



**NASA Time Trial Car Classification Form (TTA-TTF)--2010 (v7.2)**

Owner's Name Mark Domo Date \_\_\_\_\_ Region Great Lakes

Car Number 69 Car Color Red e-mail mark@drdomo.com

List all Team Drivers--leave blank if the owner is the only driver and circle here: owner-driver

Vehicle: Year 2004 Make Mazda Model RX8 Special Edition? \_\_\_\_\_

NASA TT Base Class TTD Base Weight Listing (from TT Rules) 3045 lbs.

Min. Competition Wt. (w/driver) 3045 lbs.

Multiple ECU Maps? Describe switching method/hp levels: Single map loaded via AP

**Only complete this section if the vehicle has been re-classed by the National TT Director:**

All of these cars **MUST** be assessed by the National TT Director for re-classification into a new TT Base Class!

Motor Swap, Aftermarket Forced Induction, Modified Turbo/Supercharger, Aftermarket Head(s), Increased Number of Camshafts, Hybrid Engine, Ported Rotary motors, others (see TT Rules sections 6.4.1 and 6.5)

(e-mail the below information to the National TT Director at [greg@nasa-tt.com](mailto:greg@nasa-tt.com) to receive your new TT Base Class)

Engine: OEM Displacement \_\_\_\_\_ OEM Horsepower \_\_\_\_\_ hp

Engine Swap? No Yes Donor Vehicle: Yr. \_\_\_\_\_ Make \_\_\_\_\_ Model \_\_\_\_\_

Swap Disp. \_\_\_\_\_ Swap h.p. \_\_\_\_\_ hp

New TT Base Class Assigned by the National TT Director: \_\_\_\_\_ ( Attach a copy of the re-classing e-mail)

For cars classed based on dyno numbers: Maximum allowed whp \_\_\_\_\_ hp Min. Comp. Weight \_\_\_\_\_ lbs

**Note: Any car exceeding the Adjusted Wt./Power Ratio limit for its class will automatically move up to the next highest class that it is legal for. (see TT Rules Section 6.1 and Appendix C).**

Proceed to calculate your vehicle's modification points assessment for up-classing purposes. Fill in the blanks with the number of modification points assessed for each item that affects your vehicle. You may leave the lines blank next to modifications that your vehicle does not have. Proceed to Page 2, and calculate all modification points' assessments, then fill in total points below. **ALL Factory Options and Parts Not on the Base Trim Model Must Be Assessed Points!!!**

\_\_\_\_\_ Total Number of Modification Points from assessments on Pages 2-5

\_\_\_\_\_ Total Number of Points from \* (+7) or \*\* (+14) (from base classing)

\_\_\_\_\_ All Forced Induction Vehicles Add Five (5) Points (unless re-classed by Dyno testing)

19 **Total Modification Points for Up-classing**

- |                                      |  |
|--------------------------------------|--|
| 20 thru 39 points - Up ONE Class     | 100 thru 119 points - Up FIVE Classes  |
| 40 thru 59 points - Up TWO Classes   | 120 thru 139 points - Up SIX Classes   |
| 60 thru 79 points - Up THREE Classes | 140 thru 159 points - Up SEVEN Classes |
| 80 thru 99 points - Up FOUR Classes  | 160 thru 179 points - Up EIGHT Classes |

**Base Class: TT D**

**Final Competition Class: TT D**

For purposes of NASA TT points assessments, the term OEM will be defined as follows: Any part that is identical in size, shape, and functional characteristics compared to the part that originally came on the vehicle, from the manufacturer, as a standard feature of the base model as it is listed in section 6.3 Base Classifications (factory options and specialty model parts are considered non-OEM) or is listed as a standard replacement part by the OEM manufacturer. Some parts that are produced by aftermarket manufacturers as generic replacement parts may not require a points assessment provided that: they are the same size and shape, and have the same functional characteristics as the OEM part, and that they provide no significant improvement in performance, longevity, or reliability. If you have any questions about the modification points, consult your PT Director. Errors and omissions could result in disqualification and other penalties.

