



# PWR Class

## 2024

### Introduction

The BMW CCA Club Racing PWR (**P**ower to **W**eight **R**atio) class is designed to be open to many different BMW race cars with minimal restrictions and ease of complying with the class rules. Cars will be classed primarily based on Horsepower to Weight Ratio. The PWR Class will earn BMW CCA Club Racing points and be eligible for annual awards.

The PWR class was initially envisioned to attract currently existing BMW race cars that were built for some other class or organization utilizing rules that are simple and fair to all. As PWR class racers now begin to entertain optimizing or building new cars for the PWR class, please keep in mind that any car that attains a significant advantage over other cars in class and in violation of the spirit of the rules will prompt a rapid change of rules in order to neutralize the advantage.

### Rev 3.1 Changes/clarifications

### Rules

- A. Specific Rules for the PWR class are contained in this document and will take precedence over any other BMW Club Racing rules.
- B. **WARNING:** The PWR Class is intended to allow a wide range of existing BMW race cars to race competitively regardless of initial build target class for the car. The PWR class will be subject to on-going rules modifications, especially in the early phases, in order to facilitate a fair and level playing field.
- C. **Safety** – All requirements from the Safety sections of the current BMW CCA Club Racing Rule book (see Section III and Appendices A, B and C) must be followed. Roll Cage design is free as long as the safety requirements are fully met.
- D. **Competition/General** – All General Race and procedural rules from the current BMW CCA Club Racing Rule book will apply to the PWR class.
- E. **PWR Rules Process** – The PWR class will strive for a consistent and fair ruleset. A dedicated PWR Class rules committee consisting of at least 3 active PWR class racers will be responsible for the PWR class ruleset. The rules may be updated on a quarterly basis in order to quickly address oversights, errors and ensure fair competition.
- F. **Rules Convention** – many race classes operate under the guidance of “if the rules don’t specify that you can do it, then you can not”. The PWR class is different in that the primary competitive differentiator is HP to Weight.
- G. **Eligibility** – Any car originally built by BMW is allowed including Mini and Rolls Royce. A BMW engine, transmission or any other major drivetrain component is not required.
- H. **Classing** will be determined by a (**Wheel Horsepower to Weight Ratio + Modifier**) system

1.

Class	LBS/WHP Ratio + Modifier
PWR5	Less than 8
PWR4	Greater than or equal to 8 and less than 10



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PWR3	Greater than or equal to 10 and less than 13
PWR2	Greater than or equal to 13 and less than 16
PWR1	Greater than or equal to 16

Note: Cars previously classed in BMW Club racing as SM may follow the normal disclosure process (including dyno testing) and slot into the appropriate PWR class. Existing SM class cars may also slot into PWR5 without a dyno test until the end of the 2024 season. A disclosure sheet will be required even if the dyno testing is not.

