



NASA Super Touring and Super Unlimited (NASA ST and SU)

Official National Rules 2009

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1 Definitions and Claims

NASA Super Touring (NASA ST) and NASA Super Unlimited (NASA SU) are automobile competition series focused on road course competition, and shall function as an advertising and marketing tool for the series sponsors, the independent sponsors of each team, as well as the official sanctioning body of the series. The trade names, “Super Touring® (ST)”, “NASA Super Unlimited (SU)” and these rules are the property of the National Auto Sport Association, Incorporated®, located at P.O. Box 21555, Richmond, CA 94820; 510-232-NASA (6272).

2 Sanctioning Body

The NASA ST/SU series is sanctioned by the National Auto Sport Association (NASA). All events are governed by these rules, applicable addendums, prima facie rules, as well as those found in the latest version of the NASA *Club Codes and Regulations*® (CCR).

3 Intent

The intent of these rules is to provide mandates to ensure that all Super Touring vehicles are modified within clearly established limits, so as to ensure an even platform, in which a contest of driving skill may provide the most talented drivers with great rewards. The rules shall be applied in a logical manner that seeks to provide competitors a safe and fair venue for competition, without a constrained interpretation of the rules based on phraseology or verbiage.

If a modification is not specifically allowed by the rules, it is prohibited unless the NASA ST Director declares it to be legal via a Technical Bulletin published in the Super Touring section of the www.nasaforums.com website and/or in a future Super Touring specific website. A permitted item cannot be modified to perform a prohibited function. Vehicle legality is the sole responsibility of the driver.

4 Purpose

NASA ST/SU provides a venue for spirited on-track competition in high performance racecars of all makes, models, and types. Several key factors are considered in classing vehicles, using an “Adjusted” weight to power ratio as the ultimate equalizer between vehicles. The relatively few modification specific rules will allow competitors to configure their cars to perform at an optimal level by using aftermarket parts, providing an opportunity for promotional exposure for the competitors’ sponsors, aftermarket tuners, parts manufacturers, and the vehicle manufacturers.

Additionally, these series should provide a stage to showcase driving talent, in hopes that the most talented drivers will advance to even higher-level professional series. The format of the rules encourages direct crossover from both high level NASA TT classes and race classes from multiple organizations.

5 The Classes

There are **four** Super Touring classes—Super Touring 1 (ST1), Super Touring 2 (ST2), **Super Touring R1 (STR1)**, and **Super Touring R2 (STR2)**—with **STR1 and ST1** being the higher performance level classes of the **four**. Super Unlimited (SU) is an unrestricted class for any closed wheel/fendered vehicle that complies with the safety requirements in the NASA CCR. An “Adjusted” weight/power ratio (section 7.4), modified based on body type, transmission, drivetrain, tires, and overall weight, is used to equalize cars in each of the Super Touring classes, although there are some additional restrictions placed on all vehicles in **Super Touring classes** (sections 7.2 & 7.3). **STR1 and STR2 are for closed wheel/fendered monocoque sports racers, tube-frame, tube-frame conversion, partial tube-frame, and other non-production four wheel vehicles.**

6 Super Unlimited (SU)

Any four wheel racecar that passes NASA safety tech inspection can be used to compete in SU (note: open wheel formula cars are not permitted). There are no maximum power limits or minimum weight limits. Any type and size tires may be used. All types of transmissions, chassis frames, suspensions, aerodynamic modifications, and braking systems are legal. All of the rules in the NASA CCR in Section 15 and 18 will apply, except, the following rules will supersede those in the CCR:

CCR 15.6—Roll cages may be built to provide an unlimited amount of chassis stiffening. Any number of cage mounting points may be used above the six (6) minimum requirement, and, any number of additional tubes may be used above the minimum with additional attachment points to the body, including tubes that penetrate the firewall, or convert a production vehicle into a tube-frame chassis vehicle.

CCR 15.8—An electrical master cut-off switch is required.

CCR 15.16—An approved suitable racing seat is required.

CCR 18.3—Tires may be “grooved”

CCR 18.5—Any type of fuel or additives that are approved by the Race Director are permitted.

CCR 18.6—Engine modifications are unlimited.

Front driver and passenger side fixed/Lexan windows are specifically not permitted unless they are factory installed during the manufacturing of the vehicle. Both front side windows must otherwise be in the down position while on track.

