Autocross

Official 2024 National Rules

(Rules subject to change)

April 10, 2024 Version 1.0

(Note: Latest revisions are in blue font and all previous revisions are in green)

1. **Introduction**

The following rules are not guidelines for this series but an actual listing of allowed modifications and their impact on the class you will compete in. **The only legal modifications are those specifically allowed by applicable rules. If not specifically allowed, any modifications will require approval prior to competition, ex.: major modifications such as engine swaps or drive train configuration modifications.** Some equipment may be required by the state in which you compete, example: New Jersey requires helmets.

The autocross rules are broken into 3 major sections.

1. Vehicle Classing
2. Vehicle Modifications (Mod Points Scale - MPS)
3. Explanation of classing and how mod points affect the class you compete in.

2. **Intent**

The intent of the Autocross (NX) racing series is to provide National Auto Sport Association (NASA) members a racing series with tighter connection to grassroots motorsports. It's close to home and easily accessible for many. Modifications are open for each driver as built to suit. Modifications will be accessed points and after you reach a certain threshold, it will result in that driver being bumped into a faster class. The mod points were designed to promote close

competition, and flexibility to enable drivers to learn and experiment with the principles of race car setup, thereby providing the drivers with fun, exciting, and challenging yet approachable racing format.

3. Sanctioning Body

The Class/Series is supported and sanctioned by the National Auto Sport Association (NASA). All race events are governed by the rules set forth by the Class/Series Directors and NASA officials. All competitors agree to also abide by the rules set forth in NASA's current Club Codes and Regulations (NASA CCR) and any supplemental rules issued by the Class/Series Directors.

4. Eligible Vehicles Manufacturers/Models/Configurations

The series is open to all street driven registered vehicles as well as purpose built kit cars. Restriction of participation will vary by state, for example, in New Jersey for example, you can only autocross 4-wheeled vehicles, no trikes or motorcycles.

5. Safety

5.1. **Safety Requirements**

All cars and drivers must conform to NASA's *Club Codes and Regulations* (CCR).

5.2. **Class safety**

The Event Director or any NX Official may exclude any car for any item that is deemed to be unsafe.

5.3 **Convertible/T-top Cars**

Helmets - New Jersey requires that open car drivers use a FULL FACE helmet.

New Jersey: This applies to gokarts and convertibles.

5.4 Vehicle Tech Inspection

The follow is brief checklist of items to check as part of driver check-in

a. Loose or worn ball joints
b. Loose or worn wheel bearing
c. Missing or poorly adjusted throttle return spring
d. Battery: Must be firmly secured.
    i. Lead acid (wet electrolyte) must be out of the passenger compartment or in a suitable, approved enclosure and externally vented. If the battery is relocated from stock configuration, the battery wiring requires fuse matching alternator output or minimum 120A and all framing passthroughs require grommets.
e. Tires with visible cracks (dry rot) or sidewall damage = automatic fail

f. Wheels with missing bead section or other visible damage = automatic fail
g. Interior should be free of loose fitting items (floor mats, water bottles, etc). Items from under seats can suddenly roll into the pedal box area and cause poor braking performance or stuck throttle
h. Trunks should be empty (distraction caused by noises from the trunk can lead to drivers not paying attention to where they are headed!)
i. Helmet: verify age, type (if applicable for your jurisdiction) if helmet is valid for competition use

5.5 Safety on Course

a. Course workers should not be permitted to use phone during work session
b. Course workers should know where cones are placed in their area of work.
c. Course workers should be on their feet at all the time (may need to react or MOVE quickly).
d. Always face the direction of the upcoming car.
e. Use solid structure (if available) to protect yourself.
f. Red flag should be used anytime a condition exists where one car on course has a chance to catch up to the previous car, either from mechanical issues (spin n stall), spin out or inadequate timing between cars at the start. A good starter learns to quickly gauge if a car and driver needs more time than the next.
g. Radio and flag operators should be handled by the same experienced, qualified person.
h. Radio operators should speak in clear, concise form. Timing and scoring coordinator can choose to acknowledge their calls or only ask for repeat in case there was noise on the line and call was unclear.
    i. Ex: Red Miata ONE Cone
    ii. Ex: 11 F Two Cones
    iii. 422 G Off Course
i. Event photographers *are required* to have spotters at all times when on course.