2. **Declared Weight** – a car's declared weight is defined as raced with driver and all safety equipment and for compliance reasons, any remaining fuel in the car following a race or qualifying session.
  - i. Ballast may be added to align to a class but is limited to the peak HP of the car multiplied by 1 lbs.
  - ii. Ballast to meet weight must be placed entirely in the front and/or rear passenger side floor area and/or the spare tire well in the trunk and must be securely bolted to the chassis. Each segment of ballast must weigh not more than 50 pounds and must be fastened with a minimum of two 12 mm bolts and positive lock nuts of metric grade 8.8 or better, and must utilize large diameter, load-distributing washers. Ballast may not be added or removed during any officially timed session.
3. **Declared Wheel Horsepower** – As measured for the current engine configuration at the wheels by a dynamometer. Please see requirements of the of the dynotest documentation in section I.1 below.
  - i. Declared WHP must be at least 85% of the manufacturer's published HP(crank).
    1. All PWR class cars must conform to the 85% rule with respect to the engine currently installed in the car.
      - a. Cars with engines as originally delivered from the factory will utilize the factory published HP (crank) for the particular model raced for the 85% calculation (Table PWR HP1) .
      - b. Cars with engine swaps will utilize the factory published HP (crank) for the model engine used (example M52B28) for the 85% calculation. Club Racing will maintain a table of factory published HP ratings for each engine model designation to be used for this calculation (Table PWR HP2). No other source of HP ratings will be accepted.
4. **Modifiers - Performance** modifiers which will add or subtract from the WHP to Weight ratio to yield a final classing number. If a higher performance modifier is declared, the racer is permitted to use a lower performance item. For example, if the disclosure sheet was approved for a Non DOT slick, a lesser performance tire can be used (but with no change to the officially declared ratio). Also note in the event rain tires are used, the same classification of tires must be used. For example: If the disclosure sheet was approved for a DOT Greater than 180 TW tire, then a rain tire must also be a 180 TW or higher tire.
  - i. **Aerodynamic improvements** – any component or modification that is added to a car to increase downforce or otherwise improve airflow related handling characteristics will be assessed a **modifier of -0.5**. This includes but is not limited to: Wings, ~~spoilers~~, splitters, diffusers, canards, dive planes, wheel arch vents, etc. Note: hood vents alone are not considered an Aero improvement. For reasons of respect for historical BMW factory race cars, the E30 M3 with original BMW trunk wing will not be assessed an Aero modifier.



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- ii. **Tires** (note: if you are not certain on the tire types, please see the definitions section for clarification). **Rain tires must be consistent with the selected Dry tire modifier category.**

Tire	Modifier
Non DOT Slick	-0.5
DOT R Compound	0.0
DOT Greater than 180 TW and Toyo Proxes RR/Proxes R/Toyo RA1(rain)	+1.0

- iii. **Transmission** – any transmission other than a traditional H pattern manual with a 3<sup>rd</sup> pedal clutch will have a **-0.5 modifier**. This includes but is not limited to: DCT, SMG, Automatic, and Sequential race transmissions.
- iv. No other modifiers will be in place at this time.
- v. The PWR class reserves the right to add additional modifiers or adjust existing modifiers to enable fair competition.

**Note:** A competitor is always free to use a lower performance category tire than their official tire modifier during a given event. This will have no effect on the official modifier and their PWR declared class. A permanent change to the tire modifier requires a petition to the PWR Rules committee and new disclosure filing.

5. **Vintage cars** – Certain race cars with an established history of competing in a vintage racing series may apply for pre-classing and will not require a dyno test. Pre-classing will be determined by the PWR class rules committee under the guidance of the BMW CR National Tech Steward, or a BMW CR designated representative.
6. **Calculating Class Example** – (Declared Weight/Declared Horse Power) + Modifier A car weighing **2650 lbs** with **200 WHP** is **13.25 LBS/WHP** and using 200 TW Tires gets a +1 modifier equals **14.25** therefore would be **PWR2**.

### I. Dynamometer Testing

1. Dyno test documentation
  - i. Dyno results must be submitted in a pdf format generated by the dyno system or alternatively a printout may be scanned (at 400dpi or higher) and saved in pdf format. Pictures (jpg files) of the dyno system monitor or printout are not acceptable.
  - ii. Dyno results should clearly indicate the Racer's name, Car model, Engine code and date of testing. This should be printed by the Dyno operator's software at the time of the test. Adding this information by hand after the fact will not be accepted.
2. Required Dynamometer: Dynojet
  - i. Alternatively if no Dynojet is available, a Mustang Dyno test may be substituted with the following conditions: the Declared Weight of the PWR class car must be input as the vehicle weight for Mustang Dyno testing. Mustang WHP results will need to be multiplied by 1.1 to **approximate** a Dynojet Dyno test result. Note: Competitors are strongly encouraged to utilize a Dynojet Dynamometer for Disclosure Form testing. In cases where a Dyno is utilized for compliance testing at the track, the Dynojet will be



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used and the results are the official results! No exceptions.