Points

**TIRES:**

- \_\_\_\_\_ 1) The following DOT-approved R-compound tires: Hankook Z214 (C90 & C91 compounds only), Hoosier A6 +13
- \_\_\_\_\_ 2) DOT-approved R-compound tires with a UTQG treadwear rating of 40 or less (examples: BFG R1, Goodyear Eagle RS, Hankook Z214 (C71, C70, C51, C50), Hoosier R6, Kumho V710, etc. --note: G.A.C.& VRL Hoosiers OK) +10
- 7 3) DOT-approved R-compound tires with a UTQG treadwear rating of 50 to 130 (ex. Kumho V700, Michelin Pilot Sport Cup, Nitto NT01, Pirelli PZero Corsa, Toyo R888, Toyo RA-1, Yokohama A048, etc) +7
- \_\_\_\_\_ 4) Non-DOT-approved racing slicks +30 (of any origin—re-caps and re-treads are not permitted)
- \_\_\_\_\_ 5) The following tire sizes will be used as the base tire size for each **Base Class** for all vehicles regardless of their OEM tire size(s). All vehicles in a given base class may use this tire size (or smaller) without a points assessment:  
TTA: 295 mm, TTB: 265mm, TTC: 255mm, TTD: 245mm, TTE: 235mm, TTF: 215mm, TTG: 195mm, TTH: 175mm

Tire width points assessed or points credited are determined by the difference between the width of the **largest tire** on the vehicle and the assigned base tire size as follows:

Equal to or greater than: 10mm +1, 20mm +4, 30mm +7, 40mm +10, 50mm +13, 60mm +16, 70mm +19, 80mm +22, 90mm +25, 100mm +28, 110mm +31, 120mm +34, etc.

Equal to or less than: -10mm -1, -20mm -4, -30mm -7, -40mm -10, -50mm -13, -60mm -16, -70mm -19, -80mm -22, -90mm -25, -100mm -28, -110mm -31, -120mm -34, etc.

Tire width is determined by the number printed on the tire sidewall by the manufacturer. If a tire does not have a manufacturer's printed number on the sidewall, then actual tread width measurement will be used. UTQG treadwear ratings are as of the date of the current version of the TT rules. Any new tire or tire with a changed UTQG treadwear rating must be evaluated by the National TT Director before the rating will be legal for use in NASA TT classing. All DOT-approved tires must be available for purchase by the general public through Federal or state licensed tire dealers.

Actual Tire Size \_\_\_\_\_ mm    Base Class Tire Size \_\_\_\_\_ mm    Difference \_\_\_\_\_ mm    #Points \_\_\_\_\_

7 Total Tire Modification Points

**WEIGHT REDUCTION:**

Weight reduction points are based on the actual vehicle minimum competition weight (with driver). Removal and lightening of non-essential parts is permitted unless stated otherwise in the rules. Modification of the OEM frame, sub-frame, and floor pan are not permitted (see 6.3.2) Removal or lightening of engine parts is permitted only as listed elsewhere in the TT rules:

If the base weight used for base classing purposes (section 6.3.2) minus minimum competition weight (with driver\*) is greater than: 5 lbs +1, 20 lbs +2, 35 lbs +3, 50 lbs +4, 65 lbs +5, 80 lbs +6, 95 lbs +7, 110 lbs +8, 125 lbs +9, 140 lbs +10, 155 lbs +11, 170 lbs +12, 185 lbs +13, 200 lbs +14, 215 lbs +15, 230 lbs +16, 245 lbs +17, 260 lbs +18, 275 lbs +19, 290 lbs +20, 305 lbs +21, 320 lbs +22, 335 lbs +23, 350 lbs +24, 365 lbs +25, 380 lbs +26, 395 lbs +27, 410 lbs +28, 425 lbs +29, 440 lbs +30, 455 lbs +31, 460 lbs +32, 475 lbs +33, 490 lbs +34, 505 lbs +35, etc...

\*Minimum competition weight is the vehicle's lightest weight with the driver and safety gear, during any competition session. Any driver/team who's vehicle at impound does not meet the minimum weight that they have declared on their car classification sheet will be disqualified if the number of modification points based on the lighter actual weight puts the car in a higher competition class. As well, additional penalties may be assessed (section 11 and 6.5.3) for failing to meet the listed weight on the Car Classification Form.