6. NX Series Modification and Mod Points Scale - MPS

6.1 Engine and or drivetrain swaps (all cars) - Must apply for new Base Class

6.2 Chassis and Suspension

6.2.1	Height adjustable coil-overs (dampers, springs , camber plates) OEM replacement type coil over suspension kit that allows for height and or rebound and compression as well as camber and or caster adjustments Including the following notes: Springs (no restriction) Dampers (no restriction) Camber plates / eccentric bolts / bushings (McPherson suspension only)	**25**
6.2.2	Springs Stage 2 (Any spring combination beyond Stage 1)	**13**
6.2.3	Springs Stage 1 OEM style: Up to 30% rate increase and or lowered 25mm or less	**7**
6.2.4	Seam weld	**10**
6.2.5	Dampers: competition performance shocks (adjustable and or revalved) Not available as OEM option Unmodified aftermarket OE replacement = no points Aftermarket performance version will received points, ie Koni Yellow	**7**
6.2.6	Change suspension type and/or alternate mounting points. Alternate length control arms or links. No points for the following: Watts links, Panhard rods.	**7**
6.2.7	Roll cage (6 or more attachment points)	**5**
6.2.8	Sway bar 1 bar No Points for the following: Modification to the bar and links	**2**
6.2.9	Sway bars (both) No Points for the following: Modification to the bar(s) and links	**6**
6.2.10	Camber plates , bushing ,eccentric bolts, bolt joints to permit Camber adjustment	**2**
6.2.11	Spherical bearing (on control arms)	**5**

6.2.12	Subframe modifications or its mounts and or bushing	**5**

6.3 Body and Weight Reduction

6.3.1	Glass removal (other than sunroof)	5
6.3.2	Removal of interior coverings, seats	3
6.3.3	Lightweight hood	2
6.3.4	Lightweight trunk or hatch	2
6.3.5	Sunroof and or window mechanism removal	2
6.3.6	Racing seat, non OE meeting the following: 1. Approved/homologated by a racing sanctioning body 2. Weighs less than 20 lbs)	2
6.3.7	Non-factory body flares to allowed wide tires	2
6.3.8	Lightweight fenders and or body panels (pair)	2
6.3.9	Heating and AC removal	2
6.3.10	Light(s) removal	1
6.3.11	Lightweight battery, 15 lbs or less	1
6.3.12	Airbag(s) and or speaker(s) removal	1
6.3.13	Reduced weight brake components (rotor and or caliper) Conversions from drums to discs are allowed without restrictions Any type of shoes /pads can be used Any brake fluid can be used Any brake lines material can be used as long as DOT approved Additional brake calipers are allowed without restrictions. Cooling ducts can be installed or removed. Emergency brakes can be modified but not removed. Adjustable proportional valves can be installed. ABS and or ESP systems can be modified but not removed.	1
6.3.14	Removing wipers, door locks, mirrors and or window motors	1

6.4 Aero other than OEM add-ons.

6.4.0	Aero mods include installation aftermarket devices to improve performance by improving aerodynamics or increasing downforce or both Wings: front or rear with area greater than 240 sq in Splitters: extend 4 inch or more beyond frontal bumper of the vehicle	
6.4.1	Vehicles 2200 lbs or less (with driver)	10
6.4.2	Vehicles 2201-3200 lbs (with driver)	5

6.5 Drivetrain and Engine Modifications

6.5.1	Adding a Turbo or Supercharger (Must apply for new BASE CLASS)	
6.5.2	Change of drivetrain configuration (FWD to AWD, RWD to AWD, AWD to RWD, etc.)	15
6.5.3	Transmission swap (if gear ratios of 1, 2 differ and/or weight reduced 20lbs +	5
6.5.4	Change final drive ratio	3
6.5.5	Differential upgrade LSD	5
6.5.6	Engine bore and or stroke modification	5
6.5.7	Compression ratio change	4
6.5.8	Cylinder head porting, upsizing and or modifying valves or rotary engine porting	4
6.5.9	Non OE engine pulley(s) (size or weight)	2
6.5.10	Flywheel / Clutch weight reduction Clutch disc and pressure plates - no restrictions Conversions from dual mass to single and vice versa - no restrictions	2
6.5.11	Non OE electric water pump and or fans	1
6.5.12	Relocation, engine/transmission (4" or more) from original location	5
6.5.13	Relocation, engine/transmission (1 to 4”) from original location	2

6.6 Supercharged and or Turbo Vehicles

6.6.1	Intake (prior compressor) No points for filter change, although it is recommended to run *a* filter	2
6.6.2	Intercooler & piping changes	3
6.6.3	Exhaust (Cat back only)	2
6.6.4	Exhaust (Header(s), Turbo back including cat)	5
6.6.5	ECU reprogrammed, stand alone, chip, tune, etc	10
6.6.6	Turbo or supercharger modifications or upgrades	3
6.6.7	Water or methanol injection	2
6.6.8	Fuel (E85, 100+ Octane Race Gas)	5