7 Super Touring (ST1, ST2, STR1, STR2)

7.1 Class Eligibility

7.1.1 ST1 & ST2

Any closed wheel/fendered production vehicle, approved for street use by the D.O.T., T.U.V., or Japanese government, that complies with all NASA safety requirements in the CCR, and all of the restrictions and limitations listed below in 7.2 and 7.3 is eligible to compete based on the “Adjusted” weight/power ratios below:

Super Touring 1 (ST1) = “Adjusted” wt/hp ratio equal to, or greater than, **5.50:1**

Super Touring 2 (ST2) = “Adjusted” wt/hp ratio equal to, or greater than, **8.70:1**

Performance enhancing modifications are otherwise unlimited. Some kit cars and purpose-built tube-frame or monocoque racecars may be permitted to compete in ST1 and ST2 with the approval of the NASA National Super Touring Director as they present for competition. The National ST Director will determine and publish [any additional modification factor\(s\) for the Adjusted](#) weight/horsepower ratio for those vehicles, as well as any other specific limitations and restrictions placed on those vehicles. [Note, the addition of the STR1 and STR2 classes in February of 2009 does not negate or repeal the previous \(or future\) approvals of the tube-frame and non-production vehicles for ST1 and ST2 listed in Section 8. All of these approvals will be valid at least through the end of the 2009 season. Many \(and possibly all\) of them, will continue to be valid through the 2010 season and beyond.](#)

7.1.2 STR1 & STR2

Any closed wheel/fendered racecar, that complies with all NASA safety requirements in the CCR, and all of the applicable restrictions and limitations listed below in 7.2 and 7.3 is eligible to compete based on the “Adjusted” weight/power ratios below:

Super Touring R1 (STR1) = “Adjusted” wt/hp ratio equal to, or greater than, **5.50:1**

Super Touring R2 (STR2) = “Adjusted” wt/hp ratio equal to, or greater than, **8.70:1**

Performance enhancing and chassis/body/aero modifications are otherwise unlimited.

7.2 NASA CCR Section 15 and 18 Exceptions

All of the rules listed in the NASA CCR Sections 15 and 18 will apply, except, the following rules will supercede those in the CCR:

CCR 15.6—Roll cages may be built to provide an unlimited amount of chassis stiffening.

Any number of cage mounting points may be used above the six (6) minimum requirement, and, any number of additional tubes may be used above the minimum with additional attachment points to the body, including tubes that penetrate the firewall.

CCR 15.8—An electrical master cut-off switch is required.

CCR 15.9—Steering wheel lock removal is recommended, but not required.

CCR 15.16—An approved suitable racing seat is required.

CCR 18.6—Engine modifications are unlimited.

Front driver and passenger side fixed/Lexan windows are specifically not permitted unless they are factory installed during the manufacturing of the vehicle. Both front side windows must otherwise be in the down position while on track.

7.3 Vehicle Modification Restrictions/Limitations

Unless listed below or in Section 7.2, any other performance enhancing modifications are permitted, provided that the vehicle complies at all times with the minimum “Adjusted” weight/power ratio (7.4) for its class.

- 1) **ST1 and ST2 only (not applicable for STR1 and STR2):** Every vehicle must retain its OEM **frame rails (or unibody), strut towers,** floorpan, and subframe. Tube-frame chassis conversion (partial or complete) is not permitted without a waiver from the National ST Director. Floorpan modifications to include items such as subframe connectors, roll cage bracing, and fuel cell placement may be approved on a case-by-case basis by the National ST Director. Such modifications will be subject to approval and possible modification factor assessments.
- 2) **ST1 and ST2 only (not applicable for STR1 and STR2):** Aerodynamic modifications are unrestricted, except that a rear wing (or rear spoiler for wagon-style bodies), may not exceed a height of eight (8) inches above the roofline (or OEM windshield height for convertibles).
- 3) Nitrous Oxide use is prohibited. Pre-existing tanks must be removed.
- 4) Sequential, Tiptronic-like, paddle shift/semi-automatic, and dog-ring/straight-cut gears (i.e. non-synchromesh) transmissions are permitted, but will be assessed via the “adjusted” weight/power ratio formula regardless of whether they are OEM or not.
- 5) Tire and wheel size are unlimited, but non-DOT approved tires will be assessed via the “adjusted” weight/power ratio.
- 6) Up to two hundred and fifty (250) lbs. of added ballast is permitted. All ballast must be of solid material (no fluids or shot pellets) and safely secured in any location on the vehicle approved by NASA safety technical inspectors. The preferred method is to use at least one (1) 3/8-inch grade-5 bolt, two (2) “fender” washers and a locking nut system for every fifteen (15) pounds of weight.
- 7) From the start of qualifying through the end of post-race inspection, vehicles may not have any adjustments or modifications made to systems that could alter chassis dynamometer readings by changing horsepower levels (without the direct approval of the Race Director.)