0 Total Wt. Reduction Points    Base Wt. \_\_\_\_\_ lbs. minus Min. Competition Wt. \_\_\_\_\_ lbs. = \_\_\_\_\_ lbs.

## **ENGINE/DRIVETRAIN:**

- N/A 1) Engine swap: All engine swaps must be evaluated for new base classification by the National TT Director on an individual basis, unless a base class for the particular swap is listed above in 6.3 Base Classifications or in Appendix A. The following factors will be taken into account in classing the car: wt./hp ratio, total weight, high torque in the usable rpm range, body style, engine location, drivetrain type, advanced technology/engineering in OEM suspension, brakes, drivetrain, and aerodynamics, and dry sumps (if engine is lowered). Competitors should submit all of the above data to the National TT Director by e-mail with the request for re-classification of the vehicle. Most engine swaps will require chassis dynamometer testing of the competition-ready vehicle and submittal of the minimum competition weight chosen by the competitor. (see section 6.5 Dyno Re-classing and Testing Procedures)
- N/A 2) Increased number of camshafts or non-OEM (non-stock) head(s)/hybrids: engine swap rules with Dyno testing apply—must be evaluated by the National TT Director for re-classification. (see section 6.5 Dyno Re-classing and Testing)
- N/A 3) Non-OEM, upgraded, or modified turbo, or supercharger: engine swap rules apply—all OEM naturally aspirated vehicles that have been upgraded to forced induction and forced induction vehicles with an upgraded or modified turbo or supercharger must be evaluated by the National TT Director on an individual basis for new base classification based on chassis dynamometer testing and minimum competition weight as in 1) above and in Section 6.5 Dyno Re-classing. After re-classification, modification points will not be assessed for weight reduction or engine. However, if the power output of the vehicle is later increased, the participant will have to get the vehicle re-classified again.
- \_\_\_\_\_ 4) Increased displacement by: <1.5% +0, 1.5% to <5.5% +4, 5.5% to <7% +6, 7% to <10% +8, 10% to <15% +10, 15% to <20% +15, > 20% +20.  
Formula to calculate % = current disp. divided by OEM disp., minus 1, x 100 = %  
Example: 407ci/351ci = 1.16, minus 1 = .16, x 100 = 16% (+15 pts)  
Example: 1852cc/1799cc = 1.029 minus 1 = .029 x 100 = 2.9% (+4 pts)
- \_\_\_\_\_ 5) Modified or non-OEM camshaft(s) or cam timing gears +6 (for one or more)
- \_\_\_\_\_ 6) Valve size change, modified, ported or polished OEM head (other than simple shaving of the head only) +6
- \_\_\_\_\_ 7) Any modifications that result in increased engine compression ratio (including shaving the head or decking the block to factory specs): 0.50 or less +0, >0.50 +3, >1.0 +6, >2.0 +10, >3.0 +15
- \_\_\_\_\_ 8) De-stroked engine +4
- \_\_\_\_\_ 9) Replacement pulleys (other than for supercharger) or non-electrical fan removal +1
- N/A 10) Port modification for rotary engine: Dyno testing rules apply—must be evaluated by the National TT Director for re-classification. (see section 6.5 Dyno Re-classing and Testing Procedures)
- \_\_\_\_\_ 11) Added dry sump oil system +7 (+14 if motor is lowered from OEM location)
- \_\_\_\_\_ 12) Aftermarket computer system (any non-OEM “stand-alone” or “piggyback”):  
+3 naturally aspirated, +10 forced induction
- \_\_\_\_\_ 13) Modification of the OEM air intake/box, air filter location, air piping to the turbo/supercharger/throttle body/intercooler/carburetor, or hood/fascia/fender air inlets, outlets, or vents +1 (air filter upgrade alone—0 pts.)
- \_\_\_\_\_ 14) Replacement pulley for OEM supercharger +4
- \_\_\_\_\_ 15) Aftermarket boost controller or modification/alteration of OEM vacuum lines that serve to function as a boost controller +4
- \_\_\_\_\_ 16) Aftermarket or modified wastegate actuator, wastegate, or vacuum line(s) that serve to control the wastegate actuator function or increase peak boost +3
- \_\_\_\_\_ 17) Add aftermarket intercooler +7
- \_\_\_\_\_ 18) Non-OEM or modified intercooler +4 (Intercooler sprayers are not permitted unless they came on the OEM base trim model of the vehicle)
- \_\_\_\_\_ 19) Non-OEM or modified/porting throttle body +2; independent throttle bodies +4
- \_\_\_\_\_ 20) Non-OEM or modified/porting, or deleted intake manifold: 4 cyl. +1, 6cyl.+2, 8 cyl. +3,  
12A &13B rotary +2, all other rotary +3
- \_\_\_\_\_ 21) Non-OEM or modified carburetor, fuel rail, fuel injectors, fuel pump, and/or fuel pressure regulator +2  
(no points for fuel pump alone if using OEM fuel and timing maps, sensor inputs and ignition timing)
- \_\_\_\_\_ 22) Water injection system +6 (alcohol-water mixtures are not permitted.)
- N/A 23) Nitrous oxide injection is illegal.
- \_\_\_\_\_ 24) Modification or porting of the exhaust manifold +2
- \_\_\_\_\_ 25) Aftermarket or modified header +2
- \_\_\_\_\_ 26) Non-OEM or modified exhaust piping, resonators, or mufflers downstream from the header, exhaust manifold, or turbo.(does not include catalytic converter removal/upgrade) +2  
(Note: Replacement of a failing OEM exhaust system may be permitted without a points assessment if the OEM definition in 5.5 OEM Definition is strictly adhered to.)
- 1 \_\_\_\_\_ 27) Removal, upgrade, or modification of catalytic converter(s). +1
- \_\_\_\_\_ 28) Non-OEM sequential (semi-automatic) or dog-ring (non-synchromesh) transmission (includes altered gear ratios) +7
- \_\_\_\_\_ 29) Upgrade number of forward gears in transmission or altered gear ratios +3