3. Correction: SAE J1349 rev JUN90 (29.23 in/hg, 77F, zero humidity, dyno smoothing plot set to 5)
4. Testing must be performed at operating temperatures and with the same engine modifications, specifications, and configuration as used in competition. The dyno results must be with the engine installed in the car as it will be raced i.e. dyno results prior to an engine swap are not valid.
5. The **Declared WHP** will be no less than the highest power recorded of 3 pulls all performed within 10 minutes.
6. Replacement of any part that can have an effect on performance such as but not limited to fuel injectors, headers, intake manifold, camshaft(s), etc. will require a new dyno submission and recalculation of LBS:WHP rating for classing.
7. Dyno test results expire on December 31 of the year following the date the dyno test was performed. Example: a dyno test performed on January 1, 2023 will expire on December 31, 2024. A dyno test performed on December 15, 2023 will also expire on December 31, 2024.
8. For **initial entry** into the PWR class, an existing Dyno sheet dated within the prior 18 months of an approved application will be accepted. Note: If a dyno test sheet is submitted for **initial entry** in the PWR class that was performed on a date that would be deemed to be expired by #6 above at the time of submission, it will be valid until December 31 of the year the disclosure is accepted.

### J. Vintage/Historic Cars

1. Vintage cars may be classed like any other car based on Dyno measured HP and Declared minimum weight
2. Alternatively, Vintage Race cars with a documented history of competing in vintage race series recognized by BMW CCA Club Racing (HSR, VRG, VDCA, etc) will be eligible to apply for Pre-Classing
  - i. Pre classing will be determined by the PWR Rules Committee (under the direction of the National Tech Steward, or a designated BMW CR representative).
  - ii. An application for Vintage Pre-Classing will be required which includes:
    1. Indication of existing classing in a vintage/historic series.
    2. Documented race results within the last 12 month clearly showing lap times achieved from at least 2 venues where BMW Club Racing has held events.
    3. A processing fee of \$50 is required and 2 weeks lead time for processing.

### K. Appearance

1. Livery and Sponsor Decal Display must be in accordance to the currently published requirements in the BMW Club Racing rules. See section II.D.4. Documented Vintage/Historic cars are exempt from sponsor decal requirements.
2. BMW CCA door panels are not required for PWR class cars.
3. PWR class cars must display the PWR X class designation and car number on both door panels, hood and rear of the car. These designations must of significant size and color differentiation from the background color so as to be clearly seen by event officials. Side and hood numbers shall be a minimum of 8 inches high with a 1.5- to 2-inch stroke. The rear number shall be a minimum of 3 inches high with a minimum 0.5-inch stroke. Class identification shall be near the numbers and be a minimum of 3 inches high.
4. PWR class cars must also display their declared min weight on both rear windows in 1 inch (min) white letters along with each element of the Modifier. The weight and modifiers must conform to the following format/order: **Weight** **Aero** **Tires** **Transmission**. The modifier values do not require



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a leading zero but must include a decimal point as appropriate. If the modifier value is zero a 0 is required to be displayed. . An example **WATT** display is as follows:

2900 -.5 +1 0

Adequate spacing should separate the individual modifier values. Note: Club racing may choose to provide a background decal for the PWR class WATT display to facilitate consistency. This is TBD.

### PWR Class Race Procedures

5. Each PWR class racer will require an officially approved PWR Disclosure sheet that will remain with the car along with the logbook and a copy of the official dyno graph.
6. Each PWR class car will be presented to Tech along with logbook, disclosure sheet and dyno graph. The car may be subjected to a weigh-in to verify the declared weight prior to the first on track session of a race weekend. Any deviation in weight showing the car lighter than the declared weight will need to be corrected before competitive track sessions.
7. PWR class cars will be subjected to impound following randomly selected competitive track sessions (qualification and/or race).

