



NASA Time Trial Car Classification Form (TTB-TTF)--2014 (v11.1-1-4-14)

Owner's Name _____ Date _____ Region _____

Car Number _____ Car Color _____ e-mail _____

List all Team Drivers (two max.)--Leave blank if the owner is the only driver and circle here: **Owner-driver**

Vehicle: Year _____ Make _____ Model _____ Special Edition? _____

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

Minimum Competition Wt. (w/driver) _____ lbs.

Multiple ECU Maps? Describe switching method/hp levels: _____

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 8.3.C and 9)

(e-mail the below information to the National TT Director at 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 8.1.2 and Appendix B).

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 one asterisk * (+7) or two asterisks ** (+14) (from base classing)

_____ All Forced Induction Vehicles Add Five (5) Points (unless re-classed by Nat. TT Director by Dyno testing)

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Total Modification Points for Up-classing

20 thru 39 points - Up ONE Class

80 thru 99 points - Up FOUR Classes

40 thru 59 points - Up TWO Classes

100 thru 119 points - Up FIVE Classes

60 thru 79 points - Up THREE Classes

Base Class: TT _____

Final Competition Class: TT _____

For purposes of NASA TT Modification points assessments, the term BTM 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 8.2.2 Base Classifications (factory options and specialty model parts are considered non-BTM) or is listed as a standard replacement part by the manufacturer (OEM). 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 BTM part, and that they provide no significant improvement in performance, longevity, or reliability. If you have any questions about the modification points, consult your TT Director. Errors and omissions could result in disqualification and other penalties.

Points A. TIRES:

- _____ 1) The following DOT-approved R-compound tires: BFG R1S, Hoosier Wet DOT (if used in dry conditions—see section 5.6) +15
- _____ 2) The following DOT-approved R-compound tires: BFG R1, Goodyear Eagle RS AC (auto-cross), Hankook Z214 (C90 & C91 compounds only), Hoosier A6 +13
- _____ 3) The following DOT-approved R-compound tires and those with a UTQG treadwear rating of 40 or less not otherwise listed in these rules: (examples: Goodyear Eagle RS, Hankook Z214 (C71, C70, C51, C50), Hoosier R6, Kumho V710, etc.)(note: GACTSCC tires OK) +10
- _____ 4) The following DOT-approved R-compound tires: Toyo Proxes RR, Hankook TD +9
- _____ 5) The following DOT-approved R-compound tires and those with a UTQG treadwear rating of 50 to 130: Maxxis RC-1 (ex. Kumho V700, Michelin Pilot Sport Cup, Nitto NT01, Pirelli PZero Corsa, Toyo R888, Toyo RA-1, Yokohama A048, etc) +7
- _____ 6) DOT-approved (non-R-compound) tires with a UTQG treadwear rating of 120-200 (examples: Toyo R1R, Dunlop Direzza Sport Z1 Star Spec, Bridgestone Potenza RE070, Kumho Ecsta XS, Yokohama Advan A046 & Neova AD08, Hankook R-S3) +2
- _____ 7) Non-DOT-approved racing slicks +30 (of any origin—re-caps and re-treads are not permitted)
- _____ 8) 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) or their Final Competition Class. All vehicles in a given base class may use this tire size (or smaller) without a points assessment:
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

Equal to or less than: -10mm -1, -20mm -4, -30mm -7, -40mm -10

Tire width is determined by the number printed on the tire sidewall by the manufacturer, unless stated otherwise in the TT Rules*. If a tire does not have a manufacturer's printed number on the sidewall, then actual tread width measurement (not contact patch) 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. Tire treatments and softeners are not permitted.

*Exception(s) to A.8) The Hoosier 255/35-18 (A6 & R6) will be assessed points based on its actual 275mm size (and not the 255mm listed on the sidewall)

Note: Exception to 8.1.2:

- 1) The size 245 BFG R1 and R1S tires will be assessed a Modification Factor of +0.4 for tire size (and not the listed +0.8) when calculating the "Adjusted Weight/Power Ratio."
- 2) The size 275 BFG R1 and R1S tires will not be assessed a Modification Factor for tire size (i.e., not the listed +0.4) when calculating the "Adjusted Weight/Power Ratio."

