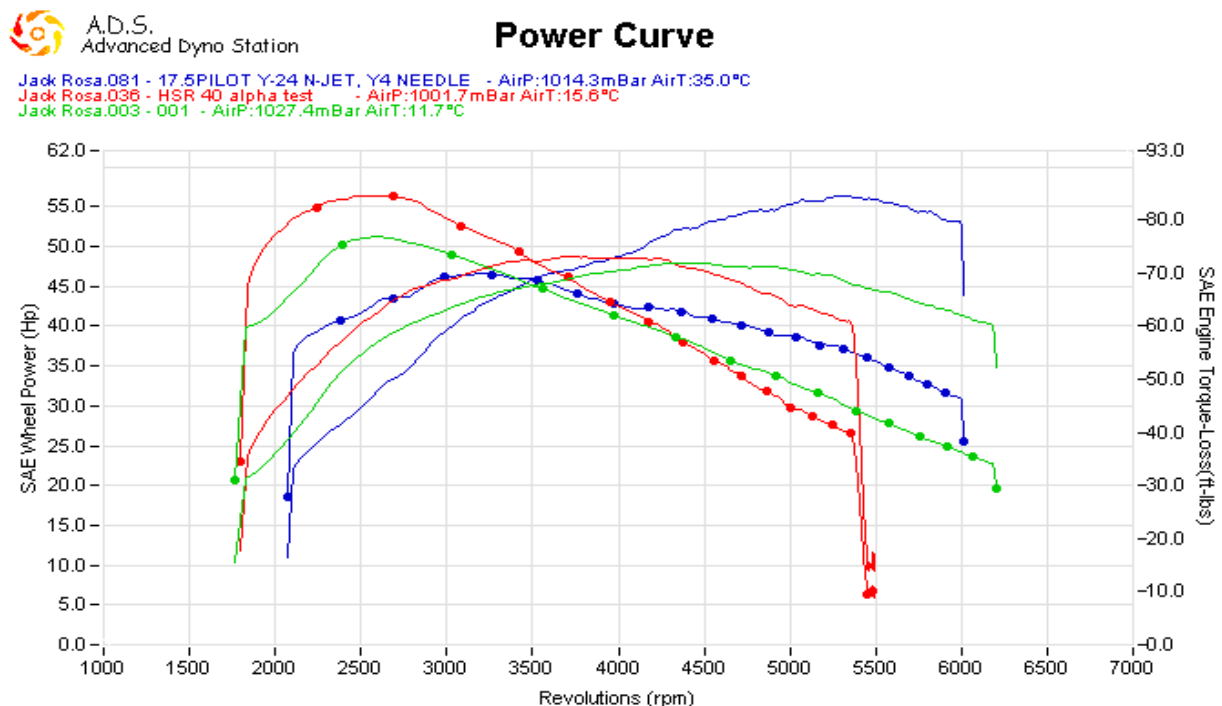


Power, more accurately placement of power, many people buy a bike only to find they wish the bike had more get up and go. Well, every manufacture of speed parts claims there parts are just what you need. Welcome to the world of marketing and hype. You need to look at three things before you decide whether or not to jump on the power train. Many people will give you an almost religious endorsement as to the reason why the performance upgrades they have are right for you. Avoid buying into the excitement and hype. Most of these reviews are from shade tree mechanics who couldn't tell you what their goal for performance was or what they truly ended up with. About the only thing you'll hear from them is stuff like "It's so much faster" "I don't have to shift into low to pass" Asked where they ride in the power band and they have no clue, most of them don't even have a tach installed. Lets put it into perspective, if you go on a 100-mile trip where is your engine running most of the time for RPMs? Maybe two or three miles total above 5000 rpm? Now think.... 97% of the time you are in the cruise range of your power band of 2500 to 4500 RPM, Your bike was engineered around this range, where does it make sense to place more power? Yes, where you drive more of the time in. Racers make max power within a certain RPM range and gear the race machines to the course. It's always an easy goal of making a ¼ machine. Place the power at the top of the shift range and extend the duration there to maximize acceleration for 13 to 16 seconds. Now I ask you, you own a cruiser, is this where you'll do most of your riding? If you answered yes, then get some big pistons, cams, 2 into 1 race pipe, high performance ignition system and about two days worth of Dyno time to map out what you'll need to set for WOT max acceleration. Is this starting to make sense? Tuning for power is just that, analyzing where you need to put your power for maximum return.