7.4 Adjusted Weight/Power Ratio Calculation

7.4.1 Definitions

The “Adjusted” weight/power ratio for each vehicle will be calculated based on a simple competition weight to peak chassis dynamometer horsepower ratio (wt./hp), followed by the adjustment of the resulting ratio by adding to, or subtracting from it, based on the list of “Modification Factors” below. Competition weight is defined as the minimum weight of the vehicle, with driver, any time that it competes in a qualifying session or race. Note: peak chassis dynamometer horsepower and dynamometer testing procedures are defined in Section 8.

7.4.2 Modification Factors

The “Modification Factor” listed after each item below is added or subtracted from the actual measured wt/hp ratio to determine the “Adjusted” wt/hp ratio that determines vehicle legality in each ST class.

Body Type: 4-door Sedan or 5-door Wagon = +0.4

Transmission: Dog-ring/Straight-cut gears (non-synchromesh) = -0.2
Sequential/Tiptronic-like/paddle shift/semi-automatic = -0.2

Drivetrain: AWD = -0.5
FWD = +1.0

Tires: Non-DOT approved tires = -0.75 (VRL & GAC Hoosiers see App. A)
Size 275 to 250 (or 10.5” to 9.6” for non-DOT approved) = +0.4
Size 245 or smaller (or less than 9.6” for non-DOT approved) = +0.8

Competition Weight:

Equal to or **Less** than:

3200-2800lbs	2750-2350lbs	2300-1900lbs	1850-1450lbs
3200 lbs -0.05	2750 lbs -0.5	2300 lbs -0.95	1850 lbs -1.4
3150 lbs -0.1	2700 lbs -0.55	2250 lbs -1.0	1800 lbs -1.45
3100 lbs -0.15	2650 lbs -0.6	2200 lbs -1.05	1750 lbs -1.5
3050 lbs -0.2	2600 lbs -0.65	2150 lbs -1.1	1700 lbs -1.55
3000 lbs -0.25	2550 lbs -0.7	2100 lbs -1.15	1650 lbs -1.6
2950 lbs -0.3	2500 lbs -0.75	2050 lbs -1.2	1600 lbs -1.65
2900 lbs -0.35	2450 lbs -0.8	2000 lbs -1.25	1550 lbs -1.7
2850 lbs -0.4	2400 lbs -0.85	1950 lbs -1.3	1500 lbs -1.75
2800 lbs -0.45	2350 lbs -0.9	1900 lbs -1.35	1450 lbs -1.8

Equal to or **Greater** than:

3300-3500lbs	3550-3750lbs	3800-4000lbs	4050-4250lbs
3300 lbs +0.05	3550 lbs +0.35	3800 lbs +0.65	4050 lbs +0.9
3350 lbs +0.1	3600 lbs +0.4	3850 lbs +0.7	4100 lbs +0.95
3400 lbs +0.15	3650 lbs +0.45	3900 lbs +0.75	4150 lbs +1.0
3450 lbs +0.2	3700 lbs +0.55	3950 lbs +0.8	4200 lbs +1.05
3500 lbs +0.3	3750 lbs +0.6	4000 lbs +0.85	4250 lbs +1.1

Note: If between 3201 lbs and 3299 lbs, there is no modification factor.

Note: All vehicle weights will be measured to the tenth of a pound (xxxx.x), then rounded off to the nearest pound for all calculations. Any weight ending in “.5” (xxxx.5x) will be rounded up or down to the benefit of the competitor.