Actual Tire Size _____ mm Base Class Tire Size _____ mm Difference _____ mm #Points _____

Total Tire Modification Points

B. 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 8.2.2) Removal or lightening of engine parts is permitted only as listed elsewhere in the TT rules. The exterior surface of the roof, hood, body panels, and doors must remain their BTM size and shape unless listed otherwise in these rules.

If the base weight used for base classing purposes (section 8.2.2) 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,
470 lbs +32, 485 lbs +33, 500 lbs +34, 515 lbs +35, etc...

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 Total Wt. Reduction Points Base Wt. _____ lbs. minus Min. Competition Wt. _____ lbs. = _____ lbs.

*Minimum competition weight is the vehicle's lightest weight with the driver and safety gear, during any competition session. Any driver/team whose 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 (sections 9 and 14) for failing to meet the listed weight on the Car Classification Form.

C. ENGINE:

- N/A 1) Engine swap: All engine swaps must be evaluated for new base classification by the National TT Director on an individual basis. Competitors must submit an e-mail request for re-classification of the vehicle. A printed copy of the Official Re-class e-mail from the National TT Director must be attached to the TT Car Classification Form. Almost all engine swaps will require chassis Dyno testing of the competition-ready vehicle (See section 9 for Dyno Re-classing, Testing, and Re-class request procedures.)
- N/A 2) Increased number of camshafts, non-BTM (non-stock) head(s)/hybrids, port modified rotary engines, and non-BTM/upgraded/modified turbo or superchargers all require Dyno Re-classing by the National TT Director. A printed copy of the Official Re-class e-mail from the National TT Director must be attached to the TT Car Classification Form. (See section 9 for Dyno Re-classing, Testing, and Re-class request procedures.) This includes all OEM/BTM forced induction vehicles with an upgraded or modified turbo or supercharger. 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-classed again.
- _____ 3) Aftermarket computer system (any non-BTM "stand-alone" or "piggyback"):
+3 naturally aspirated, +10 forced induction
- _____ 4) Modification of the BTM air intake/box, air filter location, air piping to the turbo/supercharger/intercooler/throttle body/carburetor, or hood/fascia/fender air inlet(s), outlets, or vents +1 (air filter upgrade alone—0 pts.)
- _____ 5) Non-BTM, deleted, or modified/porting throttle body +2; independent throttle bodies +4
- _____ 6) Non-BTM or modified carburetor, fuel rail, fuel injectors, fuel pump(s), and/or fuel pressure regulator +2 (no points for fuel pump alone if using BTM fuel and timing maps, sensor inputs and ignition timing)
- _____ 7) Non-BTM, modified/porting, or deleted intake manifold:
4 cyl. +1, 6cyl. +2, 8 cyl. +3, 12A & 13B rotary +2, all other rotary +3
- _____ 8) Water injection system +6 (alcohol-water mixtures are not permitted)
- N/A 9) Nitrous oxide injection is not permitted.
- _____ 10) Replacement pulleys (other than for supercharger) or non-electrical fan removal +1
- _____ 11) Replacement pulley for BTM supercharger or replacement of any pulley that affects BTM supercharger speed +4
- _____ 12) Aftermarket boost controller or modification/alteration of BTM vacuum lines that serve to function as a boost controller +4
- _____ 13) Aftermarket or modified wastegate actuator, wastegate, or vacuum line(s) that serve to control the wastegate actuator function or increase peak boost +3
- _____ 14) Add aftermarket intercooler +7
- _____ 15) Non-BTM or modified intercooler +4 (Intercooler sprayers are not permitted unless they came on the OEM base trim model of the vehicle).
- _____ 16) 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)

- _____ 17) Modified or non-BTM camshaft(s), rocker arms, push rods, or cam timing gears +6 (for one or more)
- _____ 18) Valve size change, modified, ported or polished BTM head (other than simple shaving of the head only) +6
- _____ 19) 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
- _____ 20) De-stroked engine +4
- _____ 21) Added dry sump oil system +7 (+14 if motor is lowered from OEM location)
- _____ 22) Modification or porting of the exhaust manifold +2
- _____ 23) Aftermarket or modified header +2 (note--in almost all cases will require C.24) points also)
- _____ 24) Non-BTM or modified exhaust piping, resonators, or mufflers downstream from the header primary, exhaust manifold, or turbo. (does not include catalytic converter removal/upgrade—see C.25) +2
- _____ 25) Removal, upgrade, or modification of catalytic converter(s). +1 (note--in most cases will require C.24) points also if removed.)