6.7 Naturally Aspirated Vehicles

6.7.1	Intake manifold(s)	3
6.7.2	Intake (from manifold to filter element)	1
6.7.3	Exhaust (Any modification after the Cat - muffler(s) resonator(s), pipe(s))	1
6.7.4	Exhaust (manifold / headers ,catalytic convertor)	2
6.7.5	Camshafts,rocker arms	3
6.7.6	ECU reprogrammed, stand alone, chip, tune, etc	2
6.7.7	Head swapping for different design , machining or porting , valves up sizing or modifications ,	4
6.7.8	Rotary engine porting	4
6.7.9	Fuel (E85, 100+ Octane Race Gas)	3

6.8 Wheels and Tires

6.8.1	Wheels and or tires extend beyond factory fenders How is this measured? Field inspection, if wheel and or tire sticks out past the top of the fender, the 5 point penalty should be charged. Hopefully illustration	5

	will not be required.	
6.8.2	Wheel width increase - more than 1" over stock	5
6.8.3	Wheel width increase - up to 1" beyond stock	2
6.8.4	UTQG 50 and below (commonly known as tire treadwear rating or TW, ex: 200TW)	45
6.8.5	UTQG 51-220	5
No restrictions on wheel diameter. Wheel spacers are permitted. Minimum of 6 turns of engagement is required when using spacers. Consider longer studs if using spacers. Wheel offset restrictions, none. Factory fenders can be rolled out up to 15 mm. Done properly, this can save you 5 points for sticking out past the edge of the fender. Wheel material: steel, aluminum, magnesium, carbon fiber. Wheels MUST be in good condition. Damaged wheels (beyond mild curb rash) will not be permitted. Tires MUST be in good condition. Damage to sidewall will not be permitted. Patches near sidewall outside of acceptable industry repair standards will not be permitted. Patches or plugs can be used interchangeably if done to acceptable industry standards. Missing lugnuts (or lug bolts) automatically fail during TECH Inspection.		

6.9 Performance Bonus Points as noted in the Base Class List

6.9.0	The asterisk are noted in the classing column, Example: G*, F**, B***	
6.9.1	(*)	5
6.9.2	(**)	10
6.9.3	(***)	15

6.10 MPS - Performance Leveling Index

6.10.0	The Tier Multiplier value is indicated on the TIER column in the Base Class List
6.10.1	TIER 1 (modification points multiplier) T1 = 0.87
6.10.2	TIER 2 (modification points multiplier) T2 = 0.92
6.10.3	TIER 3 (modification points multiplier) T3 = 1.00

The total is multiplied by the performance leveling index tier and rounded to the nearest whole number. If the total for example is over 20 points, but less than 40 and if your base class was G, then the class you are competing in is class F. More detailed examples noted below.

7. Vehicle Classing

7.1. Classing Structure

NASA-X offers ten competition classes in which all eligible vehicles will compete. Vehicle's class placement is based on various factors, including power, weight, drivetrain configuration, among others.

NASA-X Classes; slowest to fastest (in theory!)

G +20 F +20 E +20 D +20 C +20 B +20 A +30 R +40 X +60 O

NASA-X vehicle classing includes 3 components as noted below:

- BASE CLASS (If your vehicle is STOCK - this is all you need!)

  A list of all street legal production vehicles sold to the general public through established dealership networks or via direct sale inside continental US or elsewhere . It's possible that some rare models could be not listed . In this case a link will be provided to request one.

  Performance leveling index "TIER" will be displayed and preassigned points (*), (**) or (***) asterisk where each asterisk has a value of 5 mod points.

- MPS - Mods (Modification) Points Scale

  Modifications, alterations, upgrades, or even using specific tires may result in "modification points" being applied to the vehicle and affect your Competition Class .

  Section 6 includes a full list of modifications and points associated with them.

  An automated MODIFICATION POINTS CALCULATOR is available. The amount of Mod Points allowed in each class are noted above. As you move beyond Class A, the margin is wider.

- COMPETITION CLASS

  This is the Class where your vehicle is eligible to compete.

  Step 1: Find your base class from the published list

Step 2. Record your performance tier and total number of asterisks

Step 3. Calculate the class your car competes in.