- \_\_\_\_\_ 30) Added paddle/electronic shift +3
- \_\_\_\_\_ 31) Added limited slip differential or welded/locked differential +3
- \_\_\_\_\_ 32) Changed or modified limited slip differential (or welded/locked OEM LSD) +1
- \_\_\_\_\_ 32) Added traction control +3 (no points if proven disabled during competition)
- \_\_\_\_\_ 34) Relocation of engine/transmission between 1 and 10 inches of the OEM location +7  
(note: Relocation of less than 1 inch is not assessed points, and more than 10 inches is not permitted without the approval of the National TT Director.)
- \_\_\_\_\_ 35) Modification/upgrade from a fixed to a floating rear axle +3

**1** Total Engine/Drivetrain Modification Points

**SUSPENSION/BRAKES/CHASSIS:**

- \_\_\_\_\_ 1) Non-OEM shocks/struts/dampers with an external reservoir or more than two ranges of adjustment +10  
(example: compression (bump) and both high & low rebound adjustments)(must still take points for springs below).
- 7 \_\_\_\_\_ 2) Non-OEM shocks/struts/dampers with a “Piggy Back” external reservoir (fixed reservoir without a connecting hose)  
OR with shaft diameter 40mm or greater—must still take additional points for the springs below +7
- \_\_\_\_\_ 3) Non-OEM or modified/re-valved shocks/struts/dampers +3 (all others)(springs not included)
- 2 \_\_\_\_\_ 4) Non-OEM or modified coil springs, leaf springs/spacers/brackets, or torsion bars +2
- \_\_\_\_\_ 5) Conversion of torsion bar/leaf spring suspension to coil spring and strut/shock suspension +2
- 2 \_\_\_\_\_ 6) Add, replace, remove, or modify anti-roll bars (“sway” bars—front, rear, or both—may have spherical joints on the end links without additional points assessment) +2
- \_\_\_\_\_ 7) Replace or modify control arms (other than plates, shims, slots, or eccentric bolts/bushings for simple camber/caster adjustment only) or RWD/AWD rear trailing arms (may have spherical/metallic joint(s) for connection to the spindle/knuckle) +4
- \_\_\_\_\_ 8) Relocation of front suspension mounting points +6
- \_\_\_\_\_ 9) Relocation of rear suspension mounting points +6
- \_\_\_\_\_ 10) Changing the mounting orientation/design of the OEM shock and/or spring perch to invert them +1
- \_\_\_\_\_ 11) Using the alternate control arm mounting location on cars equipped OEM with multiple choices +6  
(example: to increase track width)
- \_\_\_\_\_ 12) Changing the orientation or design of an OEM mounting point or pick-up point of a control arm for a panhard bar or trailing arms +1
- \_\_\_\_\_ 13) Replaced or modified K-members that change the location of the lower control arms +8
- \_\_\_\_\_ 14) Tubular K(cross)-members that do not change the location of the lower control arms +2
- \_\_\_\_\_ 15) Bump steer kits or shimming of the steering rack +2
- \_\_\_\_\_ 16) Alteration of ball joints/dive angles +2
- \_\_\_\_\_ 17) Add panhard rod or Watt’s link (regardless of whether the Watt’s link replaces an OEM panhard rod or not) +4
- \_\_\_\_\_ 18) Replace or modify an OEM panhard rod or Watt's link +2
- \_\_\_\_\_ 19) Add torque arm +4
- \_\_\_\_\_ 20) Replace or modify an OEM torque arm +2
- \_\_\_\_\_ 21) Increase in track width greater than four (4) inches due to non-OEM axles, control arms, brake rotors/hats, wheel spacers, hubs, wheel offset, and/or camber adjustment +6 (measured from the inside of one tire to the outside of the opposite tire at ground level—averaging the measurements in front of and behind the contact patch to negate the effect of toe)
- \_\_\_\_\_ 22) Non-OEM rear trailing arms on FWD vehicles (for stiffness only, no change in suspension mount or pick-up points from stock) +1
- \_\_\_\_\_ 23) Non-OEM rear control arms on FWD vehicles (for stiffness and wheel alignment only, no change in suspension mount or pick-up points from stock) +1
- \_\_\_\_\_ 24) Non-OEM brake calipers +2
- \_\_\_\_\_ 25) Metallic replacement suspension bushings (Heim joints/spherical joints) +3 (except for pillow ball camber plate joints, sway bar end links already assessed points in 6) above, and control arm spindle/knuckle joints already assessed points in 7) above)
- \_\_\_\_\_ 26) Add front lower stress/arm brace (two attachment points maximum) +1
- 1 \_\_\_\_\_ 27) Add a third (or more) attachment point to front or rear strut tower bar (or replace existing/OEM three point bar) +1
- \_\_\_\_\_ 28) Add or modify other chassis stiffening devices or fabricated parts (such as lower strut braces or lower arm braces (with greater than two attachment points), subframe connectors, subframe braces, subframe mounts/bushings, etc) +3
- \_\_\_\_\_ 29) Non-OEM driver/cockpit adjustable sway bar or suspension settings +4