7.4.3 Example Calculations

Example: 2003 Dodge Viper, with OEM transmission, on DOT approved
345 size tires, weighing 3701 lbs, with peak chassis dyno power of 450 hp:
 $3701/450 = 8.22$, plus 0.55 (weight 3700 lbs or greater) = 8.77 (ST2)

Example: 2004 Chevrolet Corvette Z06, with OEM transmission, on DOT approved 345 size tires, weighing 3265 lbs, with 375 peak hp:
 $3265/375 = 8.70$ (ST2)

Example: 2005 Ford Mustang, with dog-ring gearbox, non-DOT 11" slicks, weighing 3000 lbs, with peak chassis dyno power of 435 hp:
 $3000/435 = 6.89$, minus 0.2 (dog box) = 6.69, minus 0.75 (slicks) = 5.94,
minus 0.25 (3000 lbs or less) = 5.69 (ST1)

Example: 2005 Subaru STI, with OEM transmission, on DOT approved 305 size tires, weighing 3201 lbs, with 550 peak awhp:
 $3201/550 = 5.82$, plus 0.4 (4-door sedan) = 6.22, minus 0.5 AWD = 5.72 (ST1)

Example: 2000 Dodge Viper with OEM transmission, on DOT approved 345 size tires, weighing 3451 lbs, with 645 peak rwhp:
 $3451/645 = 5.35$, plus 0.2 (3450 lbs or greater) = 5.55 (ST1)

Example: 2002 Ferrari 360, with OEM sequential transmission, on non-DOT approved 12" slicks, weighing 2851 lbs, with 410 rwhp:
 $2851/410 = 6.95$, minus 0.25 (sequential transmission) = 6.70, minus 0.75 (slicks) = 5.95, minus 0.35 (2900 lbs or less) = 5.60 (ST1)

Example: 2004 Dodge SRT4, with OEM transmission, on non-DOT approved 10.3" slicks, weighing 2501 lbs, with 500 fwHP:
 $2501/500 = 5.0$, plus 0.4 (4-door sedan) = 5.4, plus 1.0 (FWD) = 6.4, minus 0.75 (non-DOT approved tires) = 5.65, plus 0.4 (10.5" to 9.5" non-DOT tires) = 6.05, minus 0.7 (less than 2550 lbs) = 5.35 (SU)

Note: If one knows the competition weight of the vehicle, a simple reverse calculation will yield the maximum horsepower allowed for that vehicle. Begin by adding/subtracting all of the modification factors for the vehicle as listed above. Then use either the 5.50 or 8.70 ratio (depending on which class the car is being prepared for), and subtract that number from the ratio to get the vehicle's actual target wt/hp ratio. Divide the competition weight by this number to obtain the horsepower target.

Using the Dodge SRT4 example above:

$$0.4 + 1.0 - 0.75 + 0.4 - 0.7 = 0.35$$

$$5.5 - 0.35 = 5.15$$

$$2501/5.15 = 485 \text{ max hp for ST1}$$

$$8.7 - 0.35 = 8.35$$

$$2501/8.35 = 299 \text{ max hp for ST2}$$

Using the Ferrari 360 example above:

$$-0.25 - 0.75 - 0.35 = -1.35$$

$$5.5 + 1.35 = 6.85 \text{ (note that subtraction of the negative number here results in addition)}$$

$$2851/6.85 = 416 \text{ max hp for ST1}$$

$$2851/10.05 = 283 \text{ max hp for ST2}$$

8 ST1 & ST2 Approved Non-Production & Tube-Frame Vehicles

The following vehicles are approved for **ST1 and ST2** based on their “Adjusted” wt/hp ratio, with the listed modification factors:

7's Only Mazda GT Spec RX7 (-0.2 modification factor)
Active Power GTR MKI, GTR 2D, GTR 70, M6 GTR (-0.75 modification factor)
Brunton Stalker (If aero mods, wing, or splitter, then -0.75 modification factor)
Brunton Stalker (If no aero mods, wing, or splitter, +0.75 modification factor)
Caterham & Lotus 7 (if aero mods, wing, or splitter, then -0.75 modification factor)
Caterham & Lotus 7 (if no aero mods, wing, or splitter, then +0.75 modification factor)
Dodge Viper Competition Coupe (-0.2 modification factor)
Ferrari 348, 355, and 360 Challenge Series (no modification factor)
Ferrari 430 Challenge (-0.2 modification factor)
Factory Five GTM Supercar (-0.75 modification factor)
Factory Five Roadster (if aero mods, wing, or splitter -0.4 modification factor. Note: no modification factor for FF Challenge “standard front air dam”—See Appendix A)
Factory Five Type 65 Coupe (-0.4 modification factor)
Lotus 2-Eleven (no modification factor)
Panoz GTRA, GTWC (-0.2 modification factor)
Panoz GTS (-0.2 modification factor)
Porsche 997 & 996 GT3 Cup (-0.4 modification factor)
Pro Challenge Road Race Spec Car (See Appendix A)
Rossion Q1 (-0.2 modification factor)
Thunder Roadster ('08 released body/wing type -0.75 modification factor. Note: must keep chassis, body, wing to TR specs)