7.2. **Class Bump**

7.2.1 Typically a "class bump" move to the next faster class) happens after accumulating 20 modification points with some exceptions:

- Class A - 30 points allowance
- Class R - 40 points allowance
- Class X - 60 points allowance

Classing index ranges from G through A with addition of R, X and O. All open wheel cars (karts, etc) automatically start in A. Slower cars are typically in G with faster cars higher closer to Class A.

Slower >> Faster

G +20 F +20 E +20 D +20 C +20 B +20 A +30 R +40 X +60 O

- Cars listed with asterisk (*) in the BASE CLASS collect additional points
  - 5 for every (*)
- The following levels of modifications must apply for new BASE CLASS
  - Cars with engine and or drivetrain swaps
  - Aftermarket forced induction system
  - Race cars weighing more than 1200 lbs
  - Tube frame chassis, kit cars, etc.
  - **Exception**: Race cars with driver weighing less than 1200 lbs automatic Class O

7.3. **Calculation examples**

All cars listed with (*) need to add points to their total mod points. 5 points for every (*)

TIER (modification points multiplier) record your car's TIER # and submit to the calculator

TIER values ; III=1.0 , II=0.92 , I=0.87

Example 1: BMW M3 / G80 located in BASE CLASS as follows\

Model		Class	Tier
G80	M3	B	II

- Class B
- Tier II = 0.92 Correction Factor
- No asterisk

Driver 1 has a total of 21 MOD points
Apply Tier correction: 21 x 0.92 = 19.32
Because that is less than 20, competition class is B = No Bump

Driver 2 with same car with with MORE MODS: 98 points
Apply Tier correction: 98 x 0.92 = 90.16
B to A = 20
B to R = 30
R to X = 40 for total of 90 points
New competition Class is X

Example 2: Mazda Miata ND1

Model	Class	Tier
MIATA ND I 2016-2018	D***	III

- Class D
- Tier III = 1.00 Correction Factor
- 3 asterisks

Driver 1 has total of 53 MOD points including asterisk
Apply Tier correction: 53 x 1 = 53
D to C = 20 points
C to B = 20 points
B to A is 20 points
Since 53 is less than 60 but more than 40, new competition Class is B

Driver 2 has total of 35 MOD points including asterisk
Apply Tier correction: 35 x 1 = 35
D to C = 20 points
C to B = 20 points
Since 35 is less than 40 but more than 20, new competition Class is D

8. Timing and Scoring

8.1. RESULTS AND CHAMPIONSHIP
8.2. CLASS TROPHY

Top 6 finishers in each class are awarded points at each event. Sum of the points per class determine the top driver in each class at the close to the race season. Typically this is managed within race timing software (example: AxWare) but can also be done manually or with help of Excel or similar spreadsheet software.

Place	Class Points
1	10
2	6
3	4
4	3
5	2
6	1

8.3. DRIVER'S TROPHY

8.3.1. DPI - **D**river **P**erformance **I**ndex

• Driver's Championship also known as DRIVER OF THE YEAR TROPHY will be presented to the driver who scored maximum “DPI“ (driver's performance index) points .

• Top twenty drivers will be awarded with “DPI” points at each event.

• The index allows competition between the drivers across all classes. It is a calculated value based on historical data.

• DPI equivalent times are calculated by an individual factor assigned for each class. Raw time is multiplied by the indexing factor. This allows theoretical comparison across classes.

Example: Driver of FORD FIESTA in class F can index as high as driver of PORSCHE GT3 in class A raw elapsed time vary. Driver in Class A completes the course in 52.64 seconds Driver in Class F completes course in 57.01 seconds. The driver in Class A was much quicker but after DPI calculations the equivalent times are only 0.01 seconds apart.

8.3.2. Finishing Order vs. DPI Points (A)

Place	DPI Points
1	30
2	25
3	22
4	20
5	18
6	16
7	14
8	12

9	11
10	10
11	10
12	9
13	8
14	7
15	6
16	5
17	4
18	3
19	2
20	1

8.3.4 Points accumulation:

Points should be tabulated after each event. Event points should be posted after each event. Accumulated points should be presented regularly in the Season Points Report.

A. DPI Points Report (Driver Championship)
B. Class Points Report (Class Championship)

8.3.5. Driver accumulating the most (DPI) points wins the Driver Championship Title.

8.3.6. Driver accumulating the most (Class) points wins the Class Championship.

8.3.7 If there is a tie, winner shall be determined as follows;

- Numbers of wins
- Numbers of second places
- Numbers of third places
- Average finished position

8.3.8 If no winner has been determined using guidance above then two Champions shall be crowned.

8.3.9 Eligibility: Must attend minimum of 3 events and be valid NASA member