I have MORE HP then you... Heard that one before.. Ya, Big deal. What does that tell you about the guy who touts nothing other than that? What good is 105hp if it can only be used when the motor is turning 6800 to 7200 rpm. You are not cruising to your favorite haunt with your partner on the back at those RPMs are you? No, You're using your throttle through out the gear ranges to give you the best performance for the widest range of driving conditions. Hence TORQUE, the most underrated measurement of power. Torque equals raw acceleration or pull; HP is directly calculated from torque. If you tune your bike, dyno it and find only a moderate gain in horsepower but a large gain in torque. Congratulations! You've added to the acceleration to your bike. This is not to say horsepower is not important, but when it comes to drivability (Power where you want and need it) Torque is the focal point. The key is sustaining the largest amount of torque across the largest segment of the cruising range. This is where things become tricky. Creating power is a series of compromises. Typically when you add power to the top of the range you lose it on the bottom and vice versa. Remember when I used the phrase "Power Placement". Recently in the automotive world this has begun to not matter. With the advent of variable valve timing, the engine can literally change its power placement by changing the cam configuration to be strong in the low range and then change to strength in the upper range. Basically a single engine can now behave as two. That technology has yet to arrive in the motorcycle world as a practical every day running bike. Therefore a goal of sustained power across the RPM range you will be in should be the target.

So, what does this mean to you? The meaning can be found in the first question you need to ask of yourself. How do I ride? WOT (wide open throttle) everywhere? A slow loping cruise? The highway? Back roads like your runnin shine? For most people on cruisers the power range is somewhere in the low to middle range and the top is not visited often. Using different carb, manifold and cam setups you can achieve proper power placement with a bit of forethought.

Below are some examples of power placement on my Vstar 1100. I chose to use the KJS performance intake system for several reasons, most importantly was to give me a mega torque boost in lower RPM ranges. I've ended my engine mods with a set of cams, which has extended the power band into the upper RPM range for high speed (85+ MPH) highway performance. The result has been a cruiser that will lug well and run like a road race bike.



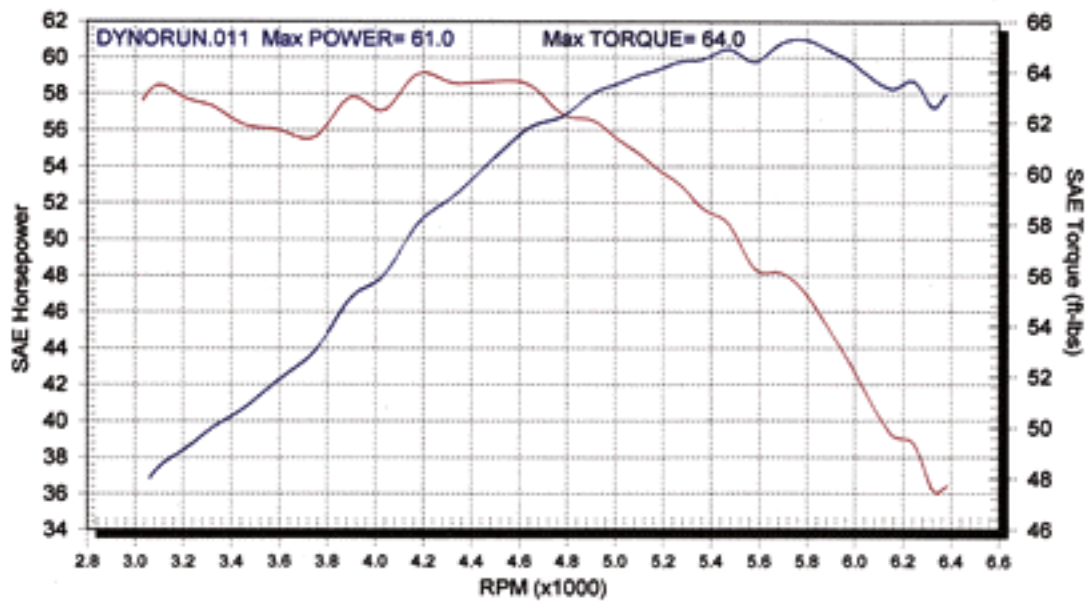
The lines with the dots represent torque and the lines without are horse power.

The red lines are the engine equipped with the manifold and a Mikuni HS40 Flat slide race carb. Notice the HUGE torque boost at low RPM, which equates to launching from the line with a snap of the throttle. The trade off is as you hit 4500 RPM your acceleration starts to drop. While there is still good power for highway use the power shines at stoplights and riding with a passenger.

The green lines are the engine equipped with the manifold and the stock Mikuni CV (constant velocity) carb. The result is good all around town driving with great acceleration and moderate highway performance. Notice the slight extended upper middle range over the HS40 (green). This makes the bike fantastic on fuel economy and good all around town performer.

The blue lines are the engine equipped with the manifold and a Mikuni HS40 Flat slide race carb. This was my goal as you can see I compromised on a little bit of low RPM power. However with the manifold I managed to gain some back and the cams extended the power into the high RPM range. Not only did the cams extend the power band but there was a gain of 14hp and 10lbs of torque! Nirvana! This is the best all around performance I have been looking for!

Now you can change the air filter system on your bike and add a two into one performance pipe and these are the kind of results you can expect. As you can see the torque line is flat and the HP takes the entire range to build before it hits its peak. Basically making the power in a narrower band. The cost for doing this sort of tuning was about the same and yet the overall gain was not all that impressive.



So consider your goal before you hop the performance train. As you can see, match a good manifold with the correct carb and you can have your cake and eat it too!