Note: Future approved vehicles will be posted on the www.nasaforums.com website in the Super Touring section.

9 Dynamometer Testing

Each year, the owner/driver must submit a completed NASA Super Touring Car Classification Form and a certified dynamometer (Dyno) report to the ST Director prior to the car’s first competition in order to compete in ST1, ST2, **STR1, and STR2**. **Certified Dyno reports are potentially valid for up to a maximum of three years (provided that no changes have been made to the vehicle that would alter Dyno readings). However, at his discretion, a NASA ST Director (or Race Director) may require an updated certified Dyno report (at the driver’s/owner’s expense) after one year from the date of the previous report.** Any competitor wishing to drive without a certified Dyno report will compete in the Super Unlimited (SU) class. All competitors will be required to include the latest certified Dyno report and minimum weight in their vehicle logbook at all times. Any subsequent modifications or adjustments done to the car that could alter power output will require repeat Dyno testing, and a new certified Dyno report. NASA Officials may request repeat Dyno testing at any other time. Competitors may submit a certified Dyno report from the previous year provided there have been no modifications to the power output of the vehicle since the Dyno testing.

A certified Dyno report consists of three separate, reproducible Dyno tests with SAE correction. The highest peak horsepower number of the three tests will be used as the official certified horsepower for weight to horsepower calculations. A smoothing factor up to five (5) is permitted. Dynamometer tests must be conducted on a Dynojet Model 248 or 224 for front and rear wheel drive vehicles, and on a Dynojet, Mustang, Dyno Dynamics, or Dynapack for AWD cars, in a commercial facility that offers dynamometer testing as part of their business and is open to the public. Each Regional ST or Race Director may retain the option to specify which business locations will be the approved centers for that particular region. Please check with the ST Director in your area for instructions. All sites approved by the NASA American Iron series are approved for Super Touring.

Dynamometer tests are official and certified when performed by series Officials. It is the responsibility of the competitor to be within power levels on any Dyno that NASA officials choose to use for testing. The Dynojet will be the preferred Dyno for all vehicles, and will be used exclusively when available.

As AWD Dyno availability is limited, NASA Officials may use any of the four AWD Dynos listed above. AWD drivers need to be especially careful that their cars will be compliant on any official Dyno that is available.

From the start of qualifying through the end of post-race inspection, vehicles may not have any adjustments or modifications made to systems that could alter chassis dynamometer readings by changing horsepower levels (without the direct approval of the Race Director.)

Examples of such systems are driver-adjustable electronic tuning and engine timing advance devices, fuel pump output modification devices, boost controllers, adjustable MAP and MAF voltage clamps, and any other system that could alter the Dyno readings when measured for compliance purposes. Any restriction device placed in the air intake system must be clearly identified as such and marked to indicate its dimensions.

For compliance testing, the dynamometer operator and the Super Touring Director or NASA Official will determine the dynamometer testing procedures and how many test runs will be performed for any given car being tested in order to obtain accurate test data. Prior to the dynamometer inspection the competitor may top off any fluids needed to ensure the engine and drivetrain are not damaged during testing. The fluids must be added with a NASA Official present. No other modifications or adjustments may be made to the car. To ensure fairness, a NASA Official, or an individual appointed by a NASA Official, will operate any cars being inspected on the dynamometer. SAE correction with a smoothing factor of five (5) will be used. Any run that results in an erratic or non-reproducible result may be dismissed by Super Touring officials.

10 Forms, Inspection, Protests, Penalties

All aspects of NASA CCR Section 17.0 Vehicle Legality Inspection shall be enforced except as defined below.

