

- Eligible models:
  - 1983-1988 Porsche 944, Normally Aspirated, 2479 cc engine
  - 1987-1988 Porsche 924S, 2479 cc engine
- Minimum weight is 2600, including driver
- Engine balancing is not allowed.
- Max compression ratio 10.5:1 (head shaved for trueness only).
- Throttle body, intake, and air flow meter must remain stock.
- Any air filter.
- OEM computers only. No chips, no modifications.
- Any exhaust header and pipe(s)
- Any clutch and pressure plate to an unmodified flywheel
- Stock ring and pinion with 3.889:1 final drive
- Any limited slip permitted. Welding the diff is allowed.
- Stock transmission (with little exception)
- Track width: 58.1" front / 57.1" rear
- Specified shocks
- Shock tower brace permitted
- Camber plates allowed
- Any springs are allowed
- Anyway sway bars (no cockpit adjustable allowed)
- Any safe ride height
- Rims 15" x 7" ATS wheels with offsets of 23.3mm or 52.3mm
- Spec Toyo Proxes RA-1 225/50/15 tire
- Any brake pads, lines, and fluid
- Stock brake components (calipers, rotors, etc.)
- Smog, radio, AC, etc. may be removed
- Minor gutting of interior allowed

## **986 Spec**

Based on the 1997-99 2.5 liter Porsche Boxster, this class represents the next step up from 944 Spec in both speed and cost to build. Ready to race cars are available for \$30,000 and maintenance costs are proving to be minimal on these fun racers.

Rules summary (986 Spec):

- Eligible models -1997-99 2.5 liter Boxster
- Minimum weight 2650 including driver
- Stock motors
- No seam welding
- No solid motor mounts
- Additional radiator allowed
- Accusump allowed
- Stock air intake system Factory style/size filters
- No performance “chips” or remapping of chips allowed
- Stock exhaust manifolds. Exhaust pipes free
- Catalytic converters may be removed
- Stock transmissions only
- Lightened flywheel okay (Aasco 106412-11)
- Replacement clutch okay (see spec for approved parts)
- No camber plates
- No strut braces
- GT-3 “Street” A arms okay
- Bilstein PSS9 shocks
- Springs may be 450 lb frt 500lb rear (see spec for approved parts)
- Tarett Engineering drop links
- Tarett Engineering rear toe links allowed
- Stock size and offset wheels (see spec for min weights)
- Toyo RA-1 Tires 255/40/17 maximum size
- 4 new tires maximum allowed per event
- Brake pads free
- Limited bodywork changes allowed (see spec)

## **Spec Z**

Spec Z features the popular Nissan 350Z in a tightly controlled spec racing series. 350Z's from 2003-2008 are allowed and a complete parts package is available from Nissan's competition parts program along with a very generous contingency award package. See the Spec Z section of [www.nasaforums.com](http://www.nasaforums.com) for more information.

- 2003-2008 350Z eligible
- 3100-3300 pound minimum weights depending on engine choice
- Exhaust may be modified and catalytic converters may be removed
- Factory ECU must be retained but reflashes allowed
- Nissan Motorsports flywheel and LSD may be used
- Suspension must be Nissan Motorsports Spec 350Z kit
- Any 18x9 inch rim with 18.5 minimum weight
- BFGoodrich g-Force R1 or g-Force KDW spec tire
- Body panels must be OEM