**12** Total Suspension/Brakes/Chassis Modification Points

**AERODYNAMICS:**

- \_\_\_\_\_ 1) Add, replace, or modify front fascia or air dam +3 (except as provided for in 13), 25), 57) of the No-Points Modification list) (note: Additional points must be assessed below for any component of the added/replaced/modified fascia or air dam that performs the functions listed in 2) and 4) below)
- \_\_\_\_\_ 2) Add, replace or modify a single front splitter/spoiler/wing/foil +3 (note: This part may extend horizontally past the side of the vehicle no greater than five inches. If any portion of this part that protrudes from the side of vehicle is not parallel to the ground, then additional points must be assessed for canards in 4) below.) (note: No material or part may extend the vertical reach of the OEM front fascia without taking fascia modification points above.)
- \_\_\_\_\_ 3) Add, replace, or modify rear wing and/or spoiler +4 (a rear wing or spoiler may not exceed a height of eight (8) inches above the roofline (or OEM windshield height for convertibles), or a width greater than the width of the car body. (note: additional points must be assessed for end plates that are greater than twelve inches in height)
- \_\_\_\_\_ 4) Add or modify canards/winglets (includes portions of an added/modified/replaced fascia that provide a downward force other than that listed in 2) above) +2
- \_\_\_\_\_ 5) Add or fabricate flat bottom/belly tray (rearward of the centerline of the front axle) +5
- \_\_\_\_\_ 6) Add rear diffuser (note: additional points must be assessed for any vertical panels incorporated into a rear diffuser that are greater than five inches in height) +2
- \_\_\_\_\_ 7) Replace or modify OEM rear diffuser, rear bumper cover, or rear “fascia” (note: additional points must be assessed for any vertical panels incorporated into a rear diffuser that are greater than five inches in height) +1
- \_\_\_\_\_ 8) Add rear vertical panels in any location (note: see 3), 6), 7), and 10)) +2
- \_\_\_\_\_ 9) Add or modify side skirts (side skirts must be vertical only, and cannot connect to any other aero component)+2
- \_\_\_\_\_ 10) Add vortex generator to roof, rear window, or rear deck lid (note: additional points must be assessed for any vertical panels incorporated into a rear diffuser that are greater than five inches in height) +1
- \_\_\_\_\_ 11) Removal of the front windshield/windshield frame +7
- \_\_\_\_\_ 12) Front side window frame air dams/diverters (driver and/or passenger side) +2

Total Aerodynamics Modification Points

**ROLL CAGES:**

4-point roll bar and 6 or 8-point (two main hoop, two rear brace, two front hoop, and either two front firewall or foot well optional mounting points) roll cage designs constructed per the NASA CCR may be utilized without a TT modification point assessment. Additional bars and/or attachment points within the driver’s compartment that exceed the allowances in the CCR are also permitted. The following roll cage designs are permitted but will be assessed points as follows:

- \_\_\_\_\_ 1) One or more bars that penetrate the front bulkhead/firewall +2
- \_\_\_\_\_ 2) One or more bars that are welded to the chassis (directly or with a plate) anywhere farther than 6” from the end of one of the above 6 or 8 listed tubes where it terminates at a plate +2

Total Roll Bars/Cages Modification Points

**Grand Total Of All Modification Points** (Enter this number on page 1)

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See Section 6.4.1 of the TT Rules for No-Points Modifications

**All Dyno test results using a Mustang dynamometer (AWD only) will have 10% added to the maximum horsepower reading to obtain the number that will be used to calculate the “Adjusted” weight/power ratio (Mustang Dyno awhp x 1.1 = Maximum awhp for wt/hp calculation)**