10.1 Car Classification Forms

All ST competitors will submit a completed Super Touring Car Classification Form and certified Dyno report to the Regional ST Director or Race Director (if there is no ST Director) prior to the first qualifying session of a race day. Once a Form has been submitted during a season, if there are no modifications to the vehicle that would change the form, a new form does not need to be submitted at subsequent races. Forms can be downloaded here:

<http://www.nasaproring.com/rules.html>. Super Unlimited (SU) competitors do not need to submit any classification forms or certified Dyno reports.

A driver may choose to compete at any time in a higher level class than would be dictated by the “Adjusted” wt./hp ratio. A car may be modified an unlimited number of times, and substitute vehicles may be used provided they comply with all ST/SU rules. Substitution of a vehicle after qualifying sessions are completed will result in the new vehicle being placed at the back of its class in pre-grid.

10.2 Vehicle Inspection

All completed ST Car Classification Forms will be available from the ST Director (or Race Director if there is no Regional ST Director) for review by any competing driver by request. Super Touring vehicles are subject to detailed inspection by any NASA Technical Inspector and visual inspection by Super Touring competitors at any time when the car is at the track or at prearranged mutually agreed upon times when the car is not at the track. Super Touring Directors retain the right to request any disassembly or other procedure required to verify vehicle compliance. At random times or at the discretion of the Super Touring Series Directors, any car may be ordered to report for rules compliance on a chassis dynamometer. All official Super Touring dynamometer tests will be open. All Super Touring competitors have the option to be present for official chassis dynamometer testing. As well, competitors may have GPS accelerometers placed in/on their vehicles at any time by Super Touring Officials to help verify rules compliance. (Note: It is likely that AWD vehicles will be required to have continuous GPS monitoring at the NASA Championships. The current approved units are the MaxQData™ MQGPS and MQ200 series.)

10.3 Protests

Protests of another competitor’s vehicle, for good cause, may be filed up to 30 minutes after the completion of a race or qualifying session, with the Race Director. A specific part does not need to be specified in the protest, but an explanation of why the vehicle is being protested is required. Frivolous and “nuisance” protests may result in some type of action against the protesting party.

10.4 Penalties

Cheating and non-compliance are not welcome and will be subject to harsh penalties. Penalties will be assessed as follows, although the Race Director may choose to assess more severe penalties.

Any car exceeding the minimum adjusted weight to power ratio for its declared class will be penalized in accordance with the NASA CCR and these rules. The penalty for competing with a vehicle in a class lower than that dictated by the Super Touring Classification system, regardless of driver/owner intentions, will be a two race disqualification for the previous two races for the first offense. A second offense will result in a loss of half of the season points, a two race

suspension, and disqualification from the race. At third offense, there will be a loss of all season points and a four race suspension. The fourth offense will result in permanent ejection from the series. Any disqualification or suspension will result in zero points that cannot be dropped.

Any decision made by a NASA Official at an event can be appealed per the NASA CCR.

Appendix A—Technical Bulletins, Approvals, Assessments for Specific Car Models

Factory Five Roadster:

No Modification Factor for FF Challenge “standard front air dam” or exact replica built with different material.

Ford Mustang:

"Upper subframe connectors" that penetrate and modify the floorpan will be assessed a -0.2 Modification Factor (seen commonly in American Iron Mustangs).

Pro Challenge Road Race Car:

Pro Challenge Road Race Car Specs for ST1, ST2, TTS, TTU
modification factor: -0.2
maximum tire width: 225mm if using DOT approved tires
9.6 inches if using non-DOT approved slicks
wheels: 13" or 15" (model open)
alignment: open to adjustment
ride height/corner balance: open via coilover adjustment
suspension: Bilstein non-adjustable shocks
body/aero/cage: Fiberglass with race wing--as built by Pro Challenge
length: 14 feet
height: 48 inches
chassis: 1.5" reinforced steel tube frame
engine: open
transmission: sequential
differential: Winters quick-change or Toyota (locked)
brakes: 4 piston, up to 12" vented rotors front
Wilwood 2 piston, 10" solid rotors rear

VRL and GAC Hoosier Tires:

Viper Racing League and Grand Am Cup Hoosier Spec. Tires are exempt from the -0.75 modification factor for Non-DOT approved tires.