Total Engine Modification Points

D. DRIVETRAIN:

- _____ 1) Non-BTM sequential (semi-automatic) or dog-ring (non-synchromesh) transmission (includes altered gear ratios) +7 (does not include automatic transmissions utilizing a torque converter)
- _____ 2) Double clutch transmissions with altered gear ratios +6 (do not also assess D.3) & D.4))
- _____ 3) Modify number of forward gears in transmission or altered gear ratios +3
- _____ 4) Added paddle/electronic shift +3
- _____ 5) Added limited slip differential or welded/locked differential +3
- _____ 6) Changed or modified limited slip differential (or welded/locked BTM LSD) +1
- _____ 7) Added traction control +3 (no points if proven disabled during competition)
- _____ 8) Relocation of engine/transmission between 1 and 10 inches of the BTM location +7 (note: Relocation of less than 1 inch is not assessed points. Original engine location shall be based on the BTM rear face of the engine block and the BTM crankshaft centerline.)
- _____ 9) Modification/upgrade from a fixed to a floating rear axle +3

Total Drivetrain Modification Points

E. SUSPENSION:

- _____ 1) Non-BTM shocks/struts/dampers with an external reservoir or more than two ranges of adjustment—must still take points for springs below +8 (example: compression (bump) and both high & low rebound adjustments).
- _____ 2) Non-BTM 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 +5
- _____ 3) Non-BTM or modified/re-valved shocks/struts/dampers +3 (all others) (springs not included)
- _____ 4) Changing the mounting orientation/design of the BTM shock and/or spring perch in order to invert the front shocks/struts (includes non-BTM inverted shocks/struts) +1
- _____ 5) Non-BTM or modified coil springs, leaf springs/spacers/brackets, or torsion bars +2
- _____ 6) Conversion of torsion bar/leaf spring suspension to coil spring and strut/shock suspension +2
- _____ 7) Add, replace, remove, or modify anti-roll bars (“sway” bars—front, rear, or both) or end links—may have spherical joints on the end links and/or relocation of the mounting points without additional points assessment) +2
- _____ 8) Non-BTM driver/cockpit adjustable sway bar or suspension settings +4
- _____ 9) Replace, modify, or remove control arms (other than plates, shims, or eccentric bolts/bushings for simple camber/caster adjustment only) or RWD/AWD rear trailing arms (may have spherical/metallic joint for the connection to the spindle/knuckle) +4
- _____ 10) Non-BTM rear control arms on FWD vehicles (for stiffness and wheel alignment only, no change in suspension mount or pick-up points from stock) +1 (if both front and rear use E.9)
- _____ 11) Non-BTM rear trailing arms on FWD vehicles (for stiffness only, no change in suspension mount or pick-up points from stock) +1
- _____ 12) Using the alternate control arm mounting location on cars equipped BTM with multiple choices (example: to increase track width) +6

- _____ 13) Relocation of front suspension mounting points +6
- _____ 14) Relocation of rear suspension mounting points +6
- _____ 15) Bump steer kits or shimming of the steering rack +2
- _____ 16) Alteration of ball joints/dive angles +2
- _____ 17) Add panhard rod or Watts link (regardless of whether or not the Watts link replaces a BTM panhard rod or the panhard rod replaces a BTM Watts link) (may have spherical joints without an additional points assessment) +4
- _____ 18) Replace or modify a BTM panhard rod or Watt's link (may have spherical joints without an additional points assessment) +2
- _____ 19) Add torque arm (may have spherical joints without an additional points assessment) +4
- _____ 20) Replace or modify a BTM torque arm (may have spherical joints without an additional points assessment) +2
- _____ 21) Add a third link to a rear suspension that does not penetrate the floor (may have spherical joints without an additional points assessment) +4
- _____ 22) Metallic and/or spherical-design replacement suspension bushings +3 (except for pillow ball camber plate joints, sway bar end links already assessed points in E.7) above, control arm spindle/knuckle joints already assessed points in E.9) above, and panhard rod, Watts link, torque arm, and third links already assessed in E.19), E.20), E.21), E.22) above.)

