



## **NASA Super Touring (ST), Performance Touring (PT), and Time Trial (TT) Official Dyno Certification Form** (rev 1-18)

### **Dyno Testing Procedures:**

- 1) All Dyno tests must be performed in a commercial facility or on a portable Dyno that offers chassis dynamometer testing as part of their business and is open to the public.
- 2) All Front Wheel Drive (FWD) and Rear Wheel Drive (RWD) vehicles must be tested on a Dynojet model dynamometer.
- 3) All Wheel Drive (AWD) vehicles may be tested on a Dynojet, Mustang, Dyno Dynamics, or Dynapack dynamometer. Mustang and Dyno Dynamics results will have 10% added for calculations.
- 4) An inductive pickup or other direct sensor shall be used to measure engine RPM, not via the ECU/OBD port or from calibration from the vehicle's tachometer. (If it is physically impossible to obtain RPM data from an inductive pickup or direct sensor due to vehicle configuration, the Dyno operator must note on the Dyno sheet the method used for obtaining RPM data, and the reason for not using an inductive pickup or direct sensor, and the competitor must notify the Series Director before competition).
- 5) At least three (3) separate, reproducible tests shall be made for each Fuel/Timing Map/boost controller setting, with graphs printed together on the same sheet, with horsepower and torque on the Y-axis and RPM on the X-axis. SAE J1349 Rev JUN 90 correction shall be used, along with a smoothing factor of five (5).
- 6) The numerical table of horsepower and RPM for the run with the highest Max HP shall be printed out in 50 RPM increments (unless the competitor elects to simply use Max HP for all calculations).
- 7) The Dyno graph printout and numerical table must identify the car owner's name, car number, car year/make/model, shop name and phone number, and Dyno operator's name.
- 8) The vehicle must be tested at normal operating temperature (as when on track).
- 9) The tires must be inflated to at least 28 psi (but should be at normal operating track tire pressure if higher.)
- 10) The hood shall be open, with a cooling fan placed in front of the engine/radiator during testing.
- 11) The vehicle must be tested in the gear producing the highest horsepower readings, which is typically the gear closest to a 1:1 ratio—commonly 5<sup>th</sup> gear for BMW M3's, Honda S2000's, Mazda RX-8's, Nissan 350/370Z's. (Note that it is the competitor's responsibility to ensure that the vehicle is compliant in all gears).
- 12) All Dyno graphs must show decreasing power for 1500 RPM from the Maximum horsepower level, or the car must reach the physical rev-limiter during the Dyno testing.
- 13) Engine, ECU, boost controller, restrictor plate, etc. adjustments shall only be made between Dyno runs in order to obtain the required additional sets of three Dyno tests for each "map" or setting. Any restriction device placed in the air intake system must be clearly identified as such and marked to indicate its dimensions.
- 14) All horsepower measurements shall be rounded to the nearest whole number before calculations.



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Car Information:

Owner/Competitor: \_\_\_\_\_ Car # \_\_\_\_\_ Log Book # \_\_\_\_\_
Vehicle Make: \_\_\_\_\_ Model: \_\_\_\_\_ Year: \_\_\_\_\_
Forced Induction? Y N (circle one) Restrictor Plate? If yes, what is the size: \_\_\_\_\_
Method of switching ECU Fuel/Timing Maps (if applicable): \_\_\_\_\_

Dynamometer Information (name/address/phone ink stamp okay here):

Shop Name: \_\_\_\_\_
Shop Address: \_\_\_\_\_ Shop Telephone # \_\_\_\_\_

Dynamometer Manufacturer/Type (circle one):

FWD/RWD: Dynojet (only) AWD: Dynojet Mustang Dyno Dyno Dynamics Dynapack
(Note: All Mustang and Dyno Dynamics results will be multiplied by 1.1 for calculations)

Testing Range (check one):

- ( ) Dyno graph shows decreasing power for 1500 rpm from the peak horsepower level
( ) Engine reached the rev limiter during these dyno runs

Dyno Results (from test with highest Max HP—all numbers rounded to nearest whole number):
(If AWD on Mustang or Dyno Dynamics model, multiply result x 1.1)

Max HP \_\_\_\_\_ Max Tq. \_\_\_\_\_ RPM at Max HP \_\_\_\_\_

If additional "Maps" or alternate settings/restrictors:

Setting Identifier \_\_\_\_\_ Max HP \_\_\_\_\_ Max Tq. \_\_\_\_\_ RPM at Max HP \_\_\_\_\_
Setting Identifier \_\_\_\_\_ Max HP \_\_\_\_\_ Max Tq. \_\_\_\_\_ RPM at Max HP \_\_\_\_\_

The Dyno results attached and the information on this form are certified as being true and correct by both the competitor and the Dyno operator:

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_
Owner/Competitor Signature Dyno Operator Name/ Signature Date





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**Instructions to Competitors:** Submit completed page 2 with your Car Classification Form and Dyno printouts. If you will be using the Avg HP calculation, either complete and submit page 3 here (repeat page 3 if needed for additional “maps” or power settings), or perform the Avg HP calculations on the actual 50 RPM vs HP data output table printout.

**Avg HP Calculation:**

Max HP \_\_\_\_\_ RPM at Max HP \_\_\_\_\_ Highest RPM on Dyno Graph \_\_\_\_\_

Horsepower at 250 rpm increments above/below Max HP from the 50 RPM increment table (Round all horsepower numbers to the nearest whole number, and if AWD on Mustang or Dyno Dynamics model, multiply results x 1.1)

<p>Below Max HP:</p> <p>250 rpm _____</p> <p>500 rpm _____</p> <p>750 rpm _____</p> <p>1000 rpm _____</p> <p>1250 rpm _____</p> <p>1500 rpm _____</p> <p>1750 rpm _____</p> <p>2000 rpm _____</p>	<p>Above Max HP:</p> <p>250 rpm _____</p> <p>500 rpm _____</p> <p>750 rpm _____</p> <p>1000 rpm _____</p> <p>1250 rpm _____</p> <p>1500 rpm _____</p> <p>1750 rpm _____</p> <p>2000 rpm _____</p>
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**If the vehicle has Forced Induction or if the Redline (highest RPM on the Dyno graph) is less than 6000 RPM,** use the highest three (3) data points above along with Max HP to calculate the Avg HP:

**Avg HP** = Max HP \_\_\_\_\_ ( \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ ) = \_\_\_\_\_ / 4 = \_\_\_\_\_

**If the vehicle Redline (highest RPM on the Dyno graph) is between 6000 and 7000 RPM,** use the highest five (5) data points above along with Max HP to calculate the Avg HP:

**Avg HP** = Max HP \_\_\_\_\_ +  
 ( \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ ) = \_\_\_\_\_ / 6 = \_\_\_\_\_

**If the vehicle Redline (highest RPM on the Dyno graph) is greater than 7000 RPM,** use the highest seven (7) data points above along with Max HP to calculate the Avg HP:

**Avg HP** = Max HP \_\_\_\_\_ +  
 ( \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ ) = \_\_\_\_\_ / 8 = \_\_\_\_\_