### L. Disclosure Sheet

1. Completed Disclosure Sheets (including dyno test) **must be submitted for approval no less than 10 working days prior to the planned race weekend**. If a disclosure sheet is submitted within the 10 business day window prior to the planned race weekend, the possible approval of the late disclosure sheet is on a best effort basis and will be assessed a \$100 fee. There is no guarantee of processing/approving a Disclosure sheet within the 10 business day window prior to a race.
2. The officially approved BMW CR PWR class disclosure sheet must be available to Tech at each race weekend **Failure to have the PWR disclosure sheet available for tech at a race event will result in disqualification**.
3. The Declared WHP must be equal to or greater than the included Dyno result which must be the most recent dyno test of the car's current engine and installed in the current race car. A reminder, the Declared WHP must be at least 85% of the manufacturer's published crank HP. Example a 2004 BMW M3 has a factory Crank HP rating of 333. The declared WHP must be at least 0.85 times 333. Accordingly, the Declared WHP must be greater than or equal to 283 WHP.
4. Once a disclosure sheet has been submitted and a car class determined by an official approval, it cannot be re-classed or change declared modifiers (even within a specific PWR class) during that season without submitting a petition to the PWR Rules committee.

### M. Compliance

1. Official Weight and HP confirmations will occur at impound during BMW CCA Club Racing Events.
  - i. Impounded cars must go directly to the impound area as directed by the tech stewards. The driver may exit the car, but the car must remain untouched until movement is directed by the stewards. Any car that does not go directly to impound will be disqualified.
  - ii. Impounded cars will be weighed to validate the declared weight
  - iii. Impounded cars may have WHP verified by Dyno per Section I. Cars will be operated by an appointed CR official.
  - iv. The racer must be prepared to direct the dyno operator to connect a tachometer lead prior to the dyno runs. If work is required to do this, the racer will need to supply tools to accomplish the task.



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- v. Ballast will be checked and may be required to be removed for weight verification of the ballast itself.
  - vi. Any and all other PWR class rules compliance may be checked during impound.
- 2. BMW CCA Club Racing officials may move any car to another PWR class OR mandate ballast if it has a demonstrated history of significantly under- or over- performing in its current class. Unless an oversight or omission occurred during the classing process, a car will be moved to another class only after review by the PWR rules committee.
- 3. Impound
  - i. The following impound penalty scenarios apply to competition sessions:
    - 1. Impound Weight:
      - a. Failure to meet minimum declared weight at impound shall result in the disqualification of the competitor for that session in accordance with the general BMWCCA CR rules. Racers shall make weight adjustments to bring the car into compliance for the remainder of race weekend.
    - 2. Impound Dynotest:
      - a. If the maximum impound HP exceeds the declared maximum HP, a Power to Weight calculation (including modifiers) shall be made by the assigned tech steward, using the impound maximum HP and impound weight.
      - b. Failure to meet the minimum declared ratio for the subject class based on such calculation shall result in the disqualification of the competitor for that session in accordance with the general BMWCCA CR rules.
      - c. In such case, it is the Driver's responsibility to acquire the new minimum weight calculations after each Dyno impound and make changes to the car accordingly. For example, this may be done by adding ballast in accordance with the established PWR rules, and getting re-weighed before the next competitive session.
    - 3. Each driver is encouraged to carry enough ballast in the car to satisfy any potential Dyno variance and meet declared weight. There is no grace allowance for weight or HP/Wt ratio.

### **N. Prohibited Elements**

- 1. Electric powered cars are not allowed.
- 2. Compressed fuel powered cars are not allowed.
- 3. Driver or automatically controlled Aerodynamic devices are not allowed.
- 4. Cockpit/Driver adjustable Fuel Management Systems are not allowed.
- 5. Adjustment of the power, torque or maximum RPMs electronically (remotely or wired) or by any other means during a race weekend is not allowed.
- 6. During the race weekend, it is not permitted to connect (by any means including wirelessly) any device to the engine management system that is capable of altering the engine control data or program.
- 7. Cockpit/Driver adjustable Suspension Systems are not allowed,
- 8. Nitrous Fuel Assist systems are not allowed.
- 9. Methanol/Alcohol-water injection systems are not allowed.