Total Suspension Modification Points

F. BRAKES/CHASSIS:

- _____ 1) Non-BTM, modified, or relocated brake calipers and/or brake caliper brackets and/or brake rotor diameter +2
- _____ 2) Add front lower stress/arm brace (two attachment points maximum) +1
- _____ 3) Add a third or fourth attachment point to a front or rear strut tower bar (or replace an existing/BTM three point bar) +1
(Additional attachment points must not be tied to any other type of mounting point with anything other than sheet metal)
- _____ 4) Add or modify other chassis stiffening devices or fabricated parts (such as lower stress/arm braces with greater than two attachment points, sub-frame connectors, sub-frame braces, sub-frame mounts, and non-rubber/non-Poly sub-frame bushings, etc) +3
- _____ 5) Increase in track width greater than four (4) inches due to non-BTM 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)

Total Brakes/Chassis Modification Points

G. AERODYNAMICS:

- _____ 1) Add, replace, or modify front fascia or air dam +3 (except as provided for in I.c.3), I.f.3), I.h.14) of the No-Points Modification list) The air dam must be vertical (5° tolerance) and must not protrude from the side of the vehicle or it will be assessed an additional +3 points. Additional points must be assessed below for any component of the added/replaced/modified fascia or air dam that performs the functions of G.2) and G.3) below.
- _____ 2) Add, replace or modify a single flat, horizontal, front splitter +3 This part may extend horizontally past the side of the vehicle no greater than five inches, with no limit on frontward protrusion. 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 G.4) below. No material, filler, or part may extend the vertical reach of the BTM front fascia without taking fascia modification points above (G.1).
- _____ 3) Add or modify canards/winglets (includes portions of an added/modified/replaced fascia that provide a downward force other than that listed in G.2) above) +2
- _____ 4) 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 BTM 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---G.8) below)
- _____ 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---G.8) below) +2
- _____ 7) Replace or modify BTM 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---G.8) below) +1

- _____ 8) Add rear vertical panels in any location (note: see G.3), G.6), G.7), and G.10)) +2
- _____ 9) Add or modify side skirts (side skirts must be vertical or an OEM option 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 vortex generator that are greater than five inches in height---G.8) above) +1
- _____ 11) Removal of the front windshield/windshield frame +7 (raking is not permitted)
- _____ 12) Front side window frame air dams/diverters (driver and/or passenger side) +2
- _____ 13) Add a non-OEM hardtop to a convertible that is not the identical shape and size of either the BTM or OEM option hardtop for that car model +5 (note: The top must not extend rearward of the front edge of the rear deck lid.) ("Fastback tops and toneau covers are not permitted.)

Note: Active aerodynamic modifications (including, but not limited to computerized, cockpit adjustable, self-adjusting, and OEM/BTM, etc.) are not permitted.

Total Aerodynamics Modification Points

H. ROLL CAGES:

4-point roll bar and 6-point (two main hoop, two rear brace, two forward hoop) roll cage designs constructed per the NASA CCR may be utilized without a TT Modification point assessment. Two additional attachment points for either two foot-well bars or two bars to the front firewall (one on each side) may be added without a TT Modification point assessment. Additional bars and/or gusseting within the structure of the cage are permitted without a TT Modification point assessment. Gusseting of the 6 (CCR) attachment points listed above is permitted without a TT Modification point assessment provided that the gussets are attached to the tube no further than six (6) inches from the end of the tube, and to the chassis no further than six (6) inches from the end of the tube where it terminates at the plate. Up to three additional attachment points solely for the purpose of bars connecting "NASCAR" style driver-side door bars to the rocker panel are permitted without a TT Modification point assessment. Additional attachment points within the driver's compartment that exceed these allowances are also permitted, but will be assessed points as follows:

- _____ 1) One or more bars that penetrate the front bulkhead/firewall +2
 - _____ 2) Any other attachment point to the chassis +2
- (Note: It is considered a safety hazard to cut through bars without removing them)

Total Roll Bars/Cages Modification Points

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