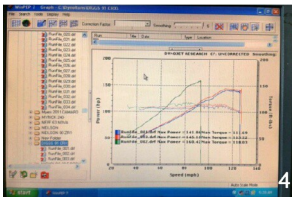
What is Open Dyno Day?

I was recently asked by a club member to explain what “Open Dyno Day” was, and why he would want to go there. I will try to answer these questions in this article. I apologize for not writing this before Brady’s last Open Dyno Day, but now you will know more about this when he has his next one.

Open Dyno Day is not related to the huge creatures that used to roam the earth, it is a day where anyone can come and run their car on the Dynamometer. OK, what is a Dynamometer? A Dynamometer is a very expensive computerized piece of equipment that records the Horsepower and Torque put down onto the road by the drive wheels of a motorized vehicle. In our case, the Miata’s rear wheels. In other words it measures the amount of power the car has to accelerate forward and maintain a high speed.

See picture #1. This is a 3,500lb roller mounted in the floor on very smooth roller bearings. There is an optical eye sensor that records each time the wheel rotates one revolution. You can see in picture #2 where this car has it’s drive wheels sitting directly on top of the roller, and is securely tied down by ratchet straps. These straps are put in place front and rear. They also put a very powerful fan in front of the car to make sure there is enough air to pass thru the radiator. The Dyno works the motor very hard, so it is important to keep it cool.



Picture #3 is the set up screen on the computer that is hooked to the Dyno drum. Note it is also hooked to an on-site weather station which records the relative Humidity, Barometric Pressure, and ambient Air Temp at the time of the run. Air density is important in making horsepower and torque. Cooler air, and drier air (less humidity) has more oxygen in it, and the motor needs oxygen to burn the fuel pulled into the motor. Barometric pressure is important as that is a measurement of how much outside air pressure is helping to “push” air into the motor. During this morning the pressure was 29.90 inches of mercury, 15.8% humidity, and 69 degrees. Pretty decent conditions for the dyno runs.

The Sophisticated computer program records the amount of time for the drum to make each revolution. It compares the time between successive revolutions and notes how rapidly the elapsed time is changing. The Computer uses the individual Revolution times, the number of revolutions and the total time it takes to bring the 3,500 lb drum up to the maximum rpm the motor is allowed to rev up to. This combined with current weather information is how it determines the power output of the motor. The Dyno works on the principle that Inertia at Rest wants to keep the drum stationary, and the car motor wants to make it turn.

Picture #4 is the graph of a 1991 CRX that was run on the Dyno. Disregarding the high reading which was a run error, he produced about 145 hp and 115 Ft/Lb of torque. Not bad for this car. Why did he run this car this day? Please read on.

WHY run a car on a Dyno? There can be many reasons. The simplest is just because you are curious as to how much power the car has. There are Two Parts to the Power Output of a motor. The one part is Torque. Torque is what gives us Acceleration. Torque is what turns the driveshaft and rear tires to help us quickly accelerate from a stop. Torque is what we use every day on the street when we start the car in motion. The more Torque the quicker we can get up to the speed we want.

Horsepower is the second part of the power output measurement. Horsepower is what gives us Speed. So when you are cruising down the highway at 65 mph and want to pass the slowpoke ahead of you, Torque speeds you up, and then the Horsepower keeps you there. In my humble opinion, Torque is

the most valuable part for a street car, and Horsepower is better for high speeds like the track. Both can be safely enjoyed on the street, if you are careful.

So why did the Honda CRX run on the Dyno? He is starting into a project to build a street car with a powerful built up motor. He wanted to know what power output he had to start, so he can see what results he gets from the modifications after he does them. It is good to have a baseline, so you can be sure your modifications are helping give more power, not hurting the power output as some mods can.

So now you know about a Dyno, and why people run their cars on them. As I am an old Motorhead who used to run a car at the Drag Races, I really enjoy being around some of the higher horsepower cars that come to the Open Dyno Day, as anyone can show up. I still enjoy hearing and watching a 420 horsepower supercharged car being run on the Dyno. I guess it is still in my blood! There were several high power cars run that day, and I enjoyed being there.

Now you know the “rest of the story” as Paul Harvey used to say. My thanks to the club member who asked me about this, as the question gave me an idea for an article.

Zoom-Zoom! Bill Latsha