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### O. Definitions

1. Documented Historic/Vintage race car – Any car that has a valid Vintage Organization logbook, issued prior application to the PWR class and with actual race results in the last 5 years.
2. DOT R compound Tires – A non-or Semi-treaded race compound tire that is frequently used in club racing and High Performance Driving Schools. These tires typically have a Treadwear rating between 40 and 100 along with a Temp and Traction Rating. Sizing is in a standard metric format such as 245/40/17. To avoid confusion, these should not be referred to as a “slick” in spite of the fact they have little or no tread. Examples of these tires are: BFG R1 (NLA), Hankook Z214, Hoosier A7, Hoosier R7, Yokohama A055, etc.
3. Non DOT Slicks - Also referred to as road racing slicks. In addition to having no tread, these tires have no DOT rating as required to be street legal and generally carry a European size format such as 280/650/18. They are purely a racing tire. Examples are: Hoosier Road Racing Slicks S80/S100, Michelin Racing Slicks SM8/9 , Hankook F200, Yokohama A005 and Pirelli DHB.
4. Aerodynamic elements:
  - i. Wing – any device mounted to the trunk consisting of multiple uprights with an air gap between the trunk lid and the aerodynamic element.

## PWR Class Rules FAQ

	<u>Questions</u>	<u>Answers</u>
	Why are you using peak Horsepower rather than something like average Horsepower?	As the PWR class ramps up, we need to keep the class rules simple initially as we acclimate to the additional overhead required by this new class. We reserve the right to revise the rules as needed to maintain fair competition.
	Why do I have to submit a petition to change the classing of my car?	The PWR class brings additional complexity and overhead to running our events. Excessive and/or unnecessary changing of classes can easily overload our volunteers.
	Why is the PWR class weight specified with the driver and doesn't specify how much fuel like some endurance series do?	There are many ways to specify race weight. For efficiency reasons, the PWR class weight specifications match the post race weight requirements of other BMW Club Race classes. This will allow Tech Stewards to easily handle the PWR classes as well as the traditional CR classes at impound.





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	What are you going to do about cars that have an artificially flat horsepower curve? Won't they have an unfair advantage?	We are expecting engines to be run close to their "natural state" in order to comply with the 85% of Factory rated HP.
	What is meant by running an engine in its "natural state?"	"Natural State" is where an engine is allowed to produce its inherent peak HP. i.e. one that is not being limited in order to play games with rules whether by restrictor plates, electronic tuning, etc.
	Why are cars with non BMW motors allowed in BMW Club Racing?	We want to include all BMW chassis to race with BMW Club Racing.
	What if my car is underweight at the initial weigh-in for the weekend?	The initial weigh-in is intended to validate that the declared weight in in the ball park. Each competitor is responsible to insure their declared weight is fully met at the completion of each competitive on-track session. Failure to do so will result in disqualification.
	Can I register my traditional class Club Racing car for PWR and choose which class to run on a weekend to weekend basis?	Yes you may submit a disclosure sheet for your car and have a dual class car (Ex DMOD and PWR3). You will only be allowed submit one PWR class disclosure per car per calendar year. Your car must run in one class per event weekend i.e. no class changes during the weekend. Note: points will only be awarded in the class actually participated in during the event.
Vintage/Historic Cars?	Why are vintage cars not required to have a dyno test to be classed in PWR?	Club Racing is committed to mapping vintage classes to PWR to make their transition easier.
	How will the class for a vintage car be determined? What if it's not right?	Club Racing has engaged with Vintage Racing Organizations to understand the relative performance of the vintage classes that encompass most BMWs. Lap times from "known" tracks will be used as a sanity check as well.
	Why does classing a vintage car require \$50 but not other cars in PWR?	Club Racing will have to invest a significant amount of time to properly class the vintage cars. Vintage cars are always welcome to class their cars with Dyno and





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		Weight data like other cars in the PWR class.
	I have a Historic/Vintage car with period correct livery. Do I have to put all the BMW Club Racing sponsor decals on my car?	Not at this time.